SREE NARAYANA COLLEGE FOR WOMEN KOLLAM

Detailed Syllabus of Courses offered

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List of UG and PG courses offered in our college and their detailed scheme and syllabus as prescribed by the University of Kerala.

UNIVERSITY OF KERALA

SCHEME AND SYLLABUS

(OUTCOME BASED)

FIRST DEGREE PROGRAMME IN CHEMISTRY

(BSc)

UNDER CHOICE BASED CREDIT AND SEMESTER SYSTEM

Core Courses, Foundation Course II, Open and Elective Courses

2020 ADMISSION ONWARDS

UNIVERSITY OF KERALA

SCHEME AND SYLLABUS

FIRST DEGREE PROGRAMME (BSc) IN CHEMISTRY

2020 ADMISSION ONWARDS

The BSc Degree programme in Chemistry covers three academic years of six semesters and aims to provide the students with an in-depth understanding and training in chemical sciences. The syllabus has been designed to stimulate the interest of the students in chemistry and prepared in order to equip the students with a potential to contribute to the academic and industrial requirements of the society. The new, updated syllabus is in accordance with the **OUTCOME BASED EDUCATION (OBE)** which aim at acquiring advanced knowledge in Chemistry as a discipline, in an interdisciplinary way. Based on the new guidelines of OBE, **Programme Outcome (PO)** ***for the First degree Programme is defined by University of Kerala***. **Programme Specific Outcome** relating to BSc Chemistry **(PSO)** and **Course Outcome (CO)** relating to each course are also specified. [CO is of the Remember level(R) understand level(U) and apply level(A) based on Blooms Taxonomy]

Chemistry being an experimental science, due importance is given to the development of laboratory and instrumentation skills. The student is acquainted with the method of science, research methodology and the use of Computational softwares and Cheminformatics thus developing basic skills and knowledge of computing and data based decision making. At the same time, emphasis is given to critically analyse the impact of Chemistry in the present scenario of emerging human friendly and ecofriendly green approach in various facets of life and to become cautious against the random usage of dangerous chemicals.

It also provides a detailed knowledge of the terms, concepts, methods, principles and experimental techniques of chemistry, in order to get a comprehensive knowledge in leading a better life in harmony with nature.

PROGRAMME SPECIFIC OUTCOME (PSO) FOR FDP IN CHEMISTRY

Sl.No.	Upon completion of BSc Degree programme in Chemistry, students	PSO No.
1	Develop scientific outlook scientific attitude and scientific temper	PSO1
2	Develop skill in experimenting , analyzing and interpreting data	PSO2
3	Develop research attitude and adopt scientific method of identifying, analyzing and solving research problems in an innovative way	PSO3
4	Apply physical and mathematical theories and principles in the context of chemical science	PSO4
5	Use chemistry related soft wares for drawing structure and plotting graphs	PSO5
6	Use instruments- potentiometer, conductometer, pH meter and colorimeter.	PSO6
7	Acquire skill in safe handling of chemicals including hazardous materials.	PSO7
8	Identify the ingredients in household chemicals, use them in a critical way	PSO8
9	Predict analytical procedures, compare experimental, theoretical and graphical methods of analysis	PSO9
10	Predict reaction mechanism in organic reactions	PSO10
11	Understand the terms, concepts, methods, principles and experimental techniques of physical, organic, inorganic and analytical chemistry	PSO11
12	Develop critical thinking and adopt healthier attitudes towards individual, community and culture through the course of Chemistry	PSO12
13	Become cautious about environmental aspects and impact of chemicals in soil, water and air and adopt ecofriendly approach in all frontiers of life	PSO13
14	Become responsible in consumption of natural resources and adopt measures for sustainable development.	PSO14
15	Visit Chemical factories and industries with scientific curiosity	PSO15
16	Develop writing skills and presentation skills using audio visual aids	PSO16
17	Compare and share knowledge in an interdisciplinary manner	PSO17
18	Inculcate spirit of originality, novelty, and necessity in scientific research	PSO18
19	Contribute to the academic and industrial requirements of the society	PSO19
20	Get motivated to higher studies - PG Degree in different branches of Chemistry, BEd Degree in Physical Science, and job opportunities in industrial and non industrial sectors	PSO20
21	Adopt safer life skills in a human friendly and ecofriendly way	PSO21

COURSE STRUCTURE

The First Degree programme in Chemistry comprises of fourteen core courses, one project course, two choice based courses (an Open course in Vth semester and an Elective course in VIth semester), one core specific foundation course (IInd semester) in addition to one area-specific foundation course, the complementary courses and language courses. The open course offered in the fifth semester is open to students from other Majors. The details of the Course Structure are given in **Table I to VI**.

A Computer Skill Development Programme is included as part of the Core Course-CH1221 (Foundation Course II in Semester II), for computational skill development with no End Semester Evaluation (ESE).

FIRST DEGREE PROGRAMME
IN CHEMISTRY
Table I : Course structure, Scheme of Instruction and Evaluation

Course Code	Study component	Instructional hrs/Week		Credit	Duration of Uty. Exam	Evaluation marks		Total Credit
		T	P			CE	ESE	18
EN1111	English I	5		4	3hrs	20	80	
1111	Additional Language I	4		3	3hrs	20	80	
EN1121	Foundation Course I	4		2	3hrs	20	80	
MM1131.2	Complementary Course I	4		3	3hrs	20	80	
PY1131.2	Complementary Course II	2		2	3hrs	20	80	
	Complementary Course Lab of PY1131.2		2	-	-	-	-	
CH1141	Core Course I	2		4	3hrs	20	80	
	Core Course Lab I of CH1141		2	-	-	-	-	
SEMESTER II								
EN1211	English II	4		3	3hrs	20	80	18
EN1212	English III	5		4	3hrs	20	80	
1211	Additional Language II	4		3	3hrs	20	80	
CH1221	Foundation Course II	2	2	3	3hrs	20	80	
MM1231.2	Complementary Course III	4		3	3hrs	20	80	
PY1231.2	Complementary Course IV	2		2	3hrs	20	80	
	Complementary Course Lab of PY1231.2		2	-	-	-	-	

SEMESTER III								
EN1311	English IV	5		4	3hrs	20	80	18
1311	Additional Language III	5		4	3hrs	20	80	
MM1331.2	Complementary Course V	5		4	3hrs	20	80	
PY1331.2	Complementary Course VI	3		3	3hrs	20	80	
	Complementary Course Lab of PY1331.2		2	-	-	-	-	
CH1341	Core Course II	3		3	3hrs	20	80	
	Core Course Lab I of CH1341		2	-	-	-	-	
SEMESTER IV								
EN1411	English V	5		4	3hrs	20	80	24
1411	Additional	5		4	3hrs	20	80	
	Language IV							
MM1431.2	Complementary	5		4	3hrs	20	80	
	Course VII							
PY1431.2	Complementary Course VIII	3	2	3	3hrs	20	80	
	Complementary Course Lab of PY1131.2 PY1231.2 PY1331.2 & PY1331.2			4	3hrs	20	80	
CH1441	Core Course III	3		3	3hrs	20	80	
CH1442	Core Course IV- Lab I of CH1141		2	2	3hrs	20	80	
SEMESTER V								
CH1541	Core Course V	3		4	3hrs	20	80	19
CH1542	Core Course VI	4		4	3hrs	20	80	
CH1543	Core Course VII	4		4	3hrs	20	80	
CH1544	Core Course VIII Lab II		5	3	6hrs	20	80	
CH 1545	Core CourseIX Lab III		4	2		20	80	
1551	Open Course	3		2	3hrs	20	80	
	Project		2	-	-	-	-	
SEMESTER VI								
CH1641	Core Course X	3		4	3hrs	20	80	23
CH1642	Core Course XI	4		4	3hrs	20	80	
CH1643	Core Course XII	4		4	3hrs	20	80	
CH1644	Core Course XIII Lab IV			3	6hrs	20	80	
CH1645	Core Course XIV Lab V			2		20	80	
CH1661.1/ CH1661.2/ CH1661.3/ CH1661.4	Elective Course	3		2	3hrs	20	80	
CH1646	Project and Factory Visit		3	4	Viva voce	-	100	

CE -Continuous Evaluation, ESE- End Semester Evaluation

Table I A. Total number of Courses offered in BSc programme

Sl No.	Courses	No. of courses	Credits semester wise
1	Language Courses	9	7+10+8+8=33
2	Foundation Courses	2	2+3=5
3	Complementary Courses	9	5+5+7+11=28
4	Core Courses	14	4+3+5+17+17=46
5	Open Course	1	2
6	Elective Course	1	2
7	Project	1	4
Total number of Courses		37	
Total number of credits in all six semesters		18+18+18+24+19+23=120.	120

Table II.Scheme of instruction of Core Courses, Foundation Course II, Open Course and Elective Course

Course No. Course code	Course Title	Sem I		Sem II		Sem III		Sem IV		SemV		Sem VI		Total	
		Hrs L/P	C	Hrs L/P	C	Hrs L/P	C	Hrs L/P	C	Hrs L/P	C	Hrs L/P	C	Hrs	**C**
C.C.I CH1141	Inorganic Chemistry I	2/2	4											2	**4**
F.C.II CH1221	Chemistry-its Origin, Methodology and Impacts			2/2	3									4	**3**
C.C.II CH1341	Inorganic Chemistry II					3/--	3								**3**
C.C.III CH1441	Organic Chemistry I														**3**
C.C.IV CH1442	Lab I of CH1141,CH1341&CH1441 (Inorganic Qualitative Analysis)					--/2		--/2	2					6	**2**
C.C.V CH1541	Physical Chemistry I									3/--	4			3	**4**
C.C.VI CH1542	Inorganic Chemistry III									4/--	4			4	**4**
C.C.VII CH1543	Organic Chemistry II									4/--	4			4	**4**
C.C.VIII CH1544	Lab II of CH1541,CH1542&CH1543 (Inorganic Volumetric Analysis)									--/5	3			5	**3**
C.C.IX CH1545	Lab III of CH1541,CH1542&CH1543 (Physical Chemistry Experiments)									--/4	2			4	**2**
O.C CH1551	Open to other majors									3/--	2			3	**2**
C.C.X CH1641	Physical Chemistry II											3/--	4	3	**4**

C.CXI CH1642	Organic Chemistry III											4/--	4	4	**4**
C.CXII CH1643	Physical Chemistry III											4/--	4	4	**4**
C.C.XIII CH1644	Lab Course IV (Organic Chemistry Experiments)											--/5	3	5	**3**
C.C.XIV CH1645	Lab Course V (Gravimetric Experiments)											--/3	2	3	**2**
E.C CH1661	Any one of the options											3/--	2	3	**2**
C.C.XV CH1646	Project									--/2		--/3	4	5	**4**
	Factory visit														
Credits/Semester		**4**		**3**		**3**		**5**		**19**		**23**			**57**

C.C-Core Course, F.C-Foundation Course, O.C-Open Course, E.C-Elective Course
L-Theory, P-Practical, C-Credit

B.Sc. Degree Programme in Chemistry

Table III. Open Course offered to students of other disciplines

Semester V

Semester	No. of Hours / Week		Credits	Course Code	Title of the Course	Instructional Hours
	L	P				
V	3	-	2	CH1551.1	Chemistry and its Application	54
				CH 1551.2	Fundamentals of Chemistry & Its Application to Everyday Life	
				CH 1551.3	Environmental Chemistry	

B.Sc. Degree Programme in Chemistry

Table IV. Elective Course offered in Semester VI

Semester	No. of Hours / Week		Credits	Course Code	Title of the Course	Instructional Hours
	L	P				
VI	3	-	2	CH1661.1	Supramolecular, Nano Particles and Green Chemistry	54
				CH 1661.2	Computational, Combinatorial and Physical Organic Chemistry	
				CH 1661.3	Polymer chemistry	
				CH 1661.4	Biochemistry	

Table V. Complementary Courses offered to BSc Chemistry (One Semester 18 weeks)

(Complementary programme - Mathematics, Total Credits – 14)

Semester	Hours/week	Number of Credits	Course code	Instructional Hours
I	4	3	MM1131.2	4×18 = 72
II	4	3	MM1231.2	4×18 = 72
III	5	4	MM1331.2	5×18 = 90
IV	5	4	MM1431.2	5×18 =90

Table VI. Complementary Courses offered to BSc Chemistry (One Semester 18 weeks)

Complementary Programme- Physics , Total Credits – 14

Semester	Hours/Week		Number of Credits	Course code	Instructional Hours
	L	P			
I	2	2	2	PY1131.2	2×18 = 36 2×18 = 36
II	2	2	2	PY1231.2	2×18 = 36 2×18 = 36
III	3	2	3	PY1331.2	3×18 = 54 2×18 = 36
IV	3	2	3 4	PY1431.2 PY1432.2	3×18 =54 2×18 = 36

GENERAL ASPECTS OF EVALUATION

MODE OF EVALUATION - COMMON TO CORE, ELECTIVE, COMPLEMENTARY AND FOUNDATION COURSES

Evaluation of each course shall involve Continuous Evaluation (CE) of 20 marks and End Semester Evaluation (ESE) of 80 marks.

1. CONTINUOUS EVALUATION FOR LECTURE COURSES

The Continuous evaluation will have 20 marks and will be done continuously during the semester.

CE components are

(i) Attendance for lecture and laboratory sessions (to be noted separately where both lecture and laboratory hours have been specified within a course);

(ii) Assignment /seminar and

(ii) Test

The distribution of marks is shown below. There will be two class tests for which, the better of the two marks obtained will form part of CE. Seminar for each course to be organized by the course teacher and assessed along with a group of teachers in the Department. The topic selection by the student for assignments/seminar will be with the approval of the course teacher.

No	Component	Marks
1	Attendance	5
2	Assignment / Seminar	5
3	Tests	10
Total		**20**

1.1. EVALUATION OF THE ASSIGNMENTS AND SEMINAR

The topic selection by the student for assignments/seminar will be with the approval of the course teacher.

The assignment can be

1. A report of about 4-6 pages in A4 size paper
2. The topic can be presented either as oral or as power point for 10 minutes duration using audio-visual aids if available. The seminar is to be conducted within the contact hour allotted for the course.
3. Preparing Charts on assigned topic
4. Making static or working models.

The submitted report /chart /models should be evaluated for assignment marks.

Mode of Assignments / Seminar Evaluation		
No	**Main Component**	**Marks**
1	Adherence to overall structure & submission deadline	All four main components present & satisfactory : 5 Only three : 4 Only two : 3 Only one : 2
2	Content & grasp of the topic	
3	Lucidity / Clarity of presentation	
4	References / Interaction/Overall effort	

1.2 QUESTION PAPER PATTERN FOR CONTINUOUS EVALUATION TESTS

- The theory examination has a duration of 1.5 hours and a maximum mark of 40
- Questions should be 20% hard, 60% medium and 20% easy.

1. Each question paper has three sections: A, B & C
2. Section A has ten compulsory- one word/one sentence questions carrying 1 mark each .
3. Section B contains twelve short questions of which 7 questions have to be answered. Each question carries 2 marks.
4. Section C contains nine questions of which 4 has to be answered. Each question carries 4 marks.

   The answer must contain at least 8 points (Short Essay type).
5. 30% of the questions in physical chemistry papers should be problem based.

Question Paper Pattern for CE Test		
Question No	Type of Question	Marks
Section A: 1-10	All / one word/one sentence	1X10=10
Section B: 11-22	7out of 12; Short Answer	7 X2=14
Section C: 23-31	4 out of 9; Short Essay	4 X4= 16

TOTAL	40 marks

DETAILS OF ESE FOR LAB COURSES					
Lab Course	Course name	ESE	Time	Total Marks 100	
				CE	ESE
Lab course I	Inorganic Qualitative analysis	IV Semester	3Hrs	20	80
Lab course II	Inorganic Volumetric analysis	V Semester	3Hrs	20	80
Lab course III	Physical chemistry experiments	V Semester	3Hrs	20	80
Lab course IV	Organic Chemistry Experiments	VI Semester	3Hrs	20	80
Lab course V	Gravimetric Experiments	VI Semester	3Hrs	20	80

1.3 CONTINUOUS EVALUATION FOR LABORATORY COURSES

The Continuous evaluation will have 20 marks. The ESE of inorganic qualitative analysis will be done only in the IV semester and similarly the ESE of physical chemistry experiments and volumetric analysis will be done only in the V semester. The ESE of Organic and Gravimetric experiments will be done at the end of VI semester.But the corresponding CE are calculated from all the semesters in which there is attendance for laboratory sessions.

No	Component	Marks
1	Attendance	5
2	Lab test	5
3	Record	5
4	Punctuality	5
Total		**20**

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1.4 EVALUATION OF THE RECORD

On completion of each experiment, a report should be presented to the course teacher as soon as the experiment is over. It should be recorded in a bound note-book. The experimental description should include aim, principle, materials/apparatus required/used, method/procedures, and tables of data collected, equations, calculations, graphs, and other diagrams and the final results.

CE for Lab report &Laboratory Record *		
No	**Sub Component**	**Marks**
1	Punctual submission and Neat presentation	All four sub-components present & satisfactory : 5
2	Record of more than 90% experiments in the syllabus	Any three : 4 marks
3	Calculations and absence of errors/mistakes	Only two : 3
4	Accuracy of the result	Only one : 2

***The LAB RECORD of experiments, certified by the tutor and HOD is compulsory for the ESE**

2. GUIDELINES FOR QUESTION PAPER SETTERS FOR ESE

- The theory examination has a duration of 3 hours
- The maximum marks is 80 for each theory paper.
- Question paper should contain 20% Remember (R) ,60% Understanding (U) and 20% Application (A) Level questions.
- Questions should be as per the syllabus from the standard text books mentioned in syllabus
- Question paper setter should submit a detailed scheme of evaluation along with question paper.

QUESTION PAPER PATTERN (ESE)

1. Each question paper has four Sections: A, B , C and D
2. Section A has ten compulsory- one word/one sentence questions carrying **1** mark each .
3. Section B contains twelve short questions of which eight questions have to be answered. Each question carries **2** marks with four points (Short Answer type).
4. Section C contains nine questions of which six has to be answered. Each question carries **4** marks. The answer must contain at least 8 points (Short Essay type).
5. Section D contains four questions of which the candidate has to answer two. Each question should have **three subdivisions** with a total of **15** marks.

Question Paper Pattern for ESE		
Question No	Type of Question	Marks
Section A: 1-10	10 one word/one sentence	1x10=10
Section B: 11-22	8 out of 12; Short Answer	2x8=16
Section C: 23-31	6 out of 9; Short Essay	4x6=24
Section D: 32-35	2 out of 4	15x2=30
Total		**80 marks**

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME
2020 Admission onwards

Semester	I
Course	Core course-I
Course name	**INORGANIC CHEMISTRY I**
Course Code	CH 1141
Credit	2
Hours	36 hours
Lecture-Tutorial-Lab	2-0-2

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Discuss the course of development of structure of atom.	U	PSO1
2	Apply rules for filling electrons in classifying elements into s, p,d and f blocks	A	PSO10
3	Define various scales of electronegativities and their applications	U	PSO10
4.	Define Effective nuclear charge and Slater's rules	U,A	PSO10
5	Discuss about diagonal relationship and anomalous behaviour of hydrogen and other first element in each group.	U	PSO4
6	Correlate and predict general properties of s and p block elements based on their electronic configuration.	A	PSO4
7	Realise applications of s and p block elements in sustainable and renewable energy sources.	A	PSO14
8	Define various concepts of acids and bases.	U	PSO11
9	Understand reactions in non aqueous solvents.	U	PSO11
10	Realise various causes, effects and control measures of environmental pollution.	E	PSO13
11	Review national movements for environmental protection.	U, A	PSO21

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Atomic Structure and Periodicity**	**9**	
1.1	Introduction to structure of atom, Rutherford and Bohr model of atom,	1	1
1.2	Dual nature of electron-de Broglie equation-matterwaves and electromagnetic waves. Experimental verification by Davis and Germer method,Heisenberg's uncertainty principle- expression and significance.	1	1
1.3	Wave mechanical concept of the atom-Schrodinger	1	1

	equation and its significance (derivation not required.)		
1.4	Quantum numbers- Pauli's Exclusion principle- Aufbau Principle- Hund's rule- Electronic configuration of atoms- classification of elements into s,p,d and f blocks-	2	1
1.5	Electronegativity- Pauling's scale, Mulliken and Allred-Rochow scale(including numerical problems),	2	4
1.6	Effective nuclear charge, Slaters rule and its applications, diagonal relationship and anomalous behavior of first element with other elements.	2	4,5
2	**Representative elements**	**9**	
2.1	General properties of s and p block elements, Hydrogen – isotopes and its applications- uses as a fuel, water gas	2	6
2.2	Physical properties- atomic radii, ionization enthalpy, electron negativity, electron affinity, Flame colouration, inert pair effect	2	6
2.3	Chemical properties- solubility and thermal stability of alkali and alkaline earth metal oxides, sulphates and hydrides	2	6
2.4	p-block elements- oxides of nitrogen and phosphorus, oxyacids of halogens	1	6
2.5	Allotropism – carbon, sulphur and phosphorus	1	6
2.6	Applications- lithium battery, cesium in photovoltaic cells, selenium in xerography and barium x-ray	1	7
3	**Acids, Bases and non- aqueous solvents**	**9**	
3.1	Arrhenius concept, Lowery –Bronsted, Lewis concepts and Lux Flood concept and its limitations,	2	8
3.2	SHAB principle and its applications,	1	8
3.3	Non – aqueous solvents: General properties- classifications- self ionization and leveling effect-	2	9
3.4	Reaction in non-aqueous solvents- protic and aprotic non-aqueous solvents- examples-solutions of metal s in liquid ammonia- self ionization of liquid ammonia-liquid SO_2, liquid HF, alkali metals in liquid ammonia.	4	9
4	**Environmental chemistry- Air, water and soil pollution**	**9**	
4.1	Air pollution- Air pollution caused by fire works, harmful effects of fire works, acid rain, green house effect, smog- classic and photochemical smog	2	10

	Ozone layer depletion, ozone hole, protection of ozone umbrella. Management of air pollution.		
4.2	Water pollution: causes- heat, industrial waste, sewage water, detergents, agricultural pollutants Treatment of industrial waste water- Activated charcoal, synthetic resins, reverse osmosis and electro dialysis Quality of drinking water- Indian Standard and WHO standard- Dissolved oxygen- BOD , COD.	3	10
4.3	Soil pollution: pesticides, fertilizers, Industrial waste, Plastic. Control of Plastic threat- importance of Plastic identification codes and Plastic recycling, use of biodegradable plastics (PGA,PLA and PHBV(mention only)	2	10
4.3	Control of pollution. Pollution Control Board – Duties and responsibilities Mention environmental movements (Plachimada,Silent valley, movement against Endosulfan, Narmada Bachavo Andolan and Chipko movement)	2	11

Text Books

1. B.R.Puri, L.R,.Sharma, K.C. Kalia, Principles of Inorganic Chemistry, Milestone Publishers New Delhi,2010
2. F.A.Cotton, G. Wilkinson, Advanced Inorganic Chemistry, Wiley, India(P)Ltd
3. J.D.Lee, Concise Inorganic Chemistry,5thEdn. Wiley, India(P)Ltd.
4. A.K.De,Environmental Chemistry,New Age International(P) Ltd. New Delhi
5. A.K.Ahluwalia, Environmental Chemistry, Ane Books, India, New Delhi.

For Further Reading

1. M.C.Day and J Selbin, Theoretical Inorganic Chemistry,2nd Edn.,Reinhold Book Corp.
2. S.Prakash,G.D.Tuli, S.K Basu, R.D.Madan,Advanced Inorganic Chemistry, Vol. 1.,S Chand
3. J.E.Huheey,E.A.Keiter, R.L.Keiter, O.K.Medhi. Inorganic Chemistry, 4th Edn. Pearson, 2006
4. S.S.Dara, A Textbook of Environmental Chemistry and Pollution Control, 8th Edn. S Chand& Sons, New Delhi.
5. M.N.Greenwood, A .earnshaw, Chemistry of the Elements, 2nd Edn. Butterworth, 1997.

UNIVERSITY OF KRALA
Model Question Paper of B.Sc. Chemistry First Degree Programme

2020 Admission onwards
SEMESTER -I Core Course-1 Course Code - CH1141 Credit-4

INORGANIC CHEMISTRY I

Time: 3 Hours **Maximum Marks: 80**

SECTION A

(Answer **all** questions in one word/one sentence. Each question carries **1** mark)

1. Mention about the flame colouration of II group elements.
2. Write an example of classic smog.
3. State Heisenberg's uncertainty principle.
4. What are matter waves?
5. Which is the conjugate base of HF.
6. Define covalent radius.
7. Write the reason for eutrophication.
8. In the stratosphere, fluorine from the CFC's change to which compound.
9. Name the radio isotope of hydrogen?
10. Mention any one use of alkali metals. **(1 X 10 = 10marks)**

SECTION B

(Answer any **8** questions. Each question carries **2** Marks)

11. Calculate the wavelength of electron moving with a velocity of 10^6 ms^{-1}.
12. A cricket ball weighing 100g is to be located within 0.1A^o. What is the uncertainty in its velocity?
13. What are eigen values and eigen functions?
14. How first element differs from other elements in a group?
15. What is COD?
16. What are ortho and para hydrogens.
17. Write SHAB principle?
18. Comment about the hydration of alkali metals?

19. State and illustrate Pauli's Exclusion Principle.

20. Distinguish between levelling solvents and differentiating solvents.

21. Write a note on green house effect.

22. What is acid rain? **(2 X 8 = 16marks)**

SECTION C

(Answer any **6** questions. Each question carries **4**Marks)

23. Discuss the following reactions in liquid SO_2.

(i) Solvation (ii) acid- base reaction

24. Discuss hydrogen and water gas as fuels.

25. Describe reverse osmosis for water purification.

26. Briefly explain about the Davisson and Germer's experimental verification of wave nature of electron.

27. What is smog? What are the different types of smog?

28. How ozone layer is depleted?

29. What is the trend of Ionization enthalpy and electron gain enthalpy in the periodic table?

30. What are hydrides? Explain.

31. Discuss about the redox property of alkali metals

(4 X 6 = 24marks)

SECTION D

(Answer any **2** questions. Each question carries **15** Marks)

32. (a) What is effective nuclear charge? Explain with example.

(b) Write a note on various electronegativity scales

(c) Explain about the various rules for filling up of electrons in orbitals. (5+5+5 Marks)

33. (a) Write a note on allotropes of carbon.

(b) Discuss on the topic 'hydrogen as next generation fuel'

(c) Give an account of Cesium in photo voltaic cell and Lithium battery (5+5+5 Marks)

34. (a) What are the common characteristics of solvents?

(b) Liquid ammonia is a better solvent for organic compounds. Why?

(c) Write a note on various concepts of acids and bases. (5+5+5 Marks)

35 .(a) Briefly discuss about the various air pollutants

(b) Fertilizers and pesticides pollute soil. Justify.

(c) Explain about the various water quality parameters (5+5+5 Marks)

(15 X 2 = 30marks)

SYLLABUS FOR B.Sc. CHEMISTRY PROGRAMME
2020 admission onwards

Semester	II
Course	Foundation course II
Course name	**CHEMISTRY –ITS ORIGIN, METHODOLOGY AND IMPACTS**
Course Code	CH 1221
Credit	2
Hours	36 hours
Lecture-Tutorial-Lab	2-0-2

CO no.	**COURSE OUTCOME** *Upon completion of this course, the students*	**Cognitive level**	**PSO**
1	Appreciate the development of scientific theories through years with specific examples	U	PSO1
2	Develop curiosity and scientific attitude towards the application of chemistry in daily life	C	PSO1
3	Outline a procedure for experimentation	A	PSO2
4	Appraise the current development in Chemistry	E	PSO1
5	Identify the common ingredients of house hold synthetic products	U	PSO8
6	Discriminate and classify chemicals used as drugs,explosives,	U	PSO7
7	Get motivated in visiting chemical Industries	E	PSO15

8	Adopt safety measures in handling chemicals	A	
9	Draw titration curves and explain theory of volumetric titrations	A	PSO2/PSO3
10	Select suitable indicators for acid base titration knowing the theories of acid base titration and indicators	A	PSO11
11	Develop computational skills	A	PSO5
12	Discuss separation techniques of filtration and chromatographic techniques	U	PSO3

R-Remember, U-Understand, A-Apply

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Evolution of Chemistry as a discipline of science**	**3**	
1.1	Evolution of Chemistry - ancient speculations on the nature of matter, early form of chemistry-alchemy.	1	1
1.2	Major contributions of Friedrich Wöhler, Mendeleev, Michael Faraday and Marie Skłodowska-Curie	1	2
1.3	Scope of Chemical Science, branches of Chemistry Basic idea of Chemistry as a central science connecting Physics , Biology and other branches of science	1	2
2	**Impact of Chemistry in human life**	**9**	
2.1	**Food Chemistry**: Food additives, preservatives, anti oxidants, commonly used permitted and nonpermitted food colours artificial sweeteners-taste enhancers, Health effects of fast foods, instant foods, dehydrated foods and junk foods, 'trans fat'	2	2
2.2	**Cleansing agents:** Soaps- Hard and soft soaps, alkali content-TFM, Detergents , Shampoos (Common ingredients and health aspects) **Cosmetics**: talcum powder, lip sticks, nail polish, moisturiser , hair dye, Sun screen lotions(Common ingredients and health aspects)	1	5,6,7
2.3	**Role of Chemistry in sustainable development** Role of chemical industries in polluting the environment, limitations of conventional waste management, birth of green chemistry	2	2
2.4	**Solar energy harvesting** :	1	2

	Photosynthesis, Photovoltaic cell, conventional solar cells, nano structured solar cells		
2.5	**Green solvents:**safer solvents - water, Super Critical fluids(CO2), ionic liquids, advantages of SCF	1	2
2.6	**Chemistry in the field of Medicine** (Elementary idea only) Radio active tracers in diagnosis and treatment of cancer: use of Radio isotopes(^{60}Co, ^{131}I) Use of MRI scanning, Dialysis in blood purification. advantages and disadvantages in using these techniques	2	6
3	**Methods and Tools of Science & Research methodology**	**6**	
3.1	Basis for scientific laws and factual truths– hypothesis observations- experimental proofs. Theories and laws	1	1
3.2	Experimentation - Design of an experiment, data collection – types of data -interpretation and deduction –repeatability and replication- Accuracy and precision, Revision or modification of scientific theories and laws	1	3
3.3	Research methodology, scientific method of conducting research: Selecting and defining a problem, Science Journals, Impact factor, citation, ISSN, ISBN.	1	4
3.4	*Educational softwares – INFLIBNET, NICNET, BRNET, NPTEL, VIRTUAL LABS OF MHRD academic services *Chemistry related softwares-Chem sketch and Chem Draw for structure drawing, *Chemical Databases-Pubchem, ZINC, Cambridge Structural Database (CSD), *Molecular visualization tools –Avogadro, Molden, Molekel, *File format-PDB and CIF *Graphical tools- Excel and Origin (*elementary idea only with computer assistance). .	2	11
3.5	Study of the latest/current Nobel prize winners in chemistry	1	4

4	**Analytical Principles and techniques**	**9**	
4.1	Inorganic qualitative analysis –Common ion effect and solubility product and their application in the precipitation of cations in a mixture. Introduction of Microscale analysis as a green chemistry approach	2	3
4.2	Quantitative Analysis:Theory of acid-base titration - titration curve of strong acid-strong base ,weak acid – strong base, strong acid- weak base and weak acid- weak base, theory of acid-base indicators	2	10
4.3	Theory of Redox titration: Titration of Fe^{2+} with $KMnO_4$ and $K_2Cr_2O_7$ and theory of redox indicators	1	10
4.4	Theory of complexometric titration: metal ion-EDTA titration. Theory of metallochromic indicators Precipitation titration: NaCl- AgNO3 titration and use of potassium chromate as adsorption indicator	1	10
4.5	Chromatography - classification of methods - Elementary study of adsorption chromatography Column and thin layer- partition chromatography-paper- ion exchange and gas chromatographic methods	1	12
4.6	Gravimetric Analysis - Mechanism of precipitate formation - Factors affecting solubility of precipitates – co-precipitation and post precipitation - Effect of digestion - washing, drying and ignition of precipitates.	2	3
5	**Chemistry and industry**	**3**	
5.1	Cement: Introduction, types of cement , manufacture, chemical composition of Portland cement, setting and hardening of cement and special cement	1	6,7
5.2	Ceramics: Introduction, types of clay products, properties of clay, plasticity of clay, manufacturing of white wares and stone wares and their application	1	6,7
5.3	Paints: Primary constituents, binders and solvents, requirements of a good paint-oil based paints, latex paints, luminescent paints, fire retardant paints and heat resistant paints Pigments**:** definition, White lead, lithopone, ultramarine, red lead, Guignet's green and chrome yellow	1	6,7
6	**Lab Safety measures and disaster management**	**6**	
6.1	Introduction to lab safety-regulatory requirements-labels,	1	5,8

	material safety. Knowledge of hazard warning information and symbols.		
6.2	Propellants and Explosive compounds ,Examples- TNT,TNG,Urea nitrate,Hydrazine derivatives. potentially dangerous mixtures- Flammable solvents, ignition sources used in laboratories, metal hydrides(basic idea)	2	2
6.3	Reactive inorganic substances and their toxicity (strong acids, bases, halogens, chromates). Hazards due to chemicals, toxic-solids, liquids, gases, and other harmful substances - carcinogenic substances.	2	2
6.4	Emergency procedures in chemical splashes to skin and eyes, burns and electric shock.	1	8

Textbooks

1 N.C. Datta, "The Story of Chemistry" , University Press.
2. B K Sharma, Industrial chemistry, 11th edition, Goel Publishing House, Meerut, 2000
3. B Srilakshmi, Food Science,5th edition, New Age Publishers, NewDelhi,2010
4.Kirpal Singh, Chemistry in Daily Life, PHI Learning Pvt.Ltd, 201
5. Muhammed Musa, Gaji, Abhishek Varma,(Editors)"Development of Solar power generation and energy harvesting", **ISBN 9789351249498**, Publisher Astral
6. Medicinal Chemistry , An introduction, II nd edition Gareth Thomas, Wiley
7. Hazards in chemical laboratories and guide to safe practices in chemical laboratories published by Royal Society of Chemistry
8. A. I. Vogel, "Text book of Quantitative Inorganic Analysis
9. Day& Underwood "Quantitative analysis: laboratory manual

Further reading

1. H.Collins and T.Pinch ,The Golem : What everyone should know about science, Cambridge Univ Press 1993
2.R T Mishra, Teaching of information Technology.
3.M Ravikumar, Information Technology for Higher Education
4.Fletcher,Gilbert , Radiation therapy in the management of cancers;
5.http://www.vlab.co.in
6.http://nptel.iitm.ac.in/
7. V. Rajaram, Introduction to Information Technology , Prentice Hall

8. Barbara Wilson, Information Technology, The Basics, Thomas Learning
9.Calvin W Tayler and Frank Barron Scientific Creativity : Its Recognition and Development

10. A.H Ahluwalia,Renu Aggarwal, Comprehensive Practical organic chemistry Renu Aggarwal, 2000, Universities press.
11.T.F.Gieryn, Cultural boundaries of science Univ. Chicago Press 1999
12.MSR Winter, A Consumer's dictionary of cosmetic ingredients, 7th edition, Three Rivers Press, NewYork,2009

UNIVERSITY OF KERALA

Model Question Paper of B.Sc. Chemistry Programme
2020 Admission onwards
SEMESTER –II Course Code - CH 1221
Foundation course II
CHEMISTRY-ITS ORIGIN, METHODOLOGY AND IMPACTS

Time: 3 Hours **Maximum Marks: 80**

SECTION A

Answer all Questions in one word to maximum of two sentences

Each question carries one mark

1. Name two interdisciplinary branches of chemistry.
2. State and explain the term alchemy.
3. Define the term repeatability.
4. Define hypothesis.
5. Name a redox indicator?
6. Define Rf value
7. Name an artificial sweetener.
8. Write one example ionic liquid.
9. Draw two symbols for hazardous chemicals.
10. What are propellants?

10x1 = 10 marks

SECTION B

Short answer type (Not to exceed one paragraph)
Answer any 8 questions from the following.
Each question carries two marks

11. Write any two contributions by the scientist Marie Curie?
12. Name any two databases and molecular visualization tools in chemistry?
13. State the difference between accuracy and precision.
14. Write the importance of ISSN and ISBN.
15. How micro scale analysis support green chemistry?
16. What are metallochromic indicators?
17. What are the errors occurring in gravimetric analysis?
18. Explain two educational softwares.
19. What are food additives?
20. How solar energy is trapped naturally?
21. What do you mean by' trans fat'?
22. Write short note on ceramics.

8×2 = 16 marks

SECTION C

Short essay (Not to exceed 120 words)
Answer any 6 questions from the following.
Each question carries four marks

23. What are soaps. How are they classified? Discuss the parameters to check the quality of soap.
24. Write a note on research methodology.
25. How will you plot a standard curve using excel sheet?
26. Describe the theory behind redox titration with one example?
27. Explain the different steps in gravimetric analysis?
28. Write a short note on the contributions of latest Nobel laureates in chemistry.
29. Briefly explain 1) MRI, 2) dialysis
30. Discuss the importance of plastic recycling in the present scenario.
31. Discuss the principle of paper chromatography.

6× 4 = 24 marks

SECTION D

Answer any two questions from the following
Each question carries fifteen marks

32. a. Discuss on green solvents.
    b. Write the importance of research journals?
    c). What are the major contributions of Faraday, Medeleeve and Wohler in chemistry? (5+5+5)
33. a) Discuss the application common ion effect in the inter group separation of cations.
    b) Describe the manufacture of cement and the chemistry of setting.
    c) Differentiate between propellants and explosives. Give examples (5+5+5)

34. a) Discuss on paints, classification and constitution.
b)Write note on white lead, lithopone and ultramarine
c)Explain the different methods of harvesting solar energy (5+5+5)

35.Explain the safety measures to be adopted in the laboratory?

b)Briefly discuss on microscale analysis as a green chemistry approach.
c)Discuss on metal ion EDTA complexation and its application (5+5+5)

2×15 = 30 marks

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards

Semester	III
Course	Core course-II
Course name	**INORGANIC CHEMISTRY II**
Course Code	CH 1341
Credit	3
Hours	54 hours
Lecture-Tutorial-Lab	3-0-2

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students.*	Cognitive Level	PSO No.
1	Understand various theories of chemical bonding and their limitations.	U	PSO4
2	Predict stability of atoms and the nature of bonding between atoms.	U,A	PSO4
3	Discuss various applications of intermolecular interactions	U	PSO4
4.	Understand chemistry of glass, silicates and silicones	U	PSO7 PSO8
5	Discuss chemistry of Boron compounds, oxyacids and oxides of Phosphorous	U	PSO11
6	Understand refractory carbides, nitrides, borides and silicides.	U	PSO11
7	Describe various types of halogen compounds.	U	PSO3
8	Understand chemistry of noble gas	U	PSO3
9	Understand inorganic polymers and their applications.	U	PSO8
10	Distinguish between types of nuclear reactions.	U	PSO11
11	Describe measurement of radioactivity.	U	PSO2 PSO3
12	Discuss applications of radioactivity in various fields.	U	PSO3
13	Understand introductory concepts of nanochemistry	U,A	PSO18
14	Suggest methods of synthesizing nano materials.	U	PSO18
15	Appreciate the variety of applications of nanomaterials.	U ,A	PSO18

R-Remember, U-Understand, A-Apply

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Chemical Bonding I**	**9**	
1.1	VSEPR theory and its applications- structure of molecules with bond pairs only, molecules with both bond pairs and lone pairs-	3	1
1.2	valence bond theory- conditions of overlapping- types of overlapping(positive , negative and zero overlapping), hybridization-methane, ethylene, benzene,acetylene, allenes, sp^3d and sp^3d^2- limitations of VBT.	3	1
1.3	MO theory, LCAO, homonuclear diatomic molecules- C_2, B_2, N_2, O_2 and ions like O_2^+ - heteronuclear diatomic molecules(HF, NO and CO)-calculations of bond order and its applications.	3	1
2	**Chemical Bonding II**	**9**	
2.1	Types of bonding- ionic bond- ionic lattice energy of ionic compounds- Bond –Lande equation, Born – Haber cycle, salvation energy and solubility of ionic solids, covalent character of ionic bond, Fajan's rules	2	2
2.2	Polarity of covalent bond- dipole moment- percentage of ionic character- dipole moment and molecular structure.	2	2
2.3	Metallic bonding- free energy theory, VB theory and band theory (Qualitative treatment only) –	1	2
2.4	Secondary forces- hydrogen bond, inter and intramolecular hydrogen bond, Applications-intermolecular interactions- ion-dipole-van der Waal's forces such as dispersion forces, dipole-dipole, ion – induced dipole, dipole induced dipole.	4	2, 3
3	**Compounds of non- transition elements I**	**9**	
3.1	Manufacture and uses of the following Glass- different types of glasses, silicates, zeolites and silicones.	4	4
3.2	Borax- boron hydrides, boron nitrides, borazole and carboranes,	2	5
3.3	Oxides and oxyacids of phosphorus.	1	6
3.4	Refractory carbides, nitrides, salt like carbides, borides and silicides.	2	7
4	**Compounds of non- transition elements II**	**9**	
4.1	Oxides and oxyacids of halogens (structure only) – inter halogen compounds and pseudo halogens-	3	8
4.2	Noble gases-uses, Xenon compounds–structure and hybridization in Xenon fluorides.	2	9
4.3	Inorganic polymers, phosphorus, boron and silicon based polymers- structure and industrial applications.	4	10
5	**Nuclear chemistry** (numerical problems expected)	**9**	
5.1	Natural radioactivity, decay constant (Derivation not expected), half life, average life	1	11
5.2	Disintegration series, modes of decay-α,β, positron emission and electron capture, artificial transmutation and artificial radioactivity	1	11
5.3	Nuclear stability, n/p ratio,modes of decay- α, β and positron emission, packing fraction, mass defect and binding energy	1	11

5.4	Units of radio activity, Measurement of radioactivity by GM counter, Wilson cloud Chamber, scintillation counter,	1	12
5.5	Nuclear fission-atom bomb and nuclear fusion- hydrogen bomb-	1	13
5.6	Applications of radioactivity- ^{14}C dating, rock dating, neutron activation analysis Isotope as tracers, dosimetry, units Study of reaction mechanism (ester hydrolysis)	2	13
5.7	Application of radioactive isotope in medicine- radio diagnosis and radiotherapy, industrial applications	1	13
5.8	Merits and demerits of nuclear technology.	1	13
6	**Chemistry of Nano materials**	**9**	
6.1	Evolution of nanoscience- Historical aspects, preparations containing nano gold in traditional medicine. Lycurgus cup-Faraday's divided metal etc. Nanosystems in nature.	2	14
6.2	Preparations of nanoparticles: Top-down approaches and Bottom to top approaches. Sol- gel synthesis, colloidal precipitation, co-precipitation, combustion techniques, sonochemistry, hydrothermal technique, high energy ball milling etc.	3	13
6.3	Carbon nanotubes , fullerens.	1	14
6.4	Properties of nanoparticles: optical, magnetic, mechanical, thermal and catalytic property with examples.	2	15
6.5	Application nano materials- Nano sensors and Quantum dots(basic idea)	1	13

Text books

1. M C Day and Selbin, "Theoretical Inorganic Chemistry",
2. F A Cotton, G Wilkinson ,"Basic Inorganic Chemistry", Wiley
3. J D Lee, "Concise Inorganic Chemistry ,.ELBS
4. Puri ,Sharma and Kalia, Inorganic Chemistry, Vishal Pub.lishing House
5. T Pradeep, Nano, The Essentials, Mc Graw Hill Education

For Further Reading

1. S Glasston,"Source Book on Atomoc Energy", East West Press Pvt. Ltd, New Delhi
2. J E Huheey Inorganic Chemistry, Principles, structure and Reactivity, by
3. H S Arnicker,"Essentials Nuclear Chemistry", New Age international (P)Ltd, New Delhi
4.Manas Chanda, " Atomic Structure and Chemical bonding in Molecular Spectroscopy",Tata Mc Graw Hill

UNIVERSITY OF KRALA
Model Question Paper of B.Sc. Chemistry Programme
2020 admissions onwards
SEMESTER -III Core Course-II Course Code – CH1341 Credit-3

INORGANIC CHEMISTRY II

Time: 3 Hours **Maximum Marks: 80**

SECTION A

(Answer **all** questions. Each question carries **1** mark)

1. Calculate the bond order of O_2^+
2. C_{60} is called ----------
3. What are nano sensors?
4. Name the type of hydrogen bonding in salicylaldehyde.
5. Draw the structure of inorganic benzene.
6. Write an example for inter halogen compound.
7. Give an example for phosphorus based polymer.
8. Name a naturally occurring radioactive isotope.
9. Write an example of carboranes?
10. What is zeolite?

SECTION B

(Answer any **8** questions. Each question carries **2** Marks)

11. Compare the properties of borazole with benzene.
12. Explain one method of preparation of gold nano particles.
13. Enumerate the applications of nano particles in medicine and electronics
14. Write a note on Fajan's rule.
15. Calculate the bond order of N_2 and C_2.
16. What are the limitations of VBT?
17. Explain the 'banana bond' in diborane.
18. Define lattice energy?
19. Differentiate between Rad and Roentgen units.
20. What is the criterion of a stable nucleus?
21. Write a note pseudo halogens.
22. Give a suitable example of dipole-dipole interaction

SECTION C

(Answer any **6** questions. Each question carries **4** Marks)

23. Draw the MO diagram for NO and CO molecule
24. Give a comparative account of VB and MO theories using relevant examples.
25. What is meant by dipole moment? How is it helpful in explaining the structure of molecules?
26. Write a note on the preparation of nano particles using sol-gel method.
27. Explain the optical, magnetic properties of nanoparticles with examples.

28. Write the hybridisation and structures of Xenon fluorides.
29. Explain artificial transmutation with an example.
30. How is mass defect related to Nuclear binding energy?
31. Write a note on the manufacture of glasses.

SECTION D

(Answer any **2** questions. Each question carries **15** Marks)

32. (a) Explain VSEPR theory with example (5 marks)

(b) Write a note on

i) solvation energy and solubility of ionic solids (5 marks)

ii) secondary bond forces (5 marks)

33.(a) Explain the measurement of radio activity by

i) GM counter (5 marks)

ii) Scintillation counter (5 marks)

(b) Write a note on radio carbon dating. (5 marks)

34. (a) Write a note on disintegration series. (6 marks)

(b) Explain the structure of silicates. (5 marks)

c) Give an account of oxy acids of phosphorus (4 marks)

35. (a) Write a note on carbon nanotubes and fullerenes (6 marks)

(b) Radio active carbon in wood decay with a half life of 5770 years.

What is the rate constant (in year^{-1}) for the decay?

What fraction would remain after 11540 years? (4 marks)

(c) Give an account of band theory (6 marks)

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards

Semester	IV
Course	Core course-III
Course name	**ORGANIC CHEMISTRY – I**
Course Code	CH 1441
Credit	3
Hours	54 hours
Lecture-Tutorial-Lab	**3-0-2**

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Recall the fundamentals of organic chemistry.	R	PSO1
2	Apply the electron displacement effects to compare acidity, basicity and stability of organic compounds/intermediates.	A	PSO4
3	Judge the reaction mechanism of substitution and elimination on the basis of the structure of alkyl halides.	U	PSO10
4	Summarise the chemistry of reaction intermediates.	U	PSO10
5	Discuss optical, geometrical and conformational isomerism of organic compounds.	U	PSO11
6	Use CIP rules to predict the configuration of organic compounds	A	PSO10
7	Differentiate photochemical and thermal reactions.	U	PSO11
8	Discuss theory of colour and constitution and the method of synthesis of dyes	U	PSO8
9	Explain aromaticity, orientation effect and mechanism of aromatic electrophilic substitution.	U	PSO10
10	Demonstrate the method of determination of reaction mechanism.	A	PSO10

R-Remember, U-Understand, A-Apply

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Introduction to organic chemistry**	**3**	
1.1	Uniqueness of carbon: classification of organic compounds, Functional groups (mention only), Review of basic rules of IUPAC nomenclature and IUPAC naming of organic compounds.	1	1
1.2	Types of reagents: Electrophiles and Nucleophiles. Definition of reaction mechanism. Drawing of electron movements with arrows: curved arrow notation, Half headed and double headed arrows.	2	1

	Nature of bond fissions: Homolysis and heterolysis.		
2	**Reaction mechanism I**	**9**	
2.1	Electron displacement effects: Inductive effect, electromeric effect, mesomeric effect, resonance, hyperconjugative and steric effects.	2	2
2.2	Acidity and basicity of organic compounds based on electron displacement effects: Acid characters of alcohols, phenols (phenol, o/m/p-cresols and o/m/p-nitro phenols) and carboxylic acids (aliphatic acids, mono, di, tri chloro acetic acids, Benzoic acid, o/m/p-nitro benzoic acids) and basic character of amines (aliphatic amines, aniline, N- & N,N-dimethyl aniline, o/m/p-nitro anilines ando/m/p- toluedienes)	2	2
2.3	Effects of hyperconjugative effect: stability of alkenes, alkylbenzenes, free radicals and carbocations. Dipole moment of propene and toluene.	1	2
2.4	Reaction intermediates: Carbocations, carbanions, free radicals and carbenes (definition, hybridization, structure, classification, formation, stability and important reactions), rearrangement of carbocations nitrenes(mention only).	2	2/4
2.5	Methods of determination of reaction mechanism: product analysis, intermediates, isotopic labeling (only benzyne mechanism), kinetic and stereo chemical evidences (Walden inversion).	2	10
3	**Reaction Mechanism II**	**9**	
3.1	Aliphatic nucleophilic substitutions: mechanism of SN1 and SN2 reactions, Effect of nature of substrate and solvent in substitution reactions , Stereochemistry of SN reactions ,Stereospecificity and Stereoselecticity in SN reactions , Walden Inversion. Neighbouring group participation (anchimeric assistance): Participation of lone pair of electrons in substitution reaction, mechanism of base catalysed hydrolysis of mustard gas only.	3	3
3.2	Elimination reaction: 1,1 and 1,2 eliminations, mechanisms of E1 and E2 reactions, Regioselectivity in elimination reactions (Hoffmann and Saytzeff rule and Bredt's rule). Stereo chemical pathways of elimination: Syn and Anti eliminations. Substitution vs Elimination.	3	3
3.3	Addition reactions: mechanism of addition of bromine and hydrogen halides to double bonds6y, Regioselectivity in addition reaction (Markownikoff's rule and peroxide effect). Cis-hydroxylation, Diels Alder addition, 1,2- and 1,4- additions in 1,3-butadiene.	3	3
4	**Stereochemistry I**	**6**	
4.1	Representation of organic molecules: Fischer, Flying wedge, Sawhorse and Newman projection formulae.	1	5
4.2	Conformational isomerism : conformation , Dihedral angle , Torsional strain , conformational analysis of ethane and n-butane including energy diagrams	2	5
4.3	Baeyer's strain theory , Sache-Mohr theory of strainless rings, Pitzer strain	1	5
4.4	Conformation of cyclohexane (chair, boat and skew boat	2	5

	forms),axial and equatorial bonds ,ring flipping,conformers of mono and dialkyl substituted cyclohexanes.		
5	**Stereochemistry II**	**9**	
5.1	Optical Isomerism: Chirality and elements of symmetry, DL notation, Enantiomers Optical isomerism in glyceraldehydes, lactic acid and tartaric acid Diastereoisomers, meso compounds	2	6
5.2	Cahn-Ingold-Prelog rules, R-S notations for optical isomers with one and two asymmetric carbon atoms, erythro and threo representations. Racemic mixture, resolution, methods of resolution.	2	5/6
5.3	Enantiomeric excess , Introduction to asymmetric synthesis Optical activity in compounds not containing symmetric carbon atoms: biphenyls and allenes.	2	6
5.4	Geometrical isomerism: cis-trans, syn-anti and E-Z notations , geometrical isomerism in maleic and fumaric acids and unsymmetrical ketoximes , methods of distinguishing geometrical isomers using melting point, dipole moment, dehydration and cyclisation	3	6
6	**Organic Photochemical Reactions and Dyes**	**9**	
6.1	Introduction – photochemical Vs thermal reactions. Single and Triplet states b , Allowed and forbidden transition. Photosensitization	1	7
6.2	Photochemical reactions of olefins: Photodimerisation Photochemistry of carbonyl compounds: Norrish I (Acetone), Norrish II cleavages.	2	7
6.3	Introduction to pericyclic reaction: Electrocyclic, cycloaddition and sigmatropic reactions.(Elementary idea only)	2	7
6.4	Dyes: Theory of colour and constitution , classification according to structure and method of application. Preparation and uses of 1) Azo dye - methyl orange, congored, 2) Triphenyl methane dye - malachite green, 3) Phthalein dye - phenolphthalein, 4) Xanthen dye - fluorescein, 5) Anthraquinone dye - alizarin 6) Vat dye - indigo. Optical brightners – Introduction and important characteristics.	4	8
7	**Arenes and Aromaticity**	**9**	
7.1	Heat of hydrogenation and heat of combustion of benzene, structure of benzene , Concept of aromaticity – Application of Huckel's rule to benzenoid and nonbenzenoid compounds (naphathalene, anthracene, annulenes, cyclic carbocations and anions, five membered heterocylics, azulene, fulvene)	3	9
7.2	Electrophilic substitution reactions in benzene: Mechanism of halogenation, nitration, sulphonation and Friedel Craft's alkylation and acylation, energy profile diagram.	2	9
7.3	Ring activating and deactivating groups with examples. Orientation effect in mono substituted benzene - –OH, -NH2, NO2, -CH3, -CHO, COOH and halogens.	2	9
7.4	Aromatic nucleophilic substitution – Uni and bimolecular displacement mechanism , Elimination and Addition mechanisms	1	9
7.5	Reactivity of naphthalene towards alkylation, nitration and sulphonation. Basic idea of carcinogenic polynuclear arenes.	1	9

Text books:

1. A.Bahl and B.S.Bahl, Advanced Organic Chemistry, S.Chand & Company, New Delhi.
2. L.G.Wade Jr, Organic Chemistry, Pearson Education, New Delhi.
3. K.S.Tewari, N.K.Vishnoi and S.N.Mehrotra, A textbook of Organic Chemisty, Vikas Publishing House (Pvt) Ltd., New Delhi..
4. S.C.Sharma and M.K.Jain, Modern Organic Chemistry, Vishal Publishing Company, New Delhi.
5. D.Nasipuri, Stereochemistry of Organic Compounds: Principles and Applications, New Age International Publizhers, New Delhi.
6. J.Clayden, N.Greeves and S.Warren, Organic Chemistry, Oxford University Press, New York.
7. I L Finar, "Organic Chemistry" Vol – 1, 5th Edition, Pearson Education, NewDelhi
8. Jagadamba Singh and Jaya Singh, Photochemistry and Pericyclic rections, New Age International, New Delhi.

For Further Reading

1. P.S.Kalsi, Organic Reactions, Stereochemistry, and Mechanism, New Age International Publishers, New Delhi
2. R.T.Morrison, R.N.Boyd. Organic Chemistry, Pearson Education, New Delhi.
3. P.Y.Bruice, Essential Organic Chemisty, Pearson Education, New Delhi.
4. Peter Sykes, A Guide Book to Mechanism in Organic Chemistry, Pearson Education, New Delhi.
5. G.M. Louden, Organic Chemistry, Oxford University Press, New York.
6. E.L.Eliel, Stereochemistry of Carbon compounds, Tata McGraw Hill Publishing House, New Delhi.
7. J.March, Advanced Organic Chemistry, John Wiley & Sons., NY.
8. S.M.Mukerji and S.P.Singh, Reaction Mechanism in Organic Chemistry, McMillan Publishers.
9. R.O.C. Norman and J.M.Coxon, Principles of Organic Synthesis, CRC Press.

UNIVERSITY OF KERALA

Model Question Paper of BSc Chemistry Programme

2020 Admission onwards

SEMESTER IV Core Course III Course Code CH1441 Credit-3

ORGANIC CHEMISTRY I

Time:3 hours Max.Marks : 80

SECTION – A

*(Answer **all** questions. Answer in **one** word to maximum **two** sentences. **Each** question carries **one** mark)*

1. What is the product formed when a bond undergoes homolytic fission?
2. Give one example for each (i) substitution reaction and (ii) elimination reaction.
3. Write an example for electrocyclic reaction.
4. Name two reagents used for cis-hydroxylation.
5. What are the products obtained when naphthalene undergoes sulphonation at different temperatures?
6. Identify the orienting effect of the following functional groups $–CH_3$, $-NO_2$, -CHO and –OH.
7. What are chromophores?
8. What is stereo selectivity?
9. What is geometrical isomerism?
10. What are optical brightners?

(1 X 10 =10 Marks)

SECTION - B

(*Short answer type. Answer **any 8** questions from the following. **Each** question carries **two** marks.)*

11. What are electrophiles and nucleophiles? Give examples
12. Write the structure of the following compounds (i) 3,3,4-trimethyl-4-heptene (ii) 2-ethyl-3-methyl hexanal.
13. Phenol is acidic while ethanol is not. Why?
14. Arrange the following in the decreasing order of stability. Justify your answer.
$(CH_3)_2CH^+$, CH_3^+, $(C_6H_5)_2CH^+$, $C_6H_5CH_2^+$
15. Give an example and state Hofmann rule.
16. What is Walden Inversion?
17. What is Kharasch effect? Illustrate with an example.
18. When toluene is nitrated the major products are ortho and para substituted products. Why?
19. State Huckel's rule.
20. Explain photosensitization with an example.
21. What is enantiomeric excess?
22. Explain with examples the importance of dipole moment measurements in distinguishing geometrical isomerism.

(2 X 8 = 16 Marks)

SECTION - C

(*Short essay type. Answer any 6 questions from the following. Each question carries four marks.)*

23. What is inductive effect? How is it affect the acidity and basicity of organic acids and bases?
24. Explain the mechanism of E1 and E2 eliminations.
25. *o*-chloro toluene when treated with sodamide in liquid ammonia gives *o*-toluidine and *m*-toluidine. Explain this observation with relevant mechanism.
26. Explain Norrish I and Norrish II reactions.
27. Determine the R & S notations of the asymmetric carbon atoms in (+) tartaric and (-) tartaric acid
28. Explain the conformational analysis of *n*-butane.
29. Give a brief account on optical activity due to restricted rotation.
30. Explain any two methods of determination of reaction mechanism.

31. What are non-benzenoid aromatics compounds? Explain their aromaticity with examples

(4 X 6 =24marks)

SECTION – D

(*Answer **any2** question. Each question carries 15 marks*)

32. (a) Explain S_N1 and S_N2 mechanisms.
    (b)Write the influence of structure of the substrate and polarity of the solvent on nucleophilic substitution reactions.
    (c) Explain Baeyer's strain theory. (5+5+5)

33. (a) Explain the mechanism of (i) nitration (ii) halogenation of benzene.
    (b) Discuss the orientation of influence of $–NO_2$ and –OH group in aromatic electrophilic substitution.
    (c) Discuss the classification of dyes on the basis of structure.
    (5+5+5)

34. (a) What is resolution? Explain any two methods of resolution.
    (b) What are carbenes? How are they generated? Comment on the structure of carbene.
    (c) Draw conformers of dimethyl cyclohexane and discuss their comparative stability.
    (5+6+4)

35. (a) Write the synthesis and uses of the following dyes (i) Malachite green (ii) Methyl Orange.
    (b) Explain the geometrical isomerism of maleic and fumaric acid.
    (c) What is hyperconjugative effect? How is it useful to explain the stability of carbonium ions?

    (6+4+5)

(15 X 2 = 30marks)

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards

Semester	V
Course	Core Course V
Course name	**PHYSICAL CHEMISTRY I**
Course Code	CH 1541
Credit	4
Hours	54 hours
Lecture	3-0-2

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students*	Cognitive level	PSO
1	Identify, compare and explain the properties and behaviourof ideal and real gases, knowing kinetic theory of gases and different types of molecular velocities and collision properties.	U	PSO11
2	Perform numerical problems of gases under a set of conditions	A	PSO2
3	Differentiate between amorphous and crystalline solids, Understandanisotropy, symmetry and types of crystals, X-ray diffraction methods of study of crystal structure, identify the imperfections in crystals understand the physical aspects of surface tension and viscosity of liquids and the basics of liquid crystals and their applications	U	PSO11
4	representation of lattice planes and calculation of interplanar spacing, draw the crystal structures of NaCl and CsCl	A	PSO9
5	Recalling the basic concepts of solutions, concentration terms, Raoult's law and colligative properties	U	PSO9
6	Determination of colligative properties and molecular mass of solute	E	PSO9
7	Understand the working principle Electro-Chemical cells	U	PSO9
8	Design and Determine the potentials ofelectrochemical systems	E	PSO2
9	Assess the nature of electrolytes in terms of dissociation and ionic conductance of electrolytes in terms of mobility of ions	E	PSO2
10	Integrate the theory into practical applications of conductometric titrations	A	PSO3

MODULE	**COURSE DESCRIPTION**	**Hrs**	CO No.
1	**Gaseous state**	**9**	
1.1	Ideal gas, Ideal gas equation, gas constant: values in different units ($JK^{-1}mol^{-1}$, L atm $K^{-1}mol^{-1}$, cal $K^{-1}mol^{-1}$.), Dalton' Law of Partial pressure- Definition and mathematical expression.	1	1
1.2	Kinetic Theory of gases: postulates,Types of molecular velocities (average, most probable and RMS), formulas and their inter relations. Maxwell Boltzmann distribution of molecular velocities (with plots), Effect of temperature on distribution of molecular velocities	2	1/ 2
1.3	Collision properties. Collision diameter, Collision number, Collision frequency and mean free path. Relation between collision parameters and viscosity and thermal conductivity of gases (no derivation).	1	1/ 2

1.4	Behaviour of real gases, Deviation from ideal behaviour, Explanation for deviation, Compressibility factor, Z-P plots of ideal gas and the real gases H_2, He, NH_3, CO and methane at 0°C, Z-P plots of N_2 at several temperatures. van der Waal's equation of state – Correction factors. van der Waal's equation at low and high pressures and at high temperature.	2	1/ 2
1.5	Boyle temperature, Boyle temperature in terms of van der waal's constant. Virial equation of state and virial coefficients. (no derivations)	1	2
1.6	Critical phenomena: PV-Isotherms of CO_2, continuity of states, critical point, Critical constants, relation between critical constants and van der Waals constants, Experimental determination critical constants.	2	2
2	**Solids, Liquids and Liquid Crystals**	**12**	
2.1	Amorphous and Crystalline solids. Isotropy and anisotropy, size and shape of crystal, Interfacial angle, types of crystals: molecular crystals, ionic crystals, covalent crystals and metallic crystals- examples and properties.	1	3
2.2	Symmetry of crystals- plane of symmetry, axis of symmetry, centre of symmetry (definitions and basic idea only), Seven basic crystal systems, Space lattice and unit cell, Bravais lattices, (unit cell parameters and examples of 14 Bravis lattices), close packing structures of cubic and orthorhombic space lattices.	2	3
2.3	Laws of rational indices, Miller indices, Representation of lattice planes of cubic crystals, interplanar spacing in crystals Determination of Avogadro number from crystallographic data	2	4
2.4	X-ray diffraction studies of crystals, Bragg's equation – derivation and applications, Rotating crystal and powder method. Structure of NaCl and CsCl	2	4
2.5	Imperfections in crystals. Stoichiometric and Non-stoichiometric defects, point defects – Schottky and Frenkel defects, F-centre	1	3
2.6	**liquid state** : Properties of liquids: Vapour pressure-definition and concept, Surface tension-factors affecting Surface tension and measurement by capillary rise and stalagmometer method	1	3/ 4
2.7	Viscosity- Poisuelle's equation, Determination of viscosity by Ostwald's viscometer, Refractive index-determination by Abbe refractometer	1	4
2.8	**Liquid Crystals :** Liquid crystals- introduction, characterization of liquid crystals, Types –smectic, nematic and cholesteric liquid crystals,- examples; Disc shaped liquid crystals, Polymer	2	3

	liquid crystals. uses of liquid crystals		
3	**Dilute solutions and colligative properties**	**9**	
3.1	Dilute solutions: Binary solutions, Concentration- Molarity, Molality, Normality and Mole fraction. (numerical problems)	2	5
3.2	Raoult's Law for solutions of non-volatile solutes, vapour pressure of ideal solutions and relative lowering of vapour pressure.	1	5
3.3	Colligative properties- lowering of vapour pressure; elevation of boiling point and depression in freezing point; molal elevation constant, molal depression constant, Thermodynamic derivation of ΔT; Osmosis and Osmotic pressure, van't Hoff equation; Isotonic, hypertonic and hypotonic solutions, Abnormal molecular mass and van't Hoff factor, Determination of degree of dissociation and association, Reverse osmosis (numerical problems).	4	5/ 6
3.4	Experimental determination of molecular mass of solutes by cooling curve method,Rast's and Beckmann methods	2	6
4	**Electrolytic conductance**	**12**	
4.1	Electrolytic conductance, specific and equivalent conductance and the relation between them. Molar conductance and its variation with dilution, Kohlraush's law and its applications , cell constant	2	7
4.2	Ionic mobility, transport number- determination by Hittorf's and moving boundary method	2	7
4.3	Applications of conductivity measurements:- Determination of degree of dissociation of weak electrolytes, degree of hydrolysis, solubility of sparingly soluble salts, conductometric titrations involving strong acid strong base, strong acid-weak base, weak acid- strong base, weak acid-weak base and precipitation.	2	7, 10
4.4	Debye-Huckel theory of strong electrolytes, Debye-Huckel-Onsager equation, Debye-Falkenhagen effect, Wien effect	2	7
4.5	Activity and activity coefficient of electrolytes, Ionic strength	2	7
5	**Electromotive force**	2	8
5.1	Electrochemical cells- definition, types- electrolytic and galvanic with examples (Daniel cell and electrolysis of Cu), Origin of electrode potential, half cell reaction and	**12**	9

	cell reactions.		
5.2	Types of electrodes-Metallic electrodes, anion reversible electrodes and redox electrodes, Reference electrodes-standard hydrogen electrode, calomel electrode and	2	9
5.3	Effect of concentration of electrolytes on electrode potential: Nernst equation for electrode and cell (Derivation), Numerical problems	2	10
5.4	Relation between electrical energy, free energy, enthalpy and entropy- Gibb's Helmholtz equation and EMF of a cell -calculation of ΔG, ΔH and ΔS from EMF data.	3	9
5.5	Concentration cells - electrode and electrolyte concentration cells,examples, with and without transference (no derivation),fuel cells –H2-O2 and hydrocarbon-O2	3	9
5.6	Applications of EMF measurements- Determination of pH using hydrogen electrode and potentiometric titrations of redox systems with Fe/Cr system	2	8,10

(At least 100 problems are to be worked out from all units together. 30% of the questions for Examination shall contain problems.)

Textbooks

1. Gurdeep Raj, "Advanced Physical Chemistry", Goel Publishing House
2.P W Atkins, "Physical Chemistry", Oxford University Press
3. Anthony R West, " Solid State Chemistry and its Applications", Wiley Eastern
4. V Ramakrishnan and M S Gopinathan, "Group Theory in Chemistry",Vishal Publishing Co.

5.Puri, Sharma and Pathania, "Principles of Physical Chemistry", Millennium Edition, Vishal Publishing Co

For Further Reading

1 A. Salahuddin Kunju and G. Krishnan "Group Theory and its Applications in Chemistry
2. R J Silby and R A Alberty, "Physical Chemistry", John Wiley & Sons
3. G W Castellan, "Physical Chemistry", Narosa Publishing House
4. F Daniels and R A Alberty, "Physical Chemistry", Wiley Eastern
5. E A Moelwyn Hughes, " Physical Chemistry", Pergamon Press
6.R.Stephen Berry,Stuart A.Rice,John Ross,"Physical Chemistry,2nd edition,Oxford".
7. S Glasstone, "Thermodynamics for Chemists", Affiliated East West Publishers
8.L V Azaroff, " Introduction to Solids", McGraw Hill
9. N B Hannay, " Solid State Chemistry", Prentice Hall
10. A.S.Negi and S.C.Anand, A text book of Physical Chemistry, New Age International publishers.

UNIVERSITY OF KERALA

Model Question Paper of B.Sc. Chemistry Programme

2020 Admissions onwards

SEMESTER- V Core Course- V Course Code 1541 Credit-4

PHYSICAL CHEMISTRY –I

Time: 3 Hrs Total marks: 80

SECTION A

Answer all the questions. Each question carries 1 mark

1. Write down the van der Waal's equation for n moles of a gas.
2. Write down the conditions at which real gases tend to approach ideal behaviour
3. Explain the Braggs equation
4. Depict the structure of CsCl.
5. Identify the use of Stalagmomter.
6 Represent the cell diagram of Daniel cell
7. Name a primary reference electrode.
8. In which type of liquid crystals, the colour of the material is sensitive to temperature changes
9. How will you express the degree of dissociation in a weak electrolyte?
10. Explain the Gibb's Helmholtz equation for the emf of a cell.

(1 x 10 = 10 marks)

SECTION B

Each question carries 2 marks (Short answer). Answer any **8** questions

11. Distinguish between RMS and most probable velocity.
12. Distinguish between isotropy and anisotropy.
13. Calculate the Miller index of of a plane with x=1,y=1/2 and z=1.
14. Explain elements of symmetry of crystals
15. Comment on the statement that Depression in freezing point is a colligative property.
16. Calculate the normality of a solution containing 10 gram NaOH in 250 mL of NaOH solution.
17. How is the EMF generated in a concentration cell? Explain..
18. How will you carry out potentiometric titration of HCl and NaOH?
19. Derive the Nernst equation for the reduction of Cu^{2+} to Cu.
20. Define Kohlraush's law
21. Name a common anion reversible electrode and give its reduction half cell representation
22. Define transport number. Suggest one method for its determination.

(2×8 = 16)

SECTION C

Each question carry 4 marks (Short essay) **Answer any 6 questions**

23.What is the law of corresponding states? How is it derived from van der Waals equation

24. Derive the Bragg equation. What is its application?

25.The average speed of a certain gas at $27^{o}C$ is $400ms^{-1}$. Calculate the temperature at which the speed will be $800ms^{-1}$.

26. How will you determine Avogadro number from crystallographic data?.

27. Write a note on the different types of Liquid crystals

28. Discuss on cubic and hexagonal close packing in crystals. Give example for each.

29. Differentiate between molecular and covalent crystals.

30. Calculate the wave length of X rays used for a first order reflection in NaCl crystal. The inter planar spacing is 0.281nm for this reflection.

31. Derive an expression for pH measurement using Hydrogen electrode.

(4 x 6 = 24 marks)

SECTION D

Answer any two questions. Each question carries 15 marks

32. a)Do all gases obey gas laws? Discuss some experimental results to explain deviation and point out the causes which accounts for this behaviour
(5 marks)

b) Explain with diagrams the influence of temperature on molecular velocities in gases.
(5marks)

c) Write a note on continuity of states and critical points.
(5marks)

33. a) Derive Bragg's equation. (5 marks)

b) The edge length of the unit cell of NaCl crystal lattice is 564 pm by X-ray diffraction. Compute the interionic distance between sodium and chloride ions. (5 marks)

c) Give an account of point defects in a crystal. (5 marks)

34. a) An aqueous solution containing 0.50 g of a solute, dissolved in20 g of water froze at 272.58K. Calculate the molar mass of the solute. Enthalpy of fusion of ice, at 273K is 6024.6 J/mol. (5 marks)

b) b)Briefly discuss on the determination of viscosity of liquids. (5 marks)

c) (Explain with necessary diagrams the conductometric titrations of acids and bases. (5 marks)

35. a). Calculate the following

i) the free energy change for the cell , $Zn/Zn^{2+}// Cu^{2+}/Cu$ with an EMF of 1.1 volt at 25^0C.

ii) the electrode potential of Cu^{2+}/Cu in the above cell if the electrode potential of Zn/Zn^{2+} is 0.76 volt.

(5marks)

b) How will you construct a concentration cell using Zn metal electrode and zinc sulphate solution? (5 marks)

c) Give an account of Standard hydrogen electrode and Calomel electrode. (5 marks)

(15x2=30)

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards

Semester	V
Course	Core course-VI
Course name	**INORGANIC CHEMISTRY III**
Course Code	CH 1542
Credit	4
Hours	72 hours
Lecture-Tutorial-Lab	4-0-3

CO No.	COURSE OUTCOME *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Discuss the electronic configuration and related properties of transition elements and inner transition elements	U	PSO11
2	Understand preparation of selected transition metal compounds,lanthanides and actinides	U,A	PSO11

3	Compare lanthanide and actinide contraction and their consequences.	U	PSO11
4.	Name coordination complexes,organometallics, discuss their properties and bonding	U	PSO11
5	Understand stability of complexes and factors affecting stability	U	PSO3
6	Discribe isomerism in coordination compounds	U, A	PSO3
7	Discuss spectrochemical series, CFSE and their consequences	U	PSO3
8	Correlate geometry , stability and Jahn Teller effect and its causes	A	PSO11
9	Discuss reaction mechanisms and applications of coordination compounds	U	PSO11
10	Name and Classify organometallic compounds	U	PSO3
11	Discuss preparation and properties and bonding of carbonyls	U	PSO3
12	Identify the role of organometallic compounds in organic synthesis	U	PSO10
13	Discuss the role of inorganic ions in biological systems and biochemistry of haemoglobin, myoglobin, cytochromes, iron sulphur proteins	U	PSO10
14	Discuss various bioinorganic processes like photosynthesis, working of sodium potassium pump, etc	U	PSO17
15	Discribe various aspects of metallurgy,and instrumental methods of analyses viz., spectrophotometric methods, thermal methods and tools available to measure nanomaterials	U	PSO6

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Transition elements and Inner transition elements-I**	**9**	
1.1	Electronic configuration and general characterisitics- Oxidation state, Ionization enthalpy (variation of I,II and III ionization enthalpy across 3d series) and Enthalpy of atomisation	2	1
1.2	Melting and boiling point, density and Variation of std. electrode potentials (E^o M^{2+}/M & E^o M^{3+}/M^{2+})	2	2
1.3	Stability of higher oxidation states and formation of complexes	1	2
1.4	Colour, magnetic property and catalytic property	1	2
1.5	Comparison of 3d, 4d and 5d transition series	1	3
1.6	Preparation, properties and uses of $K_2Cr_2O_7$, $KMnO_4$ and $TiCl_4$. Important application of transition metals	2	4,5

2	**Transition elements and Inner transition elements-II**	**9**	
2.1	Electronic configuration, general properties (including oxidation state, I.E., melting and boiling points, density, ionic radii, colour, etc) and reactions of Lanthanides and actinides	3	6
2.2	Occurrence and isolation of lanthanides from monazite(Special reference to mineral sands of Kerala)	2	7
2.3	Lanthanide contraction, actinide contraction and their consequences	2	8
2.4	Magnetic properties and complexation behaviour of lanthanides and actinides (with comparison)	2	8
3	**Coordination chemistry-I**	**9**	
3.1	Ligands and their classifications and nomenclature of complexes (latest version)	2	9
3.2	EAN rule – Chelates – Stability of complexes and Factors affecting stability of complexes	1	10
3.3	Isomerism – Structural and stereoisomerism – Geometrical and optical isomerism	2	11
3.4	Bonding in complexes – V.B. Theory, CFT applied to Octahedral, Tetradral and square pyramidal complexes. factors affecting crystal field	4	12
4	**Coordination chemistry –II**	**9**	
4.1	Spectrochemical series – CFSE, Magnetic properties and colour of metal complexes .	3	13
4.2	Effects of crystal field splitting –Jahn -Teller effect- Tetragonal distortion of an octahedral complex	3	14
4.3	Application of coordination compounds in metallurgy, volumetric - quantitative and qualitative analysis. EDTA as a titrant.	2	15
4.4	Reactions of metal complexes-labile &inert complexes, ligand substitution reactions- SN1 & SN2 reactions	1	16
5	**Organometallic and Bioinorganic chemistry-I**	**9**	
5.1	Definition and nomenclature of organometallic compounds.	1	17
5.2	Classification as Sigma, Pi and mixed (containing both Sigma and pi) complexes, 18 electron rule	2	18
5.3	Metal carbonyls- mononuclear and polynuclear (give examples with Fe, Co and Ni)	2	19
5.4	Preparation and properties of carbonyls (Fe, Ni, Mn, Cr), Vibrational frequency of CO bond in metal carbonyls.	2	19

5.5	Bonding in organometallic compounds like ferrocene, dibenzene chromium, Ziese's salt (without MOT) and dinitrogen complexes.	2	20
6	**Organometallic and Bioinorganic chemistry-II**	**9**	
6.1	Application of organometallic compounds	2	21
6.2	Bioinorganic chemistry- Role of metal ions in biological systems- Biochemistry of iron-haemoglobin and myoglobin (elementary idea of the structure and mechanism of their actions)	3	22, 23
6.3	Electron transport proteins: Cytochromes, Iron-Sulphur proteins- storage and transport of iron.	2	23
6.4	Photosynthesis, Sodium -Potassium pump, Biochemistry of magnesium and calcium (brief study only)	2	24
7	**General Principles of Isolation of elements**	**9**	
7.1	Methods of concentration of an ore- Gravity separation, Froth floatation, Magnetic separation, Leaching, electrostatic separation, automated ore sorting and dewatering.	2	25
7.2	Preliminary processes- calcination and roasting.	1	25
7.3	Methods of extracting metal from concentrated ore- Electrometallurgy- Metallurgy of Aluminium, Sodium- Pyrometallugy-	2	25
7.4	Metallurgy of iron and zinc	1	25
7.5	Aluminothermy, auto-reduction and hydrometallurgy- metallurgy of silver and gold	1	25
7.6	Purification of crude metal- Distillation, Liquation, Zone refining, Electro refining , Chromatographic techniques and Vapour phase refining (Mond's process and Van Arkel process)	2	25
8	**Instrumental methods of Analysis**	**9**	
8.1	Spectrophotometry- Laws of spectrophotometry- Beer Lambert's Law	1	26
8.2	Applications of spectrophotometry- colorimetry, atomic absorption spectroscopy and flame emission spectroscopy.	3	26
8.3	Thermal methods- introductory aspects of TG, DTA and DSC- Instrumentation and applications.	2	27
8.4	Tools for measuring nanostructures: XRD, AFM, STM, SEM and TEM	3	28

Text Books

1. B.R.Puri, L.R,.Sharma, K.C. Kalia, Principles of Inorganic Chemistry, Milestone Publishers
   New Delhi,2010
2. S.Prakash,G.D.Tuli, S.K Basu, R.D.Madan,Advanced Inorganic Chemistry, Vol. 1.,S Chand
3. R. Gopalan, V. Ramalingam, Concise coordination chemistry, 1st Edn., Vikas Publishing house
4. J.E.Huheey,E.A.Keiter, R.L.Keiter, O.K.Medhi. Inorganic Chemistry, 4th Edn. Pearson, 2006
5. D.A.Skoog, F.James Holler. S.R. Crouch. Principles of Instrumental analysis, 6th Edn., Cengage Learning, Noida,2004.

For Further Reading

1. D.A.Skoog, F.James Holler, T.A.Nieman. Principles of Instrumental analysis, 6th Edn., Cengage Learning, India Ltd.
2. A.Cottrel, An Introduction to Metallurgy, 2nd Edn. University Press, 1990.
3. D.C.Harris, Qualitatve Chemical Analysis,5th Edn., W.H. freeman & Co. New York.
4. F.A.Cotton, G. Wilkinson, Advanced Inorganic Chemistry, Wiley, India(P)Ltd

UNIVERSITY OF KERALA

Model Question Paper of B.Sc. Chemistry Programme

2020 admissions onwards

SEMESTER- V Core Course- VI Course Code CH1542 Credit-4

INORGANIC CHEMISTRY III

Time: 3 Hours **Maximum Marks : 80**

SECTION A

Answer all questions, each question carries 1 mark (answer in a word\sentence)

1. Give the general outer electronic configuration of a transition element
2. Which is more basic; $La(OH)_3$or $Lu(OH)_3$?
3. Which is the catalyst used in the oxidation of SO_2 to SO_3 in contact process?
4. Give an example for a mono nuclear and a binuclear carbonyl.
5. What is the coordination number of Ag in [Ag(CN)2] ?
6. Give the IUPAC name of Na3[Co(CO3)3]
7. What is the unit of magnetic moment?
8. Give the example for a tridentate ligand.
9. Write the structure of ferrocene.
10. Give the formula of a metal carbonyl which does not obey 18-electron rule. (1 x 10 = 10)

SECTION B

Answer any 8 questions, each question carries 2 marks (short

answer questions)

11.Explain zone refining.
12.Name the metal ion, other than magnesium, involved in photosynthesis.
13. Explain the stability of EDTA metal complexes.
14. How is the ore galena purified?
15. What is the oxidation number of P in H_3PO_4?
16. Give the importance of a cytochromes.
17. Transition metals are less reactive than the alkali and alkaline earth metals - Justify.
18. Which is more stable: Cu^{2+} or Cu^{+}in aqueous solution. ? Substantiate your answer.
19. Which has got greater tendency to form complexes; lanthanides or actinides ? Give reasons.
20. Write the difference between calcinations and roasting
21. What is an ambidentate ligand ? Give example.
22. Explain geometrical isomerism in metal complexes with suitable example (**2x8=16**).

SECTION C

Answer any 6 questions, each question carries 4 marks **(short essay type)**

23.What is Ziese's salt ? Give its structure.
24. State and explain 18-electron rule with examples .
25. How haemoglobin differ from myoglobin.
26. Write notes on AAS and Flame Emission Spectroscopy.
27. Purification of crude metals by Monds proess and van Arkel processes
28. How does TGA differ from DTA?
29. What is lanthanide contraction ? Explain its consequences .
30. What are the factors that affect stability of metal complexes ?
31. Give an account of the applications of coordination compounds in quantitative and qualitative analysis.

SECTION D

(Answer any 2 questions, Each question carries 15 marks)

32.a) Describe the ion exchange method for the separation of lanthanides from monazite. (5 marks)

b) Describe the splitting of d-orbitals in tetrahedral and octahedral fields according to crystal field theory (5 marks)

c) Comment on the magnetic properties of lanthanides (5 marks)

33.a)Give an account of Electrometallurgy and pyrometallurgy (5 marks)

b.Discuss the nature of bonding in metal carbonyls. (5marks)

c) Narrate the use of EDTA as a titrant . (5 marks)

34.a).How silicones are prepared ? Discuss their structure and uses.

b).Give an account of sodium-potassium pump in biological systems.

c)Explain the principle of zone refining with an example.

35.a)Comment on the importance of mineral sands of Kerala ?

(5marks)

b) Explain the principle and working of AFM.

(5marks)

c)Explain the crystal field splitting in octahedral field.

(5marks)

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards

Semester	V
Course	Core course-VII
Course name	**ORGANIC CHEMISTRY II**
Course Code	CH 1543
Credit	4
Hours	72 hours
Lecture-Tutorial-Lab	4-0-2

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Describe the preparation of hydroxy, carbonyl & amino compounds, carboxylic acids and organo Mg, Li & Zn compounds.	R	PSO10
2	Distinguish primary, secondary & tertiary alocohols and amines.	U	PSO10

3	Write reaction steps in ascending & descending of alcohol and aliphatic acid series, interconversion of aldose and ketose, chain lengthening and shortening of aldoses.	U	PSO11
4.	Explain the structure of glucose, fructose, sucrose, starch and cellulose.	U	PSO11
5	Predict the outcome and mechanism of simple organic reactions, using a basic understanding of the reactivity of functional groups	A	PSO10
6	Illustrate the use of organic reagents in synthesis.	**A**	PSO3 PSO10
7	Discuss fundamental principles of supramolecular and green chemistry	U	PSO13

R-Remember, U-Understand, A-Apply

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Alcohols, Phenols and Ethers**	**12**	
1.1	Alcohols: Preparation- From alkenes (hydration. Hydroboration-oxidation, oxy-mercuration demercuaration) and carbonyl compounds (reduction and with Grignard reagent)	2	1
1.2	Chemical properties: Reactions involving cleavage of O-H bonds (acidity and esterification), oxidation (with PCC, Collins reagent, Jones reagent and $K_2Cr_2O_7$) and catalytic dehydrogenation	2	5
1.3	Distinction between primary, secondary and tertiary alcohols – Ascent and descent in alcohol series. Biofuel – ethanol and biodiesel.	1	2
1.4	Dihydric alcohols: Oxidative cleavage – Lead tetra acetate, periodic acid – Pinacol-pinacolone rearrangement.	1	5
1.5	Phenols: Preparation from halobenzens, cumene and sulphonic acid. Chemical properties: – Bromination, nitration, sulphonation.	2	1/5
1.6	Reimer-Tiemann reaction (mechanism expected), Kolbe reaction, Liebermann's nitroso reaction and Lederer-Mannasse reaction. Distinction between alcohols and phenols.	2	5
1.7	Ethers: Preparation by Williamson's synthesis. Reactions of ethers: Cleavage by HI and Claisen rearrangement (Mechanism expected) – Ziesel's method of estimation of methoxy group. Crown ethers: Nomenclature and importance of crown ethers.	2	5
2	**Aldehydes and Ketones**	**12**	
2.1	Preparation: Oxidation of primary and secondary alcohols using PCC, reduction of esters using DIBAL-H, Rosenmund	2	1

	reduction, Gattermann-Koch formylation and Friedel-Craft's acylation.		
2.2	Chemical properties: Nucleophilic addition (HCN, NaHSO3, RMgX and ROH)	1	5
2.3	Addition-elimination reaction (with ammonia and ammonia derivatives). Addition reactions of unsaturated carbonyl compounds: Michael addition.	1	5
2.4	Reduction using Metal hydrides (mechanism expected), MPV reduction, Clemmenson and Wolff-Kishner reduction.	2	5
2.5	Oxidation: with KMnO4, Tollen's reagent, Fehling solution, Br2 water, Oppenaur oxidation, Baeyer-Villiger oxidation.	2	5
2.6	Acidity of α-hydrogen: Aldol, Claisen-Schmidt, Benzoin, Perkin and Knovenagel condensations (all mechanisms expected).	2	5
2.7	Haloform reaction – Iodoform test – Cannizaro reaction (mechanism expected) and Beckmann rearrangement (mechanism expected)	2	5
3	**Carboxylic acids, Sulphonic acid and their Derivatives**	**9**	
3.1	Preparation: Hydrolysis of nitrile, carboxylation of Grignard reagent and oxidation of alkyl benzenes.	1	1
3.2	Chemical properties: HVZ reaction, Decarboxylation – Kolbe electrolysis (Mechanism expected), Curtis reaction. Ascent and descent series in aliphatic carboxylic acids	2	3,5
3.3	Preparation, properties and uses of anthranilic acid, cinnamic acid, citric acid, lactic acid, oxalic acid, adipic acid and phthalic acid.	3	1
3.4	Formation of acid derivatives – acid chlorides, amides, acid anhydrides and esters – comparison of reactivity of acid derivatives. Preparation of coumarin – Fries rearrangement (Mechanism expected)	3	5
3.5	Preparation and reactions of benzene sulphonic acid, toluene sulphonic acid and benzene sulphonyl chloride – Importance of tosyl group – synthesis and application of saccharin.	3	1,5
4	**Organic Nitrogen Compounds**	**12**	
4.1	Nitrocompounds: Nitro-acitautomerism, Nef's reaction. Reduction of nitrobenzene in various media. Preparation of nitro toluenes, nitro compounds as explosives.	3	5
4.2	Amines: Classification – Preparation: From alkyl halides, nitro compounds, nitriles, isonitriles and amides – Hoffmann's bromamide reaction, Schmidt reaction, Gabriel phthalimide synthesis.	2	1
4.3	Chemical properties: Carbyl amine reaction, conversion of amines to alkene (Hoffmann elimination with mechanism), acylation, reaction with nitrous acid and Mannich reaction.	2	5
4.4	Electrophilic substitution reactions of aniline: halogenation, sulphonation and nitration by amino protection (acetylation). Benzidine rearrangement (mechanism expected).	2	5
4.5	Separation of mixture of amines – methods to distinguish	1	2,5

	primary, secondary and tertiary amines. Distinction between aliphatic and aromatic amines.		
4.6	Preparation and synthetic applications of diazonium chloride and diazomethane.	2	5
5	**Carbohydrates**	**9**	
5.1	Classification and nomenclature of monosaccharides, configuration of monosaccharides.	1	
5.2	Reactions of glucose and fructose – Determination of openchain structure of D-glucose and D-fructose.	3	4,5
5.2	Anomers and mutarotation in glucose (mechanism expected) - cyclic structure – pyranose and furanose forms – Haworth projection formula – chair conformations.	2	4
5.3	Epimers and epimerization – Interconversion of aldoses and ketoses – chain lengthening and shortening of aldoses.	1	3
5.4	Disaccharides – reactions and structure of sucrose (structural elucidation not required) Polysaccharides – Structure of starch and cellulose (structural elucidation not required) – Industrial applications of cellulose.	2	4
6	**Organometallics, Active methylene compounds and Reagents in Organic synthesis**	**9**	
6.1	Organomagnesium compounds: Grignard reagent: Preparation – Reaction with compounds containing acidic hydrogen, carbonyl compounds, cyanides and CO2.	2	1,6
6.2	Organo lithium compounds: Preparation – Reaction with compounds containing acidic hydrogen, alkyl halides, carbonyl compounds, cyanides and CO2.	1	1,6
6.3	Organo zinc compounds: Preparation of dialkyl zinc – Reaction with active hydrogen compounds, acid halides and alkyl halides, Reformatsky reaction (mechanism expected) Li dialkylcuprates – Preparation and reaction with aliphatic/aromatic/vinyl halides.	2	1,6
6.4	Active methylene compounds – examples. Preparation of ethyl acetoacetate by Claisen condensation (mechanism expected), tautomerism, Synthetic applications of acetoacetic ester.	2	1,6
6.5	Reagents in organic synthesis: Study of the following reagents with respect to functional group transformations – 1. LiAlH4 – reduction of =CO, -COOR and –CONH2. 2. NaBH4 and Diborane – reduction of =CO 3. SeO2 - hydroxylation of allylic and benzylic positions, oxidation of CH2 alpha to =CO to =CO 4. NBS : Allylic and benzylic bromination.	2	6
7	**Introducing supramolecular and green chemistry**	**6**	
7.1	Supramolecular chemistry: Introduction – molecular recognition – host-guest interactions – types of non-covalent interactions.	2	7

7.2	Green Chemistry: Introduction – atom economy – principles of greenchemistry.	2	7
7.3	Newer methods of synthesis : Ultrasound, microwaves and phase transfer catalysis.	2	7

Text books

1. A.Bahl and B.S.Bahl, Advanced Organic Chemistry, S.Chand& Company, New Delhi.
2. L.G.Wade Jr, Organic Chemistry, Pearson Education, New Delhi.
3. K.S.Tewari, N.K.Vishnoi and S.N.Mehrotra, A textbook of Organic Chemisty, Vikas Publishing House (Pvt) Ltd., New Delhi..
4. S.C.Sharma and M.K.Jain, Modern Organic Chemistry, Vishal Publishing Company, New Delhi.
5. I L Finar, "Organic Chemistry" Vol – 1, 5th Edition, Pearson Education, New Delhi.
6. J. Clayden, N.Greeves and S.Warren, Organic Chemistry, Oxford University Press, New York.
7. Helena Dodzuik, Introduction to supramolecular chemistry, Springer.
8. V.K.Ahluwalia, Green Chemistry, Enviornmentally Benign reaction, Ane Book.

For further reading:

1. L.M. Lehn, Supramolecular Chemistry, VCH.
2. M.M.Sreevastava and Rashmi Sanghi, Green Chemistry for environment, Narosa Publishing House.
3. R.T.Morrison, R.N.Boyd. Organic Chemistry, Pearson Education, New Delhi.
4. P.Y.Bruice, Essential Organic Chemisty, Pearson Education, New Delhi.
5. G.M. Louden, Organic Chemistry, Oxford University Press, New York.
6. V.K.Ahluwaliya, Organic Reaction Mechanisms, Narosa Publishing House, New Delhi.

UNIVERSITY OF KERALA
Model Question Paper of BSc Chemistry Programme
2020 Admission onwards
SEMESTER- V Core Course VII Course Code CH1543 Credit 4
ORGANIC CHEMISTRY II

Time:3 hours **Max.Marks : 80**

SECTION – A

*(Answer **all** questions. Answer in **one** word to maximum **two** sentences. **Each** question carries **one** mark)*

1. What is Williamson's synthesis?
2. Which reagent is used for the oxidative cleavage of 1,2-diols?
3. Give a test to distinguish aliphatic aldehydes from aromatic aldehydes.
4. What is atom economy?
5. What is HVZ reaction?
6. What happens when aniline is treated benzoyl chloride in alkaline medium?
7. Draw the structure of D-Arabinose and D-Ribose?
8. What are epimers?
9. What is Frankland reagent?
10. Name a nitro compound used as explosive.

(10 X 1 =10 Marks)

SECTION - B

(*Short answer type. Answer **any 8** questions from the following. **Each** question carries **two** marks.)*

11. What is Mannich reaction?
12. How can you convert isopropanol to *tert*-butyl alcohol?
13. How can you distinguish 2-pentanone from 3-pentanone?
14. What is MPV reduction?
15. How coumarin is prepared?
16. How will you convert acetic acid to propionic acid?
17. Explain Nef's reaction.
18. Write the mechanism of Benzidine rearrangement.
19. Explain inversion of cane sugar.
20. Write any two industrial applications of cellulose.
21. What is NBS? What is its use?
22. What is DIBAL? What is its use?

(8 X 2 = 16 Marks)

SECTION - C

(*Short essay type. Answer **any 6** questions from the following. **Each** question carries **four** marks.)*

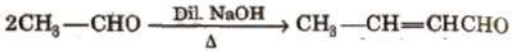
23. Explain Zeisel's method of estimating methoxy group?
24. How can you distinguish primary, secondary and tertiary alcohol?
25. Write the importance of $LiAlH_4$ and $NaBH_4$ in carbonyl chemistry.
26. Comment on Clemmensen and Wolff-Kishner reduction.
27. How cinnamic acid is prepared? Explain its important properties.
28. Discuss Hoffmann elimination?
29. Explain microwave synthesis with examples.
30. Discuss the mechanism of Reformatsky reaction.
31. What is mutarotation? Explain its mechanism.

6 X 4 = 24marks)

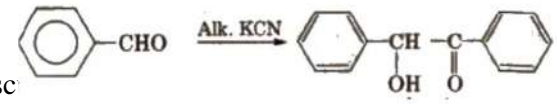
SECTION – D

(*Answer **any 2** questions. Each question carries 15marks*)

32. (a) Write the mechanism of the following reactions:



a. (a)

(b) Disc 

action and (ii) Claisen Condensation.

(c) Comment on the following (i) Biodiesel and (ii) Crown ethers.
(5+5+5)

33. (a) Explain the synthesis and applications of saccharin.

(b) How diazonium chloride is prepared? How is it useful to synthesis the following compounds: phenol, iodobenzene, azocompounds,

(c) How can you effect the following conversions (i) aniline to para-bromo aniline(ii) benzamide to aniline.
(5+5+5)

34.(a) Discuss the cyclic structure of glucose
(
(b) (i) Why glucose and fructose form same osazone?

(ii) How fructose reacts with the following reagents?

(1) Na/Hg and H_2O (2) CH_3OH and dry HCl (3) Fehling's solution.

(c) Discuss the application of the following reagents in organic synthesis (i) SeO2 (ii) Lithium alkyl cuprate.

(5+5+5)

35. (a) How primary, secondary and tertiary amines are separated?

(b) Discuss the preparation and important reactions of benzene sulphonic acid.

(c) Discuss the different types of non covalent interactions in molecules. (5+5+5)

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards

Semester	VI
Course	Core course-X
Course name	**PHYSICAL CHEMISTRY II**
Course Code	CH 1641
Credit	4
Hours	72 hours
Lecture-Tutorial-Lab	4-0-2

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students*	**Cognitive level**	**PSO**
1	Understand basic concepts of thermodynamics , spectroscopy and group theory	U	PSO11
2	Apply laws of thermodynamics in physical and chemical processes and real system	A	PSO1
3	Classify processes, properties and systems on a thermodynamic basis		PSO3
4	Discuss the second law of thermodynamics and Assess thermodynamic applications using second law of thermodynamics.	E, A	PSO3
5	Discuss basic concepts of statistical thermodynamics	U	PSO11

6	Solve numerical problems based on thermodynamics and thermochemistry		PSO2
7	Understand the basics of spectroscopic techniques-Rotational, Vibrational and Raman Spectroscopy	U	PSO2
8	Compare NMR and ESR spectroscopy and their applications	U	PSO3
9	Evaluate physical and chemical quantities using non-spectroscopic techniques.	U, E	PSO4
10	Identify the elements of symmetry and Determine the point groups of simple molecules	E	PSO11
11	Differentiate diamagnetism and paramagnetism, measurement of magnetic susceptibility	U	PSO11
12	Correlate dipole moment with geometry of molecules	R, U	PSO11

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Thermodynamics I**	**9**	
1.1	Types of processes, zeroth law of thermodynamics.	1	1
1.2	Definition of internal energy and enthalpy Heat capacities at constant volume (Cv) and at constant pressure (Cp), relationship between Cp and Cv.	1	2
1.3	First law of thermodynamics, mathematical form, (numerical problems)	1	2
1.4	Reversible process and maximum work. Calculation of work, heat, internal energy change and enthalpy change for the expansion of an ideal gas under reversible isothermal and adiabatic condition. (numerical problems)	2	2
1.5	The Joule-Thomson effect – isoenthalpic process, Joule-Thomson coefficient, derivation of the expression for Joule-Thomson coefficient. Sign and magnitude, inversion temperature-in terms of van der waal's constant.	1	2
1.6	Thermochemistry – Standard state. Standard enthalpies of reactions: Enthalpies of formation, combustion and neutralization. Enthalpies of solution -Integral and differential enthalpies of solution. Hess's law and its applications. Kirchoff's equations.	3	2
2	**Thermodynamics II**	**9**	
2.1	Limitations of Ist Law, Need for II^{nd} law of thermodynamics. Spontaneous process.	1	3

2.2	Carnot cycle:-net work done and efficiency of Carnot engine, Carnot theorem. Different statements of II^{nd} law	2	3
2.3	Thermodynamic scale of temperature Concept of entropy- Definition and physical significance. Entropy as a function of volume and temperature, pressure and temperature, as a criterion of spontaneity and equilibrium. Entropy changes in reversible and irreversible processes. Entropy change accompanying change of phase, solid to liquid, liquid to vapour, one crystalline form to another	2	3
2.4	Free energy: Gibbs and Helmholtz free energies and their significances - criteria of thermodynamic equilibrium and spontaneity. Gibbs-Helmholtz equation, dependence of Gibbs free energy changes on temperature, volume and pressure. Significance of Gibbs-Helmholtz equation.	2	3
2.5	Partial molar quantities. Chemical potential-Gibbs-Duhem equation, Clapeyron – Clausius equation. Concept of fugacity, determination of fugacity by graphical method.	2	3
3	**Thermodynamics III & Statistical thermodynamics**	**12**	
3.1	Nernst heat theorem, proof and its consequences. Statement of III^{rd} law-Plank's statement, Lewis Randall statement. Concept of perfect crystal, evaluation of absolute entropies of solid, liquid and gas. Exception to III^{rd} law with reference to examples- CO, NO, N_2O and H_2O	5	4
3.2	Statistical thermodynamics: introduction, types of statistics- MB, BE and FD. Ferminons and bosons, Phase space, system, assembly and ensemble-types of ensembles and uses. Thermodynamic probability, Boltzmann distribution law (no derivation). Partition function, molecular partition function for ideal gas	4	4
3.3	Thermodynamic functions in terms of partition functions - internal energy, enthalpy, pressure, work function and free energy function	3	4
4	**Spectroscopy I**	**12**	
4.1	Regions of electromagnetic spectrum. Different units of energy (erg, Joule, calorie, an cm^{-1}, Hz, A^0 and eV) and their interconvertions. Interaction with mater- Quantization of energy- photon,various types of molecular excitation and types of molecular spectra. Born-Oppenheimer approximation.	2	5

4.2	Rotational spectroscopy: Interaction between molecules and microwaves and criteria for microwave activity, rotation of molecules: Types of molecules according to moments of inertia- linear, symmetric top, asymmetric top and spherical top with two examples each. Microwave spectroscopy of rigid diatomic molecules, derivation for $I= \mu r^2$. energy expression, rotational constant,rotational energy levels, selection rule, pure rotational spectra. Separation between spectral lines, equation of J for maximum intensity (no derivation), determination of bond length.	2	5
4.3	Vibrational spectroscopy: Criteria for IR activity, Simple Harmonic oscillator model; Hooks law, energy and frequency equations. IR spectra of diatomic molecules. Energy expression, Selection rules, Zero-point Energy, frequency of separation, calculation of force constant, anharmonic oscillators, Morse equation. Energy expression and Selection rules, Fundamental and overtone transitions. Combination bands. Degree of freedom of polyatomic molecules.	2	5
4.4	Raman spectroscopy: Rayleigh and Raman Scattering, Stoke's and antistoke's lines and their intensity difference. Interaction between molecules and IR radiations and criteria for Raman activity, Induced dipole moment and polarizability, Pure Rotational Raman spectra. Selectionrule. Frequency of separation, vibrational Raman spectra, Selection rule, Rule of Mutual exclusion, (example;CO_2)		5
5	**Spectroscopy II**	**12**	
5.1	Electronic spectroscopy of molecules: Selection rule, Vibrational Coase Structure, Frank-Condon principle-Diagram, spectrum and continuum.	2	6
5.2	Dissociation and dissociation energy, Determination of Dissociation energy (equation only), Predissociation. Electronic spectra of polyatomic molecules (qualitative idea only), Different types of electronic excitations.	2	6
5.3	NMR spectroscopy: Principle of NMR, nuclear spin. H-NMR, Interaction of nuclear spin with external magnet. Energy level splitting, Precession.	2	6
5.4	Chemical shift. Delta and tau scales. Presentation of NMR spectra, Low resolution spectra and high resolution spectra,-Spin-spin coupling	2	6

5.5	Electron spin resonance spectroscopy: Principle, Types of substances with unpaired electrons, interaction of electron magnet with external magnet. Energy level spliting. Lande splitting factor,	2	6
5.6	presentation of ESR spectrum, the normal and derivative spectra. Hyperfine splitting. Simple examples of methyl and benzene radicals.	2	6
6	**Non-spectroscopic methods**	**9**	
6.1	Dipole moment, Debye equation and Clausius-Mosotti equation, measurement of dipole moment by temperature method, Dipole moment and molecular structure.	3	7
6.2	Diamagnetism and paramagnetism, Magnetic susceptibility and unpaired electrons, measurement of magnetic susceptibility,	3	7
6.3	Molar refraction and molecular structure, Atomic refraction, Optical exaltation, Parachor and atomic equivalent of parachor.	3	7
7	**Group theory**	**9**	
7.1	Group theory: Elements of symmetry – Proper and improper axis of symmetry, plane of symmetry, centre of symmetry and identity element. Combination of symmetry elements,	2	8
7.2	Determination of point groups of simple molecules- Acetylene,H2O, NH3, BF3, [Ni(CN)4]2- and C6H6.	2	8
7.3	Symmetry operations. Order of a group. Combination of symmetry operations. Group theoretical rules.	3	8
7.4	Construction of Group multiplication table of C2V.	2	8

Text books

1. B. R Puri,L. R Sharma,M. S.Pathania, Principles of Physical Chemistry,Vishal Publishing Company,
2. C.N. Banwell, Fundamentals of Molecular Spectroscopy, Tata McGraw-Hill Education
3. A. SalahuddinKunju and G. Krishnan, Group Theory and its Applications in Chemistry, PHI Learning Pvt. Ltd
4. Ramakrishnan and M S Gopinathan, Group Theory in Chemistry, Vishal Publishing Co

For Further Reading

1. Gurdeep Raj, “Advanced Physical Chemistry”, Goel Publishing House
2. P W Atkins, “Physical Chemistry”, Oxford University Press
3. Physical Chemistry. Ira N Levine, McGraw Hill
4. R J Silby and R AAlberty, “Physical Chemistry”, John Wiley & Sons
5. S Glasstone, “Thermodynamics for Chemists”, Affiliated East West Publishers
6. G W Castellan, “Physical Chemistry”, Narosa Publishing House

7. M C Guptha, “Elements of Statistical Thermodynamics”, New Age International (P) Ltd.
8. L K Nash, “Elements of Statistical Thermodynamics”, Addison Wesley
9. ManasChanda, “ Atomic structure and Chemical bonding in Molecular Spectroscopy”, Tata McGraw Hill

UNIVERSITY OF KERALA

Model Question Paper of B.Sc. Chemistry Programme

2020 Admission onwards

SEMESTER VI Core Course-X Course Code CH1641 Credit-4

PHYSICAL CHEMISTRY II

Time: 3 Hrs **Total marks: 80**

SECTION A

Answer all the questions. Each question carries 1 mark

1. Which of the following will give pure rotational spectrum, H_2, N_2, CO2 or HCl.
2. Write the mathematical expression of first law of thermodynamics.
3. Which branch of spectroscopy is used for the identification of free radicals?
4. What is the significance of polarizability of a molecule?
5. Give the selection rule in vibrational spectroscopy.
6. State different symmetry elements in molecules.
7. Write the Clausius- Mosotti equation .
8. Differentiate delta and Tau scale.
9. Give the selection rule for rotational spectroscopy.
10. What is the unit of dipole moment?

SECTION B

Answer any 8 questions (Short answer type, 2 marks each),

11.Explain Hess’s law with an example.
12. Derive an expression for Joule Thomson coefficient
13. How will you account for the origin of second law of thermodynamics?
14. How will you correlate dipolemoment with geometry of molecules. Explain with two examples.
15. Discuss on symmetric top and asymmetric top molecules.
16. State mutual exclusion principle with an example.

17 What is meant by normal modes of vibrations?
18. Explain predissociation with diagram.
19. Calculate the number of fundamental modes of vibrations of CO2 and SO2 molecules.
20. How does stokes and anti stokes lines originate in Raman spectrum.
21. What do you mean by the term 'parachor'
22. Explain Chemical shift.

SECTION C

Each question carries 4 marks (Short essay), Answer any 6 questions

23. What is an ensemble, explain the different types of ensembles.
24. Discuss the calcualation of workdone in irreversible expansion of an ideal gas under isothermal and adiabatic condition.
25. State and prove Nernst heat theorem. What are its consequences?
26. What is meant by Optical Exaltation? Calculate the optical exaltation of 2,6-dimethylhepta-2,5-dien-4-one.
27. Compare principle of NMR and ESR.
28. Explain the following terms Entropy and free energy. Explain why $T\Delta S$ determine randomness of a system?
29. Give an account of intensive and extensive properties.
30. Explain mutual exclusion rule with examples.
31. The fundamental vibrational frequency of carbon monoxide molecule is 2170. cm^{-1} Calculate the force constant of the molecule.

SECTION D

Answer any two question , 15 marks each

32. a) What is meant by reversible process? Derive an expression for work done in the reversible isothermal expansion of an ideal gas. (5 marks)

b) Calculate the work done in expanding one mole of an ideal gas from a volume of 2 to 20 dm^3 at 27 ^0C (5 marks)

c) Derive the relation between Cp and Cv. (5 marks)

33. a) Give an account of different statistical approaches (6 marks)

b) Show that for a rigid diatomic rotor, the moment of inertia is given by $I = \mu r^2$

c) The pure rotational spectrum of a gaseous molecule CN consists of a series of equally spaced lines separated by 3.7978cm^{-1}. Calculate the internuclear distance of the molecule. The molar masses are; ^{12}C=12.011 and ^{14}N=14.007 g mol^{-1}.

34. a) How can NMR spectrum distinguish between the isomers: p-xylene and ethyl benzene?

b) Explain the shielding and deshielding mechanism in NMR.

c) Give the hyperfine structure of ESR spectrum of hydrogen atom. Calculate the ESR frequency of an unpaired electron in a magnetic field of 0.33T. Given ge = 2 and μB = 9.273x10-24 JT^{-1}.

35. a) Discusson order of a group (5 marks)

b) Explain Frank Condon principle with diagram. (5 marks)

c) Draw the group multiplication table of C2vpoint group (5 marks)

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards

Semester	VI
Course	Core course-XI
Course name	**ORGANIC CHEMISTRY III**
Course Code	CH 1642
Credit	4
Hours	72 hours
Lecture-Tutorial-Lab	3-0-2

CO No.	**COURSE OUTCOMES** *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Outline the chemistry of simple heterocyclic compounds	U	PSO10
2	Classify amino acids, proteins, nucleic acids, drugs, terpenes, vitamins, lipids and polymers.	U	PSO10
3	Discuss the synthesis of amino acids, peptides, drugs and polymers.	U	PSO9
4	Describe the isolation and structure of terpenes and alkaloids.	R	PSO10
5	Explain the mechanism and techniques of polymerisation.	U	PSO11

6	Discuss the principle of UV, IR, NMR and Mass spectroscopy.	U	PSO2
7	Interpret spectroscopic data to elucidate the structure of simple organic compounds.	A	PSO18
8	Use the simple organic reactions to elucidate the structure of quinoline, piperine and conine.	A	PSO18

R-Remember, U-Understand, A-Apply.

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Heterocyclic compounds and Drugs**	**9**	
1.1	Heterocyclic compounds- classification,nomenclature, aromaticity. Basicity of pyridine and pyrrole.	1	1
1.2	Preparation - Paal-Knor synthesis and Hantzsch synthesis. Properties of furan, pyrrole, thiophene and pyridine.	2	1
1.3	Synthesis and reactions of quinoline, isoquinoline and indole with special reference to Skraup, Bischler-Napieralski and Fischer-Indole synthesis.	2	1
1.4	Structural elucidation of quinoline. Structure of purine and pyrimidine bases.	1	1,8
1.5	Drugs – introduction – classification on the basis of application	1	2
1.6	Synthesis and use of sulphanilamide, sulphathiazole,sulphapyridine, paracetamol and aspirin. Mode of action of sulphadrugs and amphicillin. Elementary idea of the structure and application of chloroquine, ibrufen and phenobarbitol.	2	3
2	**Amino acids, proteins and nucleic acids**	**9**	
2.1	Amino acids – classification, structure and stereochemistry of amino acids,	2	2
2.2	Essential and non essential amino acids – zwitter ion, isoelectric point.	1	2
2.3	Synthesis of amino acids – Strecker synthesis, Gabriel phthalimide synthesis, Erlenmeyer azlactone synthesis. Peptides: Structure and synthesis (Carbobenzoxy, Sheehan and solid phase synthesis)	2	3
2.4	Proteins – classification of proteins – structure of proteins – denaturation and colour reactions.	2	2
2.5	Nucleic acids: Classification, structure of DNA and RNA. Replication of DNA. Transcription and Translation - Genetic code.	2	2
3	**Natural products**	**9**	
3.1	Terpenes – Classification - Isoprene rule - Essential oil – Source	1	2,4
3.2	Structure (no structural elucidation) and uses of citral, geraniol, limonene and menthol. Structure of natural rubber – vulcanization and its advantages.	1	4

3.3	Alkaloids – Extraction. Structure and importance of nicotine, quinine, morphine and codeine.	2	4
3.4	Structural elucidation of piperine and conine.	2	8
3.5	Vitamins : Classification, structure, functions and deficiency diseases (structure of vitamin A, B1 and C only - no structural elucidation).	1	2
3.6	Lipids – biological functions – oils and fats - Common fatty acids	1	2
3.7	Hydrogenation, rancidity, saponification value, iodine value and acid value.	1	2
4	**Soaps, Detergents and Polymers**	**9**	
4.1	Soaps and detergents: Soap – synthetic detergents – cleaning action of soap and detergents.	1	2
4.2	Polymers: General idea of monomers, polymers and polymerisation	1	2
4.3	Degree of polymerisation – polydispersity - number and weight average molecular mass.	1	2
4.4	Classification of polymers, Homopolymers and copolymers, Addition and condensation polymers, thermoplatstics and thermosets	1	2
4.5	Mechanism of addition polymerization (Cationic, anionic and free radical)	1	5
4.6	Coordination polymerization - Ziegler Natta catalyst - Tacticity in polypropylene.	1	2
4.7	Polymerisation techniques – Bulk, solution and emulsion polymerization (Elementary idea)	1	5
4.8	Addition polymerization- Preparation and uses of (i) polyethylene (ii) PVC (iii) Teflon Condensation polymerization - (i) phenol-formaldehyde resin (ii) epoxy resin (iii) nylon-66 (iv) polyethylene terephthalate.	1	2
4.9	Synthetic rubbers – SBR and nitrile rubbers. Additives to polymers – Plasticisers, stabilizers and fillers. Biodegradable polymers (Basic idea only).	1	2
5	**Organic Spectroscopy I**	**9**	
5.1	UV–Visible spectroscopy – Beer-Lambert's law, types of electronic transitions, bathochromic, hypsochromic shifts, hyperchromic and hypochromic effects.	2	6
5.2	UV-Visible spectra of enes, effect of conjugation – solvent effect - Calculation of λmax of dienes and α,β-unsaturated ketones.	2	6
5.3	IR spectroscopy – Molecular vibrations, Functional group and finger print region – group frequencies, effect of hydrogen bonding on –OH stretching frequency.	3	6
5.4	Factors influencing carbonyl stretching frequency. Comparison of carbonyl stretching frequency in compounds containing carbonyl group.	1	6
5.5	Interpretation of IR spectra of simple organic molecules such as	1	7

	salicylaldehyde, benzamide, acetophenone, nitro benzoic acid and phenyl acetate.		
6	**Organic Spectroscopy II**	**9**	
6.1	NMR spectroscopy – principle of proton NMR, shielding and deshielding effect.	2	6
6.2	chemical shift, factors influencing chemical shift	1	6
6.3	spin-spin splitting, coupling constant, interpretation of PMR spectrum of simple molecules like $CHBr_2CH_2Br$, ethylbromide, pure ethanol and impure ethanol (acidic impurities) acetaldehyde and toluene. Introduction to ^{13}C NMR	3	6
6.4	Structural elucidation of simple organic molecules using IR and NMR spectroscopic techniques.	1	7
6.5	Theory of Mass spectrometry – mass spectrum, base peak and molecular ion peak, types of fragmentation, McLafferty rearrangement, isotopic effect.	2	6

Textbooks:

1. A.Bahl and B.S.Bahl, Advanced Organic Chemistry, S.Chand& Company, New Delhi.
2. K.S.Tewari, N.K.Vishnoi and S.N.Mehrotra, A textbook of Organic Chemisty, Vikas Publishing House (Pvt) Ltd., New Delhi..
3. S.C.Sharma and M.K.Jain, Modern Organic Chemistry, Vishal Publishing Company, New Delhi..
4. I L Finar, "Organic Chemistry" Vol – 1&2, 5th Edition, Pearson Education, New Delhi.
5. Gowariker V.R., Viswanathan N.V. and Jayader Sreedhar, Polymer Science, Wiley Eastern Ltd, New Delhi.
6. O.P.Agarwal, Chemistry of Natural Products, Goel Publications.
7. T.L.Gilchrist, Heterocyclic Chemistry, Pearson Education, New Delhi.
8. Y.R.Sharma, Elementary Organic Spectroscopy, Pearson Education, New Delhi.
9. William Kemp, Organic Spectroscopy, Macmillan, New York.
10. AshuthoshKar, Medicinal Chemistry, New Age International Publishers.

For Further Reading:

1. R.T.Morrison, R.N.Boyd. Organic Chemistry, Pearson Education, New Delhi.
2. P.Y.Bruice, Essential Organic Chemisty, Pearson Education, New Delhi.
3. J.Clayden, N.Greeves and S.Warren, Organic Chemistry, Oxford University Press, New York.
4. Billmeyer F.W., Text book of Polymer Science, John Wiley and Sons.
5. S.P.Bhutani, Chemistry of Biomolecules, Ane Book Pvt Ltd.
6. R.M.Silverstein and F.X.Webster, Spectrometric Identification of Organic Compounds, John Wiely and Sons, New York.
7. P.S.Kalsi, Application of Spectroscopic Techniques in OrganicChemistry, NewAge International, New Delhi.

UNIVERSITY OF KERALA

Model Question Paper of B.Sc. Chemistry Programme

2020 Admission onwards

SEMESTER- VI Core Course XI Course Code CH1642 Credit 4

ORGANIC CHEMISTRY III

Time:3hours Max.Marks: 80

SECTION – A

*(Answer **all** questions. Answer in **one** word to maximum **two** sentences. **Each** question carries **one** mark)*

1. Write the IUPAC name of (i) Furan and (ii) quinoline.
2. Draw the structure of chloroquine.
3. What is isoelectric point?
4. What is natural rubber chemically?
5. Write any two biological functions of lipids.
6. What is soap?
7. Identify the types of electronic transitions in CH_3CHO.
8. What is base peak?
9. Write the monomers of the following polymers (i) PTFE (ii) PP.
10. What is SBR?

(10 X 1 =10 Marks)

SECTION - B

(*Short answer type. Answer **any 8** questions from the following.**Each** question carries **two** marks.)*

11. Compare the aromaticity of furan and thiophene.
12. Write the structure of pyramidine bases present in nucleic acids.
13. Define the terms (i) saponification value and (ii) iodine value.
14. What is isoprene rule?
15. What are essential and non-essential amino acids?
16. What is denaturation of protein?
17. Differentiate oils and fats.
18. Define the terms M_n and M_w
19. What is vulcanisation?
20. What are plastisizers?
21. Differentiate bathochromic and hypochromic shifts.
22. What is TMS? Why it is selected as a reference compound in ^{1}H-nmr spectroscopy?

(8 X 2 = 16 Marks)

SECTION - C

(*Short essay type. Answer**any 6**questions from the following.**Each**question carries**four**marks.)*

23. Explain the synthesis of amino acid by (i) Strecker and Erlenmeyer azlactone synthesis.
24. What are vitamins? How are they classified? Write the structure of Vitamin A and C.
25. What is tacticity? Explain it by taking poly propylene as an example.
26. What is Bakelite? How is it prepared? Give its important applications.
27. Write a short note on the structure of DNA.
28. Discuss the classification of drugs on the basis of application.
29. Elucidate the structure of conine.
30. (i) How can you distinguish inter and intra molecular hydrogen bonding using IRspectroscopy?
    (ii) Predict the regions where salicylaldehyde give IR absoptions.
31. Explain spin-spin coupling in 1,1,2-tribromo ethane and draw the ^{1}HNMR spectrum of it.

(6 X 4 =24marks)

SECTION – D

(*Answer**any2**question. Each question carries 15 marks*)

32. (a) Discuss the Woodward-Fieser rule for calculating λ_{max} of dienes.
    (b) Explain the principle of nmr spectroscopy.
    (c) A compound with molecular formula C_8H_8O shows the following absorptions:
        (i) IR Spectrum: 3050, 2950, 1700, 1620, 1550, 690 cm^{-1}.
        (ii) pmr spectrum: δ 7-8ppm (multiplet, 5H), 2.5ppm (singlet, 3H).
    Identify the structure of the compound. (5+5+5)
33. (a) Explain the Fischer-Indole synthesis.
    (b) What are sulphadrugs? Give examples. Explain the mode of action of sulphadrugs.
    (c) What are terpenes? How are they classified? Write the structure and uses of limonene
    and menthol. (5+5+5)
34. Write brief note on the following :
    (a) Replication of DNA
    (b) Merrifield synthesis
    (c) Structure of protein (5+5+5)
35. (a) Discuss on the factors influencing chemical shift in NMR spectroscopy.
    (b) Write brief note on the isotopic effect in mass spectroscopy.
    (c) Explain the mechanism of cationic and anionic polymerization. (7+4+4)

(15 X 2 = 30marks)

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards

Semester	V
Course	Core course-XII
Course name	**PHYSICAL CHEMISTRY III**
Course Code	CH 1643
Credit	4
Hours	72 hours
Lecture-Tutorial-Lab	4-0-2

CO No.	**COURSE OUTCOMES** *Upon completion of this course, the students*	**Cognitive Level**	**PSO**
1	Recall the basic physical concepts in quantum mechanics, colloids, adsorption, Chemical Kinetics, catalysis, chemical and ionic equilibria, phase equilibria, binary liquid systems and photochemistry	R	PSO4
2	Understand the basic concepts involved in quantum mechanics, colloids, adsorption, Chemical Kinetics, catalysis, chemical and ionic equilibria, phase equilibria, binary liquid systems and photochemistry	U	PSO4
3	Derive and Interpret important theories and equations involved in physical chemistry	A	PSO10
4	Demonstrate the origin of quantum numbers by correlating the Cartesian and spherical polar coordinates of hydrogen atom.	A	PSO10
5	Identify and recognize the applications of various principles, equations andphysical processes	U	PSO10
6	Perform calculations involving physical concepts and equations	A	PSO4
7	Analyze` graphical representations (phase diagrams, two and three components, vapour pressure – composition and boiling point –composition, temperature-composition) present in physical chemistry.	A	PSO9
8	Understand terminology	U	PSO11

9	Understand the effects of external influence on various chemical processes	U	PSO1
10	Understand different laws and principles of physical chemistry	U	PSO3

MODULE	COURSE DESCRIPTION	Hrs	CO number
1	**Quantum mechanics**	**12**	
1.1	Radiation phenomena- blackbody radiation, photoelectric effect, Compton effect and atomic spectra. Plank's quantum theory and explanation of the radiation phenomena.	2	1,2,6
1.2	Schrodinger wave equation – significance of Ψ, well behaved functions, Concept of operators and some operators of interest , Laplacian and Hermitian (properties of operators not required), Postulates of quantum mechanics	3.5	1,2,5
1.3	Application of quantum mechanics to simple systems - particle in 1 D box, normalization of wave function, Particle in 3 D box. Concept of degeneracy	3.5	1,2,3,5,6
1.4	Application to hydrogen atom (no derivation) Schrodinger wave equation in Cartesian and spherical polar co-ordinates, Quantum numbers.	3	4
2	**Colloids and Adsorption**	**12**	
2.1	Colloidal state: Classification of colloids- Kinetic, optical and electrical properties of colloids.	1	1,2
2.2	Purification of colloids – ultra filtration and electrodialysis,	1	1,2
2.3	Ultra microscope, Electrical double layer and zeta potential.Coagulation of colloids, Hardy-Schulz rule, Gold number.sedimentation and streaming potential	2	1,2
2.4	Gels: Elastic and non-elastic gels, Imbibition and syneresis, Micelles and critical micelle concentration	2	1,2
2.5	Application of colloids – Cottrell precipitator, purification of water and delta formation.	1	1,2
2.6	Adsorption: Physical and chemical adsorption, Freundlich adsorption isotherm, ,	2	1,2
2.7	Derivation of Langmuir adsorption isotherm, Statement and explanation of BET and Gibbs isotherms	2	1,2,3
2.8	Determination of surface area of adsorbents by BET equation. Applications of adsorption	1	1,2,5,6

3	**Chemical Kinetics &Catalysis**	**12**	
3.1	Order of reaction, Derivation of integrated rate equation of zero, first, second and nth order reaction	2	1,2,3,6
3.2	Determination of order of reactions:- Graphical and analytical methods using integrated rate equations, Fractional life- method, Differential rate equation method, Isolation method.	2	1,2,6,7
3.3	Qualitative idea of Complex reactions:- (a) opposing reactions (b) first order consecutive reactions (c) parallel reactions. Qualitative idea of chain reactions.	1.5	1,2
3.4	Influence of temperature on rate of reaction: Arrhenius equation, Determination of Arrhenius parameter, Energy of activation and its significance.	2.5	1,2,3,6,9
3.5	Collision theory, Derivation of the rate equation for a second order reaction based on collision theory, unimolecular reactions- Lindemann mechanism, steady state approximation.	2	1,2,3,10
3.6	Catalysis:- Theories of catalysis, Intermediate compound formation theory, steady state method	1	1,2,10
3.7	Enzyme catalysis, Michaelis-Menten law.	1	1,2,3,10
4	**Chemical and Ionic Equilibria**	**12**	
4.1	Equilibrium constant and free energy	1	1,2,6
4.2	Thermodynamic derivation of law of mass action, relation between Kp,Kc and Kx	1	1,2,3
4.3	Le-Chatelier'sPrinciple – Application in Haber process and dissociation of PCl_5	1	1,2,3,5,9,10
4.4	Reaction isotherm, Temperature dependence of equilibrium constant, Pressure dependence of equilibrium constant	2	1,2,9
4.5	Application of Clausius-clapeyron equation in physical equilibria.	2	1,2,3,5,6
4.6	Ionic equilibrium : Ionic product of water, Effects of solvents on ionic strength, levelling effect,	1	1,2,5,6,8
4.7	pKa and pKb values, solubility product and common ion effect and their applications	1	1,2,3,5,6,8
4.8	pH and its determination by indicator methods, buffer solution, buffer action, Henderson's equation, buffer capacity	1	1,2,3,5,6,8
4.9	hydrolysis of salts of all types, degree of hydrolysis and hydrolytic constant, determination of degree of hydrolysis, relation between hydrolytic constant and ionic product of water	2	1,2,3,6,8

5	**Phase Equilibria**	**12**	
5.1	Phase Equilibria:-Terminology, the phase rule, thermodynamic derivation of phase rule	1	1,2,3,6,8
5.2	application to (a) water system (b) sulphur system (c) solid-liquid equilibria involving simple eutectic system such as Pb-Ag system, KI-water system	3	1,2,6,7
5.3	application to solid-liquid equilibria involving simple eutectic system such as Pb-Ag system, KI-water system	2	1,2,6,7
5.4	freezing mixtures, thermal analysis and desilverisation of lead	1	1,2,7,8
5.5	solid-liquid equilibria involving compound formation with congruent and incongruent melting points:- $FeCl_3$-H_2O system and Na_2SO_4-H_2O system	3	1,2,6,7,8
	solid–gas system- decomposition of $CaCO_3$, dehydration of $CuSO_4.5H_2O$, deliquescence and efflorescence.	2	1,2,6,7,8
6	**Binary Liquid Systems**	**9**	
6.1	Liquid-Liquid system:- Completely miscible, ideal and non-ideal mixtures,	1	1,2
	Raoult's law, vapour pressure- composition, temperature-composition curves	2	1,2,5,7,10
6.2	fractional distillation, deviation from Raoult's law	1	1,2,5,8
6.3	Azeotropic mixtures, partially miscible liquid system, critical solution temperature, Conjugate layers, example for upper, lower and upper cum lower CST	2	1,2,5,8
6.4	Introduction to three component system, distribution law, its thermodynamic derivation, limitations of distribution law.	2	1,2,3,5,10
6.5	Application of distribution law to the study of association and dissociation of molecules	1	1,2,5,6
7	**Photochemistry**	**3**	
7.1	Grothus-Draper, Beer- Lambert and Stark- Einstein laws.	1	1,2,6,10
7.2	Quantum yield, Reason for very low and very high quantum yields, Rate equation for decomposition of hydrogen iodide, Qualitative treatment of H_2-Cl_2 reaction and H_2-Br_2 reaction	1	1,2,9
7.3	Fluorescence and phosphorescence, chemiluminescence and photosensitization, Explanation and examples	1	1,2,5,8

Textbooks

1. Puri, Sharma & Pathania, Priniciples of Physical Chemistry, Vishal Publishing Co
2. Elements of Physical Chemistry , Glasstone and Lewis,Macmillan
3. ,P.C.Rakhit, Physical Chemistry,Sarat Book House,Calcutta
4. I N Levine, Quantum Chemistry, Prentice Hall

5.RL Madan ,Physical Chemistry, Mc Graw Hill

For Further Reading

1.R J Selby and RA Alberty, Physical Chemistry,John Wiley &sons
2. Levin, Physical Chemistry , 5th edn ,TMH
3 Bahl, Arun Bahlan dG D Tuli,Essentials of Physical Chemistry , S Chand Ltd
4. S.C.Anand, A text book of Physical Chemistry, New Age International publishers.
5.Gurdeep Raj, Advanced Physical Chemistry, Goel publishing house

UNIVERSITY OF KERALA
Model Question Paper of B.Sc. Chemistry Programme
2020 admissions onwards
SEMESTER VI Core Course XII: Course Code CH1643 Credit 4
PHYSICAL CHEMISTRY – III

Time: 3 Hrs **Total marks: 80**

SECTION A

Answer all the questions Each question carries 1 mark

1. Name two quantum mechanical operators
2. Give the Arrhenius equation.
3. Write the integrated rate equation for a first order reaction.
4. Give the relation between hydrolytic constant, dissociation constant and ionic product of water of a salt of strong acid and weak base.
5. The solubility of AgCl in water at 250C is 0.00179 g/L. calculate its solubility product at 25 ^{0}C.
6. Write Debye- Huckel- Onsagar equation.
7. Write the reduced phase rule equation.
8. Give an example for a system having upper cum lower CST.
9. Give the Nernst equation for the potential of a copper electrode.
10. What is meant by quantum yield of a photochemical reaction?

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SECTION B

Each question carries 2 marks (Short answer) **.** Answer any **8** questions

11. Explain an eigen function with an example.
12. Give the normalization condition of a wave function.
13. Give one example each for an acidic and a basic buffer.
14. Define buffer solution and buffer index
15. Define the term activation energy. Why different reactions proceed at different rates?
16. What is meant by common ion effect? Explain with an example.
17. Describe with example (i) Triple point (ii) Eutectic point
18. Explain the term congruent melting point with an example
19. Write a note on ionic product of water
20. Differentiate between pKa and pKb values.
21. How will you characterise the triple point of water?
22. What is meant by phosphorescence?

SECTION C

Answer any 6 questions. Each question carries 4 marks (Short essay).

23. Discuss postulates of quantum mechanics
24. The rate constant of a second order reaction is 5.70 x 10^{-5} dm^3mol^{-1} S^{-1} at 25^0C and 1.64 x 10^{-4} dm^3mol^{-1} S^1 at 40^0C. Calculate the activation energy and the Arrhenius preexponential factor
25. What would be the pH of a solution obtained by mixing 5 g of acetic acid and 7.5 g of sodium acetate and making the volume equal to 500 ml? Dissociation constant of acetic acid at 250C is 1.75 x 10^{-5}.
26. Explain the principle of freezing mixture by taking KI – H2O system as an example
27. State and explain Nernst distribution law. What are the limitations of the law?
28. Write notes on ultra filtration and electrodialysis.
29. Discuss on a consecutive and a parallel reactions with examples
30. What are the laws of photochemistry , explain ?
31. Explain the phase diagram of Pb-Ag system

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SECTION D

Each question carries 15 marks ,Answer any two questions

32. a) using Le Chatliers Principle, describe the effect of temperature, pressure and concentration for the following systems in equilibria:
    1) Formation of $NH_{3(g)}$ from $N_{2\,(g)}$ and $H_{2(g)}$
    2) Dissociation of $PCl_{5(g)}$ in to $PCl_{3(g)}$ and $Cl_{2(g)}$ (6 marks)

    b)Derive the rate equation for a second order reaction based on collision theory. (4 marks)
33. a)What is critical solution temperature? How does it vary by the addition of an

electrolyte?

((5 marks)

b) What is meant by CST. Explain different types of CST with examples (6 marks)

c) Elaborate on azeotropic mixtures with examples (4 marks)

34. a)Derive van't Hoff equation for temperature dependence of equilibrium constant

b)The equilibrium constant for a reaction is 1× 105. Calculate the standard free energy change

for the reaction in kilojoules at 25? C.

c) The half life of a first order reaction is 50 min. Calcualate the time required to reduce the initial concentration to 12.5%. (5x3=15 marks)

35. a) Write note on (i) Fluorescence (ii) Chemiluminescence (5 marks)

b) Derive Langmuir adsorption isotherm (5 marks)

c) Explain the phase diagram of water (5 marks)

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SYLLABUS FOR B.Sc. CHEMISTRY

FIRST DEGREE PROGRAMME

2020 Admission onwards

LAB COURSES

(For all Lab courses scheme of ESE is decided by the board of examiners in each year)

Computer Lab for

Foundation Course II (CH 1221) SEMESTER II

(No ESE)

Semester	II
Hours	2 hours/week
Lecture-Tutorial-Lab	0-0-2

CO No.	COURSE OUTCOME *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Get acquainted with Computer Lab based instruction on the use of computer and internet in learning.	U	PSO5
2	Use of educational softwares, information mining from internet and using INFLIBNET/NICNET, NPTEL and VIRTUAL LABS OF MHRD.	A	PSO5
3	Learn Word processing and document preparation. Use of Spread sheets in Data handling and presentation	U	PSO5
4	Develop skill in chemical structure drawing and visualization of molecules using chemistry softwares	U	PSO5

Students should submit the following documents, certified by Teacher in charge, along with LAB COURSE I records for ESE

1. Structure of any five simple organic molecules using Chem Sketch or Chemdraw

2. Any five chemistry related graphical plots using Excel

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SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards
Core Course-II
LAB COURSE I
INORGANIC QUALITATVE ANALYSIS
(ESE at IV Semester)

Time 3Hrs **Marks 80**

Semester	I,III &IV
Course	**Core Course-IV, Lab Course I**
Course name	**Inorganic Qualitative Analysis**
Course Code	**CH1442**
Credit	2
Hours	2 hours/week
Lecture-Tutorial-Lab	0-0-2

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Obey Lab safety instructions, develop qualities of punctuality, regularity and scientific attitude, out look and scientific temper (GOOD LAB PRACTICES)	U	PSO1
2	Develop skill in safe handling of chemicals, take precaution against accidents and follow safety measures	A	PSO2/ PSO8
3	Use glass wares ,electric oven, burners and weighing balance	A	PSO1
4	Develop skill in observation , prediction and interpretation of reactions	A	PSO1
5	Detect solubility, and classify compounds according to their solubility	U	PSO3
6	Apply the principle of common ion effect and solubility	A	PSO1&

	product in the identification and separation of ions		PSO2
7	Develop skill in preparing and purifying inorganic complex compounds	A	
8	Use filtration and chomatographic techniques, vacuum pump and centrifugal pumps	U	PSO4

MODULE	COURSE DESCRIPTION	Hrs	CO No.
I	**Lab Safety Measures**	**36**	1
A	***General Instructions***	**10**	
1	Readiness to follow Laboratory rules and regulations and cooperating with Lab instructors and staff for avoiding accidents	2	
2	Laboratory safety measures, develop safety skills by wearing lab coats, gloves and safety eye glasses wherever necessary (Necessity of **FIRST AID** and of keeping first Aid box in Lab)	2	
3	Procedures adopted in chemical splashes to skin, eyes, burns and electric shock, Instruction for emergency use of **Fire extinguishers in Lab**	2	
4	Labels and warning symbols for Safe handling of Toxic and corrosive chemicals	4	
B	***Experimental and scientific Skills***	**26**	3,4
1	Preparation of solution, Precipitation, Dissolution, Crystallisation techniques	4	
2	Use of Bunsen Burner, Electric Burners , advantages and disadvantages -Ignition tests,Flame tests and ash tests for detection of cations and anions	4	
3	Filtration techniques-Filter paper, Electric Centrifuge, Vacuum pump	2	
4	Purification technique-Washing of precipitates,Re-crystallsation and drying of precipitate	4	
5	Writing experimental procedures	2	
6	Reporting, Tabulation of data,Use of Lab records	2	
7	Semimicro analysis and Microanalysis, advantages and disadvantages		
8	Application of common ion effect in precipitation and separation of ions	4	
9	Inter group separation techniques	4	

II	**Qualitative Inorganic Analysis (Micro Analysis)**	**48**	4,5, 6
1	Studies of the reactions of the following basic radicals with a view to their identification and confirmation: Lead, Copper, Bismuth, Cadmium, Tin, Antimony, Ferrous, Ferric ions, Aluminium, Chromium, Zinc,Manganese,Cobalt,Nickel,Calcium,Strontium,Barium,Magnesium , Potassium and Ammonium ions/radicals	12	
2	Studies of the reactions of the following acid radicals with a view to their identification and confirmation: Carbonate, Sulphide, Nitrite, Nitrate, Fluoride, Chloride, Bromide, Iodide , Borate, Acetate, Oxalate, Chromate, Phosphate and Sulphate anions.	12	
3	Systematic qualitative analysis by **microscale methods** of salt mixtures containing two acidic and two basic radicals from the above list (more than one interfering radical should be avoided).	30	
III	**Inorganic Preparations** Preparations of i)Potash alum ii) Hexamine cobalt Chloride iii) Tetramine copper Sulphate iv) Mohr's salt v) Microcosmic salt vi) Sodium cobalti nitrate vii) Sodium nitro prusside vii) Manganese phthalocyanin ix) Potassium trioxalatochromate x) Potassium trioxalatoferrate	**20**	4,5, 6
IV	**Introduction to Chromatographic Separation techniques (No ESE)**	**4**	8
1	Demonstration of Paper chromatography	2	
2	Demonstration of Thin layer chromatography	2	

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME
2020 Admission onwards
SEMESTER V
Core Course-VIII
LAB COURSE II
INORGANIC VOLUMETRIC ANALYSIS
(ESE at V Semester)

Time 3Hrs **Marks 80**

Semester	V
Course	Core Course-VIII, Lab Course II
Course name	**INORGANIC VOLUMETRIC ANALYSIS**
Course Code	**CH1544**
Credit	3
Hours	5 hours/week (90Hrs)
Lecture-Tutorial-Lab	0-0-5

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Develop skill in selecting, primary and secondary standards	U	PSO1
2	Develop skill in weight calculation of primary standards weighing by electronic balance, making of solutions of definite strength (standard solutions)	A	PSO2 PSO8
3	Use sophisticated glass wares, calibrate apparatus and develop skill in keen observation , prediction and interpretation of results	A	PSO1
4	Perform volumetric titrations under acidimetry-alkalimetry, permanganometry, dichrometry, iodimetry-iodometry,cerimetry, argentometry and complexometry	A	
5	Compare the advantages and disadvantages of different volumetric techniques	U	
6	Practice Punctuality and regularity in doing experiments and submitting Lab records	A	

MODULE	COURSE DESCRIPTION	Hrs	CO No.
I	**Preparation of standard solutions**	**6**	
1	Calculation of mass of a primary standard substance and preparing its standard solution (use of constant boiling hydrochloric acid and Analytical Grade Reagents is recommended)	**2**	
2	Preparation of a solution of definite strength by Dilution techniques	**2**	
3	Preparation of carbonate free sodium hydroxide.	**2**	
II	**Inorganic Volumetric analysis-(one burette titration)**		
(a)	***Acidimetry and alkalimetry***	**25**	
1	Standardisation of HCl using Analytical Grade Na_2CO_3	**3**	
2	Titrations of Strong acid (HCl, HNO_3 and H_2SO_4) by strong bases (NaOH, KOH)	**8**	
3	Strong base (NaOH, KOH)– weak acid (Oxalic acid)	**5**	
4	Strong acid –(HCl, HNO_3 or H_2SO_4) by weak base (Na_2CO_3 solution)	**5**	
5	Determination of Na_2CO_3 and $NaHCO_3$ in a mixture by indicator method	**2**	
6	Estimation of NH_3 in an ammonium salt by direct and indirect methods	**2**	
(b)	***Permanganometry***	24	
1	*Standardisation of Potassium permanganate using A.R Oxalic acid/Mohr's salt*	3	
2	Estimation of Ferrous iron	3	
3	Estimation of Oxalic acid	3	
4	Estimation of Hydrogen peroxide	3	
5	Estimation of Calcium	4	
6	Estimation of Nitrite	3	
7	Estimation of MnO_2 in pyrolusite	5	
(c)	***Dichrometry***	*9*	
1	Determination of Ferrous iron using internal & external indicator	4	
2	Determination of Ferric iron after reduction with $SnCl_2$.	5	
(*d*)	***Cerimetry***	4	
1	Standardisation of ceric ammonium sulphate with Mohr's salt.	2	
2	Determination of oxalic acid using ceric ammonium sulphate.	2	
(e)	***Iodimetry &Iodometry***	**9**	
1	Standardisation of thiosulphate using KIO_3	3	
2	Standardisation of iodine using thiosulphate	3	
3	Determination of copper in copper sulphate	3	
(f)	*Precipitation titration*	*3*	
	Determination of chloride in neutral medium	3	

(g)	***Complexometry***	*10*	
1	Standardisation of EDTA solution with ZnSO4	3	
2	Determination of Zinc, using EDTA	2	
3	Determination of Magnesium	2	
4	Determination of permanent and temporary hardness of water using standardized EDTA	3	

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards
LAB COURSE III

PHYSICAL CHEMISTRY EXPERIMENTS

(ESE at V Semester)

Time 3Hrs

Marks 80

Instructions for use of computer softwares and programmes in the physical chemistry experiments

1.Computer software (Excel) is to be used for plotting graph or calculations.
2. Spread sheet program can be used for determining Equivalence point in potentiometric and conductometric titrations .
3. Data analysis of kinetic experiments using spreadsheet program (determination of rate constant)
4.Plot scatter diagram (wherever applicable in physical experiments)

Semester	V
Course	Core Course-IX, Lab Course III
Course name	**PHYSICAL CHEMISTRY EXPERIMENTS**
Course Code	**CH1545**
Credit	2
Hours	4 hours/week (72Hrs)
Lecture-Tutorial-Lab	0-0-4

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Develop Scientific outlook and approach in applying principles of physical chemistry in chemical systems/reactions	U	PSO1
2	Use computational methods for plotting graph	A	PSO2/PSO8

3	Desribe systematic procedures for physical experiments	U	PSO1
4	Acquire Instrumentation skill in using conductometer, potentiometer, refractometer, stalagmometer and Ostwald's viscometer.	U	PSO3
5	Compare theory with experimental findings	A	PSO1& PSO2
6	Practice Punctuality and regularity in doing experiments and submitting Lab records	A	

MODULE	COURSE DESCRIPTION	Hrs	CO No.
I	**Conductometry**	**12**	1-7
1	Determination of cell constant		
2	Conductometric titration of NaOH using HCl		
II	**Potentiometry**	**8**	1-7
1	Potentiometric titration of Fe^{2+} *versus* $Cr_2O_7^{2-}$		
2	Potentiometric titration of $KMnO_4$ *versus* KI		
3	Potentiometric titration of HCl *versus* NaOH using quinhydrone electrode		
III	**Phenol-water (Binary liquid systems)**	**12**	1-7
1	Critical solution temperature of phenol –water system		
2	Influence of KCl(impurity) on the miscibility temperature of phenol-water system .Determination of concentration of given KCl solution		
IV	**Transition temperature depression methods**	**12**	1-7
1	Determination of transition temperature of a salt hydrate.		
	Determination of Kt of salt hydrate		
2	Determination molar mass of a solute using transition point depression method		
V	**Kinetics**	**4**	1-7
	Kinetics of hydrolysis of an ester (methyl acetate/ ethyl acetate)		
VI	**Surface tension**	**4**	1-7
1	Determination of Surface tension of any three liquids		
2	Surface tension of binary mixtures and determination of concentration of an unknown mixture		
VII	**Viscosity**	**4**	1-7
1	Determination of viscosity of any three liquids		
2	Viscosity of binary mixtures and determination of concentration of an unknown mixture		
VIII	**Refractice index experiments**	**4**	1-7
1	Determination of refractive indices of any three liquids		
2	Refractive indices of KCl solutions of different concentrations and determination of concentration of unknown KCl solution		
IX	**Heat of neutralization**	**4**	1-7

	Determination of water equivalent of Calorimeter and heat of neutralization of strong acid and strong base		
X	**Partition experiments**	**8**	1-7
	Partition coefficient of iodine between CCl_4 and H_2O or Partition coefficient of ammonia between $CHCl_3$ and H_2O		

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards

LAB COURSE IV ORGANIC CHEMISTRY EXPERIMENTS

(ESE at VI Semester)

Time 3Hrs **Marks 80**

Semester	VI
Course	Core Course-XIII, Lab Course IV
Course name	**ORGANIC CHEMISTRY EXPERIMENTS**
Course Code	CH1644
Credit	3
Hours	5 hours/week (90 Hrs)
Lecture-Tutorial-Lab	0-0-5

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Develop curiosity in systematically analyzing organic compounds	A	PSO1
2	Differentiate and identify organic compounds by their characteristic reactions towards standard reagents	U	PSO10
3	Confirm their findings by preparing solid derivatives, and thus understand reliability of experimental results	A	PSO2
4	Determine physical constants of organic compounds	A	PSO3

5	Separate organic compounds by TLC/paper/column chromatographic techniques	A	PSO3
6	Prepare soaps	A	PSO18
7	Apply the principles and techniques in organic chemistry, thereby developing skill in designing an experiment to synthesize and purify organic compounds	A	PSO18
8	Practice systematic scientific procedure and prepare adequate report of them	A	PSO16
9	Understand the chemistry behind organic reactions	A	PSO10

MODULE	COURSE DESCRIPTION	Hrs	CO No.
I	**Detection of Elements**	**3**	
	Lassaign's test for Nitrogen, Sulphur and Halogen		
II	**Solubility Tests**	**5**	2
1	Classification of compounds into water soluble/insoluble		
2	Classification of compounds into ether soluble/insoluble		
3	Solubility in Na_2CO_3		
4	Solubility in NaOH		
5	Solubility in HCl		
III	**Tests for Aliphatic and Aromatic compounds**	**2**	2
	(i)Ignition test (ii)Nitration test		
IV	**Tests for saturated and unsaturated compounds**	**2**	2
	(i)Oxidation (ii) Bromination		
V	**Tests to distinguish between following compounds**	**6**	2
1	monocarboxylic acid and dicarboxylic acid		
2	primary,secondary and tertiary amines		
3	monoamide and diamide		
4	aldehyde and ketone		
5	reducing and non reducing sugars		
6	monohydric phenols and dihydric phenols		
VI	**Reactions of common functional groups using known organic compounds**.	**6**	6
VII	**Systematic qualitative analysis with a view to characterization of the following functional groups**	**30**	6

1	Halo compounds :chlorobenzene, benzyl chloride,		
2	Phenols: phenol, *o* ,*m* ,*p* -cresols, naphthols, resorcinol		
3	Aldehydes and ketones: benzaldehyde, acetophenone, benzophenone		
4	Carboxylic acids: benzoic, phthalic, cinnamic and salicylic acids		
5	Esters: ethyl benzoate, methyl salicylate		
6	Amides: benzamide, urea		
7	Anilines: aniline, *o,m, p* - toluidines, dimethylaniline		
8	Nitro compounds: nitrobenzene, *o*- & *p*- nitro toluene		
9	Poly nuclear hydrocarbons: naphthalene, anthracene		
10	Reducing and non reducing sugars: glucose and sucrose		
VIII	**Preparation of Organic Compounds.**	**16**	5&6
1	Halogenation :Bromination of acetanilide		
2	Nitration of Acetanilide or nitrobenzene		
3	Oxidation of benzaldehyde/Toluene/Benzyl chloride		
4	Acetylation of salicylic acid or aniline Benzoylation of phenol or aniline		
5	Hydrolysis of ethyl acetate and benzamide		
IX	***Preparation of Soap**		
X	**Chromatography**	**10**	4
1.	**TLC of simple organic compounds (using TLC sheets)		
2	*Paper chromatographic separation of mixture of inks and sugars		
3	*Column chromatographic separation of a mixture of dyes		
XI	***Organic estimations**	**4**	8
1	Estimation of phenol		
2	Estimation of Aniline		
XII	**Determination of physical constants	**3**	3
XIII	Steam distillation –Extraction of essential oil from citrus fruits/eucalyptus leaves (NOT FOR ESE)	**3**	4

** **Experiments under X or XII are compulsory but only one is expected for a batch.**

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SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME
2020 Admission onwards
SEMSTER VI Core Course-XIV

LAB COURSE V GRAVIMETRIC EXPERIMENTS

(ESE at VI Semester)

Semester	VI
Course	Core Course-XIV, Lab Course V
Course name	GRAVIMETRIC EXPERIMENTS
Course Code	CH1645
Credit	2
Hours	4 hours/week (72Hrs)
Lecture-Tutorial-Lab	0-0-4

CO No.	COURSE OUTCOME *Upon completion of this course, the students*	Cognitive Level	PSO No.
1	Understand precipitation techniques in quantitative context	U	PSO1
2	Appreciate the application of silica crucible and sintered crucible in gravimetry	A	PSO2 PSO8
3	Practice technique of making, diluting solutions on quantitative basis	A	PSO1
4	Realise the factors affecting precipitation/crystallisation	A	PSO1
5	Take precautionary measures in filtration , drying and incineration of precipitates	U	PSO3
6	Understand the principle of colorimetry to estimate Fe^{3+} and ammonia	A	PSO1& PSO2
7	Practice Punctuality and regularity in doing experiments and submitting Lab records	A	PSO18

MODULE	COURSE DESCRIPTION	Hrs	CO No.
I	**Precipitation and Filtration Techniques**	**10**	1,2
1	True solution , Colloids, Precipitates		
2	Saturated and super saturated solutions		
3	Solubility product and common ion effect		
4	Precipitating agents		

5	Co-precipitation and post precipitation		
6	Washing of precipitate based on principle of solvent extraction		
7	Filtration using Whatmann Filter paper		
8	Desiccating agents and use of desiccators and vacuum desiccators		
9	Incineration in silica crucible		
10	Use of sintered crucible and its advantages and limitations		
II	**Gravimetric Estimations**		
A	**Estimations using silica crucible**	**30**	1,2
1	Estimation of water of crystallization in hydrated Barium chloride		
2	Estimation of Barium as Barium sulphate		
3	Estimation of sulphate as Barium sulphate		
4	Estimation Iron as Fe_2O_3		
5	Estimation Calcium as $CaCO_3$		
6	Estimation Aluminium as Al_2O_3		
7	Estimation Magnesium as $Mg_2P_2O_7$		
B	**Estimations using sintered crucible**	**20**	1,2
1	Magnesium as oxinate		
2	Nickel as nickel dimethyl glyoximate		
3	Copper as copper thiocyanate		
4	Silver as silver chloride		
II	**Colorimetry**	**12**	3
1	Determination of Fe^{3+} using thiocyanate		
2	Determination of ammonia using Nessler's reagent.		

Textbooks

1. A.I.Vogel, "A text book of Qualitative Analysis including semi micro methods" Longmans.
2. V.V.Ramanujam, "Semi micro Qualitative Analysis"
3. E.S.Gilreath "Qualitative Analysis using semi micro method" Mc Graw Hill
4. A.I.Vogel, "A text book of Qualitative Inorganic Analysis" Longmans
5. A.I.Vogel, "Elementary Practical Organic Chemistry" Longmans
6. J B Yadav,Advanced Practical Physical Chemistry, Goel ,Publishing House

For Further Reading

1. Day and Raman, "Laboratory Manual of Organic Chemistry".
2. B.Viswanathan and P.S Raghavan , "Practical Physical Chemistry" 2005 Edn. Viva Books (Pvt.Ltd)
3. F.G Mann and B.C Saunders, "Practical Organic Chemistry" 4th Edn, Orient Longmann
4. A.Findlay, "Practical Physical Chemistry" Creative Media
5. R.C.Das and E.Behara, "Experimental Physical Chemistry", Tata Mc Graw Hill
6. N.K.,Vishnu, "Advanced practical organic chemistry" Vikas publishing house, New Delhi

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards

Semester	V-VI
Course	**PROJECT COURSE**
Course name	**PROJECT**
Course Code	**CH1646**
Credit	4
Marks	100 (No CE marks)
Lecture-Tutorial-Lab	0-0-2

CO No.	**COURSE OUTCOME** *Upon completion of this course, the students*	**Cognitive Level**	**PSO No.**
1	Develop an aptitude for research in chemistry	U,A	PSO1
2	Practice research methodology and literature search	A	
3	Critically choose appropriate research topic and presentation	A	PSO2 PSO8

GUIDELINES FOR PROJECT COURSE (Course Code CH1646)

- The board of examiners can decide the scheme of evaluation of project , study tour report and viva voce
- Topics of chemical interest can be selected for the project. Project is to be done by a group not exceeding 5 students on approval by the teacher in charge.
- Every student should submit typed (A4 paper, 12 Font, 1.5 Space, 20- 30 pages), spirally bind
  project report duly attested by the supervising teacher and the Head of the Department on the day of practical examination before a board of two Examiners for ESE.
- The viva-voce based on the project is conducted individually.
- Project topic once chosen shall not be repeated by any later batches of students.
- List of projects submitted year wise is to be maintained in a register and submitted before the examiners if necessary.

. .**The project report may contain the following sections**

1. Preliminary (Title page, declaration, certificate of the supervising teacher, content etc.)
2. Introduction with relevant literature review and objective
3. Materials and Methods
4. Results
5. Discussion
6. Conclusion / Summary
7. References

STUDY TOUR AND FACTORY VISIT

Students are directed to

- Visit at least one chemical factory preferably with in the state of Kerala.
- Submit scientifically prepared hand written study tour report along with photographs of candidate at the places of visit for ESE on the day of the examination of project evaluation.

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SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

2020 Admission onwards
OPEN COURSE FOR OTHER MAJORS

Semester	V
Course	Open Course
Course name	**CHEMISTRY AND ITS APPLICATIONS**
Course Code	CH 1551.1
Credit	2
Hours	54 hours
Lecture-Tutorial-Lab	2-0-0

CO No.	COURSE OUTCOME *Upon completion of this course, students*	Cognitive level	PSO
1	Appreciate the history of evolution of science	U	PSO1
2	Develop curiosity and scientific attitude towards the application of chemistry in daily life	C	PSO1
3	Appraise the current development in Chemistry and contribution of chemistry for sustainable development	E	PSO1
4	Identify the common ingredients of house hold synthetic products	U	PSO 8
5	Classify chemicals according to their uses	U	PSO3
6	Critically choose cosmetics and cleansing agents for daily use	E	PSO15
7	Adopt safer and healthier life skills in harmony with nature	A	PSO21

MODULE	**COURSE DESCRIPTION (No Chemical structure required)**	**Hrs**	CO No.
1	**Evolution of Chemistry as a discipline of science**	**9**	1,2
1.1	Evolution of Chemistry - ancient speculations on the nature of matter, early form of chemistry-alchemy.	1	
1.2	Chemical revolution, Atomic and Molecular Theory	1	
1.3	Comparison of Rutherford's atom model with solar system	2	
1.4	Major contributions of Mendeleev, Michael Faraday and Marie Curie.	1	
1.5	Scope of Chemical Science, branches of Chemistry, Basic idea of interdisciplinary areas involving Chemistry	1	

2	**Chemistry for energy production**	**9**	3
2.1	Electrochemical cell-cathode and anode, Daniel cell, Dry cell	**2**	
2.2	Fuels: Definition and classification of fuels, characteristics of a good fuel, Combustion, calorific value, Wood, coal, Classification based on carbon content	2	
2.3	Petroleum, Origin, Petrol- Diesel, Flash point. Aviation fuels	2	
2.4	Natural gas, biogas, and LPG- composition Pollution due to burning of fossil fuels	2	
2.5	Solar energy and solar cells (applications only)	1	
3	**Vitamins , hormones, enzymes and nucleic acids**	**9**	2
3.1	Vitamins: Vitamin A, B_2, C, D, E and K source, function and deficiency diseases	3	
3.2	Hormones: Insulin and its function, Thyroid hormones, Iodine deficiency condition	2	
3.3	Enzymes: as Biological catalysts,– Role of enzymes in digestion of food	2	
3.4	Nucleic acids: RNA and DNA, Role of nucleic acids in life process (No structure or chemical reactions)	2	
4	**Chemistry in day today life**	**9**	3,7
4.1	**Food Chemistry**: Food additives, preservatives, anti oxidants, commonly used permitted and nonpermitted food colours -artificial sweeteners-taste enhancers Health effects of fast foods, instant foods, dehydrated foods and junk foods	2	
4.2	**Cosmetics**: talcum powder, lip sticks, nail polish, moisturiser Sun screen lotions and hair dye	2	
4.3	**Cleansing agents**: Soaps- Hard and soft soaps, alkali content-TFM, Detergents and Shampoos.	1	
4.5	**Plastics** : Thermo plastics and thermosetting plastics, Plastic identification codes, biodegradable plastics (PGA,PLA and PHBV) and their applications, Importance of Plastic recycling	2	
4.6	**Pharmaceuticals**: Drugs, classification into analgesics, antacids, antibiotics, antiseptics, disinfectants, anaesthetics, tranquilisers, narcotics and antidepressants-one example	2	
5	**Environmental Chemistry I**	**9**	**2,7**
5.1	Air pollution: Composition of air, major causes of air pollution, Pollutants in air-carbon monoxide, carbon dioxide, oxides of Nitrogen and sulphur , chlorofluro	2	

	carbons- effect of using refirigerators and air conditioners, Particulate matter- Acid rain, Green house effect, ozone layer and its depletion		
6	**Environmental Chemistry II**	**9**	2,7
6.1	Water pollution: causes- heat, industrial waste, sewage water, detergents, agricultural pollutants Treatment of industrial waste water- Activated charcoal, Reverse osmosis Quality of drinking water- Indian Standard and WHO standard- Dissolved oxygen- BOD , COD	6	
6.2	Soil pollution: pesticides, fertilizers, Industrial waste, Plastic.	3	

Reference

1.T F Giereyn, Cultural boundaries of science) University, Chikago Press, 1999
2 N C Dutta, The Story of Chemistry, University Press

3.MSR Winter, A Consumer's dictionary of cosmetic ingredients, 7th edition, Three Rivers Press, NewYork,2009
4.B K Sharma, Polymer chemistry, Goel Publishing House, Meerut, 1989
5. B K Sharma, Industrial chemistry, 11th edition, Goel Publishing House, Meerut, 2000
6.A K Day,"Environmental chemistry-An Introduction", New Age Publisher, 8th edition
7. B Srilakshmi, Food Science,5th edition, New Age Publishers, NewDelhi,2010
8. Organic Chemistry of Drug action and drug design-L B Silverman, Elsvier,
9. Medicinal Chemistry , An introduction, II nd edition Gareth Thomas, Wiley, India,2011

UNIVERSITY OF KERALA
Model Question Paper First Degree Programme
2020 Admission onwards
SEMESTER V Course Code CH1551.1
OPEN COURSE FOR OTHER MAJORS
CHEMISTRY AND ITS APPLICATION

SECTION A
Answer all questions in one word , each question carry one mark

1.Name any one interdisciplinary area of chemistry
2.Early form of chemistry is called--------
3.Enzymes are called biological ---------
4. Name the hormone produced byPancrease
5.Alkali content of soap is expressed as ------

6.PGA is a biodegradable plastic. State true or false
7 .Name the main constituent of LPG
8.White lead is a --------
9.Which among DNA and RNA determine heredity ?
10.Night blindness is caused by deficiency of
a)Vitamin A,b)Vitamin C,c)Vitamin.D,d)Vitamin K

SECTION B

Each Question carries 2 marks. Answer any 8 questions.

11.Give two examples each for enzymes and hormones.
12. How will you distinguish between hard and soft soaps?
13.What are nucleic acids? Give examples.
14.How does acid rain occurs?
15.Define calorific value of a fuel.
16.Suggest a natural way of harvesting solar energy. Explain.
17.How will you classify fuels?
18.Name two petroleum based fuels.
19.How do iodine deficiency affect human beings?
20.What is an electrochemical cell?
21.Name the electrodes in Daniel cell.
22. What is the cause of green house effect?

SECTION C

Each Question carries 4 marks. Answer any 6 questions.

23. Explain the source and hazards of fly ash and asbestos.
24. Explain briefly soil pollution.
25. Write a note on enzymes.
26. List four different types of drugs
27. Distinguish between antiseptics and disinfectants
28. What are the characteristic of a good fuel?
29. What are the functions and deficiency diseases of Vitamin C, Vitamin D ?.
30. Write a note on Enzymes.
31. Discuss on the health effects of fast food and junk food.

(4×6 = 24 marks)

SECTION D

Answer any two questions (15 marks each)

32. a) Discuss on the major contributions of Rutherford .
    b) Differentiate between cathode and anode. Identify the anode and cathode in Dry cell
    c) Chemistry is the central science of many other disciplines.Justify (5x3 = 15 marks)

33. a) Write a note on Dalton's atomic theory.
    b) How do Refrigerators cause air pollution? Explain.

c) Write a note on vitamin deficiency disease. (5x3 = 15 marks)

34. a) What are the 'Three R's of plastic control?
b) What is meant by DNA? Name the sugar unit present in DNA.
c) Write a note on Drugs. (5x3 = 15 marks)

35. a) Explain the cleansing action of soap.
b) What is antibiotic? Give the names of the first antibiotic and the scientist who discovered it.
c) Give an account of the green house effect. (5 x 3 =15 marks)

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UNIVERSITY OF KERALA

OPEN COURSE FOR OTHER MAJORS

SEMESTER-V CREDIT-2 COURSE CODE-CH1551.2

Semester	V
Course	Open Course
Course name	**FUNDAMENTALS OF CHEMISTRY AND ITS APPLICATION TO EVERYDAY LIFE**
Course Code	CH 1551.2
Credit	2
Hours	54 hours
Lecture-Tutorial-Lab	2-0-0

CO No.	**COURSE OUTCOME** *Upon completion of this course, students*	**Cognitive Level**	**PSO No.**
1	Appreciate the evolution of Science and Chemistry and the early form of chemistry	U	PSO1
2	Understand the dvelopement of Chemistry as a discipline and the role of chemistry as a central science	U	PSO1
3	Discuss the fundamental properties of atom, structure of atom, classification of elements in to a periodic table	U	PSO3
4	Differentiate between simple molecules and giant molecules and the bonding nature	U	PSO11
5	Explain different types of bonding and predict stability	U	PSO4

6	Compare properties of graphite and diamond and their structural differences	U	PSO4
7	Identify house hold chemicals, their advantages and disadvantages	U	PSO12
8	Become aware of chemical hazards and the precautions in handling chemicals	A	PSO12
9	Beware of food adulterants	A	PSO12 PSO21
10	Critically select chemical fertilizers,artificial sweeteners, beverages, and food preservatives	A	PSO21

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Evolution of Chemistry**	**9**	**2**
1.1	Evolution of Chemistry - ancient speculations on the nature of matter, early form of chemistry -alchemy	3	
1.2	Robert Boyle and the origins of modern chemistry in the latter 1600s - origin of modern chemistry - Antoine Lavoisier and the revolution in chemistry	3	
1.3	Role of Chemistry as a central science connecting Physics, Biology and other branches of science. Basic ideas of interdisciplinary areas involving Chemistry	3	
2	**Atomic structure**	**9**	**2**
2.1	Atom- model of Dalton- Thomson – Rutherford and Bohr	3	
2.2	Nature of electron proton and neutron – atomic number – mass number- isotopes -state the relative charges and approximate relative masses of a proton, a neutron and an electron	3	
2.3	Description with the aid of diagrams, the structure of simple atoms as containing protons and neutrons (nucleons) in the nucleus and electrons arranged in shells (energy levels-K,L,M etc) (mention only of s, p, d and f orbitals)	3	
3	**Periodic table**	**9**	**2**
3.1	The Periodic Table - Periodic trends, Group properties - describe the relationship between group number and the ionic charge of an element-	3	
3.2	similarities among the elements in the same group - metallic to non-metallic character from left to right across a period of the Period Table	2	
3.3	Classification into s,p,d, and f block- General Properties of elements in Group I and XVIII using the Periodic	4	

	Table, metals, nonmetals, metalloids and inert gases		
4	**Structure and properties of materials**	**9**	**5**
4.1	Elements, compounds and mixtures – elementary idea of ionic bond and covalent bond	2	
4.2	Compare the structure of simple molecular substances, e.g. methane; water, carbon dioxide, iodine, with those of giant molecular substances, e.g. poly(ethene); sand (silicon dioxide);	4	
4.3	Diamond and graphite in order to deduce their properties compa the bonding structures of diamond – graphite, electrical conductivity	3	
5	**Chemicals used in everyday life.**	**9**	**8**
5.1	Household materials – Major chemical ingredients (No structural formula and preparation needed), : Match Box- Soap- detergent— cooking gas – tooth paste – shampoo- hair dye- nail polish- whitener-moth balls, house hold bleach	4	
5.2	method of action and possible hazards/toxicity of	3	
5.3	Explosive chemicals, propellants –fire crackers.	2	
6	**Chemicals in food and beverages**	**9**	**9**
6.1	Important chemical ingredients/ taste makers used in packed food - soft drinks - and its health hazards ,Chemicals in food production	3	
6.2	fertilizers used in natural sources - Fertilizers urea, NPK and Super phosphates - uses and hazards.	2	
6.3	Adulterants in milk, ghee, oil, coffee powder, tea, asafoetida, chilli powder, pulses and turmeric powder - identification	2	
6.4	artificial sweeteners - food preservatives	2	

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Model Question Paper First Degree Programme

2020 Admission onwards

SEMESTER V Course Code CH1551.2 Credit 2

OPEN COURSE FOR OTHER MAJORS

FUNDAMENTALS OF CHEMISTRY & ITS APPLICATION TO EVERYDAY LIFE

Time: Three Hours **Maximum Marks : 80**

SECTION A

(Answer in a word / sentence) Answer all questions

1. Name the early form of chemistry
2. Who is the father of modern chemistry?

3. What is superphosphate?
4. ^{1}H , ^{2}H and ^{3}H are called --------of hydrogen
5. Diamond is chemically ----(carbon, gold, Silicon, glass)
6. What is main constituent of LPG ?
7. Mercury is a liquid ----(metal, nonmetal, metalloid, none of the above)
8. Silica is the chemical name of (sand, soap,silver, carbon)
9. Artificial sweeteners and ------- ---- are common in junk food.
10. What is periodicity?

SECTION B

Each question carries 2 marks (Short answer type).
Answer any eight questions .

11. Name any two Toxic Chemicals in Cosmetics
12. Obtain the electron configuration for (a) N; (b) F.
13. Explain Hund's rule of maximum multiplicity with an example.
14. Define electron affinity, explain with an example.
15. Which of the following elements Li, Be, B, C, N, O, F and Ne are metals?
16. Explain Bohr model of atom.
17. Why is the electronegativity value of most noble gases equal to zero?
18. What are the Health Effects of Drinking Soda?
19. Which do you expect to have more metallic character, Lead (Pb) or Tin (Sn)
20. What is a Match Head of match stick made of?
21. Explain why graphite conducts electricity whereas diamond doesn't.
22. Is the reactivity of group I metals increasing or decreasing down the group? Explain why?

(2×8 = 1

SECTION C

Each question carries **4 marks** (Short essay type)
Answer any six **questions**

23. Explain the colour of firecrackers.
24. What is the difference between covalent and ionic bonding?
25. What are periods and groups in the periodic table? What is periodicity?
26. What are adulterants.
27. How is Thomson's model of the atom different from Dalton's model of atom?
28. What's the difference between an oxidation number and an ionic charge?
29. Explain the health hazards associated with drinking soft drinks?

30. How can metallic character change across a period?

31. Describe clearly the link between increasing effective nuclear charge across a period and the changes in van der Waals radius.

SECTION D

Each question carries 15 marks (essay type) Answer any two questions.

32. a.Explain about the pH changes of aqueous solutions of elements in the third period as the period is crossed.
    b. Explain how these changes are directly related to the changes in effective nuclear charge across the period.
    c. Describe the metallic character of elements in a period. (5x3 marks)

33. a.Explain the role of some chemicals in household items. (8 marks)
    b.Write a short note on food adultration. (7 marks)

34. a.Write a short note on the uses and hazards of fertilisers. (8 marks)
    b.Draw the structure of carbon and sodium (shell model) (7 marks)

35. a. Draw the structures showing shapes of methane, water and carbon dioxide (8 marks)
    b.compare the bonding structures of diamond – graphite. (7marks)

UNIVERSITY OF KERALA

OPEN COURSE FOR OTHER MAJORS

2020 Adimission onwards

Semester	V
Course	Open Course
Course name	**ENVIRONMENTAL CHEMISTRY**
Course Code	CH 1551.3
Credit	2
Hours	54 hours
Lecture-Tutorial-Lab	2-0-0

CO No.	**COURSE OUTCOME** *Upon completion of this course, students*	**Cognitive Level**	**PSO No.**
1	Discuss the structure and composition of the atmosphere	U	PSO14
2	Identify,Realise and enlist the causes of pollution to water, soil and air	U	PSO14
3	Become aware of environmental issues and its effect to man and other living beings	U	PSO12
4	Review major environmental disasters and suggest controlling and preventive measures	U	PSO12
5	Discuss the laws of environmental protection	U	PSO21

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Environmental Components** Structure and composition of the, Atmosphere, hydrosphere, biosphere and Lithosphere – composition of atmosphere	9	1,2,3
2	**Water pollution** Sources, its effect and control; Sampling and measurement of water quality and their analysis, water quality standards, BOD and COD Hard water – soft water Eutrophication and restoration of lakes.	9	1,2,3
3	**Air Pollution** Types and sources of air pollution, Common Air Pollutants - Effects of air pollution; Smog – ozone layer depletion green house effect – acid rain	9	1,2,3
4	**Soil Pollution** Sources, types, effects and control of: Land pollution, Marine pollution, Thermal Pollution and Radioactive pollution. Waste separation, storage and disposal ; Waste Reduction, Recycling and Recovery of materials.Plastics and their misuses.	9	1,2,3
5	**Major environmental disasters** Major environmental disasters - mercury poisoning in Minamata, Japan, Itaiitai disease due to cadmium poisoning in Japan - Love Canal toxic waste site, Seveso disaster chemical plant explosion - Bhopal disaster - Chernobyl incident	9	4
6	**Major environmental laws:** Environment (Protection Act) – The Air (Prevention and control of pollution) Act – The water (Prevention and control of pollution) Act – The wild life protection Act – Forest conservation Act – The Ozone Depleting Substances (Regulation and Control) Rules – The Plastic Waste (Management and Handling) Rules - Rio declaration- Montreal protocol, Kyoto protocol Introduction to Green chemistry (elementary ideas only)	9	5

Reference

1. Banerji, K Sameer"Environmental Chemistry", ISBN - 9788120315761.
2. K. De "Environmental Chemistry - An introduction" New Age International (P)Ltd.,2017
3. B. K. Sharma "Air Pollution", Goel Publishing House
4. V. K. Ahluwalia "Environmental Chemistry", books.google.co.in, 2017
5. G.W. vanLoon and S. J. Duffy "Environmental Chemistry: A Global Perspective"
6. S.K.Mohanty, Environment and Pollution Laws, Universal Law Publishing Co. (P)Ltd

UNIVERSITY OF KERALA
Model Question Paper for
B.Sc Chemistry Programme
OPEN COURSE FOR OTHER MAJORS
Semester V Course Code CH1551.3 Credit -2
ENVIRONMENTAL CHEMISTRY

Time: 3 hours
Marks: 80

SECTION A

Answer all questions (Each question carries 1 mark)

1. What you meant by Triple R in waste management ?.
2. What type of pollution causes acid rain?
3. What are the misuses of plastics?
4. What are the three major man made sources of air pollution?
5. What kind of materials are discharged into the seas?
6. What increases the amount of carbon dioxide in the atmosphere?
7. Explain the action of zeolites on hard water.
8. What are freons?
9. Define pollution
10. What is fly ash?

SECTION B

(short answer type) (Answer any 8 questions, Each answer carries 2 mark)

11. How is pollution related to acid rain?
12. How does ocean pollution affect sea animals?
13. What are the main concepts of Green Chemistry
14. Write short note on Radioactive pollution
15. Discuss the major composition of earth's atmosphere 16. Write about the cause and consequence of Chernobyl incident
17. What is BOD and COD?
18. What causes radioactive pollution?
19. Distinguish between Hard water and soft water.
20. What is the goal of Forest Conservation Act?
21. What is the Greenhouse effect and what is its cause? 22. What are the types of air pollutants ? **(2×8 = 16)**

SECTION C

(Short essay type) each question carries **4**marks. Answer **any**

23. Write short note on volatile organic compounds.
24. How can thermal pollution be prevented?
25. How do you control Radioactive pollution?
26. What is smog? How does smog arise?
27. What is Eutrophication
28. Write a note on Rio-Declaration.
29. Explain the various layers of the Atmosphere
30. What is Air Pollution? How can air pollution be minimized?
31. Briefly explain about the components of atmosphere.

SECTION D

Answer **any 2** from the following. Each question carries **15** marks

32. (a) Explain Hardness of water and the different types. (5 marks)
    (b) Discuss about the various sources of water pollution. (5 marks)
    (c) What are the control measures for water pollution ? . (5 marks)
33. (a) Write short note on causes and problems of ozone layer depletion?
    (b) Explain the various types of smog.
    (c) Discuss the Ozone Depleting Substances (Regulation and Control) Rules
34. (a) Explain thermal pollution
    (b) Discuss about plastics and their misuses
    (c) Discuss about Chernobyl disasters
35. (a) Discuss about green chemistry
    (b) Explain Montreal protocol and Kyoto protocol
    (c) The water (Prevention and control of pollution) Act (15 × **2= 30)**

UNIVERSITY OF KRALA

SYLLABUS FOR B.Sc. CHEMISTRY

FIRST DEGREE PROGRAMME

2020 Admission Onwards

ELECTIVE COURSES

Semester	V1
Course	Elective Course
Course name	**SUPRAMOLECULAR, NANO PARTICLES AND GREEN CHEMISTRY**
Course Code	**CH1651.1**
Credit	2
Hours	54 hours
Lecture-Tutorial-Lab	2-0-0

CO No.	**COURSE OUTCOME** *Upon completion of this course, students*	**Cognitive Level**	**PSO No.**
1	Become aware of pollution caused by industries	U	PSO13
2	Recognise the necessity of green approaches to protect nature	R	PSO14
3	Discuss about sustainable development and logical use of natural resourses	U	PSO14
4	Motivated to more ecofriendly life style	A	PSO21
5	Realises the importance of microscsale approaches and nano material research	U	PSO13 PSO21

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Green Chemistry-I**	**9**	**1-5**
1.1	Role of Chemical Industries in polluting the environment	1	
1.2	Limitations of conventional waste management and pollution prevention-birth of green chemistry	2	
1.3	introduction to the principles of green chemistry-atom economy calculation(simple reactions)	2	
1.4	-production of Ibuprofen-less hazardous chemical syntheses, designing safer chemicals	2	
1.5	Bhopal gas tragedy- new greener syntheses, safer solvents and auxiliaries ionic liquids-super critical fluids CO2 and H2O, advantages of SCFs	2	
2	**Green Chemistry-II**	**9**	**1-5**
2.1	Design for energy efficiency-principle of microwave oven, microwave assisted organic syntheses, simple examples-	2	
2.2	renewable feedstock- biodiesel, preparation, advantages	2	
2.3	catalysis, green catalysts- inherently safer chemistry for accident prevention	2	
2.4	Green chemistry practices in research, educational and commercial laboratories- lab safety signs-introduction to micro scale experiments.	1	
3	**Chemistry of Nano Materials - I**	**9**	**2**
3.1	Classifications of nanostructured materials, nano particles; quantum dots, nanowires, ultra – thinfilms multilayered materials.	2	
3.2	Synthesis of nanometre scale particles of colloidal semiconductors such as TiO2, CdS, ZnO, BaTiO3, by wet chemical methods, hydrothermal methods, and pyrolytic or high temperature methods.	2	
3.3	Carbon nanotubes fullerenes and graphene.	2	
	Synthesis and purification of carbon nanotubes, Singlewalled carbon nanotubes and multiwalled carbon nanotubes, Structure-property relationships.	3	
4	**Chemistry of Nano materials - II**	**9**	**2**
4.1	Preparation of self-assembled monolayers, core shell nanoparticles and quantum dots.	2	
4.2	Properties of nanoparticles: optical, magnetic, mechanical, thermal and catalytic properties,	2	
4.3	characterisation of nano particles by AFM, STM and	2	

	SEM. Applications of nanomaterials:		

4.3	Characterisation of nano particles by AFM, STM and SEM. Applications of nanomaterials:	2	
4.4	Potential uses of nanomaterials in electronics, robotics, computers, sensors, mobile electronic devices, vehicles and transportation. Medical applications of nanomaterials	3	
5	**Molecular recognition**	**9**	**5**
5.1	The concepts of molecular recognition, host, guest and receptor systems.	**3**	
5.2	Forces involved in molecular recognition.	**3**	
5.3	Hydrogen bonding, ionic bonding, p-stacking, vander Waal's and hydrophobic interactions.	**3**	
6	**Supramolecularchemistry**	**9**	5
6.1	Introduction to molecular receptors-design principles	**2**	
6.2	Tweezers, Cryptands and Carcerands, Cyclophanes, Cyclodextrins and Calixarenes	**2**	
6.3	Typical examples Molecular recognition and catalysis-catalysis by cation receptors, anion receptors and cyclophanes	**3**	
6.4	Molecular recognition in DNA and protein structure	**2**	

References

1. Anastas. P.T.; Warner, J.C.,"Green Chemistry; Theory and Practice", Oxford University Press; Oxford , U.K.,1998.

2. Lancaster,M,"Green Chemistry; An Introductory Text",Royal Society of Chemistry; Cambridge,U K, 2003

3. Rashmi Sanghi and M.M Srivasthava, "Green Chemistry Environment Friendly Alternatives", Narosa Publishing House,2006

4. T.Pradeep, "NANO: The Essentials", 'McGraw-Hill Education'.
5. D. Nasipuri "Stereochemistry of Organic Compounds", Wiley
6. J M Lehn, "Supramolecular Chemistry", V C H.
7. H Vogtle, "Supramolecular Chemistry", W iley.
8. P S Kalsi, J P Kalsi,"Bioorganic, Bioinorganic and supramolecular Chemistry", New Age International

UNIVERSITY OF KERALA
Model Question Paper B.Sc Chemistry Programme
2020 Admission Onwards
SEMESTER VI Course Code CH1651.1 Credit 2
ELECTIVE COURSE
SUPRAMOLECULAR, NANO
PARTICLES AND GREEN CHEMISTRY

Time: 3 Hours **Maximum marks : 80**

SECTION A

Answer all questions. Each question carries 1 mark.

1. Define atom economy.
2. Write an example of green catalyst.
3. Between an addition and elimination reaction which is having a better atom economy?
4. Name a colloidal semiconductor.
5. Expand SAMS.
6. What is graphene?
7. Name the different allotropes of carbon.
8 . Name any two molecular receptors.
9. What are cryptands?
10. Define π stacking.

SECTION B

Answer any eight questions. Each question carries 2 marks.

11. Write a note on Bhopal Tragedy.
12. Define Carbon efficiency.
13. Explain the limitations of conventional waste management.
14. Give any four lab safety signs with its meaning.
15.Write about the wet method of preparing colloidal semiconductors.
16.What are the magnetic properties of nanoparticles.
17. Briefly describe the catalytic properties of nano materials.
18. Explain the different types of SWCNTs.
19. What are the non-covalent bonds involved in molecular recognition?
20. Define host and guest in supramolecular chemistry.
21. Write a note on Cyclodextrins.
22. What are molecular tweezers?

SECTION C

Answer any six questions. Each question carries 4 marks.

23. What are secondary electrons?
24. Write a note on safer solvents and auxiliaries.
25. Explain ionic liquids.
26. Write a note on biodiesel.
27. Describe the synthesis of quantum dots and mention its optical properties.
28. Explain the preperation of SAMs.
29 Discuss the potential applications of nanomaterials in computers, sensors, and Medical

applications.
30. Discuss the various aspects of molecular recognition involved in the structure of DNA.
31 Write notes on cation and anion receptors.

SECTION D

Answer any two questions. Each question carries 15 marks.

32. (a)Explain the twelve principles of green chemistry. (10marks)
(b) Explain microwave assisted organic syntheses with an example. (5marks)
33. (a) Explain the principle and working of SEM
(b) Write a note on synthesis and purification of carbon nanotubes.
34. Write short notes on (a) calixarenes (b) Cyclodextrins (c) cyclophanes.
35. Write short notes on(a) molecular recognition(b) preparation biodiesel(c)non bonded interactions.

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME

SEMESTER V1 **COURSE CODE CH1651.2**
ELECTIVE COURSE
COMPUTATIONAL, COMBINATORIAL AND PHYSICAL ORGANIC CHEMISTRY

Semester	V1
Course	Elective Course
Course name	**COMPUTATIONAL, COMBINATORIAL AND PHYSICAL ORGANIC CHEMISTRY**
Course Code	**CH1651.2**
Credit	2
Hours	54 hours
Lecture-Tutorial-Lab	2-0-0

CO No.	COURSE OUTCOME *Upon completion of this course, students*	Cognitive Level	PSO No.
1	Understand the use of Chemistry related softwares	U	PSO5
2	Discuss computational methods and combinatorial synthesis	U	PSO5
3	Classify reaction mechanism with suitable examples	U	PSO10
4	Understand the role of Thermodynamic functions in the study of Kinetics	U	PSO11
5	Correlate structure with reactivity	A	PSO11

MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Introduction to Computational Chemistry**	**9**	**1**
1.1	Web resources in chemistry learning,	1	
1.2	Introduction to structure drawing, spread sheet and chemistry related softwares.	2	
1.3	Approximate methods in Quantum mechanics- Many electron atoms: Self consistent field method. Chemical bonding:	3	
1.4	Perturbation theory and variational principle. MO theory of hydrogen molecule ion. VB theory of hydrogen. Concept of resonance.	3	
2	**Computational Methods**	**9**	**1,2**
2.1	Brief description of computational methods: ab initio, semi empirical, DFT and molecular mechanics.	2	
2.2	RHF, ROHF &UHF methods Basis sets, STO &GTO	2	
2.3	Z-matrix of simple molecules H2O, CO2 & NH3	3	
2.4	Common computational and visualization softwares	2	
3	**Combinatorial Chemistry Introduction**	**9**	**2**
3.1	Early development, what is combinatorial synthesis, library synthesis on resin beads,	3	
3.2	solid phase chemistry, Merrifield peptide synthesis, support for solid phase synthesis,	3	
3.3	parallel synthesis and mix and split library synthesis.	3	
4	**Combinatorial Synthesis**	**9**	**2**
4.1	Libraries on multipins, libraries on wicks, libraries on		

	laminar solid phases (no detail study).		
4.2	Solution phase library synthesis- eg.-, Hantzsch synthesis of aminothiazole, peptide and nonpeptide libraries(eg. only),.		
4.3	Applications of combinatorial chemistry in drug discovery		
5	**Introduction to Physical organic chemistry**	**9**	**3-5**
5.1	Classification of mechanism with suitable examples. Bond breaking mode – Heterolytic, Homolytic and Pericyclic Nature of reaction –	2	
5.2	Substitution, Elimination, Addition, Pericyclic and Rearrangement reactions. Nature of reagent – Nucleophilic, Electrophilic and Free radical.	2	
5.3	Thermodynamic and Kinetic control of reaction. The Hammond postulate (qualitative treatment). The thermodynamic functions – ΔH, ΔS and ΔG and their determination from Arrhenius equation. Role of above thermodynamic functions in mechanistic probe of reactions.	3	
5.4	Methods of determining mechanism, Identification of products, Detection of intermediates, Catalytic study, Isotopic labeling, Stereochemical evidence, Kinetic evidence	2	
6	**Correlation of structure with reactivity**	**9**	**3-5**
6.1	The effect of substrate structure – Differences in mechanism for primary, secondary and tertiary systems.	2	
6.2	The effect of a and ß substitution – the +I and –I effects (Inductive effects of electron releasing and electron withdrawing groups at a and ß positions).	1	
6.3	Substitution of mono and bicyclic (at a and ß positions) aromatic rings (Resonance effects). Hyperconjugate effects.	2	
6.4	Neighbouring group effect nonclassical bridge head	2	
6.5	Steric effects – B-strain, Strain in aliphatic cyclic systems. Steric inhibition of resonance – ortho effect and a-effect, The Hammett equations	2	

References :

1. Guy H. Grant and W.Graham Richards, “Computational Chemistry”, OCP(29) 2. Christopher J. Cramer, John Wiley,“Essentials of Computational Chemistry”,
3. Frank Jenson, “Computational Chemistry”.
4. Ira N. Levine,“ Quantum Chemistry”.
5. David Young, “Computational Chemistry A Practical Guide for Applying

Techniques to Real World Problems", Wiley Interscience.

6. N K Turret, "Combinatorial Chemistry", (Oxford Publication)
7. Jerry March "Advanced Organic chemistry", 3rd edition, Wiely International (Indian edn New Delhi) Chapter 6 and 10
8. P S Kalsi," Text of organic Chemistry", Mac million India ltd 1999 Ch 2
9. M K Jain and S C Sharma," Modern Organic Chemistry" , Vishal Publishing Co, 2004, Chapter 3,4, 15

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Model Question Paper of BSc Chemistry Programme
2020 Admission onwards
SEMESTER VI - Course Code CH1651 .2 Credit 2
ELECTIVE COURSE

COMPUTATIONAL, COMBINATORIAL AND PHYSICAL ORGANIC CHEMISTRY

Time: 3 Hours **Marks : 80**

SECTION A

Answer all questions.
Each question carries 1 mark.

1. Write Arrhenius expression and explain the terms.
2. What is RHF?
3. What are nucleophilic reagents? Give examples.
4. Name any two structure drawing softwares.
5. Write Hammett equation.
6. Give one example solution phase library synthesis.
7. Write any two examples for polyamide resin.
8. Propene is more stable than ethane. Why?
9. What is combinatorial synthesis?
10. Write any two examples for heterolytic bond breaking reaction.

1 X 10 = 10 Mark

SECTION B

Answer any eight questions from the following. Each question carries 2 marks.

11. What are the web resources in learning Chemistry?
12. What is a basis set ?
13. What are the major mechanisms of organic reactions ?
14. Distinguish between STO & GTO.
15. Explain the advantages of combinatorial synthesis.

16. What is meant by electrocyclic reaction. Give one example.
17. What are the applications of combinatorial synthesis.
18. What are multipins used in combinatorial synthesis
19. Explain kinetic requirements of reaction.
20. Explain Hammond postulate.
21. Explain +I and – I effects.
22. Explain isotopic labeling in the study of organic reactions. **2× 8 = 16**

SECTION C

Answer any six questions from the following. Each question carries 4 marks.

23. Draw the Z matrix of H2O & NH3
24. Why SEM is called parametrisation method
25. How can a eight – member dipeptide library is synthesized ?
26. Explain non-peptide libraries.
27. How are the intermediates detected?
28. Explain substitution reactions of naphthalene.
29. Explain the effect of leaving group in aliphatic substitution reactions.
30. What is self consistent field method.
31. Explain mix and split library synthesis. **6 X 4 = 24 Marks**

SECTION D

Answer any two questions from the following. Each question carries

32. (a)Explain MO theory of hydrogen molecule ion.
(b)Explain VB theory of hydrogen .
10 + 5 = 15 Marks
33. (a)Explain neighboring group participation with examples.
(b)Explain sterric effects and B-strain. 7.5 + 7.5 = 15 Marks

34. (a) How does the structure of substrate affect the aliphatic nucleophilic substitution?
(b) Comment on the effect of substituent on nucleophilic substitution reaction.
7.5 + 7.5 = 15 Marks

35. (a) Write a brief description of methods(a) ab initio(b)DFT (c) molecular mechanics.

5+ 5+ 5 = 15 Marks

UNIVERSITY OF KRALA
SYLLABUS FOR B.Sc. CHEMISTRY
FIRST DEGREE PROGRAMME
2020 Admission onwards

Semester	V1
Course	Elective Course
Course name	**POLYMER CHEMISTRY**
Course Code	**CH1651.3**
Credit	2
Hours	54 hours
Lecture-Tutorial-Lab	2-0-0

CO No.	**COURSE OUTCOME** *Upon completion of this course, students*	**Cognitive Level**	**PSO No.**
1	Differentiate between Natural and synthetic polymers	U	PSO14
2	Understand polymerization process of monomeric units	U	PSO12
3	Critically analyse the advantages and disadvantages of polymers	A	PSO12
4	Analyse different Applications of Polymers	A	PSO4
5	Identify the properties of polymers.	U	PSO11
6	Realize the necessity of biodegradable substitutes for a sustainable development	U,A	PSO12 PSO12

MODULE	**COURSE DESCRIPTION**	**Hrs**	**CO No.**
1	**Introduction to polymers**	**9**	**1**
1.1	Brief history of macromolecular science, general characteristics of polymers in comparison with common organic compounds.	2	
1.2	Nomenclatures. Distinction between plastics, elastomers and fibres. Natural polymers- cellulose, silk, gums and resin.	2	
1.3	Types of polymers- thermoplastics and thermosettings, functionality concept. Concept of cross linked polymers.	2	
1.4	Types of polymerization- addition, condensation, ionic, co-ordination. Addition – polymerisation – mechanism,	3	

	initiation , propagation and termination processes, initiators, inhibitors. Mechanism of ionic polymerization		
2	**Methods of polymerization**	**9**	**2**
2.1	Methods of polymerization-bulk, suspension, emulsion, solution necessity of copolymers and copolymerization, blocks and graft copolymers.	2	
2.2	Thermosetting polymers-examples, synthesis, chemistry, properties and applications of phenol- formaldehyde resins	2	
2.3	synthesis, chemistry, properties and applications of amino resins, urea-formaldehyde and melamine-formaldehyde resins	2	
2.4	synthesis, chemistry, properties and applications of polyurethanes epoxy resins- grades of epoxy resins, curing process and its importance with mechanism , poly carbonates, silicones	3	
3	**Elastomers-I**	**9**	**5**
3.1	thermoplastic polymers, Polyisoprene, polybutadiene, neoprene.	2	
3.2	synthesis, chemistry, properties and applications of Polyolefins, polyethylenes_HDPE, LDP,LLDP,	4	
3.3	synthesis, chemistry, properties and applications of polyvinyl chloride-grades of PVC, Teflon, Polystyrene-homopolymers, copolymers such as SBR, ABS, SAN.	3	
4	**Elastomers 2** .	**9**	**2**
4.1	Vinyl polymers- polyvinyl acetate and its modifications like PVA, PVB and polyacetals	3	
4.2	Polyamides - nylon -6, nylon-66 and other nylons.	2	
4.3	Poly ethers and poly esters, terephthalates. Cellulosics such as esters, ethers, acetates, butyrates, nitrate, CMC; regenerated cellulose	4	
5	**Experimental methods-1**	**9**	**2**
5.1	Molecular weight and molecular weight distribution – number , weight and viscosity average molecular weights of polymers	2	
5.2	methods of determining molecular weight, practical significance of molecular weight distribution, size of polymers.	2	
5.3	Introductory concepts of kinetics of polymerization and Carother's relation.	3	
5.4	Glassy state, glass transition temperature, TGA, factors affecting GTT, crystallinity in polymers.	2	

6	**Experimental Methods –II**	**9**	**2**
6.1	Viscosity, solubility, optical properties, electrical properties, thermal properties, mechanical properties of polymers	2	
6.2	Degradation of polymers by thermal, oxidative ,mechanical and chemical methods.	2	
6.3	Polymer processing- compression moulding, casting, extrusion , fibre spinning, injection moulding, thermoforming, vulcanization of elastomers	2	
6.4	Polymer industry in India.	1	
6.5	**Overall advantages and disadvantages of using synthetic polymers**	**1**	**3,6**
6.6	Necessity of biodegradable substitutes for a sustainable development	1	

References

1. Bllmeyer, “Textbook of polymer science”, John Wiley and Sons

2. D.D. Deshpande, “Physical chemistry of macromolecules”, Vishal publications,

   New Delhi, 1985

3. V.R. Gowariker, N.V. Viswanathan and J.Sreethan, “Polymer Science”, Wiley Eastern Ltd, 1986
4. K.J. Saunders, Organic Polymer Chemistry, 2nd Edn., Chapman and Hall, London, 1988
5. Gowri Sankar Misra, Introductory Polymer Chemistry, New Age International, New Delhi
6. P Ghosh, Polymer Science & Technology, Tata McGraw Hill Eduction, 1991
7. Jeol R.Fried, Polymer Science & Technology, Prentice Hall of India (P) Ltd. New Delhi, 1999.

UNIVERSITY OF KERALA

Model Question Paper of BSc Chemistry Programme

2020 Admission onwards

Course Code CH1651.3

SEMESTER VI ELECTIVE COURSE

POLYMER CHEMISTRY

Time: Three Hours **Maximum Marks: 80**

SECTION A

Each question carries 1 mark (Answer in one word\sentence)
Answer all questions

1. What are elastomers?
2. How is melamine-formaldehyde resin prepared?
3. Write a note on Nylon 66.
4. Mention the monomer unit of neoprene.
5. Define copolymers.
6. Explain extrusion.
7. Define fibre spinning.
8. Explain emulsion polymerisation
9. Give two examples of natural polymers 10. What is SBR and SAN?

SECTION B

Answer any eight questions. Each question carries 2 marks.

11. Write a note on Condensation polymerisation.
12. Explain the synthesis of HDPE.
13. Write a note on Polyurethanes.
14. Explain number, weight and viscosity average molecular weight.
15. Define graft copolymers.
16. Explain the preparation of PVC.
17. What are epoxy resins?
18. Explain the vulcanisation of ealstomers.
19. Write the mechanism of ionic polymerisation.
20. Explain the chemical methods of degradation of polymers.
21. Explain polymer processing.
22. Distinguish between thermoplastics and thermosetting plastics.

SECTION C

Answer any six questions. Each question carries 4 marks

23. Write a short note on silicones.
24. What are the methods of determining molar mass?
25. Write notes on (1) compression (2) moulding (3) casting
26. Discuss the synthesis and application of Teflon
27. Describe the role of initiators and inhibitors in addition polymerisation
28. Distinguish between plastics, elastomers and fibres
29. Describe the TGA of polymers.
30. Discuss the various aspects of molecular recognition involved in the structure of DNA.
31. Explain kinetics of polymerization and Carothers relation

SECTION D

Answer any two questions. Each question carries 15 marks.

32. Discuss the methods of
    (a) Determining molecular weight (9+6)
    (b)Practical significance of molecular weight distribution
33. Write a note on (6+9)
    (a) vinyl polymers
    (b) discuss about the methods of synthesis of PVA, PVB and Polyacetals.
34. (a) Explain crystallinity in polymers (6+9)
    (b) Explain thermal, electrical and mechanical properties of polymers.
35. Write notes on (5+5+5)
    (a) compression (b) moulding (c) casting

UNIVERSITY OF KERALA

Model Question Paper for BSc Chemistry Programme

2020 Admission onwards

Semester	V1
Course	Elective Course
Course name	**BIO CHEMISTRY**
Course Code	**CH1651.4**
Credit	2
Hours	54 hours
Lecture-Tutorial-Lab	2-0-0

CO No.	COURSE OUTCOME *Upon completion of this course, students*	Cognitive Level	PSO No.
1	Recognise the constituents of blood and blood coagulation factors	R,U	PSO21
2	Become aware of the role of organs, in maintaining health	U	PSO21
3	Realise applications of Analytical techniques and instruments for biochemical studies	U	PSO9

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MODULE	COURSE DESCRIPTION	Hrs	CO No.
1	**Blood** Constituents of blood cells and plasma, plasma proteins, albumin and globular - lipoproteins, functions (Details not expected), Coagulation - 'Coagulation factors, Hemoglobin - functions, Structure of hemoglobin, abnormal hemoglobin	9	1
2	**Respiration** Chemical and physiological events, affecting diffusion of O2 and CO2 during respiration, Transport of Oxygen in Blood O2 dissociation curve, Interrelationship between O2 and CO2 transport.	9	2
3	**Kidney Function** Body water balance, buffers in blood, Formation of Urine, Kidney function, Renal Threshold, Constituents of Urine, diseases associated with Kidney function	9	2
4	**Nutrition** Measurement of Energy Value of food , Calorific value, caloric requirement, Kilocalorie. Basal metabolic rate (BMR):- Significance, Condition, factors , measurement	9	3
5	**Digestion and Absorption of Food** Outline study of digestion and absorption of Carbohydrates, proteins, fats and enzymes involved , composition and functions of bile - Bile pigments, Bile acids, Bile salts.	9	2
6	**BiochemicalTechniques** Chromatography - Ion exchange, adsorption paper, TLC, GLC, affinity, Gel filtration Electrophoresis - paper, gel, ultracentrifugation	9	3

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1.Gyton,"Text Book of Medical Physiology".

2. Ganog,"Text Book of Medical Physiology ".
3. David Randall, "Physiology".
4. Dr. A.C. Deb, "Fundamentals of Biochemistry".
5. Swaminathan, "Advanced Text Book on Food & Nutrition".
6. B. Srilakshmi, "Nutrition Science".

UNIVERSITY OF KERALA
B.Sc Chemistry Programme Model Question Paper

2020 Admission onwards

Semester VI Course Code CH1651 .4 Credit 2
ELECTIVE COURSE
BIOCHEMISTRY

Time: 3 hours **Maximum marks: 80**

SECTION A

Answer all questions (maximum two sentences each question carries 1 mark)

1. What is the normal pH of arterial blood?
2. What is the cause of sickle cell anemia?
3. Give an example for plasma protein.
4. What are anticoagulants?
5. Define BMR?
6. What is the renal threshold value of glucose?
7. What is NPN?
8. What is the calorific value of fat?
9. Name the bile pigments.
10. What is GLC?

(10x1=10 marks)

SECTION B

Answer any eight, each question carries 2 marks

11. Define renal threshold and its significance?
12. What are the normal constituents of urine?
13. What are the different types of hemoglobin?
14. Write a short note on protein digesting enzymes.
15. Draw the structure of heme
16. What are the constituents of blood?
17. What are the functions of plasma protein?
18. What is difference between plasma and serum?
19. What is adsorption chromatograpy?
20. What is the composition of bile?
21. Write about abnormal hemoglobin.
22. Discuss about ion exchange chromatography.

SECTION C

Answer any six each question each question carries 4 marks

23. Explain Oxygen dissociation curve and factors affecting its shift.
24. Describe gel electrophoresis.
25. Explain thin layer chromatography.
26. Explain briefly the buffers in blood.
27. Give an account of diseases affecting kidney function.
28. Discuss about ultracentrifugation.
29. Discuss the physiological events involved in the transport of oxygen and carbon dioxide.
30. Describe briefly about the various blood cells.
31. Briefly explain about lipoproteins and their functions.

(6 x 4 = 24 marks)

SECTION D

Answer any two (essay) Each question carries 15 marks

32.Discuss about
(i) Coagulation factors (ii) Anticoagulants (iii) Mechanism of blood clotting.

33. Discuss about the principle procedure and applications of
(i) SDS PAGE (ii) Affinity chromatography (iii) Gel filtration chromatography

34. Describe
(i) Body water balance (ii) Functions of kidney (iii) Formation of urine.

35. Discuss about the digestion and absorption of
(i) Carbohydrate (ii) Protein (iii) Fat

(15 x 2 =30 marks)

UNIVERSITY OF KERALA

Syllabus for
M. Sc. Programme in Branch III
CHEMISTRY

(Revised Syllabi under Semester System with effect from 2020 Admissions)

PREAMBLE

The syllabi of M.Sc programmes in Chemistry offered in the affiliated colleges of the University under Semester system have been revised and the revised syllabi are to be effective from 2020 admission. There are two independent PG programmes in Chemistry, namely **M.Sc. Programme in Branch III–Chemistry and M.Sc. Programme in Branch IV–Analytical Chemistry**. Both these PG programmes are equivalent in all respect for employment and higher studies. Each of these two PG programmes shall extend over a period of two academic years comprising of four semesters, each of 450 hours in 18 weeks duration. The syllabi and scheme of examinations of these two programmes are detailed below. The theory courses of the first three semesters and the practical courses of the first two semesters of the two programmes are common, and therefore, the examinations of these two PG programmes are to be conducted with common question papers for the first three semesters by a common Board of Examiners. These syllabi are effective from 2020 admission in affiliated colleges of the university.

M.Sc. PROGRAMME IN BRANCH III – CHEMISTRY

(Revised syllabus under semester system with effect from 2020 admission)

SYLLABUS AND SCHEME OF EXAMINATION

Course No and Title		Hours per week		Duration of ESA	Marks for CA	Marks for ESA	Total Marks
		L	P				
SEMESTER I*							
CH 211	Inorganic Chemistry I	5		3	25	75	100
CH 212	Organic Chemistry I	5		3	25	75	100
CH 213	Physical Chemistry I	5		3	25	75	100
CH 214	Inorganic Chemistry Practicals I		3	(To be continued in Semester II)			
CH 215	Organic Chemistry Practicals I		3	(To be continued in Semester II)			
CH 216	Physical Chemistry Practicals I		4	(To be continued in Semester II)			
						Total marks for Semester I	**300**
*Distribution of teaching hours/week: Theory–15 hours, Practical's –10 hours							
SEMESTER II*							
CH 221	Inorganic Chemistry II	5		3	25	75	100
CH 222	Organic Chemistry II	5		3	25	75	100
CH 223	Physical Chemistry II	5		3	25	75	100

CH 214	Inorganic Chemistry Practicals II		3	6	25	75	100
CH 215	Organic Chemistry Practicals II		3	6	25	75	100
CH 216	Physical Chemistry Practicals II		4	6	25	75	100
						Total marks for Semester II	**600**
*Distribution of teaching hours/week: Theory–15 hours, Practical's –10 hours							
SEMESTER III*							
CH 231	Inorganic Chemistry III	5		3	25	75	100
CH 232	Organic Chemistry III	5		3	25	75	100
CH 233	Physical Chemistry III	5		3	25	75	100
CH 234	Inorganic Chemistry Practicals II		3	(To be continued in Semester IV)			
CH 235	Organic Chemistry Practicals II		3	(To be continued in Semester IV)			
CH 236	Physical Chemistry Practicals II		4	(To be continued in Semester IV)			
						Total marks for Semester III	**300**
*Distribution of teaching hours/week: Theory–15 hours, Practical's –10 hours							
SEMESTER IV*							
CH 241	Chemistry of Advanced Materials	5		3	25	75	100
CH 242 (a)	Inorganic Chemistry IV	5		3	25	75	100
CH 242 (b)	Organic Chemistry IV						
CH 242 (c)	Physical Chemistry IV						
CH 234	Inorganic Chemistry Practicals II		3	6	25	75	100
CH 235	Organic Chemistry Practicals II		3	6	25	75	100
CH 236	Physical Chemistry Practicals II		4	6	25	75	100
CH 243 (a)	Dissertation**					50	50
CH 243 (b)	Visit to R&D Centre					5	5
Comprehensive viva-voce						45	45
						Total marks for Semester IV	**600**
						Grand Total (for semesters I – IV)	**1800**
*Distribution of teaching hours/week: Theory–10 hours, Practical's –10 hours , 5 hours for discussion on project							

** 10 marks out of the 50 marks for dissertation will be for dissertation viva-voce. The remaining 40 marks is to be distributed as follows_
Introduction to the work/ Statement of the Problem – 5, Review of Literature – 5 Materials and Methods – 5, Results and Discussion – 15, Language and style of presentation – 2, References – 3, Quality and Innovation – 5.

Programme Specific Outcomes

PSO 1 Develop a better understanding of the current chemical principles, methods and theories with the ability to critically analyse at an advanced level.

PSO 2 Acquire solid knowledge of classical and modern experimental techniques and interpretation of results; thereby acquire the ability to plan and carry out independent projects.

PSO 3 Develop the qualities of time management and organization, planning and executing experiments.

PSO 4 Have a good level of awareness of the problems associated with health, safety and environment.

PSO 5 Understand how chemistry relates to the real world and be able to communicate their understanding of chemical principles to a lay audience and as well apply the knowledge when situation warrants.

PSO 6 Learn to search scientific literature and databases, extract and retrieve the required information and apply it in an appropriate manner.

PSO 7 Demonstrate proficiency in undertaking individual and/or team-based laboratory investigations using appropriate apparatus and safe laboratory practices.

PSO 8 Develop analytical solutions to a diversity of chemical problems identified from application contexts; critically analyse and interpret qualitative & quantitative chemical information's.

PSO 9 Set the scene to make use of the wide range of career options open to chemistry graduates.

M.Sc. PROGRAMME IN BRANCH III – CHEMISTRY

(Revised syllabus Under Semester System w.e.f. 2020 Admission)

SEMESTER I

CH 211 INORGANIC CHEMISTRY I

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	employ crystal field theory in analysing the splitting of d orbitals in octahedral, tetragonal, square planar, tetrahedral, trigonal bipyramidal and square pyramidal fields, calculate Crystal Field Stabilization Energy and Interpret Octahedral Site Stabilization Energy.	Ap, An U	1
2.	apply Jahn-Teller theorem and demonstrate evidence for JT effect, static and dynamic JT effect.	Ap	1
3.	illustrate MOT for octahedral and tetrahedral complexes with and without pi bonds and construct MO diagrams.	An C	1
4.	critically evaluate data from a variety of analytical chemistry techniques and apply knowledge of the statistical analysis of data.	Ap, E	1, 2
5.	interpret complexometric titrations, redox titrations, gravimetric titrimetry and titrations in non-aqueous solvents.	E, U	1, 2
6.	apply TG, DTA and DSC in the study of metal complexes.	Ap, An	1, 2
7.	explain the functioning of the frontier materials in inorganic chemistry like Solid Electrolytes, Solid oxide fuel cells, Rechargeable battery materials, Molecular materials and fullerides.	U	1, 4, 6
8.	explain the preparation, properties and structure of isopoly acids of Mo, W and V and heteropoly acids of Mo and W.	U	1
9.	explain preparation and properties of xenon fluorides, and noble gas compounds, aluminosilicates, zeolites and silicones and identify the importance of shape selectivity.	U	1
10.	identify the chemical processes occurring naturally in earth's atmospheric, aquatic and soil environments and evaluates the impacts of human perturbations to these processes.	An, E	4

PSO–Programme Specific Outcome CO–Course Outcome

Cognitive Level: R–Remember U–Understanding Ap–Apply An–Analyse E–Evaluate C–Create

Module	Course Description	No. of Hrs	CO No.
1.0	**Coordination chemistry-I: Theories of metal complexes**	**18**	
1.1	Crystal field theory: Splitting of d orbitals in octahedral, tetragonal, square planar, tetrahedral, trigonal bipyramidal and square pyramidal fields.	4	1
1.2	Jahn-Teller theorem, evidence for JT effect, static and dynamic JT effect.	2	2
1.3	Crystal Field Stabilization Energy. CFSE for d^1 to d^{10} systems. Octahedral Site Stabilization Energy. Factors affecting the splitting parameter.	4	1
1.4	Spectrochemical series. Evidence of covalency in Metal-Ligand bond, introduction to Ligand field theory.	2	1
1.5	Molecular Orbital Theory. Sigma and pi bondings in complexes. MO diagrams of octahedral and tetrahedral complexes with and without pi bonds.	4	3
1.6	Experimental evidence of pi bond on the stability of sigma bond. Nephelauxetic effect.	2	3
2.0	**Analytical principles**	**18**	
2.1	Evaluation of analytical data: Accuracy and precision. Standard deviation, variance and coefficient of variation. Student 't' test, 'Q' test, and 'F' test. Confidence limits.	2	4
2.2	Errors: Classification, distribution, propagation, causes and minimization of errors. Significant figures and computation rules.	2	4
2.3	Correlation analysis: Scatter diagram. Correlation coefficient, r. Calculation of r by the method of least squares.	2	4
2.4	Volumetric methods: Classification of reactions in volumetry. Theory of indicators.	2	4
2.5	Complexometric titrations: Titration using EDTA-direct and back titration methods. Precipitation titrations. Redox titrations.	4	5
2.6	Titrations in non-aqueous solvents. Organic reagents used in gravimetry: Oxine, dimethylglyoxime and cupferron.	2	5
2.7	Applications of TG, DTA and DSC in the study of metal complexes.	4	6
3.0	**Frontiers in Inorganic Chemistry**	**18**	
3.1	Solid Electrolytes: Mixed oxides, cationic, anionic solid electrolytes, mixed ionic-electronic conductors,	4	7
3.2	Solid Oxide Fuel Cells (SOFC), Rechargeable battery	3	7

	materials.		
3.3	Solid state chemistry of metal nitrides and fluorides, chalcogenides, intercalation chemistry and metal-rich phases.	4	7
3.4	Inorganic pigments, Inorganic phosphors.	3	7
3.5	Molecular materials and fullerides, basic idea of molecular materials chemistry like One dimensional metals, Molecular magnets and Inorganic liquid crystals.	4	7
4.0	**Isopoly & Heteropoly acids, Silicon-Oxygen compounds, Xenon compounds**	**18**	
4.1	Isopoly: Preparation, properties and structure of isopoly acids of Mo,W and V.	4	8
4.2	Heteropoly acids: Heteropoly acids of Mo and W. Keggin Structure, Keggin anions, Polyoxometalates .	5	8
4.3	Silicon-oxygen compounds: Aluminosilicates, Zeolites as microporous materials and molecular sieves, Silicones and Polysiloxanes.	5	9
4.4	Xenon fluorides, Structure of XeF_2 (MO theory only), Perxenate ion, Organo xenon compounds, Coordination compounds of Xenon.	4	9
5.0	**Chemistry of Natural Environmental Processes**	**18**	
5.1	Chemistry of processes in atmosphere: Composition of the atmosphere. Automobile pollutants and the catalytic converter. Photochemical smog. Chemistry of the stratosphere. Catalytic destruction of ozone. Depletion of the ozone layer. Hazards of common air pollutants on the human health.	6	10
5.2	Chemistry of processes in hydrosphere: The hydrologic cycle. Cycling and purification. The unique properties of water. Acid-base properties.	6	10
5.3	Chemistry of processes in Lithosphere: Redox status in soil. pE, pH predominance diagrams for redox sensitive elements Fe and Cr. Acidity in soil materials. Acid neutralization capacity and the quantification of the soil acidity. Ion speciation in soil solution. Cation exchange capacity and exchange phase composition.	6	10

References

1. F. A. Cotton and G. Wilkinson, Advanced Inorganic Chemistry, John Wiley and Sons, 6th edition, 1999.
2. J. E. Huheey, Inorganic Chemistry- Principles of Structure and Reactivity, Harper Collins College Publishing, 4th edition, 2011.
3. K. F. Purcell and J. C. Kotz, Inorganic Chemistry, Saunders, 1977.
4. S. F. A. Kettle, Physical Inorganic Chemistry, Oxford University Press, 1st edition, 1998.

5. Shriver and Atkins, Inorganic Chemistry, Oxford University Press, 2010.
6. A. I. Vogel, A Text Book of Quantitative Inorganic Analysis, Longman, 5th edition, 1989.
7. D. A. Skoog, D. M. West and F. J. Holler, Fundamentals of Analytical Chemistry, Saunders College Publishing, 7th edition, 1996.
8. D. A. Skoog and D. M. West, Principles of Instrumental Analysis, Saunders College Publishing, 5th edition, 1998.
9. F.A. Cotton, Chemical Applications of Group Theory, Wiley Eastern, 3rd edition, 2009.
10. A. S. Kunju and G. Krishnan, Group Theory and its Applications in Chemistry, PHI Learning, 2010.
11. R. L. Carter, Molecular Symmetry and Group Theory, John Wiley& Sons, 1998.
12. E. James Girard, Principles of Environmental Chemistry, Jones and Bartlett Publishers, 3rd Edition, 2013
13. H.V. Jadhav, Elements of Environmental Chemistry, Himalya Publication House, 2010.
14. E. Michael Essington, Soil and water Chemistry, CRC Press, 2nd edition, 2015.

CH 212 ORGANIC CHEMISTRY I

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	write down the IUPAC name of polycyclic, spirocyclic and heterocyclic compounds and draw the structures from the IUPAC name of these compounds.	U	1
2.	determine R and S, P and M, E and Z configuration of compounds with chiral centres, biphenyls, allenes, spiranes and draw the configurations in dash and wedge formula, or zig –zag configurations.	E	1
3.	detect prochirality in a compound and explain relevance of prochirality .	U, An	1
4.	explain chiral centre, chiral axis and chiral plane with examples, stability of conformations, stereoselective and stereospecific reactions.	An, E	1
5.	calculate Cotton effect of a compound from its structure and configuration.	E	1
6.	explain different methods for generation of free radical and different types of free radical reactions- Predict the products in a free radical reaction.	U, An	1
7.	describe different types mechanism of substitution, elimination, hydrolysis and addition reactions.	Ap	1
8.	differentiate the rate, mechanism and stereochemistry influenced by solvent, substrate structure, intermediate stability.	An	1
9.	predict the products or reactants or reagents in selected	U	1

	types of reactions.		
10.	design the mechanism of selected reactions.	C	1

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Module	Course Description	No. of Hrs	CO No.
1.0	**Stereochemistry**	**18**	
1.1	Nomenclature of organic compounds - Cyclic, fused polycyclic and bridged polycyclic hydrocarbons, bridged and fused hydrocarbon systems, Spirocyclic hydrocarbon systems, Heterocyclic systems containing Nitrogen and Oxygen.	3	1
1.2	Introduction to molecular symmetry and chirality, axial chirality, planar chirality and helicity, relative configuration, stereochemical nomenclature, R and S, E and Z (use only 3D formula, dash and wedge).	3	2
1.3	Prostereoisomerism, stereotopicity & stereoprojections. Prochiral centre and prochiral faces - Pro R and Pro S, Re face and Si face, Importance of prochirality in biological systems.	3	3
1.4	Axial stereochemistry: atropisomerism and its designation - biphenyls, allenes, spiranes- M and P configurations. Stereoselectivity: enantioselectivity, diastereoselectivity & stereoconvergence. Stereospecific and stereoselective synthesis.	2	4
1.5	Application of Cram's rule, Felkin–Ahn model. Basic introduction to chiral separation methods and estimation of enantiomeric excess, chiral pool, chiral auxiliary, chiral reagents, BINAP.	2	4
1.6	Conformational analysis of substituted cyclohexane, decalin and biased systems. Effect of conformation on reactivity of cyclohexanes.	2	4
1.7	Introduction to ORD, CD - their application in assigning configuration. Sector rules such as octant and axial haloketone rules. Cotton effect.	2	5
1.8	Importance of stereochemistry in drugs-Pthalidomide, Dopa, Ibuprofen.	1	2
2.0	**Reactions Involving Free Radicals, Nitrenes and Carbenes**	**18**	
2.1	Free radical Structure, stability and reactivity, Preparation of free radicals- Triphenyl methyl, TEMPO, AIBN, Dibenzoyl peroxide, NBS , Tributyl Tinhydride and AIBN.	5	6
2.2	Free radical reactions- Chlorination of alkane, addition of HX, SRN1 mechanism, Gomberg reaction, Pschorr	5	6

	ring closure, Hunsdieckers reaction, Ullman reaction, Kolbes electrolytic reaction.		
2.3	Acyloin condensation, Alkyne coupling reactions,. Mc Murry reaction, Pinacol coupling reaction.	3	6
2.4	Structure, formation, stability and reactions of carbenes and nitrenes (rearrangement reactions excluded).	5	6
3.0	**Nucleophilic substitution reaction**	**18**	
3.1	Nucleophilic substitution at sp^3 carbon - S_N1 and S_N2 mechanisms. Competition between S_N1 and S_N2 reactions. Walden inversion, stereochemistry. Effect of solvent, leaving group and substrate structure on rates of S_N1 and S_N2 substitutions.	4	7, 8
3.2	Neighbouring group participation, Nonclassical carbocations, S_N1', S_N2', S_Ni mechanisms.	3	7, 8
3.3	Mitsunobu reaction, Mechanism of esterification and ester hydrolysis-acid catalysed and base catalysed reactions.	3	7, 8
3.4	Aromatic Substitution reactions - Electrophilic substitution: mechanism and evidence- Reactions involving nitrogen, sulphur, carbon, halogen and oxygen electrophiles. Reimer-Tiemann, Vilsmeier-Haack reactions.	4	7, 8
3.5	Directive and rate controlling factors in aromatics with one or more substituents. Aromatic Nucleophilic Substitution reactions - S_N1, S_NAr, Elimination – Addition reactions (benzyne), evidence with examples, Chichibabin reaction.	4	7, 8
4.0	**Addition Reactions**	**18**	
4.1	Addition of H_2O, X_2, HX, and boranes to C=C systems, (hydroboration followed by oxidation only), stereo aspects, effect of substituents on the rate of additions, iodo lactonisation, one or two examples.	5	9, 10
4.2	Prilezhaev reactions. Cis and trans hydroxylation of cycloalkenes. Nucleophilic addition to activated C=C systems. Michael addition and Robinson Annulation.	5	9, 10
4.3	Aldol condensation (normal, crossed and directed), evidence for normal Aldol condensation. Stork enamine, Cannizzaro, Perkin, Ritter, Stobbe, Knoevenagel, Darzen, Reformatsky and benzoin condensations.	4	9, 10
4.4	Grignard, Mannich, Thorpe reactions, Dieckmann condensation, sulfur ylides (stabilized and unstabilised)-direct and conjugated addition to carbonyl. (Mechanisms expected for all reactions)	4	9, 10

5.0	**Elimination Reactions**	**18**	
5.1	Elimination reactions leading to C=C bond formation and their mechanisms. E_1, E_2 and E_1cb mechanisms.	5	9, 10
5.2	Stereo aspects of C=C bond formation in cyclic and acylic systems. Regioselectivity in elimination, Hoffmann and Saytzeff elimination. Effect of basicity, temperature, leaving group and substrate structure**.**	5	9, 10
5.3	Elimination vs substitution, Shapiro reaction, Peterson and Julia olefination, Wittig and Wittig - Horner reaction-stereochemistry.	4	9, 10
5.4	Cis elimination-esters, sulfoxides, selenoxides, Chugaev reaction, Cope elimination, Stereo aspects of cis elimination - cyclic bcyclic systems Sodium in liquid ammonia and Lindlars catalyst in conversion of alkynes to alkenes.	4	9, 10

References

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2. P. S. Kalsi, Stereochemistry, conformation and mechanism, Eighth Edition, New Age International Publishers, 2015
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6. Maya Shankar Singh, Reactive Intermediates in Organic Chemistry-Structure, mechanism and reactions, Wiley-VCH, 2012.
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18. R. O. C. Norman and J. M. Coxon, Principles of Organic Synthesis CRC press, 1993.

CH 213 PHYSICAL CHEMISTRY I

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	outline the development of quantum mechanics and its tools and apply them in determining the wave functions and energies of moving particles.	U, Ap, An	1
2.	recognize the nature of adsorption and propose theories and choose theoretical and instrumental methods of measurements of surface property.	U, Ap, An	1
3.	understand theory and mechanism of catalytic action.	U	1
4.	correlate thermodynamic properties and apply them in systems.	U, Ap, An	1
5.	understand theories, mechanism and, kinetics of reactions and solve numerical problems.	U, Ap, An	1
6.	identify point groups and construct character table and predict hybridisation and spectral properties of molecules.	U, Ap, C	1

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Module	Course Description	No. of Hrs	CO No.
1.0	**Quantum Chemistry I**	**18**	
1.1	Classical mechanics and its limitations –need of quantum mechanics, de Broglie relation and its experimental proof, uncertainty principle and its consequences.	1	1
1.2	Postulates of quantum mechanics: State function postulate: Born interpretation of the wave function, well behaved functions, orthonormality of wave functions.	2	1
1.3	Operator postulate: Operator algebra, linear and nonlinear operators, Laplacian operator, commuting and non-commuting operators, Hermitian operators and their properties.	2	1
1.4	Eigen value postulate: eigen value equation, eigen functions of commuting operators.	2	1
1.5	Expectation value postulate. Postulate of time Dependent Schrödinger equation, Quantization of angular momentum, quantum mechanical operators corresponding to angular momenta (Lx, Ly, Lz and L^2) - expression for (L_x, L_y, L_z and L^2) in polar coordinates.	2	1
1.6	Application of Quantum mechanics to Exactly Solvable Model Problems Translational motion: free particle in one dimension, particle in a box with infinite potential barrier one	3	1

	dimensional box three-dimensional box and cubical box-degeneracy.		
1.7	Particle with finite potential barriers, one potential barrier, two finite barriers. Quantum mechanical tunnelling (Qualitative concept only).	3	1
1.8	Vibrational motion: one-dimensional harmonic oscillator (complete treatment), Hermite equation (solving by method of power series), Hermite polynomials, recursion relation, wave functions and energies-important features of wave functions, Harmonic oscillator model and molecular vibrations.	3	1
2.0	**Surface Chemistry and Catalysis**	**18**	
2.1	The gas-solid interphase, types of adsorption. Heat of adsorption and its determination, differences between chemisorptions and physisorption.	2	2
2.2	Adsorption isotherms - Freundlich and Langmuir isotherms. Thermodynamic and statistical derivation of Langmuir adsorption isotherm. Multilayer adsorption-the BET theory and Harkins-Jura theory.	3	2
2.3	Determination of surface area of solids-Harkins–Jura absolute method, point B method, Langmuir method and BET method.	2	2
2.4	Adsorption from solutions: Gibb's adsorption equation and its verification. Adsorption with dissociation. Adsorption with interaction between adsorbate molecules.	2	2
2.5	Different types of surfaces, properties of surface phase. Thermodynamics of surface. Surface tension of solutions. Surfactants and micelles. Examination of surfaces- Low Energy Electron Diffraction (LEED).	2	2
2.6	Photoelectron spectroscopy, ESCA, scanning probe microscopy, Auger electron spectroscopy, SEM and TEM.	3	2
2.7	Surface films-different types, surface pressure and its measurement.	2	3
2.8	Catalysis: Mechanism and theories of homogeneous and heterogeneous catalysis. Bimolecular surface reactions. Langmuir–Hinshelwood mechanism. Enzyme catalysis.	2	3
3.0	**Classical Thermodynamics**	**18**	
3.1	Entropy - Dependence of entropy on variables of a system (S, T and V; S, T and P). Thermodynamic equations of state. Criteria for equilibrium and spontaneity, Euler's relation, Gibbs and Helmholtz free energy.	2	4
3.2	Maxwell relations and significance, temperature	2	4

	dependence of free energy, Gibbs Helmholtz equation and its applications.		
3.3	Partial molar quantities - Chemical potential, Gibbs Duhem equations, determination of partial molar properties-partial molar volume and partial molar enthalpy.	2	4
3.4	Fugacity - relation between fugacity and pressure, determination of fugacity of a real gas, variation of fugacity with temperature and pressure. Fugacity of liquid mixtures, fugacity of mixture of gases, Lewis-Randall rule.	3	4
3.5	Activity, activity coefficients, dependence of activity on temperature and pressure. Determination of activity and activity coefficients of electrolytes and non-electrolytes.	2	4
3.6	Thermodynamics of mixing, Duhem-Margules equation, Konowaloff's first and second laws, Henry's law, excess thermodynamic functions-determination of excess enthalpy and volume.	4	4
3.7	Chemical affinity and thermodynamic functions, effect of temperature and pressure on chemical equilibrium-van't Hoff reaction isochore and isotherm.	3	4
4.0	**Chemical kinetics**	**18**	
4.1	Theories of reaction rates: Collision theory and its failure. Transition state theory - Eyring equation. Comparison of the two theories. Thermodynamic formulation of the reaction rates. Potential energy surfaces.	3	5
4.2	Theories of unimolecular reactions - Lindemann theory. Lindemann-Hinshelwood mechanism, qualitative idea of RRKM theory.	2	5
4.3	Kinetics of complex reactions- Parallel reactions, opposing reactions, consecutive reactions and chain reactions, steady state treatment, kinetics of H_2-Cl_2 and H_2-Br_2 reactions, decompositions of ethane, acetaldehyde and N_2O_5. Rice-Herzfeld mechanism, branching chain reactions, Hinshelwood mechanism of chain reactions and explosion.	4	5
4.4	Fast reactions: Relaxation method, relaxation spectrometry, flow method, shock method, fast mixing method, field jump method, pulse method, flash photolysis and NMR method.	3	5
4.5	Reactions in solution: Factors affecting reaction rates in solutions, effect of dielectric constant and ionic strength, cage effect, Bronsted-Bjerrum equation.	3	5
4.6	Kinetic effects: Primary and secondary kinetic salt effect, influence of solvent on reaction rates,	3	5

	significance of volume of activation, linear free energy relationship. Hammet equation and Taft equation.		
5.0	**Molecular symmetry**	**18**	
5.1	Symmetry elements and symmetry operation. Matrix representation of symmetry operations. Block factored matrices, Character of a matrix. Conditions for a set of elements to form a group. Point groups and their systematic identification.	2	6
5.2	Multiplication of operations. Group multiplication table. Similarity transformation and classification of symmetry operation, Matrix representation of point group. Reducible and Irreducible representations.	3	6
5.3	The Great Orthogonality Theorem. Rules derived from GOT (proof not required).	1	6
5.4	Setting up of character table of C_{2v}, C_{3v} and C_{2h} groups. Direct product representations. Reduction formula, reduction of reducible representation to IRs. Transformation properties of atomic orbitals. Molecular symmetry and optical activity.	4	6
5.5	Applications of character tables: Hybridisation-identification of atomic orbitals taking part in hybridisation of triangular planar, square planar, trigonal bipyramidal, square pyramidal and tetrahedral molecules.	4	6
5.6	Spectroscopy-Determination of number of active IR and Raman lines taking simple molecules belongs to C_{2v}, C_{3v} and D_{4h} point groups as example.	4	6

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1. D. A. McQuarrie, Quantum Chemistry, University Science Books, 2008.
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CH 214 INORGANIC CHEMISTRY PRACTICALS – I

Total 125 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.	U, E	3, 7, 8
2.	estimate volumetrically the concentration of Zn, Mg and Ni using EDTA and the volumetric estimation of Fe.	Ap, An	7, 8
3.	estimate volumetrically the hardness of water and concentration of Ca in water samples using EDTA.	Ap, An	7, 8
4.	estimate colorimetrically the concentration of Chromium – (using Diphenyl carbazide), Iron (using thioglycollic acid), Iron (using thiocyanate), Manganese (using potassium periodate), Nickel (using dimethyl glyoxime).	Ap, An	7, 8
5.	carry out the preparation of the metal complexes Potassium trioxalatochromate (III), Tetraammoniumcopper (II) sulphate, Hexamminecobalt (III) chloride.	Ap	7, 8
6.	record the UV spectra, IR spectra, magnetic susceptibility, TG, DTA and XRD of the complexes prepared.	Ap, An	2, 7, 8

Module	Course Description	No. of Hrs	CO No.
1.	Volumetric estimation using EDTA - Zn, Mg, Ni (back titration), Hardness of water, Ca (using murexide).	25	1, 2, 3
2.	Determine the hardness of water and the concentration of Ca in water samples using EDTA.	20	1, 2, 4
3.	Volumetric estimation of Fe.	10	1, 2, 3
4.	Colorimetric estimation of Chromium – (Diphenyl carbazide), Iron (thioglycollic acid), Iron (thiocyanate), Manganese (potassium periodate), Nickel (dimethyl glyoxime).	35	1, 2, 5
5.	Preparation of metal complexes - Record UV, IR, magnetic susceptibility, TG, DTA and XRD of the complexes prepared (a) Potassium trioxalatochromate (III) (b) Tetraammoniumcopper (II) sulpahte (c) Hexamminecobalt (III) chloride	35	1, 2, 6, 7

References

1. A. I. Vogel, A Text Book of Quantitative Inorganic Analysis, Longman, 4th edition, 1978.
2. A. I. Vogel, A Text Book of Qualitative Inorganic Analysis, Longman 5th edition, 1979.
3. D. A. Skoog and D. M. West, Analytical Chemistry: An Introduction, Saunders College Publishing, 4th edition, 1986.
4. W. G. Palmer, Experimental Inorganic Chemistry, Cambridge University,

CH 215 ORGANIC CHEMISTRY PRACTICALS – I

Total 125 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.	U, E	3, 7, 8
2.	determine the correct method for separation of a binary mixture and make the separated compounds in pure form.	An, E	2, 7, 8
3.	develop thin layer chromatogram of a compound and determine its purity.	C	2, 7, 8
4.	separate two compounds by column chromatography.	An	2, 7, 8
5.	utilize the synthetic procedures and reagents to convert a compound into another. Differentiate the products by spectroscopic methods.	An	2, 7, 8
6.	use green chemical principles in the synthesis.	Ap	2, 4
7.	solve GC MS and LC MS of a compound to ascertain purity and identity, apply the basic principles	Ap, E	2, 7

Module	Course Description	No. of Hrs	CO No.
1.	**Separation and identification of organic compounds-** a. Quantitative wet chemistry separation of a mixture of two components by solvent extraction. b. TLC of the purified samples along with the mixture in same TLC plates (component 1 with mixture and component 2 with mixture on separate TLC plate) and calculation of Rf values- Reporting and recording TLC in standard formats- preparation of sample solution, adsorbent, dimensions of the plate, saturation time, developing time, visualization and detection, Rf Value, Drawing - in the form of a table.	**30**	1, 4, 5
2.	**Separation of a mixture by column chromatography (not for end semester evaluation)** a. Malachite green and methylene blue, b. o-nitroaniline and p-nitroaniline.	20	1, 4
3.	**Preparation of compounds by two stages**. ▪ Recording UV, IR, ^{1}H–NMR and ^{13}C–NMR and EI mass spectra of synthesized compounds. ▪ Record and interpret GC–MS and LC–MS of the purified compound. ▪ TLC analysis-Stage 1 reactants and products on TLC plate 1 and stage 2 reactants and products on plate 2). ▪ Record TLC in standard format as in separation. ***All preparations must be restricted to 1 g level*** **I. Nitration** (1) Acetanilide → p-nitroacetanilide → p-nitroaniline (2) Methylbenzoate → methyl m-nitrobenzoate → m-nitrobenzoic acid **II. Bromination** (3) Acetanilide → p-bromoacetanilide → p-bromoaniline *using CAN for bromination* **III. Aldol condensation- Synthesis of heterocycles.** (4) Benzaldehyde → Dibenzylideneacetone → 1,5-Diphenyl-3-styryl-2-pyrazoline **IV. Diazocoupling** (5) Aniline → Diazoaminobenzene → p-aminoazobenzene **V. Rearrangement** (6) Pthalic anhydride → Pthalimide → Anthranilic acid **VI. Synthesis of Dyes** (7) N,N-Dimethylaniline → N,N-dimethyl-4-nitrosoaniline → methylene blue	75 *(average 12.5 hrs for preparation and analysis of each)*	1, 5, 6, 7

The board of examiners have to select either TLC of separated components OR TLC of preparation for an examination. But both TLC examinations are to be practiced and entered in the record of experiments.

References

1. B. S. Furniss, Vogel's text book of practical organic chemistry, 5th Edition, Longman, 1989.
2. D. L. Pavia, G. M. Lampman, G. S. Kriz and R. G. Engel, A microscale approach to organic laboratory techniques," Wadsworth Publishing, 5th Edition, 2012.
3. R. K. Bansal, Laboratory manual of organic Chemistry, Wiley Eastern, 199.4.
4. N. K. Vishnoi, Advanced Practical Organic Chemistry, 3rd Edition, Vikas
5. F. G. Mann and B. C. Saunders, Practical Organic Chemistry, Pearson Education, 2009.
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7. P. F Shalz, Journal of Chemical Education, 1996, 173: 267.
8. Monograph on green laboratory experiments, DST, Government of India, pp 1-79.
9. For spectral data of organic compounds, see: http://sdbs.riodb.aist.go.jp/sdbs/cgi-bin/direct frame top.cgi.

CH 216 PHYSICAL CHEMISTRY PRACTICALS – I

Total 125 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.	U, E	3, 7, 8
2.	construct the Freundlich and Langmuir isotherms for adsorption of acetic/oxalic acid on active charcoal/ alumina and determine the concentration of acetic/ oxalic acid	C, Ap, An	7, 8
3.	determine the rate constant, Arrhenius parameters, rate constant and concentration using kinetics	Ap	7, 8
4.	construct the phase diagram and determine the composition of an unknown mixture	Ap, An	7, 8
5.	construct the ternary phase diagram of acetic acid chloroform-water system and out the procedure in an unfamiliar situation to find out the composition of given homogeneous mixture.	C, Ap, An	7, 8
6.	construct the tie-line in the ternary phase diagram of acetic acid chloroform-water system	C, Ap, An	7, 8
7.	determine distribution coefficient using distribution law.	Ap	7, 8
8.	determine the equilibrium constant employing the distribution law.	Ap	7, 8
9.	determine the coordination number of Cu^{2+} in copper-	Ap	7, 8

	ammonia complex.		
10.	determine K_f of solid solvent, molar mass of non-volatile solute, mass of solvent and composition of given solution	Ap, An	7, 8
11.	determine K_T of salt hydrate, molar mass of solute, mass of salt hydrate and composition of given solution.	Ap, An	7, 8
12.	determine surface tension and parachor of liquids.	Ap	7, 8
13.	ascertain the relationship between surface tension with concentration of a liquid and use this to find out the composition of given homogeneous mixture.	Ap, An	7, 8
14.	determine the concentration of given strong acid/alkali.	Ap, An	7, 8
15.	determine the heat of ionisation of acetic acid.	Ap, An	7, 8
16.	determine the heat of displacement of Cu^{2+} by Zn.	Ap, An	7, 8

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Module	Course Description	No. of Hrs	CO No.
1.	**Adsorption** a) Freundlich and Langmuir isotherms for adsorption of acetic/oxalic acid on active charcoal/ alumina. b) Determination of concentration of acetic/ oxalic acid.	15	1, 2,
2.	**Kinetics** a) Determination of rate constant of acid hydrolysis of methyl acetate. b) Determination of Arrhenius parameters. c) Determination of concentration of given acid. d) Determination of rate constant of the saponification of ethyl acetate and evaluation of Arrhenius parameters. e) Determination of rate constant of reaction between $K_2S_2O_8$ and KI.	15	1, 3
3.	**Phase rule** **I. Solid-liquid equilibria** a) Construction of phase diagram and determination of the composition of unknown mixture (naphthalene/ biphenyl, naphthalene/ benzophenone, naphthalene/ diphenyl amine). b) Construction of phase diagram with simple eutectic - naphthalene/ metadinitrobenzene. **II. Partially miscible liquid pairs** a) CST of phenol-water system. b) Three component system - Construction of ternary phase diagram of acetic acid chloroform-water system and hence the composition of given homogeneous mixture. Construction of tie-line.	16	1, 3, 4, 5, 6
4.	**Distribution law** a) Distribution coefficient of ammonia between hexane and water. Determination of equilibrium constant of	20	1, 7, 8, 9

	copper - ammonia complex by partition method or coordination number of Cu^{2+} in copper-ammonia complex. b) Distribution coefficient of benzoic acid between toluene and water. c) Distribution coefficient of iodine between hexane and water. d) Determination of the equilibrium constant of the reaction $KI + I_2 \leftrightarrows KI_3$ and hence the concentration of given KI in hexane and water.		
5.	**Dilute Solutions** a) Determination of K_f of solid solvent, molar mass of non-volatile solute, mass of solvent and composition of given solution (Solvent-Naphthalene/ Biphenyl/ Benzophenone etc. Solute-Naphthalene/ Biphenyl/ Diphenylamine etc.) b) Determination of vant Hoff's factor for benzoic acid in Naphthalene. c) Determination of atomicity of sulphur.	17	1, 10
6.	**Transition temperature** Determination of K_T of salt hydrate, molar mass of solute, mass of salt hydrate and composition of given solution (Solvent - $Na_2S_2O_3.5H_2O/CH_3COONa.3H_2O$, Solutes glucose, sucrose, urea).	12	1, 11
7.	**Surface tension** a) Determination of surface tension of various liquids (water - ethanol, water - glycerol, water - sorbitol, nitrobenzene-toluene) by Stalagmometric method (drop number/ drop weight) and by Capillary rise method. b) Determination of parachors of molecules and various groups. c) Determination of concentration of a mixture. d) Determination of surface tension and parachor of liquids using double capillary method. e) Variation of surface tension with concentration. Unknown concentration of a mixture. Interfacial tension. f) Determination of surface excess and area per molecule.	15	1, 12, 13
8.	**Thermochemistry** a) Determination of the concentration of given strong acid/alkali. b) Thermometric titration of NaOH vs standard HCl. c) Heat of displacement of Cu^{2+} by Zn. d) Determination of the heat of ionisation of acetic acid.	15	1, 14 15, 16

References

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2. B. P. Levitt and J.A. Kitchener, Findlay's Practical Physical Chemistry, Longmans, London, 9th edn.,1973.
3. J. M. Newcombe, R. J. Denaro, A. R.Rickett & R.M.W Wilson, Experiments in Physical Chemistry Pergamon, 1962.
4. A.M. James and F.E. Pichard, Practical Physical Chemistry, Longman.
5. R.C. Das and Behera, Experimental Physical Chemistry, Tata McGraw Hill, 1983.
6. B. Viswanathan, Practical Physical Chemistry, Viva Publications, 2012.
7. P.S. Sindhu, Practicals in Physical Chemistry-A Modern Approach, McMillan India, 2005.
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Model Question Papers

General Instruction to question paper setters

- There will be a 15 main questions in each question paper divided into 3 sections – A, B and C
- Each of the sections A, B and C will have 5 questions each, **1 from each module**.
- Each question in Section A will have 3 sub questions (a), (b) and (c), of which the candidate has to answer any two (2 marks each).
- Each question in Section B will have 2 sub questions (a) and (b), of which the candidate has to answer any one (5 marks each).
- Candidate should answer any three out of the five questions in Section C (10 marks each).
- Section A carries a total of 20 marks, Section B carries 25 marks, and Section 3 carries 30 marks.
- The maximum marks will be 75 and the duration of the exam will be 3 hrs.

First Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry/ Branch IV – Analytical Chemistry
CH/CL 211: INORGANIC CHEMISTRY – I
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) Sketch the splitting of d orbitals in a triagonal bipyramidal complex.
   (b) Which among CN^- and NH_3 have a higher nephelauxetic effect? Why?
   (c) Calculate the CFSE for a d^4 ion.

2. (a) Differentiate accuracy from precision.

(b) What are metallochromic indicators? Give an example.
(c) What is a Student t test used for?

3. (a) CdS is an yellow pigment while CdSe is red. Given reason.
(b) What is NASICON?
(c) What are anti-stokes phosphors?

4. (a) What are zeolites? Explain their use as water softeners?
(b) Determine the probable structure of perxenate ion using VSEPR theory.
(c) What are polysiloxanes? Give it structure.

5. (a) List two conditions that favour the formation of photochemical smog.
(b) Discuss briefly a method to quantify soil acidity.
(c) How does chlorine free radicals tamper the ozone layer?

$[2 \times 10 = 20]$

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) State and illustrate Jahn-Teller distortion.
(b) Discuss the factors affecting the magnitude of Δ_o.

7. (a) What is a scatter diagram? What is its significance?
(b) Discuss briefly the principle behind EDTA titrations.

8. (a) What are SOFCs?
(b) Briefly discuss the structure of fullerides.

9. (a) Zeolites find applications as microporous materials and molecular sieves. Substantiate this statement.
(b) What are isopoly acids?

10. (a) List out five unique properties of water.
(b) Discuss on the various air pollutants and their effect on human health.

$[5 \times 5 = 25]$

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. Describe the Molecular orbital energy level diagrams for octahedral metal complexes with and without π–bonds.

12. Explain the utility of TG, DTA and DSC in the study of metal complexes.

13. Detail the types of solid electrolytes giving due importance to structural aspects.

14. Elaborate the properties of the heteropoly acids of Mo and W.

15. What are pourbaiux diagrams? Outline its role in explaining the chemistry of processes in lithosphere.

[10 × 3 = 30]

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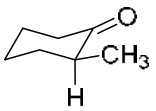
First Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry/ Branch IV – Analytical Chemistry
CH/CL 212: ORGANIC CHEMISTRY – I
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

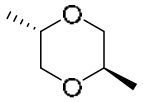
SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) Distinguish between conformation and configuration.
   (b) Draw the structure corresponding to diazabicyclo[2,2,2]octane.
   (c) Pick out the chiral/ achiral/ meso structures from the following.



A



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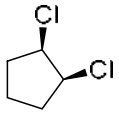

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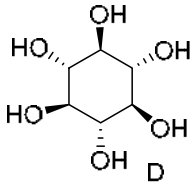
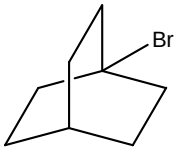
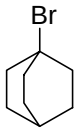


D

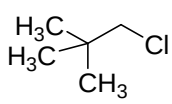
2. (a) What is AIBN?
   (b) Explain the peroxide effect in the addition of HBr to propene.
   (c) How you can synthesize the following molecule?

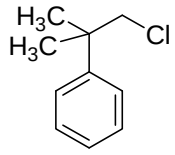


3. (a) Which of the following bromides will undergo a faster solvolysis? Explain

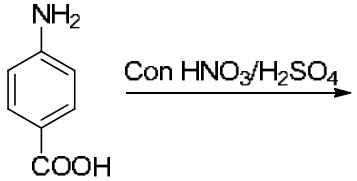
$(CH_3)_3CBr$ Or 

   (b) Given below are two chlorides. Which among them will go through a faster solvolysis? Give reasons for your answer.

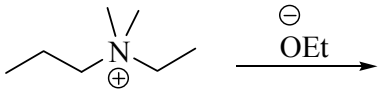


Or 

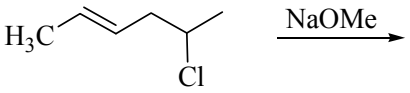
   (c) Complete the following reaction.



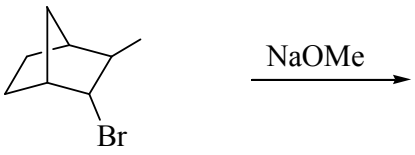
4. (a) Predict the product of the following reaction and indicate the major one. Give reasons.



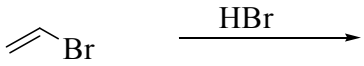
(b) What are the products obtained the reaction given below. Identify the major product in this case citing reasons.



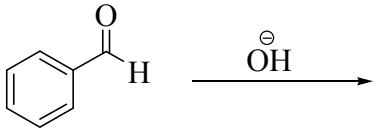
(c) Identify the major product in the following reaction. Substantiate your answer.



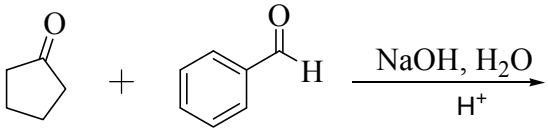
5. (a) Complete the reaction



(b) Predict the products in the following reaction



(c) Complete the following reaction

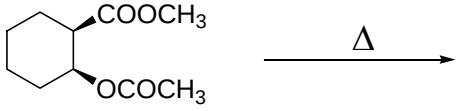


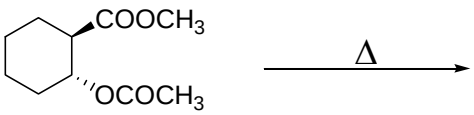
[2 × 10 = 20]

SECTION B

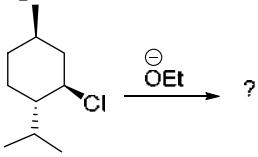
Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

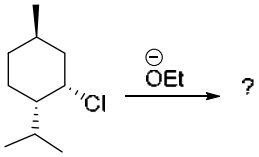
6. (a) Predict the product (s) of the following reactions

i 

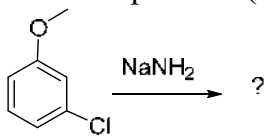
ii 

(b) Predict the product (s) of the following reaction and indicate the major one. Explain?

i. 

ii. 

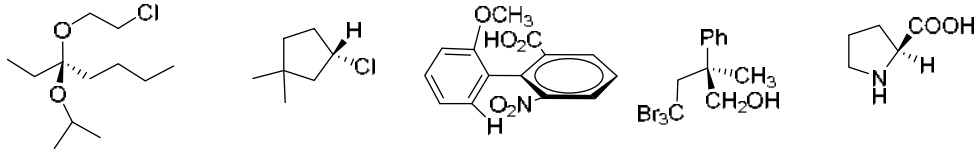
7. (a) Give the product (s) with mechanism. Explain?



(b) Discuss the mechanism of allylic bromination using NBS. Explain the stability of allyl radical.

8. (a) How will you convert isopropanol to n-propanol using a boron reagent? How does the addition of borane reagents to alkene differ from hydration? Illustrate with the help of an example.
(b) Discuss benzoin condensation. What is the importance of cyanide in the reaction?

9. (a) Assign the absolute configuration to the following compounds.



(b) What are atropisomers? Explain why atropisomerism disappears at higher temperature?

10. (a) How does leaving group affect the rate of S_N1 and S_N2 reactions? Explain.
(b) Give the major product obtained when methoxybenzene is nitrated. Discuss the directive effect with the help of resonance structures

[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. Discuss Cotton effect? What is octant rule? Explain ORD curve.

12. Discuss the structure, stability and reactions of carbenes. How will you distinguish between singlet and triplet carbenes by a chemical method?

13. Discuss the mechanism of
a) Robinson Annulation
b) Mannich reaction
c) Thorpe reaction
d) Ritter reaction and
e) Darzen reaction

14. Neighbouring group participation results retention in configuration. Justify the given statement with the help of suitable examples. What is meant by anchimeric assistance?

15. Explain Wittig and Wittig –Horner reactions with stereochemistry. Compare Witting reaction with Julia olefination.

[10 × 3 = 30]

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First Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry/ Branch IV – Analytical Chemistry
CH/CL 213: PHYSICAL CHEMISTRY – I
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) Check whether the function e^{-x^2} is an eigen function for kinetic energy operator. If so what is the eigen value?
   (b) Show that the momentum of particle in 1D box is quantised.
   (c) Write the general expression for Hermitte polynomial. Deduce first two polynomials.

2. (a) Distinguish between associative and dissociative chemisorption.
   (b) Under what condition can multilayer adsorption become more important than monolayer adsorption?
   (c) Explain one method of determination of surface pressure.

3. (a) Calculate ΔS of mixing when 2 moles of H_2, 3 moles of He and 2 moles of O_2 are mixed at fixed temperature assuming ideal behaviour and no chemical change.
   (b) Write any two Maxwell's relations and give their significance.
   (c) State 'Konowaloff's' rule.

4. (a) Give two reasons to show that conventional techniques are not suitable for the study of kinetics of fast reactions.
   (b) Explain steady state principle?
   (c) How volume of activation affects the reaction rate?

5. (a) Identify the symmetry elements present in the following and assign the point group
   (i) H_2 (ii) HCl
   (b) Explain improper axis of symmetry.
   (c) Cyclic groups are abelian. Explain.

[2 × 10 = 20]

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) For a particle in 3D box with $L_x = L_y = \frac{L_z}{2}$, what would be the energy when $n_x = 1$, $n_y = 2$ and $n_z = 2$ and when $n_x = 1$ $n_y = 1$ and $n_z = 4$. Use the calculations to explain the meaning of the term accidental degeneracy.

(b) H(x) is written as a power series in x as $H(x)=\sum_{j=0}^{n} a_j x^j$. Derive recursion formula.

7. (a) Write any two methods for the determination of surface area of a solid.
   (b) Explain Langmuir-Hinshelwood mechanism of surface catalyzed reactions.

8. (a) Derive Van't Hoff isotherm. How is this useful in the study of chemical equilibria?
   (b) Derive Gibbs-Duhem equation.

9. (a) Compare the rate constant as given by Arrhenius equation and collision theory and show that $E_a = E_0 + \frac{RT}{2}$
   (b) Derive the rate law for the decomposition of N_2O_5.

10. (a) Construct the group multiplication table for the symmetry operations of NH_3 molecule.
    (b) Determine the number of active IR and Raman lines in the vibrational spectrum of $POCl_3$.

[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. Set up the Schrodinger wave equation for a simple harmonic oscillator. Find the eigen functions and eigen values.

12. Explain any two instrumental techniques used for surface characterization.

13. Write a brief account of the methods for the determination of activity coefficient of electrolytes and non-electrolytes.

14. Explain chain reactions. Discuss Seminoff Henshelwood theory of branching chain reactions

15. a) Explain the hybridization scheme in BF_3 molecule using group theory.
    b) Show that the four elements of C_{2v} point groups forms 4 classes?

D_{3h}	E	$2C_3$	$3C_2$	σ_h	$2S_3$	$3\sigma_v$		
A_1'	1	1	1	1	1	1		$x^2 + y^2, z^2$
A_2'	1	1	−1	1	1	−1	R_z	
E'	2	−1	0	2	−1	0	(x, y)	$(x^2 - y^2, xy)$
A_1''	1	1	1	−1	−1	−1		
A_2''	1	1	−1	−1	−1	1	z	
E''	2	−1	0	−2	1	0	(R_x, R_y)	(xz, yz)

[10 × 3 = 30]

SEMESTER II

CH 221 INORGANIC CHEMISTRY II

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	obtain the term symbols of d^n system and determine the splitting of terms in weak and strong octahedral and tetrahedral fields.	E	1
2.	explain the correlation diagrams for d^n and d^{10-n} ions in octahedral and tetrahedral fields and interprets electronic spectra of complexes.	U, E	1
3.	applies magnetic measurements in the determination of structure of transition metal complexes.	Ap	1
4.	relates crystalline structure to X-ray diffraction data and the reciprocal lattice and explains the diffraction methods	U	1
5.	explains crystal defects .	U	1
6.	elaborates the structure of selected compounds of AX, AX_2, A_mX_2, ABX_3 and spinels.	C	1
7.	explains the electronic structure of solids using free electron theory and band theory.	E	1
8.	understands the differences in semiconductor and dielectric materials and their electrical and optical properties	U, E	1
9.	explain the structure and reactions of S–N, P–N, B–N, S–P compounds and boron hydrides.	U, E	1
10.	analyse the topological approach to boron hydride structure and estimates styx numbers and apply Wade's rules in borane and carboranes.	Ap, An, E	1
11.	identify the electronic configurations and term symbols of lanthanides and actinides.	Ap	1
12.	sketches the shapes of f orbital and shows their splitting in cubic ligand field.	U	1
13.	elaborates the importance of the beach sands of Kerala and their important components.	C	1

PSO–Programme Specific Outcome CO–Course Outcome

Cognitive Level: R–Remember U–Understanding Ap–Apply An–Analyse E–Evaluate C–Create

Module	Course Description	No. of Hrs	CO No.
1.0	**Coordination chemistry-II: Spectral and magnetic properties of transition metal complexes**	**18**	
1.1	Electronic spectra of metal complexes-Term symbols of d^n system, Racah parameters, splitting of terms in weak and strong octahedral and tetrahedral fields.	4	1

1.2	Correlation diagrams for d^n and d^{10-n} ions in octahedral and tetrahedral fields (qualitative approach), d-d transition, selection rules for electronic transition, effect of spin orbit coupling and vibronic coupling.	3	2
1.3	Interpretation of electronic spectra of complexes- Orgel diagrams, Tanabe-Sugano diagrams, calculation of Dq , B and β (Nephelauxetic ratio) values, charge transfer spectra.	3	2
1.4	Magnetic properties of complexes-paramagnetic and diamagnetic complexes, molar susceptibility, Gouy's method for the determination of magnetic moment of complexes, spin only magnetic moment.	4	3
1.5	Temperature dependence of magnetism. Temperature Independent Paramagnetism (TIP). Spin state crossover, Antiferromagnetism - inter and intra molecular interaction.	2	3
1.6	Application of magnetic measurements in the determination of structure of transition metal complexes.	2	3
2.0	**Crystalline state**	**18**	
2.1	Crystal symmetry- Introduction to point groups and space groups. Miller indices. Reciprocal lattice concept.	2	4
2.2	Close packed structures: BCC, FCC and HCP. Voids. Coordination number.	2	4
2.3	X-ray diffraction by crystals: Function of crystals. Transmission grating and reflection grating. Bragg's equation.	2	4
2.4	Diffraction methods: Powder and rotating crystal. Indexing and determination of lattice type and unit cell dimensions of cubic crystals.	3	4
2.5	Crystal defects: Perfect and imperfect crystals. Point, line and plane defects. Thermodynamics of Schottky and Frenkel defects.	2	5
2.6	Colour centers in alkali halide crystals. Defect clusters. Extended defects: Crystallographic shear structure and stacking faults. Dislocations and crystal structure.	3	5
2.7	Structure of compounds of AX (Zinc blende, Wurtzite), AX_2 (Rutile, fluorite, antifluorite), A_mX_2 (Nickel arsenide), ABX_3 (Perosvskite, Ilmenite), Spinels. Inverse spinel structures.	4	6
3.0	**Solid state chemistry**	**18**	
3.1	Electronic structure of solids. Free electron theory, band theory. Refinements to simple band theory, k space and Brillouin zones.	4	7
3.2	Conductors, insulators and semiconductors. Band	3	7

	structure of conductors, insulators and semiconductors and their applications.		
3.3	Intrinsic and extrinsic semiconductors, doping of semiconductors and conduction mechanism, the band gap.	3	7
3.4	Temperature dependence of conductivity, carrier density and carrier mobility in semiconductors.	2	7
3.5	Superconductivity, Photoconductivity, Photovoltaic effect. Colour in inorganic solids.	3	7
3.6	Dielectric properties. Dielectric materials. Ferroelectricity, pyroelectricity, piezoelectricity and ionic conductivity. Applications of ferro, piezo and pyroelectrics.	3	8
4.0	**Compounds of S, N, P and B**	**18**	
4.1	Sulphur-Nitrogen compounds: S_4N_4, S_2N_2, S_4N_2 and polythiazyl S_xN_y compounds. S-N cations and anions.	2	9
4.2	Sulphur-Phosphorus compounds: Molecular sulphides such as P_4S_3, P_4S_7, P_4S_9 and P_4S_{10}.	2	9
4.3	Phosphorous-Nitrogen compounds: Phosphazines. Cyclo and linear phosphazines.	2	9
4.4	Boron-Nitrogen compounds: Borazine, substituted borazines and boron nitride.	2	9
4.5	Boron hydrides: Reactions of diborane. Structure and bonding. Polyhedral boranes: Preparation, properties, structure and bonding.	3	9
4.6	The topological approach to boron hydride structure. Styx numbers. Importance of icosahedral framework of boron atoms in boron chemistry. Closo, nido and arachno structures. Wade's rules.	5	10
4.7	Carboranes and metallocarboranes.	2	10
5.0	**Lanthanides and actinides**	**18**	
5.1	Lanthanides: Characteristic properties. Electronic configurations and term symbols. Occurrence and extraction. Separation techniques.	4	11
5.2	Oxidation states of lanthanides. Spectral and magnetic properties of lanthanides. Lanthanide complexes as shift reagents.	3	11
5.3	Shapes of f orbital and their splitting in cubic ligand field.	2	12
5.4	Actinides: Occurrence and general properties. Extraction of thorium and uranium. Electronic configuration and term symbol. Oxidation states. Spectral and magnetic	4	11

	properties.		
5.5	Comparative properties of lanthanides and actinides. Trans-uranium elements and their stabilities.	2	11
5.6	Applications of lanthanide and actinide compounds.	1	13
5.7	Comprehensive study of the beach sands of Kerala and their important components such as monazite, ilmenite, zircon and sillimanite.	2	13

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4. A. R. West, Solid State Chemistry and its Applications, Wiley Eastern, 1990.
5. H. J. Emeleus and A. G. Sharp, Modern Aspects of Inorganic Chemistry, Van Nostrand, 4th edition,1973.
6. L. V. Azaroff, Introduction to Solids, Mcgraw-Hill, 1960.
7. S. Cotton, Lanthanides and Actinides, Macmillan, 1991.
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9. A. Syamal and R. L. Datta, Elements of Magnetochemistry, Affiliated East-West Press, 1980.
10. C. Kittel, Introduction to Solid State Physics, Wiley and Sons, 8th edition, 2004.
11. N. N. Greenwood and A. Earnshaw, Chemistry of Elements, REPP Ltd, 2nd edition, 2005.
12. A. Earnshaw, Introduction to Magnetochemistry, Academic Press, 1968.

CH 222 ORGANIC CHEMISTRY II

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	discuss the fundamentals, operating principles and instrumentation of separation techniques.	R	1,
2.	differentiate the principle and applications of phase transfer catalysis with examples.	An	1
3.	describe the various methods of determining reaction mechanisms and basic thermodynamic principles of organic reactions.	U	1
4.	explain the Hammet parameters of reaction and design an experiment to confirm the mechanism of a reaction.	R, C	1
5.	identify different types of rearrangement reactions, determine the product of the reaction applying migratory aptitude, and reproduce the evidences for the mechanism of the reaction.	R, E	1

6.	understand that the outcomes of pericyclic reactions may be understood in terms of frontier orbital interactions, correlation diagram, Mobius and Huckel approach.	R	1
7.	recall and define the various types of pericyclic reaction; define such terms as 'conrotatory', 'suprafacial'.	R	1
8.	predict and rationalise the outcomes of pericyclic reactions including stereospecificity, regioselectivity, and stereoselectivity.	U	1
9.	state the synthetic importance of the above cycloaddition and rearrangement reactions, and give disconnections of target compounds corresponding to these reactions.	R	1
10.	describe the fate of excited molecule based on Jabolonoski diagram, predict the course of an organic photochemical reaction and identify the product with the type of functional group.	R, An	1
11.	propose synthetic routes to a variety of molecules, starting from simple precursors with correct stereochemistry and reagents of selected reactions.	Ap	1

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Module	Course Description	No. of Hrs	CO No.
1.0	**Separation Techniques**	**18**	
1.1	Classification of chromatographic methods. Theory of chromatography. Applications of chromatographic methods. Adsorption and partition chromatography. Paper, thin layer and column chromatographic methods.	4	1
1.2	Common Spray reagents and Developing agents in chromatography.	2	1
1.3	Centrifugal TLC, LC, pressure column chromatography, HPLC and GC, column matrices. Detectors. Affinity and chiral separations using HPLC.	4	1
1.4	GC MS and LC MS Principle, instrumentation and applications.	4	1
1.5	Normal and ultra-centrifugation. Gel and capillary electrophoresis and their applications.	2	1
1.6	Solvent extraction. Extraction using supercritical liquid CO_2, Craig's technique of liquid-liquid extraction.	2	1
2.0	**Physical Organic Chemistry**	**18**	
2.1	Phase transfer catalysis and its applications.	2	2
2.2	Kinetic and thermodynamic control of reactions with examples.	1	3
2.3	Reaction coordinates- difference between transition state and intermediates, Energy profiles, Curtin – Hammet Principle, Hammond postulate. Principle of microscopic	3	3

	reversibility. Reactivity in relation to molecular structure and conformation. Steric effects, F strain. Ortho effect, Bond angle strain.		
2.4	Solvent polarity and parameters, Y, Z and E parameters and their applications. Primary, secondary, inverse kinetic isotope effects. Salt effects and special salt effects in SN reactions.	3	3
2.5	Methods of determining reaction mechanisms-Product analysis, Isotopic studies, Primary and secondary kinetic isotope effects, Isolation and detection of intermediates, Cross over experiments.	4	3
2.6	Linear Free Energy Relations, The Hammett equation and its applications. Significance of sigma (σ) and rho (ρ) reactions with negative and positive ρ, low and high ρ, abnormal Hammet plot, Taft equation. Hammet plot for aromatic nucleophilic, electrophilic, S_N^1, S_N^2, electrophilic addition, Wittig reactions.	5	4
3.0	**Molecular Rearrangement and Transformation Reactions**	**18**	
3.1	Types of organic rearrangements: Anionic, cationotropic, prototropic, rearrangements involving carbene and nitrene intermediates.	4	5, 11
3.2	Mechanism with evidence of Wagner – Meerwein, Pinacol, Demjanov, Hofmann, Curtius, Schmidt, Lossen, Beckmann.	3	5, 11
3.3	Mechanism with evidence of Fries, Fischer–Hepp, Hofmann–Martius, von-Richter, Orton, Bamberger, Smiles.	3	5, 11
3.4	Mechanism with evidence of Dienone–phenol, Benzilic acid, Benzidine, Favorskii, Stevens, Dakin.	3	5, 11
3.5	Bucherer reaction, Rupe, Stevens, Claisen rearrangement.	2	5, 11
3.6	Rearrangements involving diazomethane – Arndt Eistert reaction, Wolf rearrangement.	3	5, 11
4.0	**Aromaticity and Pericyclic Reactions**	**18**	
4.1	Aromaticity and antiaromaticity. Non aromatic, homoaromatic, hetero and non–benzenoid aromatic systems. Aromaticity of annulenes, mesoionic compounds, metallocenes, cyclic carbocations, carbanions.	2	6, 7
4.2	Influence of aromaticity on physical and chemical properties, Diamagnetic anisotropic – benzene and paracylophane.	1	6, 7
4.3	Classification of pericyclic reactions, FMO, Correlation	4	6, 7,

	diagram, Mobius and Huckel theory of electrocyclic and cyclo addition reactions.		8, 9
4.4	Diels–Alder reaction–Stereo and regio selectivity , industrial applications–Aldrene, Dialdrene, endosulfan, anti stroke drug, Reserpine synthesis, fire retardant , Retro–Diels Alder, Alders ene, intramolecular Diels Alder reaction.	4	6, 7, 8, 9
4.5	1,3–Dipolar cycloaddition, nitrones, nitrile oxide, construction of heterocycles–oxazole, triazole, tetrazole, ozonide, Huisgen reaction.	3	6, 7, 8, 9
4.6	Sigmatropic rearrangement–classification [i,j], examples of [1,3], [1,5], [1,7], [3,3], [2,3] – FMO theory, stereochemistry of cope rearrangement, Claisen rearrangement.	4	6, 7, 8, 9
5.0	**Organic Photochemistry**	**18**	
5.1	Photochemical processes. Singlet and triplet states and their reactivity, Jablonski diagram, Energy transfer, sensitization and quenching.	3	10
5.2	Photoreactions of carbonyl compounds, enes, dienes and arenes. Norrish Type I and Type II reactions of acyclic ketones.	4	10
5.3	Patterno-Buchi and Barton reactions, Hofmann- Löffler-Freytag reaction, photo-Fries and Di-π methane, oxa di-π methane rearrangements.	4	10
5.4	Photoreactions of Vitamin D. Photosynthesis, photochemistry of vision.	3	10
5.5	Singlet oxygen generation and its reactions. Introduction to chemiluminescence.	2	10
5.6	Applications of photochemistry.	2	10

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CH 223 PHYSICAL CHEMISTRY II

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	apply quantum mechanical principles in solving both real and imaginary spherical harmonics systems-multi electron systems and analyse spectral lines.	U, Ap, An	1
2.	describe and explain the physical and chemical principles that underlie molecular structure determination techniques like microwave, vibrational, Raman and electronic spectroscopy.	R, U	1
3.	predict likely spectral characteristics of given molecular species, and be able to rationalise those characteristics on the basis of structural and electronic arguments.	Ap, An	1
4.	acquire knowledge of basics of statistical mechanics and compare statistical methods.	U, Ap	1
5.	understand and apply of theories of heat capacity.	U, Ap	1
6.	understand theories of electrolytes and electrochemical reactions.	R, U, Ap, An	1
7	ascertain the application of electrochemistry in industrial fields.	An	1
8.	understand the theories and applications behind various types of analytical techniques in electrochemistry.	U	1
9	acquire skill in solving numerical problems.	Ap	1

Module	Course Description	No. of Hrs	CO No.
1.0	**Quantum Chemistry II**	**18**	
1.1	Rotational motion: The wave equation in spherical polar coordinates-particle on a ring, the phi equation and its solution, wave functions in the real form.	3	1, 9
1.2	Non-planar rigid rotor and particle on a sphere-separation of variables, the phi and the theta equations and their solutions, Legendre and associated Legendre equations, Legendre and associated Legendre polynomials. Spherical harmonics (imaginary and real forms)-polar diagrams of spherical harmonics.	5	1, 9
1.3	Quantum Mechanics of Hydrogen-like systems: The wave equation in spherical polar coordinates: separation of variables – r, θ and ϕ equations and their solutions, wave functions and energies of hydrogen-like systems.	4	1, 9
1.4	Radial distribution functions, angular functions and their plots.	2	1
1.5	Wave functions for multi electron systems, wave equation for multi electron systems, symmetric and anti-symmetric wave functions, Pauli's anti-symmetry principle, and the postulate of spin. Spin orbitals. Spin-orbit coupling. Vector atom model-Term symbols, selection rules and explanation of spectral lines of hydrogen atom.	4	1
2.0	**Spectroscopy I**	**18**	
2.1	Rotational spectrum, selection rules, intensity of spectral lines, calculation of inter-nuclear distance.	2	2, 3
2.2	Non-rigid rotors and centrifugal distortion. Rotational spectra of polyatomic molecules-linear and symmetric top molecules. Introduction to instrumentation.	2	2, 3, 9
2.3	Vibrational spectra of harmonic and anharmonic oscillator. Selection rules. Morse curve, fundamentals and overtones. Determination of force constant.	3	2, 3, 9
2.4	Rotational fine structure, P, Q, R branches of spectra.	1	2, 3
2.5	Vibrational spectra of polyatomic molecules: Normal modes, classification of vibrational modes into stretching (asymmetric, symmetric), bending, parallel and perpendicular vibrations.	2	2, 3
2.6	Finger print region and group frequencies. Introduction to FTIR and instrumentation.	1	2, 3
2.7	Raman scattering, polarizability and classical theory of Raman spectrum.	1	2, 3
2.8	Rotational and vibrational Raman spectrum. Raman	2	2, 3

	spectra of polyatomic molecules. Complementarity of IR and Raman spectra. Mutual exclusion principle.		
2.9	Introduction to instrumentation. Laser Raman spectrum.	1	2, 3
2.10	Electronic spectra of diatomic molecules. Vibrational coarse structure and rotational fine structure of electronic spectrum. Franck-Condon principle.	2	2, 3, 9
2.11	Types of electronic transitions. Fortrat diagram. Predissociation.	1	2, 3
3.0	**Statistical Thermodynamics**	**18**	
3.1	Basic principle of permutation, combination, thermodynamic probability and entropy.	3	4
3.2	Microstates, concept of ensembles canonical and grand canonical ensemble.	1	4
3.3	Maxwell Boltzmann distribution.	2	4
3.4	Molecular partition functions - Translational (1D, 2D and 3D), vibrational, rotational and electronic partition functions. Total partition functions.	4	4
3.5	Relationship between partition functions and thermodynamic properties, Sackur-Tetrode equation. The principle of equi-partition of energy.	4	4
3.6	Chemical equilibrium, Law of mass action, Transformation of the equilibrium expressions. Statistical derivation.	4	4
4.0	**Quantum statistics**	**18**	
4.1	Bose-Einstein statistics, Thermodynamic probability, Bose Einstein distribution function. Examples of particles.	3	4
4.2	Fermi-Dirac statistics. Examples of particles- Fermi-Dirac distribution function. Thermionic emission	3	4
4.3	Relation between Maxwell Boltzmann, Bose Einstein and Fermi-Dirac statistics.	3	4
4.4	Quantum theory of heat capacity - calculation of heat capacity of gases; limitation of the method.	3	5
4.5	Heat capacity of solids. Dulong and Petit's law, Kopp's law; limitations.	2	5
4.6	Einstein theory of heat capacity; limitations.	2	5
4.7	The Debye theory of specific heat capacity of solids.	2	5
5.0	**Electrochemistry**	**18**	
5.1	Ionics: Activity and activity coefficient of electrolytes, determination of activity coefficient.	1	6
5.2	Debye-Huckel theory of strong electrolytes, Debye-Huckel-Onsager equation and its derivation, limitation of the model, conductance at high frequencies and high	2	6

	potentials –Wein effect and Debye - Falkenhagen effect.		
5.3	Ionic strength, Debye - Huckel limiting law, mean ionic activity coefficient.	1	6, 9
5.4	Electrodics: Different type of electrodes. Electrochemical cells, EMF of concentration cells, liquid junction potential and its determination, cells without liquid junction potential.	2	6, 9
5.5	Calculation of thermodynamic properties. Electrical double layer and electro capillarity.	2	6, 9
5.6	Electrokinetic phenomena.	1	6, 7
5.7	Over potentials: Butler-Volmer equation. Tafel and Nernst equation, Tafel plot and its significance.	3	6 7
5.8	Fuel cells: H_2-O_2, zinc-air and solid oxide fuel cells.	1	7
5.9	Potentiometric titrations involving redox reaction. Conductometric titrations. Coulometric titrations.	2	8
5.10	Voltammetry: principle and method of polarography, cyclic voltammetry, stripping voltammetry and amperometry.	3	8

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Model Question Papers

General Instruction to question paper setters

- There will be a 15 main questions in each question paper divided into 3 sections – A, B and C
- Each of the sections A, B and C will have 5 questions each, **1 from each module**.
- Each question in Section A will have 3 sub questions (a), (b) and (c), of which the candidate has to answer any two (2 marks each).
- Each question in Section B will have 2 sub questions (a) and (b), of which the candidate has to answer any one (5 marks each).
- Candidate should answer any three out of the five questions in Section C (10 marks each).
- Section A carries a total of 20 marks, Section B carries 25 marks, and Section 3 carries 30 marks.
- The maximum marks will be 75 and the duration of the exam will be 3 hrs.

Second Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry/ Branch IV – Analytical Chemistry
CH/CL 221: INORGANIC CHEMISTRY – II
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) Which among $Ni(CO)_4$ and $Fe(CO)_5$ has an intense d–d transition ? Why?
   (b) The effective magnetic moment of a complex is 4.90 BM. Calculate the number of unpaired electrons per unit complex.
   (c) The electronic spectra of metal complexes are broad. Why?

2. (a) Differentiate H-centre from V-centre in NaCl crystals.
   (b) What effects do Schottky and Frenkel defects have on the density of a crystal?
   (c) What are spinels? Give the general formula of spinels.

3. (a) What is meant by band gap of a substance?
   (b) The conductance of metals decreases with increase in temperature. Why?
   (c) What are intrinsic and extrinsic semiconductors

4. (a) Complete the reactions given below
   (i) $B_2H_6 + H_2O \rightarrow$
   (ii) $S_4N_4 + Cl_2 \rightarrow$
   (b) Which undergoes addition reactions faster – Benene or Borazine? Why?
   (c) Clasify the following into closo, nido and archano.
   B_2H_6, $C_2B_9H_{11}$, $B_{12}H_{12}^{2-}$, B_5H_{11},

5. (a) Actinides form oxocations but lanthanides don't. Give reason?
   (b) What is misch metal?
   (c) Which among lanthanides and actinides has a higher tendency to form complexes? Why?

$[2 \times 10 = 20]$

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) Discuss the Orgel diagram and electronic spectra of $[Ti(H_2O)_6]^{3+}$.
   (b) What is meant by a charge transfer spectra?

7. (a) Detail the line and plane defects in solids.
   (b) Describe the principle and procedure of X-ray diffraction method.

8. (a) Examine the various types of dielectric properties exhibited by crystals.

(b) What is photovoltaic effect? Which type of materials exhibit this property?

9. (a) How is polythiazyl synthesized? Describe its structure. Why is it treated as a one dimensional conductor?
   (b) Obtain the styx number of B_4H_9.

10. (a) Detail the ion exchange method employed in the separation of lanthanides.
    (b) Brifely describe the industrial importance of the beach sands of Kerala.

[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. Explain the Guoy's methods used to determine magnetic susceptibility. How is it important in structure determination?

12. Discuss in detail the perovskite structure by taking $SrTiO_3$ as the example.

13. Discuss the salient features of the band theory of solids and compare it with the free electron theory of solids.

14. What are carboranes? How are they obtained?

15. Compare the spectral and magnetic properties of lanthanides and actinides.

[10 × 3 = 30]

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Second Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry/ Branch IV – Analytical Chemistry
CH/CL 222: ORGANIC CHEMISTRY – II
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) What is retention time? Explain its significance.
   (b) Write any two spraying reagents for detection of alkaloids.
   (c) What is meant by reversed phase HPLC.

2. (a) What is F strain?
   (b) Explain microscopic reversibility.
   (c) Describe Taft equation and its terms?

3. (a) Show how vicinal diols are converted to ketones by rearrangement?
   (b) Give the mechanism of Curtius rearrangement.
   (c) Briefly explain Fisher-Hepp reaction.

4. (a) Why is [10] annulene a non aromatic compound?
   (b) Azulene posses dipole moment of 1.4 D. Why?
   (c) State Woodward and Hoffman rules for pericyclic reaction?

5. (a) What is photo-Fries rearrangement?
   (b) Distinguish singlet and triplet states in photochemistry.
   (c) Write an example for Barton reaction.

[2 × 10 = 20]

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) Describe the instrumentation of GC-MS
   (b) What are the information's obtained from a LC-MS chromatogram?

7. (a) Design a cross over experiment for Claisen rearrangement and predict your observation.
   (b) Hammet ρ value of nitration of benzene is negative while that of Wittig reaction is positive Explain.

8. (a) Explain the migratory aptitude in Baeyer-Villager rearrangement with three examples
   (b) Discuss the mechanism and applications of Dienone-phenol rearrangement

9. (a) Write the product of photochemical ring closure of 2E, 4E hexadiene with correct stereochemistry and FMO explanation
   (b) Draw a correlation diagram to show that supra-supra 4+2 cycloaddition is thermally allowed.

10. (a) Discuss the chemistry behind the process of vision.
    (b) Explain Patterno-Buchi reaction

[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. Describe the experimental procedures for thin layer chromatography and column chromatography.

12. Explain any four reactions where isotopic studies support the mechanism.

13. Describe with evidences the mechanism of
    a) Wagner-Meerwein rearrangement b) Pinacol rearrangement
    c) Demjanov rearrangement d) Hofmann rearrangement

14. Describe the stereoselectivity and regioselectivity of Diels-Alder reactions

15. Write a note on fate of excited state molecule with a Jablonski diagram and

photochemistry of vitamin-D.

[10 × 3 = 30]

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Second Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry/ Branch IV – Analytical Chemistry
CH/CL 223: PHYSICAL CHEMISTRY – II
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) Write the determinantal form of wave function for lithium atom.
   (b) By inspecting the hydrogen like wave function,
   $\varphi_{(nlm)} = \frac{\sqrt{2}}{81\sqrt{\pi}} Z^{3/2}(6 - Zr)Zr \exp^{(-Zr/3)} \cos\theta$, find the quantum numbers *n*, *l* and *m*.
   (c) What is a radial distribution function? Mention it's importance.

2. (a) How would one determine the theoretical force constant of the C–C bond?
   (b) Anti-stokes lines are usually weak. Why?
   (c) What is the effect of nuclear spin on the intensity of spectral lines?

3. (a) Differentiate between Bosons and Fermions.
   (b) Explain the concept of ensembles and give the difference in properties of each category
   (c) How can you explain partition function is a measure of number of available energy levels?

4. (a) Calculate the value of C_v for any element when its temperature is equal to the Debye characteristics temperature.
   (b) What is Sterling's approximation? How this approximation helps to arrive at thermodynamic probability.
   (c) Distinguish between Dulong Pettit law and Kopps law.

5. (a) Draw the graph and explain the theory of conductometric titration of a weak acid against a strong base.
   (b) What is the significance of half-wave potential?
   (c) Calculate the mean activity coefficient of 0.01 M $BaCl_2$in water at 25°C.

[2 × 10 = 20]

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) Verify that F = $1/\sqrt{2}\ \pi \exp(iM\varphi)$ constitute an orthonormal set for particle

in a ring.

(b) Write the Schrodinger equation for hydrogen atom in polar coordinates and separate the variables.

7. (a) Spacing between adjacent lines in HCl molecule is 10 cm^{-1}. Force constant is $1.38\times10^{-23}JK^{-1}$, Calculate maximum population at room temperature.

(b) Explain the origin of P and R branches in rotational-vibrational spectrum.

8. (a) Deduce Sackur-Tetrode relation using Partition function.

(b) State and prove Boltzman's theorem connecting entropy and probability.

9. (a) Considering free electrons in a metal to form a Fermi gas. Obtain the Richardson – Dushmam equation for thermionic emission for electrons.

(b) Deduce Fermi-Dirac distribution law; hence obtain an expression for energy.

10. (a) Explain the term ionic mobility. The H^+ ion because of its heavy hydration and consequent large size and shape, should have a low mobility but actually its mobility is very high. How would you account for it? Why does H^+ ion move about 50 times more rapidly in ice than in liquid water.

(b) The exchange current density of a Pt/H_2, $H^+(aq)$ electrode is 0.79mA cm^{-2}. What current flows through a standard electrode of total area 5 cm^2 when the potential difference across the electrode is 5 mV, the temperature 25°C and the proton activity unity?

[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. (i) Apply Schrodinger equation for particle in a ring. Find eigen values andeigen functions.

(ii) Show that any two associated Legendre functions satisfy orthogonality condition.

(7+3)

12. (i) The rotational Raman spectrum recorded for $^{14}N_2$ molecule using monochromatic laser source of wave length 336.86 nm, first three Stokes lines were observed respectively at 28677.3, 29669.3 and 29661.4 cm^{-1}. Find the bond length of the molecule.

(ii) How is the rotational spectrum of a diatomic molecule affected by isotopic substitution?

(5+5)

13. (i) How thermo dynamic functions like internal energy, entropy and specific heat capacity are related to partition function? Derive the relation.

(ii) Explain Maxwell-Boltzman distribution law.

(7+3)

14. What are the limitations of Einstein's theory of heat capacity? How Debye theory attempted to rectify this? Discuss Debye theory of specific heat capacity of solids.

15. (i) What is exchange current density? How the concept is understood using Butler-Volmer equation?
    (ii) Describe the theory and application of cyclic voltametry.

(5+5)

[10 × 3 = 30]

SEMESTER III

CH 231 INORGANIC CHEMISTRY III

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	demonstrate knowledge of advanced content in the areas of inorganic chemistry such as in organometallic compounds, bioinorganic compounds, spectroscopic methods in inorganic Chemistry and nuclear chemistry.	U	1
2.	examine the bonding in simple and polynuclear carbonyls with and without bridging and complexes with linear π donor ligands.	U, An	1
3.	explain the structure and bonding of ferrocene and dibenzenechromium with the help of MO theory.	U, An, C	1
4.	understand fundamental reaction types and mechanisms in organometallics and to employ them to understand selected catalytic processes in industry.	U, An, C	1
5.	contrasts the thermodynamic and kinetic stability of complexes, analyses the factors affecting stability of complexes and explains the methods of determining stability constants.	An, E	1
6.	classifies ligand substitution reactions and explains its kinetics and various mechanisms.	U, E	1
7.	analyze the chemical and physical properties of metal ions responsible for their biochemical action as well as the techniques frequently used in bioinorganic chemistry such as oxygen transport, e-transfer, communication, catalysis, transport, storage etc.	U, An	1
8.	explain the principles of spectroscopic methods employed in inorganic chemistry and their applications in the study of metal complexes.	An, E	1
9.	demonstrate a knowledge of fundamental aspects of the structure of the nucleus, radioactive decay, nuclear reactions, counting techniques.	R, U	1
10.	evaluate the role of nuclear chemistry to find the most suitable measures, administrative methods and industrial solutions to ensure sustainable use of the world's nuclear resources.	U, E, C	1, 4

PSO–Programme Specific Outcome CO–Course Outcome

Cognitive Level: R–Remember U–Understanding Ap–Apply An–Analyse E–Evaluate C–Create

Module	Course Description	No. of Hrs	CO No.
1.0	**Organometallic compounds**	**18**	

1.1	Nomenclature of organometallic compounds. Hapto nomenclature. 18 and 16 electron rule, isoelectronic and isolobal analogy.	2	1
1.2	Metal carbonyls, bonding in metal carbonyls. Synthesis, structure and bonding of polynuclear carbonyls with and without bridging.	2	2
1.3	Complexes with linear π donor ligands: Olefins, acetylenes, dienes and allyl complexes. Complexes with cyclic π donors: Cyclopentadiene, benzene complexes.	2	2
1.4	Structure and bonding of ferrocene and dibenzenechromium complexes (MO treatment).	4	3
1.5	Oxidative addition and reductive elimination, insertion and elimination reactions	3	4
1.6	Catalysis by organometallic compounds: Alkene hydrogenation using Wilkinson's catalyst, hydroformylation of olefins using cobalt and rhodium catalyst, polymerization reaction by Ziegler-Natta catalyst, Monsanto acetic acid process, Palladium catalysed oxidation of ethylene-the Wacker process.	5	4
2.0	**Coordination chemistry-III: Reactions of metal complexes**	**18**	
2.1	Energy profile of a reaction - Thermodynamic and kinetic stability, Stability of complex ions in aqueous solutions: Formation constants. Stepwise and overall formation constants. Factors affecting stability of complexes.	2	1, 5
2.2	Determination of stability constants: spectro photometric, polarographic and potentiometric methods.	3	1, 5
2.3	Stability of chelates. Thermodynamic explanation, macrocyclic effects.	1	1, 5
2.4	Classification of ligand substitution reactions-kinetics and mechanism of ligand substitution reactions in square planar complexes, trans effect theory and synthetic applications.	3	1, 6
2.5	Kinetics and mechanism of octahedral substitution-water exchange, dissociative mechanism, associative mechanism - Eigen-Wilkins mechanism, Eigen - Fuoss equation, base hydrolysis, racemisation and isomerisation reactions.	3	1, 6
2.6	Electron transfer reactions: Outer sphere mechanism-Marcus theory, inner sphere mechanism - Taube mechanism.	3	1, 6
2.7	Photochemical reactions-substitution and redox reactions of Cr(III), Ru(II), and Ru(III) complexes. Photo-isomerisation and photo-aquation reactions of metal complexes.	3	1, 6

3.0	**Bioinorganic chemistry**	**18**	
3.1	Essential and trace elements in biological systems, structure and functions of biological membranes, mechanism of ion transport across membranes, sodium-potassium pump.	2	1, 7
3.2	Photosynthesis, porphyrin ring system, chlorophyll, PS I and PS II. Synthetic model for photosynthesis.	2	1, 7
3.3	Role of calcium in biological systems - blood coagulation, muscle contraction.	1	1, 7
3.4	Oxygen carriers and oxygen transport proteins-haemoglobin and myoglobin.	2	1, 7
3.5	Non-haeme iron-sulphur proteins involved in electron transfer-ferredoxin and rubredoxin.	3	1, 7
3.6	Iron storage and transport in biological systems ferritin and transferrin.	3	1, 7
3.7	Redox metalloenzymes-cytochromes, cytochrome P-450, peroxidases and superoxide dismutase and catalases. Nonredox metalloenzymes- Carboxypeptidase A - structure and functions.	3	1, 7
3.8	Nitrogeases, biological nitrogen fixation. Vitamin B_{12} and coenzymes. Toxic effects of metals (Cd, Hg, Cr and Pb).	2	1, 7
4.0	**Spectroscopic Methods in Inorganic Chemistry**	**18**	
4.1	Infrared spectra of coordination compounds. Structural elucidation of coordination compounds containing the following molecules/ ions as ligands- NH_3, H_2O, CO, NO, OH^- , SO_4^{2-} , CN^- , SCN^- , NO_3^-, NO_2^-, CH_3COO^- and X^- (X=halogen). Changes in ligand vibration on coordination with metal ions.	5	1, 8
4.2	Vibrational spectra of metal carbonyls–CD and ORD spectra of metal complexes.	3	1, 8
4.3	ESR spectra: Application to Cu(II) complexes and inorganic free radicals such as PH_4, F_2^- and $[BH_3]^-$.	3	1, 8
4.4	Nuclear Magnetic Resonance Spectroscopy: The contact and pseudocontact shifts, some applications including biological systems, an overview of NMR of metal nuclides with emphasis on ^{11}B, ^{31}P and ^{19}F NMR.	4	1, 8
4.5	Mossbauer Spectroscopy: Application of the technique to the studies of iron and tin complexes.	3	1, 8
5.0	**Nuclear Chemistry**	**18**	
5.1	Nuclear structure, mass and charge. Nuclear moments. Binding energy. Semiempirical mass equation. Stability rules. Magic numbers.	3	1, 9

5.2	Nuclear models: Shell, Liquid drop, Fermi gas, collective and optical models.	3	1, 9
5.3	Equation of radioactive decay and growth. Half life and average life. Radioactive equilibrium. Transient and secular equilibria.	3	1, 9
5.4	Nuclear reactions: Direct nuclear reactions, heavy ion induced nuclear reactions, photonuclear reactions. Neutron captures cross section and critical size.	3	1, 9
5.5	Nuclear fission as a source of energy, Nuclear chain reacting systems. Principle of working of the reactors of nuclear power plants. Breeder reactor. Nuclear fusion reaction, stellar energy.	3	1, 10
5.6	Principles of counting technique such as G.M. counter, proportional, ionization and scintillation counters. Cloud chamber.	3	1, 9

References

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CH 232 ORGANIC CHEMISTRY III

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	describe and explain the physical and chemical principles that underlie molecular structure determination techniques such as UV-visible, IR, mass and NMR spectroscopy.	U, An	1
2.	apply knowledge of molecular structure determination using UV-visible, IR, mass and NMR spectroscopic techniques to identify and/or characterise chemical compounds from experimental data.	Ap, An	1, 8
3.	calculate λ_{max} of a compound, apply IR frequency table to determine the functional groups present in the molecule, interpret mass spectrum of compound from fragmentation.	U, Ap	1, 8
4.	predict likely spectral characteristics of given molecular species; solve the structures of unknown molecules using appropriate spectroscopic techniques.	U, Ap, An	1, 8
5.	devise a 2 D NMR of a compound based on learned principles and solve the structure of a compound based on NMR data.	C, Ap	1, 8
6.	discuss organic transformations with organometallic compounds and predict the products of the reactions.	U	1
7.	propose the retro synthetic pathways to a variety of molecules	U, Ap, C	1
8.	propose mechanisms for chemical reactions, given starting materials, reagents, conditions, and/or products.	U, Ap, C	1
9.	compare the reactions and mechanism and determine the products of a selected set of reactions; identify protecting group strategies.	Ap, E	1
10.	devise combinatorial method to create a library of compounds.	C	1, 6
11.	give examples of stereoselective, regioselective and chemoselective reductions and oxidations.	U	1

.

Module	Course Description	No. of Hrs	CO No.
1.0	**UV-vis and IR Spectroscopy and Mass spectrometry**	**18**	
1.1	Electronic transitions and analysis of UV spectra of enes, enones and arenes. Woodward Fieser rules. Effect	4	1, 2, 3

	of solvent polarity on UV absorption.		
1.2	Principle of characteristic group frequency in IR. Identification of functional groups and other structural features by IR, Hydrogen bonding and IR bands. Sampling techniques.	4	1, 2, 3
1.3	Mass spectrometry-Soft and hard ionization techniques; EI, CI, FAB, Electrospray and MALDI ion sources. Magnetic, High resolution (Double focusing), TOF and quadrupole mass analysers. Characteristic EIMS fragmentation modes and MS rearrangements.	6	1, 2, 3
1.4	Mass spectral fragmentation patterns of long chain alkanes, alkenes, alkynes, alcohols, ethers, thiols, aromatic compounds, aldehydes, ketones, acids, amides, nitro, amino and halo compounds.	4	1, 2, 3
2.0	**NMR spectroscopy and Structural elucidation**	**18**	
2.1	Theory of NMR spectroscopy, chemical shifts, anisotropic effects and coupling constant. Spin-spin interactions in typical systems. First order and higher order spectra.	5	1, 2,
2.2	Simplification methods of complex spectra by high field NMR, shift reagents, chemical exchange and double resonance.	5	1, 2
2.3	^{13}C NMR chemical shifts. Applications of NOE, DEPT, and 2D techniques such as COSY-HSQC, HMQC and HMBC (basic principles only).	5	1, 2, 5
2.4	Spectral interpretation and structural elucidation. Solving of structural problems on the basis of numerical and spectrum based data.	3	1, 4
3.0	**Organometallic compounds in organic synthesis**	**18**	
3.1	Preparation of organo Mg, Al, Li, Cu, Zn, Cr, Grignard reagents in organic synthesis. Alkylation, oxirane addition, carbon dioxide addition, carbonyl addition, enone addition (1,2 - and 1,4 - additions), reduction, and enolisation reactions. Selectivity in Grignard reactions.	5	6, 8
3.2	Reactions of organo Li reagents, Li exchange reaction, its use in the preparation of RLi compounds, addition to C=O, COOH and $CONR_2$, Li dialkylcuprates (Gilman reagent)-preparation and reaction with alkyl halides, aryl halides and enones.	5	6, 8
3.3	Alkynyl Cu(I) reagents, Glasier coupling. Dialkyl cadmium compounds preparation and reaction with acyl halides.	4	6, 8
3.4	Benzene tricarbonyl chromium - preparation and reaction with carbanions. Tebbe's reagent, Silane carbanion and its reactions.	4	6, 8

4.0	**Methods in organic synthesis**	**18**	
4.1	Retrosynthetic analysis and disconnection approach-synthons, synthetic strategy, reliable reaction, disconnect after heteroatom, chemoselectivity, two group disconnections (use of epoxide), creation of cis and trans double bonds, retro synthesis of amines.	3	7, 9
4.2	Regioselectivity in enol alkylation,Lithium enolates, Zimmerman-Taxler model, enamine alkylation, aza enolate, silyl enol ether, alkylation of nitriles, nitro compounds, acids, ketones, aldehydes.	3	7, 9
4.3	Olefin metathesis – first and second generation Grubbs' catalysts. Umpolung concept-1,3-Dithiane, benzoin condensation.	3	7, 9
4.4	Coupling reactions - Heck, Negishi, Sonagashira, Kumada and Suzuki coupling, Stepens-Castro coupling, Stille coupling,	4	7, 9
4.5	Protecting group strategy: Tetrahydropyranyl, silyl, t-butyl, trichloroethyl, acetal and thioacetal as hydroxyl, thiol, carboxyl and carbonyl protecting groups in synthesis.	3	7, 9
4.6	Introduction to combinatorial synthesis - split and pool method only.	2	10
5.0	**Oxidation and Reduction reactions in organic chemistry**	**18**	
5.1	Reduction using boranes and hindered boranes - 9 BBN, disiamylborane, pinacolborane	2	11
5.2	Sodium borohydride and lithium aluminium hydride,$NaCNBH_3$ DIBAL-H, bulky metal hydrides, Li trialkylborohydrides, tri-n-butyltin hydride, diimide, and aluminium alkoxide.	4	11
5.3	Birch reduction, Clemmensen reduction and Wolff - Kishner reduction, Huang - Minlon modification, Rosenmund reduction.	3	11
5.4	McFadeyan-Stevens reaction, allylic and benzylic oxidation, Sharpless epoxidation, oxidation using SeO_2, manganese (IV) oxide, lead tetraacetate, ozone, peracids, DDQ, silver carbonate and Cr(VI) reagents.	5	11
5.5	Jones oxidation, chemo and region selectivity in reductions and oxidations. Swern oxidation, Moffatt oxidation, Sommelet reaction. Applications of HIO_4, Dess-Martin periodinane, OsO_4 and mCPBA.	4	11

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CH 233 PHYSICAL CHEMISTRY III

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	understand the theories of chemical bonding and their application with help of approximate methods predict the nature of orbitals and molecular spectra.	U, Ap, An	1

2.	compare MO and VBT.	An	1
3.	understand the properties of gases and liquids and the nature of the intermolecular forces in them.	U, Ap, An	1
4.	describe the principle behind the determination of surface tension and coefficient of viscosity.	U	1
5.	describe and explain the physical and chemical principles that underlie molecular structure determination techniques like NMR, ESR, Mossbauer, NQR and PES spectroscopy.	U, Ap, An	1
6.	judge the degrees of freedom of systems and understand theories of irreversible thermodynamic systems.	U, Ap, An, E	1
7.	understand the quantum mechanical and non-quantum mechanical methods in computational chemistry, potential energy surface and basis functions.	U, An	1
8.	write the Z matrix of simple molecules.	U, Ap	1
9.	acquire skill in solving numerical problems.	Ap	1

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Module	Course Description	No. of Hrs	CO No.
1.0	**Approximate methods and Chemical Bonding**	**18**	
1.1	Approximate methods: Method of Variation-variation theorem and its proof. Linear variation functions. Secular equations and secular determinants.	2	1
1.2	Method of Perturbation-successive correction to an unperturbed problem. Detailed treatment of first order non-degenerate case only. Hartree-Fock Self-Consistent Field (HF-SCF) method for atoms, Hartree-Fock equations (derivation not required) & the Fock operator.	3	1
1.3	MO theory- The Born-Oppenheimer approximation -MO Theory-LCAO MO method applied to H_2 and H_2^+.	2	1
1.4	MO diagram of homo nuclear diatomic molecules Li_2, Be_2, B_2, C_2, O_2 and F_2 and hetero nuclear diatomic molecules LiH CO, NO and HF.	2	1
1.5	Spectroscopic term symbols for homodiatomic molecules, selection rules for molecular spectra.	1	1
1.6	Valance bond theory - VB treatment of hydrogen molecule only.	2	1
1.7	Comparison of MO and VB theories.	1	2
1.8	Quantum mechanical treatment of sp, sp^2 and sp^3 hybridisation.	2	1
1.9	HMO theory of conjugated systems. Bond order and charge density calculations, free valance. Application of HMO method to ethylene, allyl, butadiene and benzene systems.	3	1, 9
2.0	**Gaseous and Liquid State**	**18**	
2.1	Maxwell's distribution of molecular velocities,	4	3, 9

	influence of temperature, types of molecular velocities- derivation of molecular velocities from Maxwell's equation.		
2.2	Transport phenomena in gases – viscosity of gases, Chapman equation, determination of viscosity of gases, calculation of mean free path.	3	4, 9
2.3	Thermal conductivity, diffusion	3	3
2.4	Degrees of freedom of gaseous molecules - Translational, Rotational and vibrational.	1	3
2.5	Equation of state of real gases- van der Waal's equation, Other equation of states - Virial equation, second virial coefficient and determination of diameter of a molecule.	3	3, 9
2.6	Inter molecular forces - Dipole-dipole interaction, induced dipole-dipole, induced dipole-induced dipole interactions.	1	3
2.7	Liquid state: Liquid vapour equillibria, vapour pressure- methods of measuring vapour pressure - barometric method and dynamic method - equation of state for liquids, structure of liquids-short range order.	1	3
2.8	X-ray diffraction of liquids. Vacancy model for a liquid, radial distribution function.	1	3
2.9	Surface tension - determination of surface tension by drop weight method and drop number method. Viscosity - determination of coefficient of viscosity by Ostwald viscometer.	1	4, 9
3.0	**Spectroscopy II**	**18**	
3.1	Resonance spectroscopy: Nuclear Magnetic resonance Spectroscopy, Nuclear spin. Interaction between nuclear spin and applied magnetic field.	2	5
3.2	Proton NMR. Population of energy levels.	1	5
3.3	Nuclear resonance. Chemical shift. Relaxation methods. Spin-spin coupling. Fine structure.	2	5
3.4	Introduction to instrumentation Fourier Transformation (FT) NMR Spectroscopy: Instrumentation - experimental aspects magnets, radio frequency transmitter, NMR probe and computer. Radio frequency pulses effect of pulses, rotating frame reference, FID, FT technique - data acquisition and storage, signal averaging. Pulse sequences- pulse width, spins and magnetisation vector.	3	5, 9
3.5	ESR spectroscopy: Electron spin. Interaction with magnetic field. Kramer's rule. The g factor. Fine structure and hyperfine structure. Analytical applications of ESR, Determination of reaction rates and mechanisms by ESR, Structural determination by ESR. Elementary idea of ENDOR and ELDOR.	4	5, 9

3.6	Mossbauer spectroscopy: Basic principles. Doppler effect, chemical shift, recording of spectrum, application. Quadrupole effect, Effect of magnetic field.	3	5
3.7	NQR spectroscopy- Principle and application.	2	5
3.8	Photoelectron spectroscopy: Introduction to UV photoelectron and X-ray photoelectron spectroscopy.	1	5
4.0	**Applications of Thermodynamics**	**18**	
4.1	Simple examples of irreversible processes.	1	6
4.2	General theory of non-equilibrium processes. The phenomenological relations. Onsager reciprocal relation. Principle of minimum entropy production.	2	6
4.3	Generalized equation for entropy production, Entropy production from heat flow, matter flow and current flow.	3	6, 9
4.4	Application of irreversible thermodynamics to diffusion. Thermal diffusion, thermo osmosis and thermo-molecular pressure difference.	4	6
4.5	Electro-kinetic effects, the Glansdorf-Pregogine equation. Far from equilibrium region.	3	6
4.6	Three component systems: Graphical representation. Three component liquid systems with one pair of partially miscible liquids. Influence of temperature. Systems with two pairs and three pairs of partially miscible liquids.	3	6
4.7	Solid- liquid system: Two salts and water systems-no chemical combination, double salt formation, one salt forms hydrate, double salt forms hydrate, Isothermal evaporation.	2	6
5.0	**Computational Chemistry**	**18**	
5.1	Introduction to computational chemistry: As a tool and its scope. Potential energy surface-stationary point, saddle point or transition state, local and global minima. Basis functions-Slater type orbitals (STO) and Gaussian type orbitals (GTO).	3	7
5.2	Basis sets: minimal, split valence, polarized and diffuse basis sets, contracted basis sets, Pople's style basis sets and their nomenclature.	2	7
5.3	Quantum mechanical computational methods - Abinitio methods: Introduction to SCF. RHF, ROHF and URHF. (no need of calculation). Wave functions for open shell state, Slater determinants, Roothan concept.	2	7
5.4	Semi empirical methods: Huckels and extended Huckel methods. Strengths and weaknesses. PPP, ZDO, NDDO, INDO, MNDO (AM1, PM3) and CNDO	2	7

	approach.(Mentioning only).		
5.5	Density functional theory methods (DFT) - Electron correlation and introduction to post HF methods. Hohenberg-Kohn theorems, Exchange correlational functional Kohn-Sham orbitals, Local density approximation. Generalized gradient approximation (Only the basic principles and terms to be introduced).	2	7
5.6	Non-quantum mechanical computational methods - Molecular mechanics: Force fields - bond stretching, angle bending, torsional terms, non-bonded interactions, electrostatic interactions and the corresponding mathematical expressions. Commonly used forcefields - AMBER and CHARMM.	2	7
5.7	Construction of Z-matrix for simple molecules. H_2O, H_2O_2, H_2CO, CH_3CHO, NH_3 and CO_2.	2	8
5.8	Structure drawing and energy calculation (geometry optimization) using free software Arguslab, Tinker, NAMD, DL-POLY	3	7

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CH 234 INORGANIC CHEMISTRY PRACTICALS – II

Total 125 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.	U, An	3, 7, 8
2.	estimate a simple mixture of ions (involving quantitative separation) by volumetric and gravimetric methods.	An	7, 8
3.	perform COD, BOD, DO, TDS analysis.	Ap, An	4, 7, 8
4.	predict likely spectral characteristics of given metal compexes solve the structures of unknown metal compexes using appropriate spectroscopic techniques and magnetic measurements .	Ap, An	6, 8
5.	analyse the XRD of simple substances.	An	8
6.	interpret TG and DTA curves.	An	8

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Module	Course Description	No. of Hrs	CO No.
1.	Estimation of simple mixture of ions (involving quantitative separation) by volumetric and gravimetric methods. a) Iron (gravimetric) and Chromium (volumetric) b) Iron (gravimetric) and Zinc (volumetric) c) Copper (volumetric) and Nickel (gravimetric) d) Iron and Copper	40	1, 2

	e) Copper and Nickel		
2.	Environmental Analysis – COD, BOD, DO, TDS	20	1, 3
3.	Spectral Interpretation of metal complexes using IR, UV-vis. spectral data. Supplementary information like metal estimation, CHN analysis, conductivity measurements and magnetic measurements to be provided to the students. Assessment is based on arriving at the structure of the complex and assignment of IR spectral bands.	25	4
4.	Analysis of XRD of simple substances.	15	5
5.	Interpretation of TG and DTA curves .	25	6

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1. A. I. Vogel, A Text Book of Quantitative inorganic Analysis, Longman, 4th edition, 1978.
2. Willard , Merrit and Dean, Instrumental Methods of Analysis, 7th edition, 1986.
3. W. W. Wendlandt, Thermal Methods of Analysis, Inter-Science, New York, 1964.
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CH 235 ORGANIC CHEMISTRY PRACTICALS – II

Total 125 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.	U, An	3, 7, 8
2.	predict likely spectral characteristics of given molecular species; solve the structures of unknown molecules using appropriate spectroscopic techniques	Ap, An	6, 7, 8
3.	develop paper chromatogram of a compound and determine its purity	C	7, 8
4.	estimate quantitatively the Aniline, Phenol, glucose, Ascorbic acid and Aspirin in a sample	Ap	7, 8
5.	estimate colorimetricaly paracetamol, protein and ascorbic acid	Ap	7, 8
6.	use green chemical principles in the synthesis	Ap	4, 7, 8

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Module	Course Description	No. of Hrs	CO No.
A.	**Volumetric estimation of** 1) Aniline 2) Phenol 3) Glucose 4) Ascorbic acid 5) Aspirin	25	4
B.	**Colorimetric estimation** 6) paracetamol with potassium ferricyanide 7) protein by biuret method 8) Ascorbic acid by folin-phenol reagent or phosphotungstic acid methods	25	5
C.	**Spectral identification** 9) UV, IR, ^{1}H NMR, ^{13}C NMR, EI mass spectral identification of Organic compounds from a library of organic compounds (Each students have to record the spectral analysis of a minimum of 40 compounds)	40	1, 2
D.	**Separations of mixtures by Paper Chromatography** 10) Identification of amino acids	10	3
E.	**Single stage preparation of organic compounds by green chemistry**	25	4
	11) Preparation of p-bromoacetanilide using CAN.		
	12) Radical coupling – 1,1-Bis-2-napthol.		
	13) Synthesis of dihydropyrimidinone.		
	14) Synthesis of dibenzalacetone - with lithium hydroxide.		
	15) Photoreduction of benzophenone to benzopinacol (not for end semester evaluation).		
The board of examiners have to choose the combination of a volumetric estimation, a colorimetric estimation, a green synthesis OR paper chromatography and spectral analysis.			

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1. B. S. Furniss, Vogel's text book of practical organic chemistry, 5th Edition, Longman, 1989.
2. D. L. Pavia, G. M. Lampman, G. S. Kriz and R. G. Engel, A microscale approach to organic laboratory techniques, Wadsworth Publishing, 5th Edition, 2012.
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9. For spectral data of organic compounds, see: http://sdbs.riodb.aist.go.jp/sdbs/cgi-bin/direct_frame_top.cgi

CH 236 PHYSICAL CHEMISTRY PRACTICALS – II

Total 125 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.	U, E	3, 7, 8
2.	determine the strength of strong/ weak acids by conductometric titrations.	Ap	7, 8
3.	verify Onsager equation and Kohlraush's law conductometrically .	An, E	7, 8
4.	determine the activity and activity coefficient of electrolyte.	Ap, An	7, 8
5.	determine the concentration of a solution potentiometrically or pH metrically.	Ap, An	7, 8
6.	employ spectrophotometry in determining unknown concentration.	Ap, An	7, 8
7.	determine the viscosity of liquid mixtures and use this in determining the concentration of a component in a mixture.	Ap, An	7, 8
8.	determine the concentration of a liquid mixture using a refractometer .	Ap, An	7, 8
9.	determine the unknown concentration of a given glucose solution.	Ap, An	7, 8

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Module	Course Description	No. of Hrs	CO No.
1.	**Conductometry** a) Determination of strength of strong and weak acids in a mixture b) Determination of strength of a weak acid. c) Precipitation titration ($BaCl_2 \times K_2SO_4$) d) Titration of dibasic acid ($H_2C_2O_4/H_2SO_4$). e) Verification of Onsager equation. f) Verification Kohlraush's law. g) Determination of activity and activity coefficient of electrolyte.	20	1, 2, 3, 4
2.	**Potentiometry** a) Determination of emf of Daniel cell and temperature dependence of emf of a cell. b) Titrations involving redox reactions – Fe^{2+} vs $KMnO_4$, $K_2Cr_2O_7$, $(NH_4)_2Ce(SO_4)_2$ and KI vs $KMnO_4$ c) Determination of the emf of various $ZnSO_4$ solutions and hence the concentration of unknown $ZnSO_4$	20	1,5

	solution. d) Determination of activity and activity constant of electrolytes. e) Determination of thermodynamic constants of reactions.		
3.	**pH metric titrations.** a) Acid alkali titrations using Quinhydrone electrode. b) Titrations(double) involving redox reactions – Fe^{2+} vs $KMnO_4$, $K_2Cr_2O_7$, $(NH_4)_2Ce(SO_4)_2$ and KI vs $KMnO_4$ c) Determination of strengths of halides in a mixture. d) Determination of pH of buffer solutions and hence to calculate the E^o of quinhydrone electrode	15	1, 5
4.	**Spectrophotometry** a) Verification of Beer-Lambert's law. b) Absorption spectra of conjugated dyes (malachite green, methylene blue). c) Determination of concentration of potassium dichromate and potassium permanganate in a mixture. d) To study the complex formation between Fe^{3+} and salicylic acid. e) Determination of pKa of an indicator.	20	1, 6
5.	**Polarimetry** a) Measurement specific rotation of glucose. b) Determination of specific rotation of sucrose c) Determination of unknown concentration of glucose solution and rate constant of its hydrolysis in presence of HCl	15	1, 7
6.	**Viscosity**: a) Viscosity of liquids and mixtures of liquids. b) Verification of Kendall's equation. c) Composition of unknown mixtures. d) Determination of molecular masses polymers by viscosity measurements (Mark-Houwink equation)	15	1, 8
7.	**Refractometry** a) Determination of molar refraction of pure liquids b) Determination of concentration of KCl solution/glycerol solution c) Determination of solubility of KCl in water. d) Determination of molar refraction of solid KCl e) Study the stoichiometry of potassium iodide-mercuric iodide complex. f) Determination of concentration of KI solution.	20	1, 9

References

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Model Question Papers

General Instruction to question paper setters

- There will be a 15 main questions in each question paper divided into 3 sections – A, B and C
- Each of the sections A, B and C will have 5 questions each, **1 from each module**.
- Each question in Section A will have 3 sub questions (a), (b) and (c), of which the candidate has to answer any two (2 marks each).
- Each question in Section B will have 2 sub questions (a) and (b), of which the candidate has to answer any one (5 marks each).
- Candidate should answer any three out of the five questions in Section C (10 marks each).
- Section A carries a total of 20 marks, Section B carries 25 marks, and Section 3 carries 30 marks.
- The maximum marks will be 75 and the duration of the exam will be 3 hrs.

Third Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry/ Branch IV – Analytical Chemistry
CH/CL 231: INORGANIC CHEMISTRY – III
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) Represent diagrammatically the dative bonding seen in metal-cyano complexes.
   (b) Give an example each for a hexahapto ligand and a heptahapto ligand.
   (c) Verify whether $[IrBrCO(PPh_3)_2]$ obeys 18 electron rule or not.

2. (a) List the factors that affect the stability of coordination compounds.
   (b) What is meant by trans effect?
   (c) What is the Kurnakovs test?

3. (a) Give two examples for metallo-enzymes containing iron.
   (b) Briefly discuss the coordination environment of the metal ion in Vitamin B_{12}.
   (c) Explain the mechanism of oxygen binding in haemocyanin.

4. (a) Explain doppler broadening with an example.
   (b) What is superhyperfine splitting in esr spectra?
   (c) How many signals are obtained in the ^{19}F nmr spectra of the following (i) SF_6 (ii) SF_4 (iii) $XeOF_4$. Give reasons for your answer

5. (a) List any two differences between GM counter and Proportional counter.
   (b) Distinguish between half life and average life. How are they related?
   (c) Summarise the liquid drop model of the nucleus.

[2 × 10 = 20]

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) IR spectroscopy provides vital information in during the study of metal carbonyls. Explain.
   (b) Discuss the characteristics of oxidative addition and reductive elimination reactions of organometallic compounds.

7. (a) Give an account of the photochemical reactions of complexes.
   (b) Using $[PtCl_4]^{2-}$ as the starting material, how can the cis and trans isomers of $[PtCl_2(NH_3)(PPh_3)]$ and $[PtCl_2(NO_2)(NH_3)]^-$ be prepared

8. (a) Explain the role played by calcium in blood clotting.
   (b) Briefly discuss nitrogen fixation.

9. (a) Discuss the application of ESR spectroscopy to Cu (II) complexes.
   (b) Discuss the utility of Mossbauer spectroscopy in the study of complexes of iron.

10. (a) Give a brief note on nuclear shell model
    (b) What is meant by radioactive equilibrium? The ratio between atoms of two radioactive elements A & B at equilibrium was found to be 3.1×10^9:1. If the half life period of A is 2×10^{10} years what is the half life of B.

[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. Construct the MO diagram of dibenzene chromium and explain the bonding using MOT.

12. What are inner sphere and outer sphere reactions? Explain the salient features.

13. Discuss in detail the function of PS-I and PS-II in photosynthetic activity.

14. How is CD and ORD employed in the structure determination of metal complexes?

15. Explain the principle involved in the working of the reactors in nuclear power plants

[10 × 3 = 30]

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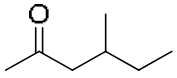
Third Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry/ Branch IV – Analytical Chemistry
CH/CL 232: ORGANIC CHEMISTRY – III
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

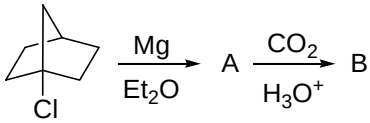
Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) What is the effect of solvent polarity on n–π* transition?
   (b) How will you distinguish between Intramolecular hydrogen bonding and intermolecular hydrogen bonding using IR spectroscopy?
   (c) Predict the fragmentation pattern of the following molecule

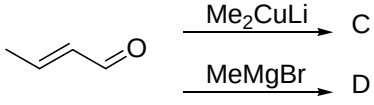


2. (a) How many peaks do you expect in the nmr spectrum of N,N-dimethyl formamide? Explain.
   (b) How does the coupling constant differ between a geminal and vicinal hydrogens?
   (c) What are shift reagents? Give an example

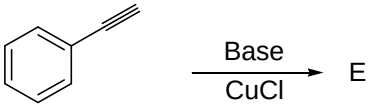
3. (a) Complete the reaction



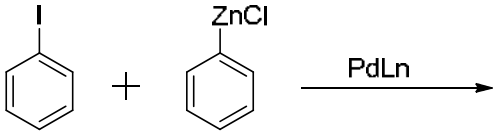
   (b) Predict the structure of the products C and D in the reaction given below



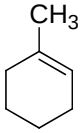
   (c) Write the structure of the compound E in the reaction given below



4. (a) Identify the reaction and predict the product

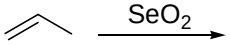


(b) Suggest a retrosynthetic route for the following compound

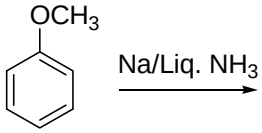


(c) Give any two protecting groups for hydroxyl group.

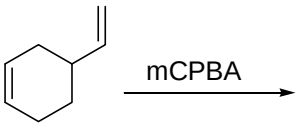
5. (a) Complete the reaction



(b) Identify the product in the reaction given below



(c) What is the product obtained in the following reaction?



[2 × 10 = 20]

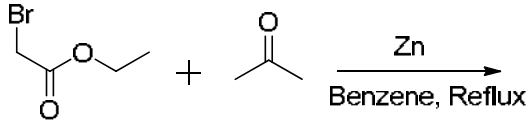
SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

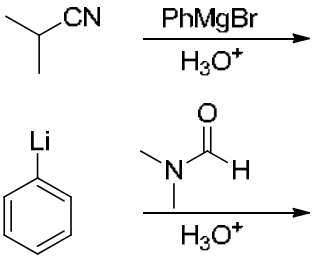
6. (a) Discuss the principle and applications of MALDI.
   (b) Give the mass fragmentation pattern of toluene and phenol.

7. (a) Explain the anomaly in the chemical shift value of acetylene and benzene.
   (b) Write on any two 2D NMR technique.

8. (a) Complete the following reaction and suggest a suitable mechanism



(b) Predict the product (s) of the following reactions with mechanism



9. (a) Convert benzaldeyde to ethylbenzene using umpolung strategy.
   (b) Discuss the mechanism for Stille coupling with the help of an example.

10. (a) Illustrate Sharpless asymmetric epoxidation with the help of an example.
    (b) Give a brief outline of four Cr(VI) reagents used for oxidation reactions.

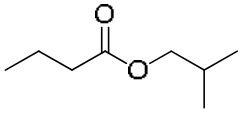
[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. a) Discuss the mass spectral fragmentation pattern of aromatic compounds, ketones and amides.
    b) Write on FAB.

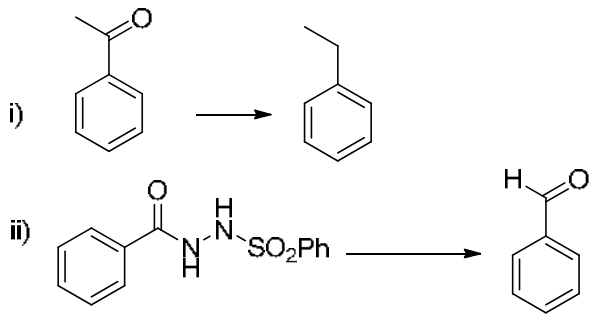
12. a) ^{1}H NMR spectrum of a compound gives the following spectral data. δ9.78(1H, s), 7.75(2H, d), 6.90(2H,d), 3.8(3H, s). Identify the compound
    b) Discuss DEPT nmr of



13. a) Discuss the preparation and reactivity of Tebbe's reagent.
    b) Illustrate the synthetic utility of silyl carbanions using examples

14. a) Discuss Suzuki and Heck coupling with the help of mechanism.
    b) Write in brief on olefin metathesis

15. a) Comment on the reactivity of various bulky metal hydrides using suitable examples.
    b) How will you bring about the following conversion? Suggest a suitable mechanism



[10 × 3 = 30]

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Third Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry/ Branch IV – Analytical Chemistry
CH/CL 233: PHYSICAL CHEMISTRY – III
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) Arrange O_2, O_2^+, O_2^- in the increasing order of stability. Justify your answer.
   (b) Write briefly about 'Perturbation theory'.
   (c) Write the Hamiltonian for He atom and suggest a suitable trial wave function for it.

2. (a) Predict and justify the condition at which a real gas obeys the following equation of state PV= RT+ Pb.
   (b) The van der Waals constant a for two gases are 4.17 and 0.024 $dm^6atm\ mol^{-2}$ respectively. Explain which is easily liquefiable and why?
   (c) At what pressure does the mean free path of argon gas at 25°C become comparable to the diameter of the atoms themselves? Given $\sigma = 0.36\ nm^2$.

3. (a) The shift in frequency shown by a proton from TMS is 180 Hz, when measured on a 100 MHz instrument. Calculate the chemical shift in ppm.
   (b) Calculate the ESR frequency of an unpaired electron in a magnetic field 0.33Tesla.Given for free electron g=2, $\beta=9.273\times10^{-27}$ J/T.
   (c) Explain the basic principle of X-ray photo electron spectroscopy.

4. (a) Apply phenomenological equation in thermal diffusion.
   (b) How is temperature influence the miscibility curve of a three-component system forming one pair of partially miscible liquids?
   (c) What are the conditions under which linear relations are valid to understand irreversible processes?

5. (a) How do parameterization techniques help to reduce the task of computation?
   (b) Construct the z-matrix of CO_2 molecule.
   (c) Differentiate STO and GTO.

$[2 \times 10 = 20]$

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) Calculate the first order correction to the energy levels for a one dimensional box with a slanted bottom whose potential energy varies as

v_x/a where a is the length of the box.

(b) Apply HMO theory to butadiene molecule and discuss the molecular orbitals and their corresponding energy levels.

7. (a) Calculate Cv for the following gases at room temperature.
i) He ii) HCl iii) CO_2
Discuss the principle of equipartition of energy.
(b) Which among CO_2 and O_2 undergo effusion faster. Justify your answer.

8. (a) Write a brief account of NMR spectroscopy.
(b) Discuss the application of Mossbauer spectroscopy.

9. (a) Derive expressions for entropy production in the case of system contains both the matter flow and current flow.
(b) Verify the Onsager reciprocal relation in the case of simple chemical reaction $A \rightleftharpoons B$.

10. (a) Write a note on non-quantum mechanical method of energy calculation.
(b) What is potential energy surface? Explain its significance.

$[5 \times 5 = 25]$

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. Discuss the bonding in H_2 molecule by valence bond theory.

12. Discuss about the transport properties of gas. Show that the ratio of thermal conductivity to that of coefficient of viscosity = Cv/M

13. a) Explain the principle and applications of NQR spectroscopy.
b) When N_2 gas is excited with radiation of energy 21.22 eV from a helium lamp, electrons are ejected with kinetic energies 5.63eV and 4.53 eV. What are their binding energies?

(7+3)

14. a) Draw the phase diagram of a three-component liquid system with three pairs of partially miscible liquids. Explain.
b) How would you understand (i) thermo osmosis and (ii) thermal diffusion from irreversible thermo dynamics?

(5+5)

15. a) Write briefly on ab-initio methods used in computational chemistry? What are the merits and demerits of the method?.
b) Explain the terms i) force field ii) contracted Gaussians.

(7+3)

$[10 \times 3 = 30]$

SEMESTER IV

CH 241 CHEMISTRY OF ADVANCED MATERIALS

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	understand dimensions, synthesis, physicochemical properties of nanomaterials and its applications.	U, Ap, An	1
2.	understand and apply characterization tools for analysing nano structures.	U, Ap, An	1
3.	outline and recognize the types of polymerization, kinetics and mechanisms.	U, Ap, An	1
4.	understand the stereochemical aspects and methods for the determination of molecular weights of polymers.	U, Ap, An	1
5.	discuss the synthesis and applications of selected classes of speciality polymers.	U, Ap, An	1, 5
6.	distinguish the types and important applications of smart materials.	U, Ap, An	1, 5

PSO–Programme Specific Outcome CO–Course Outcome
Cognitive Level: R–Remember U–Understanding Ap–Apply
An–Analyse E–Evaluate C–Create

Module	Course Description	No. of Hrs	CO No.
1.0	**Introduction to Nanomaterials and Nanotechnology**	**18**	
1.1	Nanomaterials: 0D, 1D, 2D and 3D nanomaterials-fundamental physicochemical principles - size dependence of the properties of nanomaterials - quantum confinement. Nanocomposites.	3	1
1.2	Synthesis of nanomaterials: Sol-Gel, colloidal precipitation, co-precipitation, hydrothermal, vapour deposition, and sonochemical method.	3	1
1.3	Carbon nanostructures and clusters: Graphenes, carbon nanotubes and fullerenes (C_{60}) - Synthesis, properties and applications.	4	1
1.4	Metal nanoparticles: Synthesis and properties (optical, electronic, magnetic), surface plasmon resonance.	3	1
1.5	Evolving interfaces of nanotechnology: Nanobiotechnology, nanoelectronics, nano sensors, nano-biosensors, nano tweezers, elementary ideas about nano catalysts, nano photocatalysts, nanofiltration.	3	1
1.6	Nanomedicines-nanoparticles for medical imaging and targeting cancer cells and nano encapsulation for drugdelivery to tumours. Nanotoxicology.	2	1

2.0	**Characterization Tools in Nanotechnology**	**18**	
2.1	Electron microscopies: Scanning electron microscopy (SEM), Transmission Electron Microscopy (TEM), High Resolution Transmission Electron Microscopy (HR-TEM).	4	2
2.2	Probe microscopies: Atomic Force Microscopy (AFM), Scanning tunnelling microscopy (STM), Scanning tunnelling electron microscopy (STEM).	4	2
2.3	X-ray methods: X-ray diffraction (XRD), X-ray Photoelectron spectroscopy (XPS), Energy Dispersive X-ray Spectroscopy (EDAX), X-ray Fluorescence (XRF)	4	2
2.4	Laser scattering method: Dynamic light scattering (DLS)	1	2
2.5	Spectroscopic techniques: IR spectroscopy for surface functionalization of nanoparticles, UV-visible - Diffused reflectance spectroscopy, photoluminescence, Raman spectroscopy. (Basic understanding of each technique with special emphasis on characterization at nano scale).	5	2
3.0	**Polymerization processes**	**18**	
3.1	Free radical addition polymerization-kinetics and mechanism. Chain transfer. Cationic and anionic polymerization: Kinetics and mechanism. Step growth polymerization - Polymer characterization – Molecular weights.	3	3
3.2	Linear vs cyclic polymerization. Other methods of polymerization - bulk, solution, melt, suspension, emulsion and Dispersion techniques.	3	3
3.3	Polymer stereochemistry: Configuration and conformation, Tacticity, Chiral polymers.	3	4
3.4	Molecular weight distribution and molecular weight control. Methods for determining molecular weights-static, dynamic, viscometry, light scattering and GPC.	4	4
3.5	Crystalline and amorphous states - Glassy and rubbery states. Glass transition temperature and crystalline melting of polymers. Degree of crystallinity - X-ray diffraction.	3	4
3.6	Thermal stability of polymers - Application of DSC.	2	3
4.0	**Speciality Polymers**	**18**	
4.1	Industrial Polymers: carbon chain and hetero chain polymers-synthesis and applications. Polymeric reagents, catalysts and substrates.	3	5
4.2	Conducting polymers: Synthesis & applications of	3	5

	polyacetylenes, polyanilines, polypyrroles & polythiophines.		
4.3	Photo responsive and photorefractive polymers. Polymers in optical lithography.	3	5
4.4	Drug delivery - Drug carriers - Polymer based nanoparticles.	3	5
4.5	Basic concepts about polymer based LEDs and lithium-polymer batteries.	3	5
4.6	Liquid crystalline polymers - Main chain and side chain liquid crystalline polymers. Phase morphology.	3	5
5.0	**Smart materials**	**18**	
5.1	Piezoelectric, magnetostrictive, halochromic, chromogenic, electrochromic, thermochromic, magnetocaloric and thermoelectric materials.	4	6
5.2	Chemistry behind photochromism in spiropyrans, spirooxazines, diarylethenes, azobenzenes, quinones. Examples for photochromic coordination compounds.	4	6
5.3	Shape-memory polymers, pH-sensitive polymers, Temperature-responsive polymers, dielectric elastomers.	4	6
5.4	Self-healing polymers and concept of mechanophores.	3	6
5.5	Introduction to ferrofluids, concept of pseudo elasticity.	3	6

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CH 242 (a) INORGANIC CHEMISTRY IV

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	explain the schemes for σ and π bonding with examples.	U	1
2.	explain MO and Ligand field theory with the support of group theory and construct the MO diagram of octahedral complexes.	U, C	1
3.	apply character tables to find out the Infrared and Raman active modes for C_{2v}, C_{3v} and D_{4h}.	Ap, An	1
4.	assimilate the concepts of molecular recognition, self-assembly, dynamic combinatorial chemistry and supramolecular chirality, and be aware of the most important work in the field.	U	1
5.	understand the nature of bonding in metal atom clusters and distinguish Low nuclearity and High nuclearity carbonyl clusters.	U, An	1
6.	perform the electron counting schemes in cluster compounds.	Ap, An	1
7.	differentiate the different types of cluster molecules and understand their utility in catalysis.	An	1
8.	understand and explain the role of metal ions in biological systems and give examples for the use of metals in medicine.	U, An	1
9.	differentiate the defects arising due to deficiency and excess presence of metal ions in the body.	An	1
10.	explain the acid base concept in non aqueous media and identify the reactions taking place in selected non aqueous solvents.	An	1

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Module	Course Description	No. of Hrs	CO No.
1.0	**Applications of group theory**	**18**	
1.1	Hybrid orbitals and molecular orbitals for simple molecules. Transformation properties of atomic orbitals. Hybridisation schemes for σ and π bonding with examples.	3	1
1.2	MO theory for AB_n type molecules. Molecular orbitals for regular octahedral, tetrahedral and metals and sandwich compounds.	3	2
1.3	Ligand field theory: Splitting of d orbitals in different environments using group theoretical considerations.	3	2
1.4	Construction of energy level diagrams. Correlation diagram. Method of descending symmetry. Tanabe-Sugano diagrams. Selection rules for electronic spectra.	3	2
1.5	Molecular orbitals in octahedral complexes. Formation of symmetry adapted group orbitals of ligands. MO diagram.	3	2
1.6	Symmetry and selection rules: Symmetry properties of common orbitals. Application of character tables to infrared and Raman spectroscopy. Infrared and Raman active modes for C_{2v}, C_{3v} and D_{4h}.	3	3
2.0	**Supramolecular Chemistry**	**18**	
2.1	Concepts and language. Molecular recognition: Molecular receptors for different types of molecules, design and synthesis of coreceptors and multiple recognition.	4	4
2.2	Strong, weak and very weak Hydrogen bonds. Utilisation of H-bonds to create supramolecular structures. Use of H bonds in crystal engineering and molecular recognition.	4	4
2.3	Supramolecular reactivity and catalysis. Transport processes and carrier design.	3	4
2.4	Supramolecular devices. Supramolecular photochemistry, supramolecular electronic, ionic and switching device.	4	4
2.5	Some examples of self-assembly in supramolecular chemistry.	3	4
3.0	**Metal-Metal bonds and Metal Clusters**	**18**	
3.1	Metal–Metal bonds and metal atom clusters. Conditions favourable for formation of M–M bonds, Compounds with M–M multiple bonds.	4	5
3.2	Dinuclear compounds of Re, Cu and Cr, metal-metal multiple bonding in $(Re_2X_8)^{2-}$.	3	5
3.3	Tri , Tetra and hexa nuclear clusters, Isoelectronic and isolobal relationships, Low nuclearity and High nuclearity carbonyl clusters (LNCCs and HNCCs).	3	5

3.4	Hetero atoms in metal atom clusters, electron counting schemes for HNCCs – Capping Rule.	3	6
3.5	Cubane Clusters, Chalcogenide Clusters, Chevrel Phases. Zintl Anions and Cations.	4	7
3.6	Molecular Clusters in catalysis	1	7
4.0	**Selected topics in Bioinorganic Chemistry**	**18**	
4.1	Copper on biochemical systems. Oxidase activity, superoxide dismutase activity. Electron transport in biology.	4	8
4.2	Structure and function of copper proteins in electron transport process. Oxygen transport copper proteins. Hemocyanin-copper transport, copper enzymes-Azurin, plastocyanin.	4	8
4.3	Inorganic medicinal chemistry. Metals in medicine. Metal deficiency and diseases. Toxic effects of metals. Effect of deficiency and excess of essential metal ions.	3	9
4.4	Toxicity due to non essential elements and speciation. Detoxification mechanism.	3	8
4.5	Role of lithium and aluminium in biological systems. Chelation therapy and chemotherapy.	2	9
4.6	Anticancer drugs and vanadium based diabetics drugs.	2	9
5.0	**Acids, Bases and Non-aqueous Solvents**	**18**	
5.1	Acid base concept in non aqueous media-HSAB concept, solvent effects, linear free energy relationship – mechanism and methods of determination, super acids	4	10
5.2	Reactions in non-aqueous solvents. Ammonia-solutions of metals in liquid ammonia.	3	10
5.3	Protonic solvents: anhydrous sulfuric acid, hydrogen halides.	3	10
5.4	Aprotic solvents: non-polar solvents, non-ionizable polar solvents, polar solvents undergoing autoionization, liquid halogens, interhalogen compounds, oxyhalides, dinitrogentetroxide, sulphurdioxide.	8	10

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CH 242 (b) ORGANIC CHEMISTRY IV

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	define secondary metabolites from plants and animals.	R	1
2.	explain the biosynthesis of terpenes and sterols, illustrate the structural elucidation and synthesis of natural products.	U, An	1
3.	list the forces involved in molecular recognition and recognize molecular receptors.	U	1
4.	quote molecular recognition events in biological systems.	U	1
5.	discuss the methods of creating combinatorial libraries and its processing to locate lead molecule.	U	1
6.	explain the various stages in drug development process, and outline the synthesis of paracetamol, phenobarbital, diazepam, sulphamethoxazole, benzylpenicillin, and chloramphenicol.	R, U, C	1
7.	construct a solid phase synthesis of tripeptide from any three aminoacids, explain protection, deprotection and automated synthesis of peptides and nucleotides.	U, C	1
8.	describe twelve principles green chemistry.	R	1, 4
9.	illustrate reactions in which green chemistry principles are applied and calculate atom economy.	Ap, An	1, 4

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Module	Course Description	No. of Hrs	CO No.

1.0	**Chemistry of natural products and biomolecules**	**18**	
1.1	Introduction to primary and secondary metabolites in plants. Extraction methods of chemical constituents from plants, such as fractionation using solvents, specific extraction of alkaloids and supercritical fluid extraction. Characterizations of isolated compounds (terpenes, sterols, alkaloids, carbohydrates, flavonoids and poly phenols) by colour reactions and spray reagents.	6	1
1.2	Biosynthesis of terpenes from acetyl coenzyme A, sterols via squalene.	3	2
1.3	Determination of carbon skeleton of alkaloids (Hofmann, Emde and Von Braun degradation methods). Structural elucidation of ephedrine, atropine.	3	2
1.4	Classification of pigments, structure elucidation of β-carotene.	3	2
1.5	Synthesis of quercetin, synthesis of testosterone, androsterone, progesterone (from cholesterol), estrone.	3	2
2.0	**Molecular recognition and supramolecular chemistry**	**18**	
2.1	Introduction to supramolecular chemistry. The concepts of molecular recognition, host, guest and receptor systems. Forces involved in molecular recognition. Hydrogen bonding, ionic bonding, π-stacking, van der Waals and hydrophobic interactions	4	3
2.2	Introduction to molecular receptors, tweezers, cryptands and carcerands, cyclophanes, cyclodextrins and calixarenes- typical examples.	4	3
2.3	Non-covalent interactions in biopolymer structure organization. Role of self-organization and self-association in living systems-tobacco mosaic virus, cell membrane.	4	4
2.4	Importance of molecular recognition in DNA and protein structure, their function and protein biosynthesis – basic aspects only.	4	4
2.5	Supramolecular systems like Organic zeolite, Clathrate hydrates of gases, Helicates, liquid crystals – elementary idea only	2	4
3.0	**Medicinal chemistry**	**18**	
3.1	Combinatorial organic synthesis, introduction, methodology, automation, solid supported and solution phase synthesis, study of targeted or focused libraries and small molecule libraries. Application - drug discovery.	5	5

3.2	Drug design and development-Discovery of a drug, a lead compound. Development of drug-Pharmacophore identification, modification of structure, structure-activity relationship, structure modification to increase potency. Lipophilicity.	5	6
3.3	Computer assisted drug design. Receptors and drug action. Natural products and drug development. Different classes of drugs with examples.	4	6
3.4	Synthesis of paracetamol, phenobarbital, diazepam, sulphamethoxazole, benzylpenicillin, chloramphenicol.	4	6
4.0	**Chemistry of biopolymers and polymers**	**18**	
4.1	Peptide bond formation methods. SPPS, Mechanism, amino and carboxy protection in SPPS. Synthesis of tripeptides, A, G, C, T, U, adenosine, ADP and ATP. Automated polypeptide and oligonucleotide synthesis.	6	7
4.2	Structure organization of proteins and poly nucleotides. Protein sequencing by Edmans method. Protein denaturation.	6	7
4.3	Synthesis of stereo regular polymers. Ziegler-Natta catalyst. Polymers in organic synthesis - supports, reagents and catalysts. Biodegradable polymers.	6	7
5.0	**Green chemistry**	**18**	
5.1	Twelve principles of green chemistry. Green chemical strategies for sustainable development- Reaction mass balance, atom economy evaluation for chemical reaction efficiency, green solvents, reaction media- Synthesis under water, solventless, fluorous and ionic liquid media.	6	8, 9
5.2	Synthesis using scavenger resins, catalysis and biocatalysis. Green computation. Green processes-microwave synthesis- fundamentals of microwave synthesis - Two principal mechanisms for Interaction with matter - The Microwave Effect with examples - Single-Mode and Multimode Microwave cavities.	6	8, 9
5.3	Microwave technology-Techniques and applications. Sonochemical synthesis. Applications of sonication in the synthesis of organic compounds.	6	8, 9

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CH 242 (c) PHYSICAL CHEMISTRY IV

Total 90 h

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	apply the group theory in the identification of IR and Raman active normal modes in molecules coming under various point groups such as C_{2v}, C_{3v}, C_{4v}, $D_{3h,}$ Td and Oh.	Ap	1
2.	apply group theory in solving spectroscopic problems.	Ap	1
3.	solve the problems in Exactly solvable systems like Simple Harmonic Oscillator, rigid rotor and the Hydrogen atom.	Ap, An	1
4.	explain the approximation methods used in quantum mechanics	U	1
5.	illustrate trial wave functions for calculation of H atom and particle in a 1D box as examples.	U, Ap	1
6.	set up secular determinants	C	1

7.	explain the variation in the state of a system with time	U, An	1
8.	apply computational methods as potential tools for practicing chemistry	An	1
9	construction of Z-matrices of simple molecules H_2, H_2O, H_2O_2, H_2CO, CH_3CHO, CH_4, C_2H_6 and with dummy atom, CO_2, NH_3, C_6H_6.	C	1
10.	explain the commonly using force fields (MM3, MMFF, AMBER and CHARMM) and Softwares.	Ap	1
11.	Compare Molecular Mechanics, Ab-initiomethod, Semi-empirical method and DFT method of computations.	E	1

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Module	Course Description	No. of Hrs	CO No.
1.0	**Applications of group theory**	**18**	
1.1	Spectroscopic applications: Transition moment integral transition moment operator. Vanishing matrix element. Symmetry selection rule for IR, Raman and electronic spectra. Dipole and polarizability transition moment operator.	3	1, 2
1.2	Identification of IR and Raman active normal modes in molecules coming under various point groups such as C_{2v}, C_{3v}, C_{4v}, D_{3h}, Td and Oh.	3	1, 2
1.3	Mutual exclusion and complementarity principle of IR and Raman spectra and their use in the identification of molecular structures	3	1, 2
1.4	Probability of overtone and combination bands. Identification of allowed and forbidden electronic transitions in carbonyl groups. Vibronic transitions.	3	1
1.5	Application to MO theory: Symmetry adapted LCAO-MO theory of π (pi)-bonded hydrocarbons	3	1
1.6	Projection operator and its use in the construction of wave functions of π – molecular orbitals, secular equations and use of symmetry for simplifying the calculations of energy and wave functions of ethylene, butadiene and carbocyclic systems such as benzene and naphthalene.	3	1
2.	**Exactly solvable systems**	**18**	
2.1	Simple Harmonic Oscillator: Wave equation for 1D harmonic oscillator. Complete solution and their properties. 3D Harmonic oscillator. Potential energy in three dimension and Schrodinger wave equation in Cartesian coordinate. Separation of variables and solution of the equation for energy and wave function. Degeneracy.	3	3
2.2	Rigid rotor: Schrodinger equation in polar Coordinate. Angular momentum operator for rigid rotor. Separation of variables and complete solution for ϕ and θ equations.	3	3

2.3	Legendre polynomials and associated Legendre functions. Normalisation of associated Legendre functions and evolution of the values of orbital angular momentum quantum number. Recursion relations. Rigid rotor wave function and energy.	3	3
2.4	The Hydrogen atom: Schrodinger wave equation in polar coordinate. Separation of variables and complete solution of the radial part. The associated Laguarre polynomial. Normalisation. The evolution of the value of the principal quantum number.	3	3
2.5	The spherical harmonics and the radial part of the wave function. The total wave function of H atom. The wave functions of Hydrogen like atomic orbitals and explanations for the shapes of various orbitals.	3	3
2.6	Angular momentum, angular momentum operators (L_x, L_y, L_z and L_2) and their commutation properties. Spherical harmonics as eigen functions of angular momentum operator L and L^2. Ladder operator method for angular momentum. Space quantisation.	3	3 $_z$
3.0	**Approximate method I**	**18**	
3.1	Schrodinger wave equation for He atom and anharmonic oscillator and difficulty to get the exacts solution.	3	4
3.2	The Variation method: Variation theorem and its proof. The variation integral and its properties. Variational parameters. Trial wave functions.	3	4
3.3	Illustration of trial wave functions for calculation of H atom and particle in a 1D box as examples.	3	5
3.4	Trial functions as linear combination of orthonormal functions, linear combinations of functions containing variational parameters as trial functions.	3	5
3.5	Setting up of secular determinants. Variation methods of normal state of He.	3	6
3.6	The SCF method, SCF and variation method. Strength and limitation of the method.	3	6
4.0	**Approximate method II**	**18**	
4.1	The perturbation method. The generalised perturbation method. The idea of successive correction to unperturbed systems.	3	4
4.2	First order perturbation. Correction of wave function and energy. Theory of non - degenerate level perturbation. The normal Helium atom.	3	4
4.3	The first order perturbation of the degenerate level. The hydrogen atom.	3	4
4.4	Second order perturbation theory. Correction for wave	3	4

	function and energy. Stark effect.		
4.5	Time dependant wave equation: Variation in the state of a system with time. Emission and absorption of radiation.	3	7
4.6	The Einsteins transition probability and its calculation. Selection rules and intensity of spectrum for harmonic oscillator, rigid rotor and hydrogen atom.	3	4
5.0	**Computational methods**	**18**	
5.1	Computational methods as potential tools for practicing chemistry. Potential energy surface, saddle point, local minima and global minima. Geometry optimisation. Exchange and overlap integrals. Difficulty in evaluating them with H-like wave functions. Slater Type functions (STO), approximation of STO with Gaussian type functions. Contracted Gaussians.	3	8
5.2	Basis sets: minimal basis set, split valance basis set, polarised basis set and diffused basis set. Model chemistry and notations. Geometry input - in terms of Cartesian coordinates and internal coordinates. Z-matrix, construction of Z-matrices of simple molecules H_2, H_2O, H_2O_2, H_2CO, CH_3CHO, CH_4, C_2H_6 and with dummy atom, CO_2, NH_3, C_6H_6.	3	9
5.3	Molecular mechanics method: Force fields, potential energy expressions for bond stretching, bending, torsion, non-bonded interactions, electrostatic interaction and H-bonding. Setting up of force field expressions. Method of parameterisation. Use of molecular mechanics. Brief introduction to commonly using force fields (MM3, MMFF, AMBER and CHARMM) and Softwares.	3	10
5.4	Ab-initio method: Hartree-Fock Self Consistent Field method. Slater determinant. Post Hartree-Fock methods –Configuration Interaction (CI) and Moller Plesset (MP) methods.	3	11
5.5	Semi empirical method: Basic principle of the method. Its variants, ZDO, CNDO and INDO.	3	11
5.6	Density Functional method: Functional. Hohenberg-Kohn theorems. Kohn-Sham orbitals. Basic idea of Local Density (LD) approximation, Generalised Gradient approximation and hybrid (BLYP, B3LYP) methods. Comparative study of Molecular Mechanics, Ab-initiomethod, Semi-empirical method and DFT method of computations.	3	11

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CH 243 (a) Dissertation

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	demonstrate an advanced theoretical and technical knowledge of chemistry as a creative endeavour; analyse, interpret and critically evaluate scientific information.	Ap, An	1
2.	present information, articulate arguments and conclusions, in a variety of modes, to audiences in their field of research.	E, C	5, 8
3.	as part of a team or individually, design, conduct, analyse and interpret results of an experiment, and effectively communicate these in written reports and other formats.	Ap, An	3, 7
4.	develop an understanding of the requirements to undertake independent research in a chemistry field.	U	6, 9
5.	demonstrate an understanding of the relationship between scientific research and the progress of new knowledge in a global scenario.	An	5, 6, 9

CH 243 (b) Visit to R & D Centre

CO No.	Expected Course Outcomes *Upon completion of this course, the students will be able to*	Cognitive Level	PSO No.
1.	Understand the relevance of independent supervised research in a chemistry field and the need of well-developed judgement, adaptability and accountability as a practitioner or learner	U, An	2, 9

Model Question Papers

General Instruction to question paper setters

- There will be a 15 main questions in each question paper divided into 3 sections – A, B and C.
- Each of the sections A, B and C will have 5 questions each, **1 from each module**.
- Each question in Section A will have 3 sub questions (a), (b) and (c), of which the candidate has to answer any two (2 marks each).
- Each question in Section B will have 2 sub questions (a) and (b), of which the candidate has to answer any one (5 marks each).
- Candidate should answer any three out of the five questions in Section C (10 marks each).
- Section A carries a total of 20 marks, Section B carries 25 marks, and Section 3 carries 30 marks.
- The maximum marks will be 75 and the duration of the exam will be 3 hrs.

Fourth Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry/ Branch IV – Analytical Chemistry
CH/CL 241: CHEMISTRY OF ADVANCED MATERIALS
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) What is meant by quantum confinement?
   (b) Explain the synthesis of metal nanoparticles with an example.
   (c) Write a short note on nano toxicology?

2. (a) What is EDAX?
   (b) How XPS is used in nano technology?
   (c) How diffused reflectance spectroscopy is used in characterisation of nanoparticles?

3. (a) What do you mean by chain transfer in polymerization process?
   (b) Mention two advantages and two disadvantages of solution polymerization over bulk polymerization.
   (c) Explain briefly “auto acceleration” in radical polymerization? Why does it happen?

4. (a) What are conducting polymers?
   (b) Name any two polymeric reagents.
   (c) Which are the polymers used in optical lithography?

5. (a) What are halochromic materials?
   (b) Write a note on pH-sensitive polymers.

(c) What are piezo electric materials?

[2 × 10 = 20]

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) Explain the relation between size and properties of nano-materials.
   (b) Explain the CVD method used in the preparation of nanoparticles.

7. (a) Explain the use of powder XRD in determination of particle size of nanomaterials.
   (b) How is electron microscopy used as characterisation techniques?

8. (a) What are chain transfer agents? Describe their effect on rate expression and molecular weight obtained in the presence of chain transfer agent.
   (b) Unlike radical polymerisation both cationic and anionic polymerization show a marked dependence on the type of solvent used. Discuss on this.

9. (a) Discuss the structure and working principle of lithium polymer batteries.
   (b) Explain in detail the synthesis of polythiophenes.

10. (a) Explain the chemistry behind photochromism in spirooxazines and quinones.
    (b) Write short note on synthesis and application of ferrofluids.

[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. Explain application and role of metal nano particles in catalysis with examples.

12. Discuss the applications of DLS and IR spectroscopy in the analysis of nanomaterials.

13. Elaborate any two methods to determine the molecular weight of polymers.

14. Explain the application of polymers in drug delivery and in catalysis.

15. Describe with proper examples:
    (a) magnetostrictive materials
    (b) thermoelectric materials
    (c) self-healing polymers
    (d) dielectric elastomers.

[10 × 3 = 30]

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Fourth Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry
CH 242(a): INORGANIC CHEMISTRY – IV
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) What is the point group of NO_3^-? How does it's symmetry change when complexed as unidentate ligand?
   (b) Give the splitting of d-orbitals in a square pyramidal geometry?
   (c) Demonstrate that C_3 and C_3^2 belong to the same class in C_{3v} point group.

2. (a) What is meant by macrocyclic effect?
   (b) Give any two examples of self-assembly in supramolecular chemistry.
   (c) What are the three basic functions of supramolecular species?

3. (a) What are anionic clusters? Give examples
   (b) Explain Wade's rules to calculate the number of framework electrons in clusters.
   (c) Clusters of $Co(CO)_{12}$ and $Co_3FeH(CO)_{12}$ are isolobal to each other. Explain

4. (a) What is cisplatin? What is it's importance?
   (b) What is the role of Lithium in biological systems?
   (c) Write any two diseases caused by the deficiency of copper in the body.

5. (a) Give examples of room–temperature molten salts that could be used as non-aqueous solvents?
   (b) What is meant by levelling effect of solvent?
   (c) Which species would act as a base in (1) BrF_2 and (2) liquid SO_2.Why?

[2 × 10 = 20]

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) Give the salient features of Tanabe-Sugano diagram taking d^5 ion as an example.
   (b) Discuss the application of group theory in arriving at the selection rules for the electronic spectrum of metal complexes.

7. (a) Explain the importance of supramolecular chemistry in the field of catalysis
   (b) What are the advantages and applications of supramolecular chemistry in Nanotechnology?

8. (a) Explain the concept of Chevrel phases.
   (b) What are LNCC's? Give eg: Discuss their structures.

9. (a) The toxicity of metals have been variously correlated with their (1) electronegativity, (2) insolubility of sulphides and (3) stability of chelates. Discuss.
   (b) What are dismutation reactions? Give eg: What type of metal is in superoxide dismutase?

10. (a) What are the advantages and disadvantages of using protic solvents asnon-aqueos solvents?
    (b) Write a note on the reactions in liquid HF.

[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. Deduce the normal modes of trans-N_2F_2 molecule and predict the IR and Raman activity of the modes. Given the character table for C_{2h}.

C_{2h}	E	C_2	i	σ_h		
A_g	1	1	1	1	R_z	x^2, y^2, z^2, xy
B_g	1	–1	1	–1	R_x, R_y	xz, yz
A_u	1	1	–1	–1	z	
B_u	1	–1	–1	1	x,y	

12. Discuss with suitable examples the different types of interaction in supramolecular compounds.

13. Discuss and draw the structure and bonding of $(Re_2X_8)^{2-}$.

14. Explain the structure and functions of hemocyanin and plastocyanin

15. Write a detailed account of the reactions in the following non-aqueous solvents: (1) NH_3 and (2) N_2O_4.

[10 × 3 = 30]

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Fourth Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry
CH 242(b): ORGANIC CHEMISTRY – IV

(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) How will you characterize alkaloids and flavonoids by colour reagents?
   (b) Give the structure of an alkaloid. How will you determine its carbon skeleton through Hofmann degradation?

(c) Explain supercritical fluid extraction method for the chemical constituents from plants.

2. (a) What are calixarenes? Give one example.
   (b) Explain the term π–π stacking.
   (c) What are the biomaterials needed for protein synthesis?

3. (a) Narrate the importance of chiral drugs.
   (b) Draw the structure of paracetamol. Discuss its synthesis.
   (c) Differentiate between solid phase and solution phase combinatorial organic synthesis.

4. (a) Explain the synthesis of adenine from thiourea.
   (b) Give two examples of amino and carboxy protecting groups.
   (c) Explain the structure of glycogen.

5. (a) Define atom economy?
   (b) Give two advantages of scavenger resins.
   (c) What are designer solvents? Give one example.

[2 × 10 = 20]

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) Discuss the biosynthesis of terpenes from acetyl coenzyme A.
   (b) Elucidate the structure of atropine.

7. (a) Briefly discuss the 'host-guest' relationship in molecular recognition.
   (b) Explain self organization and self association in living systems.

8. (a) Narrate the steps involved in drug design.
   (b) Give the synthetic route for diazepam and benzylpenicillin.

9. (a) Write a note on biodegradable polymers.
   (b) Briefly discuss Edmans method of protein sequencing.

10. (a) What is sonochemistry? What are the principles of sonochemistry?
    (b) Briefly explain organic reactions involving ionic liquids.

[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. a) Explain primary and secondary metabolites in plants.
    b) Discuss the Anner Meischer synthesis of estrone.

12. a) Explain different forces involved in molecular recognition.
    b) Write short notes on following supramolecular systems
       (i) Liquid crystals (ii) Helicates

13. a) Explain different classes of drugs with examples.
    b) Briefly discuss computer assisted drug design.

14. a) Explain Solid Phase Peptide Synthesis. What are the advantages of this method?
    b) What is the principle of Ziegler-Natta catalyst?

15. a) What are the twelve principles of green chemistry?
    b) Green chemistry is sustainable chemistry. Explain.

[10 × 3 = 30]

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Fourth Semester M.Sc. Degree Examination – Model question paper
Branch III – Chemistry
CH 242(c): PHYSICAL CHEMISTRY – IV
(2020 Admission Onwards)

Time: 3 Hrs Max. Marks: 75

SECTION A

Answer **two** among **(a)**, **(b)** and **(c)** from each. Each sub question carries 2 marks

1. (a) Differentiate SAGO and SALC
   (b) Explain vanishing and non vanishing integral with one example each
   (c) Discuss the mutual exclusion principle using group theory

2. (a) Explain space quantization
   (b) Express the angular momentum operators in terms of spherical coordinates
   (c) Write the three Legendre polynomials when m = 0 and l = 1,2,3

3. (a) Write one trial function to solve Helium by variation method. Justify your answer.
   (b) Briefly discuss Self Consistent Field method
   (c) State and explain variation theorom.

4. (a) State and explain selection rules for vibrational transitions in simple harmonic oscillator
   (b) The potential energy term for an harmonic oscillator is $\frac{1}{2}kx^2 + bx^3$. Predict the correction term according to first order perturbation method. Justify your answer
   (c) What is Stark effect?

5. (a) What is the meaning of the notation 3-21G**?
   (b) What is parametrisation?. How does it simplify abinitio calculations?
   (c) Write the z-matrix of Ammonia molecule/

[2 × 10 = 20]

SECTION B

Answer either **(a)** or **(b)** from each question. Each sub question carries 5 marks

6. (a) HCHO belongs to C_{2v} point group. Using group theory, find out the lowest energy electronic transition.

   (b) Find the IR and Raman active vibrations of NH_3? C_{3v} character table given.

C_{3v}	E	$2C_3$	$3\sigma_v$		
A_1	1	1	1	z	x^2+y^2, z^2
A_2	1	1	−1	R_z	
E	2	−1	0	$(x,y), (R_x, R_y)$	$(x^2-y^2, xy)\ (xz, yz)$

7. (a) Write Schrodinger wave equation for a rigid rotor. Transform it into the Lagendre equation

   (b) Solve the time independent Schrödinger wave equation for a three dimensional harmonic oscillator whose potential energy is

$$V_{(x,y,z)} = \frac{1}{2}(k_1x^2 + k_1y^2 + k_1z^2)$$

8. (a) Estimate the ground state energy of normal Helium using variation method

   (b) What are the strength and limitations of variation method?

9. (a) Show that the first order Stark effect on the ground state of hydrogen atom is zero.

   (b) Find the ground state energy of a particle in one dimensional box with slanted bottom using first order perturbation method.

10. (a) Explain DFT method of computational chemistry.

    (b) Discuss the need of Post Hartree-Fock method

[5 × 5 = 25]

SECTION C

Answer any **three** questions. Each question carries 10 marks

11. Find energy of π molecular orbitals of benzene using HMO method. Use C_6 character table.

12. Apply Schrodinger wave equation for simple harmonic oscillator. Find eigen function and eigen values.

13. What is linear variation method? Illustrate using one example.

14. Briefly discuss time dependent perturbation theory.

15. Discuss the various computational methods based on wave function. Make a critical comparison.

[10 × 3 = 30]

UNIVERSITY OF KERALA

FIRST DEGREE PROGRAMME(CBCS System) in B.A. ENGLISH LANGUAGE AND LITERATURE

Revised Syllabus for 2020 Admissions onwards
(Core, Complementary, Open & Elective Courses)

(2020 ADMISSION ONWARDS)

FIRST DEGREE PROGRAMMES (CBCS System) in B.A. ENGLISH LANGUAGE AND LITERATURE

SEMESTERS I to VI - COURSE BREAKUP [2020 Admission onwards]

Sem No	Course No	Course Title	Instructional Hours	Credits
1	EN 1111.1	Language Course 1: Language Skills	5	4
1		Language Course 2: [Additional Language 1]	4	3
1	EN 1121	Foundation Course 1: Writings on Contemporary Issues	4	2
1	EN 1141	Core Course 1: Introduction to Literary Studies I	6	4
1	EN 1131	Complementary Course 1: Popular Literature and Culture	3	3
1		Complementary Course 2 [External]	3	2
2	EN 1211.1	Language Course 3: Ability Enhancement Compulsory Course- Environmental Studies and Disaster Management	5	4
2	EN 1212.1	Language Course 4: English Grammar Usage and Writing	4	3
2		Language Course 5: [Additional Language 2]	4	3
2	EN 1241	Core Course 2: Introduction to Literary Studies II	6	4
2	EN 1231	Complementary Course 3 : Art and Literary Aesthetics	3	3
2		Complementary Course 4 [External]	3	3
3	EN 1311.1	Language Course 6: English for Career	5	4
3		Language Course 7:[Additional Language 3]	5	4
3	EN 1341	Core Course 3: British Literature I	5	3
3	EN 1321	Foundation Course 2: Evolution of the English Language	4	3
3	EN 1331	Complementary Course 5: Narratives of Resistance	3	3
3		Complementary Course 6 [External]	3	3
4	EN 1411.1	Language Course 8: Readings in Literature	5	4
4		Language Course 9 [Additional Language: 4]	5	4
4	EN 1441	Core Course 4: British Literature II	5	4
4	EN 1442	Core Course 5: Literature of the 20th Century	4	3
4	EN 1431	Complementary Course 7: Philosophy for	3	2

		Literature		
4		Complementary Course 8 [External]	3	3
5	EN 1541	Core Course 6: Literature of Late 20th Century and 21st Century	5	4
5	EN 1542	Core Course 7: Postcolonial Literatures	4	4
5	EN 1543	Core Course 8: 20th Century Malayalam Literature in Translation	4	3
5	EN 1544	Core Course 9: Linguistics and Structure of the English Language	4	4
5	EN 1545	Core Course 10: Criticism and Theory	5	4
5	EN 1551.1	Open Course 1: Communicative Applications in English	3	2
5	EN 1551.2	Open Course 1: Theatre Studies	-do-	-do-
5	EN 1551.3	Open Course 1: Film Appreciation	-do-	-do-
6	EN 1641	Core Course 11: Gender Studies	5	4
6	EN 1642	Core Course 12: Indian Writing in English	5	4
6	EN 1643	Core Course13: Film Studies	5	4
6	EN 1644	Core Course 14: World Classics	4	3
6	EN 1661.1	Elective Course: Translation Studies	3	2
6	EN 1661.2	Elective Course: American Literature	-do-	-do-
6	EN 1661.3	Elective Course: Creative Writing	-do-	-do-
6	EN 1661.4	Elective Course: English for the Media	-do-	-do-
6	EN 1661.5	Elective Course: 20th Century Regional Literatures in English Translation	-do-	-do-
6	EN 1661. 6	Elective Course: Copy Editing	-do-	-do-
6	EN1645	Project	3	4

BA English Language and Literature: Programme Outcome

PO 1: A comprehensive understanding of the discipline of literary studies

PO 2: Realize the divergent and plural voices that come in to the making of the corpus of literary studies.

PO 3: Understand literature as one of the many arts that seeks literary expression and its close connection with other art forms like painting, music, dance, movie and so on down the ages.

PO 4: Imbibe the importance of multidisciplinary approach to understand the nuances of literary expressions.

PO 5: Understand the specific socio-cultural backdrop of the formation of literary representations.

PO 6: Form an awareness of the multiplicities of such socio-cultural realities that shape literary representations and to critique the inherent hegemony.

PO 7: The ability to trace the development of the English language from the early writings to its present day use in specific contexts.

PO 8: Address the requirements of the language use in a globalized context

PO 9: Ensure the importance of study of the English language in relation to the study of language and literature of the mother tongue.

PO 10: Have improved competence in translation and to view the same not only as a tool for cultural transmission but also as skill acquisition.

PO 11: Comprehended the current modes of writings – that which encompasses the issues related to race, gender, ethnicity, climate change etc. and realize the role of literature in inculcating social sensitiveness

PO 12: The competence to identify the literary voices of dissent from diverse parts of the globe and to reflect on the popular culture and literature.

PO 13: A basic knowledge of research methodology and other areas related to the faculty of research.

PO 14: Imbibe a research oriented approach to the study of humanities in connection with the basic understanding of social sciences to initiate a multidisciplinary approach of study.

PO 15: Contribute to the realm of knowledge production with an increased intellectual, creative, critical and multidisciplinary capability.

SEMESTER I

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS SYSTEM)

Core Course 1: EN 1141 Introduction to Literary Studies I

No. of Credits: 4 **No. of Instructional hours: 6 per week [Total: 108 Hours]**

Aim To introduce the world of literature

Objectives

1. Develop an awareness of the diversity of world literature, representing different forms, time and space
2. An awareness of genre, with emphasis on forms of poetry and drama
3. Develop an inquisitiveness to read more of literature in the line of texts suggested in the course.

Course Outcome

CO 1: Introduce varied literary representations.
CO 2: Familiarize students with the nature and characteristics of literature.
CO 3: Discuss the nature and characteristics of literature
CO 4: Introduce two key genres of literature, poetry and drama.
CO 5: Possess a foundational understanding of poetry and drama.

COURSE OUTLINE

Module I Introduction
Art form-Oral-Written- Narrative forms- Poetry- Prose- Literary Fiction- Novel- Novella-Short Story- Electronic Literature-Popular Literature

1. Swapna Gopinath: "What is Literature?" https://freereads854632715.wordpress.com/2020/10/04/what-is-literature/
2. Mario Klarer: Chapter 2, 'Major Genres in Textual Studies' Section on Poetry and Drama Pages (27-56) *An Introduction to Literary Studies*. Routledge, 1999.

Module II Poetry- Forms
What is Poetry? Nature-Characteristics-Poetic Forms-Lyric-Epic-Elegy-Ballad-Ode-Sonnet-Dramatic Monologue-Narrative Poems-Pastoral-Free Verse-Blank Verse -Haiku -Performance Poetry-Graphic Poetry

1. Edgar Allen Poe: "Annabel Lee"
   https://www.poetryfoundation.org/poems/44885/annabel-lee
2. P.B Shelley: "To a Skylark"
   https://www.poetryfoundation.org/poems/45146/to-a-skylark
3. John Milton: "Lycidas"
   https://www.poetryfoundation.org/poems/44733/lycidas
4. Edna St. Vincent Millay: "I, Being born a Woman and Distressed (Sonnet XLI)"
   https://poets.org/poem/i-being-born-woman-and-distressed-sonnet-xli
5. Kae Tempest: "The woman the boy became"
   https://kaleidoscopetodd.tumblr.com/post/108439629368/the-woman-the-boy-became
   https://www.youtube.com/watch?v=YS7vPjsMsJw
6. Matsuo Basho: "The Old Pond"
   https://www.poemhunter.com/poem/the-old-pond/

Module III- Glimpses of World Poetry

1. Khalil Gibran: "On Children"
   https://poets.org/poem/children-1
2. Pablo Neruda: "Tonight I Can Write the Saddest Lines"
   https://www.poemhunter.com/poem/tonight-i-can-write-the-saddest-lines/
3. Mary Elizabeth Frye: "Do not stand at my grave and weep"
   https://www.poemhunter.com/poem/do-not-stand-at-my-grave-and-weep/
4. Gabriel Okara: "You Laughed and Laughed and Laughed"https://theafricanbookreview.com/2014/05/09/you-laughed-and-laughed-and-laughed-gabriel-okara/
5. Wislawa Szymborska: "Possibilities"
   https://www.poemhunter.com/poem/possibilities-21/
6. Amrita Pritam: "I will meet you yet again"
   http://www.littlemag.com/ghosts/amritapritam.html

Module IV Drama

What is Drama? Nature-Characteristics-Tragedy-Comedy-Tragicomedy-One Act Plays-Melodrama-Opera-Pantomime-Mime-Ballet

1. Cedric Mount *: The Never Never Nest*
   https://kupdf.net/download/never-never-nest-one-act-play_5bda8f69e2b6f5b855bfbbc6_pdf
2. Sajitha Madathil*: Matsyagandhi*
   Golden Threshold: An Anthology of One Act Plays and Stories. Orient Blackswan, 2013.
3. Henrik Ibsen: *A Doll's House*
   https://www.gutenberg.org/files/2542/2542-h/2542-h.htm

Recommended Reading

Brillenburg Wrth, Kiene and Ann Rigney. *The Life of Texts: An Introduction to Literary Studies.* Amsterdam, Amsterdam University Press, 2019.

Carey, John. *A Little History of Poetry*. United States, Yale University Press, 2020
Casey, Maryrose. *Creating Space Contemporary Indigenous Theatre*. Brisbane, University of Queensland Press, 2004
Chaudhuri, Rosinka. *A History of Indian Poetry in English*.Cambridge University Press, 2016
Damrosch, David. *What is World Literature?*Princeton University Press, 2018
De, Souza, Eunice. Ed. *These my Words* The Penguin Book of Indian Poetry. Penguin Books, 2012.
Fischer-Lichte, Erika, *History of Drama and Theatre*, Routledge, 2002.
Frow, John. *Genre*.UK, Taylor and Francis, 2013.
Harper, Michael, S, Antony Walton.*The Vintage book of African American Poetry*
New York, Knopf Doubleday Publishing Group, 2012.
Hart, Stephen, M. *The Cambridge Companion to Latin American Poetry*, Cambridge, Cmbridge University Press, 2008.
Hosein , Ann. *The History of Theatre*. New York, The Rosen Publishing Group, 2015.
Ibsen, Henric, *A Doll's House*. Outlook Verlag, 2018.
Klarer, Mario. *An Introduction to Literary Studies*. UK,Taylor and Francis, 2005.
Lal, Ananda, *Theatres of India A Concise Companion*.Oxford University Press, 2009.
Mason, Bim. *Street Theatre and other Outdoor Performance*, Routledge, 1992.
Mc Clatchy, J,D. *The Vintage Book of Contemporary World Poetry*.New York, Vintage Books, 1996.
Mc Clatchy, J,D. *The Vintage Book of Contemporary American Poetry*.New York, Vintage Books, 2009.
Ricks, Christopher. *The Oxford Book of English Verse*, Oxford, Oxford University Press, 1999.
Styan, John L, John Louis Styan. *The English Stage A History of Drama and Performance*. Cambridge, Cambridge University Press, 1996.
Turner, Palgrave Francis. *The Golden Treasury*.New York, Steriling Publishing Private Limited. 2005.
Thayil, Jeet, *60 Indian Poets*, London, Penguin Books Limted,2008.

e-resources

https://www.youtube.com/watch?v=sr3nw7CZvO8 (Video of *A Doll's House*)
https://www.youtube.com/watch?v=yn2HdrAh-fA (Video of *Never Never Nest*)
https://www.youtube.com/watch?v=uCYFQvGdvpo&list=PLw835AzeS24O8LphQisApUy_APpNAG49e&index=14 (Video of *Matsyagandhi*)
https://pabloneruda.net/#
https://www.kahlilgibran.com/
https://www.poetryfoundation.org/poems/browse#page=1&sort_by=recently_added
https://www.poemhunter.com/
https://www.poetryinternational.org/pi/home
https://www.pitt.edu/~dash/folktexts.html
https://www.gutenberg.org/ebooks/search/?query=poetry&submit_search=Go%21
https://www.gutenberg.org/ebooks/search/?query=Drama&submit_search=Go%21https://www.gutenberg.org/ebooks/search/?query=theatre&submit_search=Go%21
https://www.gutenberg.org/ebooks/search/?query=one+act+plays&submit_search=Go%21

SEMESTER I

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS SYSTEM)

Complementary Course 1: EN 1131 Popular Literature and Culture

No: of Credits: 3 **No: Instructional Hours: 3 per week [Total 54 Hours]**

Aim To broaden the idea of literature and the concept of texts

Objectives

1. Learn the difference between genre fiction and literary fiction
2. Gain an understanding of the folk roots of popular literature
3. Gain a perspective into the debate between high and low cultures

Course Outcome

CO 1: Encourage the student to think critically about popular literature.

CO 2: Understand the categories of the "popular" and the "canonical"

CO 3: Identify the conventions, formulas, themes and styles of popular genres such as detective fiction, the science fiction and fantasy, and children's literature.

CO 4: An assessment of the literary and cultural value of popular texts

C O 5: Sensitize students to the ways in which popular fiction reflects and engages with questions of gender, identity, ethics and education.

COURSE OUTLINE

Module I Popular Literature and Culture- A Brief Overview

Popular literature- 'literature of the people'- origins and development- characteristic features- genres and subgenres- folk tales-fairy tales-ballads-romances-periodicals-detective fiction- sci-fi, fantasy-horror-children's literature-cartoon/comic strips- comics-chick lit-dance-music-art-television shows

Essays

1. Glover, David and Scott McCracken. "Introduction". The Cambridge Companion to Popular Fiction. Cambridge: CUP. 2012. (http://www.cambridgeblog.org/wp-content/uploads/2012/08/The-Cambridge-Companion-to-Popular-Fiction-Intro.pdf)

2. Felicity Hughes, 'Children's Literature: Theory and Practice', English Literary History,vol. 45, 1978 (https://www.jstor.org/stable/2872651?seq=1) https://fdocuments.in/document/childrens-literature-55845ad6244ac.html

Module II Prose and Verse

1. Brothers Grimm – "The Juniper Tree" https://www.pitt.edu/~dash/grimm047.html
2. Sir Arthur Conan Doyle – "The Adventure of the Speckled Band" https://etc.usf.edu/lit2go/32/the-adventures-of-sherlock-holmes/352/adventure-8-the-adventure-of-the-speckled-band/
3. Roald Dahl - Extracts from *Charlie and the Chocolate Factory* (Chapters 13 to 15, Penguin 2013) http://jssisdubai.com/Document/Uploaded/CharlieAndTheChocolateFactory.pdf
4. Satyajit Ray – "Professor Shonku and the UFO" (from *The Mystery of Munroe Island and Other Stories*, Puffin Classics 2015)
5. Ruskin Bond – "The Cherry Tree" (Penguin India 2012) http://englishories.blogspot.com/2014/02/the-cherry-tree-ruskin-bond.html
6. Bob Dylan – "Blowin' in the Wind" http://www.bobdylan.com/songs/blowin-wind/
7. John Lennon – "Imagine" https://www.azlyrics.com/lyrics/johnlennon/imagine.html
8. Lewis Carroll – "The Walrus and the Carpenter" (from *Through the Looking Glass*) https://www.poetryfoundation.org/poems/43914/the-walrus-and-the-carpenter-56d222cbc80a9

Module III Comics-Novels

1. Herge:*Tintin in Tibet* (Hergé. Tintin in Tibet. London: Egmont. 2012)
2. Somdev Bhatt: "The Story of Padmavati and Prince Vajramukti" (Vikram-Betaal Story) http://vikrambetalstory.blogspot.com/
3. Anuja Chauhan:*The Zoya Factor*
4. J. K. Rowling:*Harry Potter and the Philosopher'sStone*

Recommended Reading

Chute, Hillary. "Comics as Literature?Reading Graphic Narrative".*PMLA* – Publications of The Modern Language Association of America. 123. 452-465. 2008.

Chauhan, Anuja. *The Zoya Factor* Harper Collins, 2008.

Gill, Rosalind & Herdieckerhoff, Elena. "Rewriting the romance: new femininities in chick lit?".*Feminist Media Studies* 6(4). 2006.

Herge.*Tintin in Tibet*.Baker and Taylor, 2009.

Pawling, Christopher 'Popular Fiction: Ideology or Utopia?' *Popular Fiction and Social Change*. Basingstoke: Macmillan, 1985.

Radway, Janice. 'The Institutional Matrix, Publishing Romantic Fiction', in *Reading the Romance: Women, Patriarchy, and Popular Literature.* London:Verso. 1987.

Rowling, J.K Harry Potter and the Philosopher's Stone, Bloomsbury, 2017.

Suvin, Darco, "On Teaching SF Critically", Positions and Presuppositions in Science Fiction. Kent, Ohio: Kent State University Press. 1989

Todorov, Tzevetan. "The Typology of Detective Fiction".*The Poetics of Prose*. Ithaca: Cornell University Press, 1995

Wilson, Edmund. 'Who Cares Who Killed Roger Ackroyd?', The New Yorker, 20 June 1945.

e-resources

Falvey Memorial Library https://digital.library.villanova.edu/Collection/vudl:24093

Grossman, Lev. Literary Revolution in the Supermarket Aisle: Genre Fiction Is Disruptive Technology. 23 May 2012, https://entertainment.time.com/2012/05/23/genre-fiction-is-disruptive-technology/

Meskin, Aaron. Recognition and Hybridity of Art or Comics as Literature?13 Aug. 2018, www.atmostfear-entertainment.com/literature/comics/recognition-and-hybridity-of-art-or-comics-as-literature/.

Science Fiction: The Literature of Ideas. www.writing-world.com/sf/sf.shtml.

Swirsky, Peter. "Popular and Highbrow Literature: A Comparative View" CLCweb: Comparative Literature and Culture. Volume 1 Issue 4 1999.https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1053&context=clcweb

Thomas, Ronald R. "The Devices of Truth". Detective Fiction and the Rise of Forensic Science .Cambridge: Cambridge University Press. https://pdfs.semanticscholar.org/de55/c1139de3b9b9fada4da62bc1391e060cf603.pdf

SEMESTER II

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course 2: EN 1241 Introduction to Literary Studies II

No. of Credits: 4 **No. of instructional hours: 6 per week [Total: 108 Hours]**

Aim Introduce the world of Literature, esp. Fiction and Non-Fiction

Objectives

1. An awareness of diverse literary representations from different time and space
2. Possess a foundational understanding of fiction and non-fiction.
3. Provide an awareness of genre, with emphasis on forms of short fiction, fiction and non-fiction.

Course Outcome

CO 1: Cherish a taste for the literary among students

CO 2: Comprehend the nature and characteristics of different genres of literature.

CO 3: Detailed awareness of the two key genres of literature- fiction and non-fiction.

CO 4: Imbibe the representational possibilities of the respective genres.

CO 5: Instill a creative and critical aptitude

COURSE OUTLINE

Module I Short Story

What is a short story? History-Characteristics.

1. Rabindranath Tagore: "Kabuliwala" http://theanonymouswriter.com/wp-content/uploads/2015/07/Kabuliwala-by-Rabindranath-Tagore.pdf
2. Hans Christian Anderson: "The Nightingale" https://www.gutenberg.org/files/27200/27200-h/27200-h.htm#nighting
3. Fyodor Dostoyevsky: "An Honest Thief" https://www.gutenberg.org/files/40745/40745-h/40745-h.htm#AN_HONEST_THIEF
4. O Henry : "The Ransom of Red Chief" https://www.gutenberg.org/files/1595/1595-h/1595-h.htm#8
5. Katherine Mansfield: "The Garden Party" https://www.gutenberg.org/files/1429/1429-h/1429-h.htm

6. Jamaica Kincaid: "Girl"
   https://erhsnyc.org/ourpages/auto/2016/3/14/36191544/Girl%20by%20Jamaica%20Kincaid.pdf
7. Cynthia Ozick: "The Shawl"
   https://www.newyorker.com/magazine/1980/05/26/the-shawl
8. Bram Stoker: "Dracula's Guest"
   https://www.gutenberg.org/files/10150/10150-h/10150-h.htm

Module II Novella

History- Characteristics.

1. John Steinbeck : *The Pearl*
   https://www.ptbeach.com/cms/lib02/NJ01000839/Centricity/Domain/211/The-Pearl-John-Steinbeck.pdf
2. Antoine de Saint-Exupery: *Little Prince*
   https://verse.aasemoon.com/images/f/f5/The_Little_Prince.pdf

Module III Novel

History- Characteristics-Types

1. Bibhutibhushan Bandhyopadhyay: *Pather Panchali*

Module IV Non-Fiction

History-Characteristics-Type

1. Ramachandra Guha: "The Cities that Shaped Gandhi, the Cities that Gandhi Shaped"
   http://ramachandraguha.in/archives/the-cities-that-shaped-gandhi-the-cities-that-gandhi-shaped-hindustan-times.html
2. Margaret Atwood: "Attitude" (Speech, 1983)
   http://www.humanity.org/voices/commencements/margaret-atwood-university-toronto-speech-1983
3. Yuval Noah Harari: "A Day in the Life of Adam and Eve" from *Sapiens*: *A Brief History of Humankind*

Recommended Reading

Anjaria, Ulka. *A History of Indian Novel in English*, New York, Cambridge University Press, 2015.

Bandopadhyay, Bibhutibhushan.*Pather Panchali*..Penguin Random House India Private Lmited. 2019.

Casserto, Leonard and Benjamin Reiss.*The Cambridge History of American Novel*. Cambridge University Press, 2011.

Geir Farner. *Literary Fiction*.Bloomsburry. 2014.

Machiavelli, Niccolo. *The Prince*. Dante UP, 2003.

Moretti, Franco. *Atlas of the European Novel 1800-1900*. London, Verso, 1998.

Noah Harari, Yuval. *Sapiens: A Brief History of Humankind* 2014.

---, Yuval, *Homo Deus*: *A Brief History of Tomorrow* 2016.

Quayson, Ato. *The Cambridge Companion to the Postcolonial Novel*.CUP. 2016.

Roy, Rituparna. *South Asian Partition Fiction in English, From Khushwant Singh to Amitav Ghosh* .Amsterdam UP. 2010.

Saunders Smith, Gail. *Non-Fiction Text Structures for better Comprehension and Response.* Gainesville, Maupin House, 2009.

Schwarz, Daniel R. *Reading the Modern European Novel Since 1900*. Wiley Blackwell 2018.

Steinbeck, John. *The Pearl*.Penguin, 1992.

Tickell, Alex. *South-Asian Fiction in English, Contemporary Transformations*. UK, Palgrave Macmillan, 2016.

e-resources

https://www.nobelprize.org/prizes/lists/all-nobel-prizes-in-literature/

https://www.thebalancecareers.com/the-man-booker-prize-winners-1968-to-present-2799885

https://www.abebooks.com/books/50-essential-non-fiction-books/index.shtml

https://www.gutenberg.org/ebooks/search/?query=novels&submit_search=Go%21

https://www.gutenberg.org/ebooks/search/?query=short+stories&submit_search=Go%21

https://encyclopedia.ushmm.org/content/en/project/the-holocaust-a-learning-site-for-students

https://www.holocaust.com.au/resources/websites/

https://www.history.com/topics/world-war-ii/the-holocaust

http://margaretatwood.ca/

https://dostoevsky.org/

http://ramachandraguha.in/

https://www.ynharari.com/

SEMESTER II

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Complementary Course 3: EN 1231 Art and Literary Aesthetics

No: of Credits: 3 **No: of Instructional Hours: 3 per week [Total 54 Hours]**

Aim Introduce the multidisciplinarity of Art and Literary Studies

Objectives:

1. Gain an understanding of various movements in art history and how they relate to literature
2. Engage with works of art that directly refer to literary works and also draw inspiration from art
3. Recognize how all forms of art is part of a continuum.

Course Outcome

CO 1: The student will be able to engage with literature in a broader, educated perspective.

CO 2: The student will be able to think with greater originality and independence about the complex interrelationship between different art forms.

CO 3: The student will be trained to engage sensitively and intelligently in new readings of literature.

CO 4:The course develops an understanding of the co-relation between literature, film, music and painting and encourages ways of reading and seeing which deliver insights into literary texts.

CO 5: Initiate students to implement the multidisciplinary scope of art and literary studies.

Instructions: This course is designed to draw out the relationships between art movements and literature. In the first two modules, the texts/pieces have been chosen to be representative of the various time periods in which these movements originated, so a comparative study of both the paintings, films and the literary works is recommended. The third module discusses music as literary text and the various ways in which this is manifested.

Module I

Literature and Visual Arts - I

1. **Essay**: Herbert Read – extract from *The Meaning of Art* (pg 17-48) Pelican Books, 1959. (https://plunderingtroops.files.wordpress.com/2012/05/herbert-read-the-meaning-of-art.pdf)

2. **Romanticism:**

   Delacroix – Liberty Leading the People (painting)

   Coleridge – "Destruction of the Bastille" (poem)

3. **Pre-Raphaelite Movement:**

   D.G Rossetti – Prosperine (painting)

   D.G Rossetti – "Prosperine" (poem)

4. **Post-Impressionism**

   Amrita Sher-gil – Ancient Story Teller (painting)

   Virginia Woolf – *The Waves* (novel)

Module II

Literature and Visual Arts - II

1. **Expressionism**

   Munch - The Scream / Kahlo – Self Portrait with Thorn (paintings)

   Kafka – "Metamorphosis (novella)"

   The Cabinet of Dr Caligari (film)

2. **Cubism/Surrealism**:

   Picasso - Guernica (painting)

   Max Weber- "Eye Moment" (poem)https://heiup.uniheidelberg.de/journals/index.php/transcultural/article/view/23509/17361 (From the online article- "The Reception of Max Weber's Cubist Poems (1914) in Taishō Japan")

   Aimé Césaire – "The Woman and the Flame" (poem)

   Salvador Dali, Walt Disney Pictures – *Destino* (short film)https://www.youtube.com/watch?v=y_TlaxmOKqs

3. **Postmodernism**

   Banksy - Love is in the Air (Flower Thrower)

   Katsuhiro Otomo – *Akira* (film)

   Zadie Smith – *White Teeth* (novel)

Module III

Literature, Music and Performing Arts

1. **Essay**: T. M. Krishna – "A Culture that Dominates is No Culture At All" (Ramon Magsaysay Address)
   https://thewire.in/rights/tm-krishna-magsaysay-award-speech
   https://www.youtube.com/watch?v=IfR3OddYVBY

2. **Poetry and Music: poems put to music:**

   - "The Lady of Shalott" (poem Tennyson)
     https://www.poetryfoundation.org/poems/45359/the-lady-of-shalott-1832
   - "The Lady of Shalott" (pop music Loreena McKennit)
     https://www.youtube.com/watch?v=80-kp6RDl94

3. **Music as Resistance**

   - Billie Holiday – "Strange Fruit" (Jazz, Harlem Renaissance)
     https://www.youtube.com/watch?v=Web007rzSOI)
   - Langston Hughes- "Harlem" (Harlem Renaissance)
     https://www.poetryfoundation.org/poems/46548/harlem

4. **Music as Text:**

   - "The 1975 – 1975"(Greta Thunberg's speeches on the climate crisis set to music) https://www.youtube.com/watch?v=4fwEG8XK1uU
   - Lin Manuel Miranda – "My Shot" (from Hamilton) (From a Broadway musical about the American founding fathers in rap form)
     https://www.youtube.com/watch?v=Ic7NqP_YGIg

5. **Music in Fiction and Drama**

   - "Do You Hear the People Sing" (from *Les Miserables*)
     https://www.youtube.com/watch?v=K5PzJhU8iI0
   - "The Willow Song" from *Othello*

6. **Music, Dance, Literature**

   - Isadora Duncan – "The Dancer of the Future" (essay)
     https://mccc.edu/pdf/vpa228/the%20dancer%20of%20the%20future%20-%20duncan.pdf

Recommended Reading

e-resources

Astor, Dave. Music in Literature.2 Apr. 2013, www.huffpost.com/entry/music-in-literature_b_2590404 .

Benjamin, Elizabeth and Sophie Corser. "INTRODUCTION Literature and Art: Conversations and Collaborations" MHRA Working Papers in the Humanities, 9 (2015) http://www.mhra.org.uk/pdf/wph-9-1.pdf

Berger, John. Ways of Seeing. Penguin 1972.http://waysofseeingwaysofseeing.com/ways-of-seeing-john-berger-5.7.pdf

Fornäs, Johan. "The Words of Music", Popular Music and Society, (26), 1. 2003. 37-51 https://core.ac.uk/download/pdf/192601065.pdf

Pater, Walter. The Renaissance: Studies in Art and Poetry. London: Macmillan, and Co, 1910. http://www.gutenberg.org/files/2398/2398-h/2398-h.htm

Syjuco, Miguel. "Art and literature are vital to democracy - here's why" Agenda World Economic Forum May 2017. https://www.weforum.org/agenda/2017/05/literature-and-creative-writing-are-vital-to-democracy-here-s-why/

All About the Hamiltons. https://www.newyorker.com/magazine/2015/02/09/hamiltons

SEMESTER III

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE

Core Course 3: EN 1341 British Literature I

No. of Credits: 3 **No. of instructional hours: 5 per week [Total: 90 Hours]**

Aims Introduce the origin and growth of English literature

Objectives

1. Familiarize the historical phases of English literature
2. Provide glimpses of writers and literary texts that are pivotal to an understanding of British literature
3. Discuss the development of British literature across time from Pre-Elizabethan to Restoration Era

Course Outcome

CO 1: Comprehend the origins of English literature

CO 2: Understand the specific features of the particular periods

CO 3: Understand themes, structure and style adopted by early British writers

CO 4: Gain knowledge of growth and development of British Literature in relation to the historical developments

CO 5: Understand how writers use language and creativity to capture human experience through different literary forms

COURSE OUTLINE

Module I Pre-Elizabethan Literature

Anglo-Saxon literature—Bede, Beowulf, King Alfred – Norman Conquest—Ballads—Fall of Constantinople—English Renaissance—Humanism—Reformation—Printing Press, Caxton—Chaucer, Langland—Mystery Plays, Miracle Plays, Morality Plays, Interlude—Thomas More

1. General Prologue,*Canterbury Tales* – Introduction- Lines 1-31
2. Deor's Lament
   http://www.thehypertexts.com/Deor's%20Lament%20Translation.htm
3. Bede's Story of Caedmon book IV chapter xxiv from the Old English translation of HistoriaEcclesiasticaGentisAnglorum
   https://www.heorot.dk/bede-caedmon.html

Module II Elizabethan Age

Gorbuduc-Ralph Roister Doister-Tottel's Miscellany-University Wits-Sidney-Spenser-Isabella Whitney-Mary Sidney Herbert- Kyd,-Marlowe-Bacon-Ben Jonson-Donne and Metaphysical Poetry.

1. Spenser- "Sonnet 30" (from Amoretti)
   www.poetryfoundation.org
2. Isabella Whitney: "A Sweet Nosegay, or Pleasant Poesy, Containing a Hundred and Ten Philosophical Flowers"
   https://www.poetryfoundation.org/poems/45994/a-sweet-nosegay-or-pleasant-poesy-containing-a-hundred-and-ten-philosophical-flowers
3. Extract from *Doctor Faustus*- "Apostrophe to Helen"
4. Two Essays from Bacon ("Of Friendship", "Of Studies")*Bacon's Essays*. Macmillan. 1992.
5. John Donne: "Valediction Forbidding Mourning"
   https://www.poetryfoundation.org/poems/44131/a-valediction-forbidding-mourning

Module III Shakespeare

Elizabethan Theatre-Opening of Globe Theatre-Authorized version of the Bible-Beaumont and Fletcher-Webster

1. Shakespeare "Sonnet 33"
   http://shakespeare.mit.edu/
2. Shakespeare: *A Midsummer Night's Dream*
   http://shakespeare.mit.edu/

Module IV Puritan and Restoration Age

Milton—Bunyan—Civil War—Closing of Theatre—Cromwell—End of Commonwealth—Restoration of Monarchy—Opening of Theatres—Wycherley, Congreve, Etherege—Glorious Revolution

1. John Milton: Extract from Book 9 (*Paradise Lost*) - The Fall of Man – Lines 850-1055
   https://rpo.library.utoronto.ca/poems/paradise-lost-book-ix
2. John Bunyan : "Of the Boy and the Butterfly"
   https://www.poemhunter.com/poem/of-the-boy-and-butterfly/
3. Aphra Behn: "Song"
   https://www.poetryfoundation.org/poems/50527/song-56d22db1a9572

Recommended Reading

Alexander, Michael. *A History of English Literature*. Macmillan.

Baugh, A.C. *A History of English Literature*.Routledge. 2013.

Boitani, Piero. Jill Mann(ed). *The Cambridge Companion to Chaucer*.CUP. 2003.

Carter, Ronald, John McRay. *The Routledge History of Literature in English*. Routledge, 2017

Chaucer, Geoffrey. *The Canterbury Tales.*Trans. Neville Coghill.Penguin, 2003. Print

Christopher Ricks, ed., *English Poetry and Prose1540-1674*

Poplawski, Paul. *English Literature in Context*. CUP.1993

Peck, John, Martin Coyle. *A Brief History of English literature.* Palgrave 2003

Thornley G C and Gwyneth Roberts.*An Outline of English Literature.*Pearson, 2011.

e- resources

https://library.baypath.edu/english-and-literature-web-sites

https://www.gutenberg.org/ebooks/search/?query=shakespeare&submit_search=Go%21

https://www.gutenberg.org/ebooks/search/?query=chaucer&submit_search=Go%21

http://www.literature-study-online.com/resources/#historical

http://www.universalteacher.org.uk/lit/history.htm

https://www.britannica.com/art/English-literature/Elizabethan-poetry-and-prose

https://www.encyclopedia.com/humanities/culture-magazines/restoration-literature-england

https://chaucer.fas.harvard.edu/

https://chaucer.fas.harvard.edu/pages/Synopses-Prolegomena

http://www.dartmouth.edu/~milton/reading_room/contents/text.shtml

https://www.gutenberg.org/files/29854/29854-h/29854-h.htm(Aphra Behn)

http://www.mindfulteachers.org/2013/05/women-writers-at-time-of-shakespeare-e.html

https://internetshakespeare.uvic.ca/Library/SLT/literature/women%20writers/morewomen.html

SEMESTER III

FIRST DEGREE PROGRAMME IN

BA ENGLISH LANGUAGE AND LITERATURE

Foundation Course 2: EN 1321 Evolution of the English Language

No. of Credits: 3 **No. of instructional hours: 4 per week [Total: 72 Hours]**

Aim: Study the historical development of the English Language.

Objectives

1. Demonstrate a thorough understanding of the diachronic development of the English language down the ages.
2. Sensitize students to the changes that have shaped English
3. Enable understanding of the growth of English into a global language

Course Outcome:

CO 1: Knowledge of the paradigm shifts in the development of English.

CO 2: Well aware of the historical paradigm shifts in the history of English Language

CO 3: Imbibe the plural socio cultural factors that went in to the shaping of the English Language.

CO 4: Place English language in a global context.

CO 5: Recognize the politics of many 'Englishes'

COURSE OUTLINE

Module I

Language families – Indo-European family – Germanic group – Consonant shift – Descent of English – Old English and its features- Grimm's law- Verner's law- Umlaut and Ablaut – Dialects of OE – Celtic, Latin and Scandinavian influences

Module II

Norman Conquest – French influence – Middle English – Decay of inflections – Loss of grammatical gender – Impact of Bible Translations – Contributions of Chaucer to English – Rise of Standard English

Module III

Modern English – Contributions of Spenser, Shakespeare and Milton to English –Changes in pronunciation (Great Vowel Shift) – Spelling reform – Dr. Johnson's dictionary – Evolution of English as a Global Language

Module IV

Semantic changes in English -Word formation – Growth of vocabulary – Various Englishes- Digital English.

Recommended Reading:

Barber C.L. *The Story of Language*. Pan Books. 1972.

---, *The English Language, A Historical Introduction*. CUP, 1993.

Baugh, Albert C, Thomas Cable. *A History of the English Language*.Taylor and Francis, 1993.

Crystal, David. *The Stories of English*.Penguin, 2005.

Wood, Frederick T. *An Outline History of English Language.* Macmillan, 2000.

e- resources:

"English language" https://www.britannica.com/topic/English-language

"The History of English" https://www.thehistoryofenglish.com/index.html

"Studying the History of English" http://www.uni-due.de/SHE/index.html

"History of the English Language"
https://en.wikipedia.org/wiki/History_of_the_English_language

"History of English" https://www.englishclub.com/history-of-english/

SEMESTER III

FIRST DEGREE PROGRAMME IN

BA ENGLISH LANGUAGE AND LITERATURE (CBCS SYSTEM)

Complementary Course 5: EN 1331 Narratives of Resistance

Number of Credits: 3 No. of Instructional Hours: 3 [Total 54 Hours]

Aim Introduce the various narratives of resistance, literary and other wise.

Objectives

1. To understand the various modes of resistance needed to subvert oppressive socio-cultural structures.
2. To provide insight into the struggles of people from around the world for identity and rights and contribute proactively to social dynamics.
3. To understand how literature acts as a vehicle for voices of dissent and protest.

Course Outcome

CO 1: Be able to identify themes of resistance in different forms and genres of literature.

CO 2: Have a sense of the various kinds of injustice related to race, ethnicity, gender etc. prevalent in society.

CO 3: Develop an idea of literature as a form of resistance to all forms of totalitarian authority.

CO 4: Understand the inter connection between various genres in manifesting resistance

CO 5: How resistance is an undeniable presence in the everyday narratives of literary and other artistic expressions.

COURSE OUTLINE

Module I Narratives of Resistance

Nature and Function of Resistance- Heterogeneous forms of Resistance-Gender-Dalit-Race-Totalitarianism-Nation State-Holocaust- Slave Narratives-War-Resistance and Social Change

Module II Poetry/Documentary

1. Adrienne Rich- "What Kind of Times Are These" https://www.poetryfoundation.org/poems/51092/what-kind-of-times-are-these
2. Denise Levertov- "Making Peace" https://www.poetryfoundation.org/poems/53900/making-peace
3. Mahmoud Darwish-"ID Card"

https://www.wrmea.org/017-november-december/id-card-by-mahmoud-darwish-a-translation-and-commentary.html

4. S.Joseph : "Between These Lines" https://www.poetryinternational.org/pi/poem/17768/auto/0/0/S-Joseph/Between-These-Lines/en/nocache
5. Tishani Doshi- "Girls are coming out of the Woods" https://www.poetryfoundation.org/poems/152744/girls-are-coming-out-of-the-woods
6. Taslima Nasreen : "Garment Girls" https://www.poemhunter.com/poem/garment-girls/
7. Lucille Clifton: "poem in praise of menstruation" https://www.poetryfoundation.org/poems/54584/poem-in-praise-of-menstruation
8. Peter Davis (Dir): *Nelson Mandela: Prisoner to President* (Apartheid Documentary 1994) https://www.youtube.com/watch?v=Rk-Lxgp9NWg

Module III Prose and Fiction

1. Assange, Julian. "Conspiracy as Governance." State and Terrorist Conspiracies. 7-12 https://cryptome.org/0002/ja-conspiracies.pdf(Article)
2. Sojourner Truth: "Ain't I A Woman?" (Speech) https://www.nps.gov/articles/sojourner-truth.htm
3. Jacinta Kerketta And Nighat Sahiba "On The Power of Poetry And Politics of Language".Huffpost article by Kavitha Muralidharan (Article) https://www.huffingtonpost.in/entry/jacinta-kerketta-nighat-sahiba-kashmir-jharkhand-poems-language_in_5c41f480e4b027c3bbc14a3a?guccounter=
4. Alice Munro: "Boys and Girls" (Short Story) http://www.giuliotortello.it/shortstories/boys_and_girls.pdf
5. K. Saraswathi Amma: "Life, In My View" (Memoir) (Translation J.Devika) https://swatantryavaadini.in/2020/08/30/life-in-my-view-k-saraswathi-amma/#more-982
6. Nemat Sadat :*Carpet Weavers* (Novel) Penguin, 2019.

Recommended Reading

Brueck , Laura. *Writing Resistance: The Rhetorical Imagination of Hindi Dalit Literature.*

Columbia University Press, 2014.

Darwish, Mahmoud.*Unfortunately, It Was Paradise: Selected Poems.*University of California Press, 2013.

De Santis, Christopher C., et al. *The Collected Works of Langston Hughes: The poems, 1941-1950.* Italy,University of Missouri Press, 2001.

Doshi, Tishani. *Girls Are Coming Out of the Woods*. India, Harper Collins Publishers India, 2017.

Dutta, Mohan J. *Voices of Resistance: Communication and Social Change*. Purdue University Press. 2012.

Harlow, Barbara. *Resistance Literature*. New York, Methuen, 1987.

Hosseini, Khaled. *A Thousand Splendid Suns*.Bloomsbury Publishing, 2009.

Jo Glanville, ed. Qissat: *Short Stories by Palestinian Women*. London, Telegram, 2006. 90-94.

Levertov, Denise. *Selected Poems*.United States, New Directions, 2003.

Lewis, T. (2008).“Literature as Resistance”.*The Hudson Review*,60(4), 655–664. www.jstor.org/stable/20464787

Manṭo, SaʿādatḤasan. *Manto*: *Selected Short Stories: Including 'Toba Tek Singh' and 'The Dog of Tithwal'*. India, Random House India, 2012

Munro, Alice. *Selected Stories*. United Kingdom, Random House, 2012.

Neruda, Pablo. *The Poetry of Pablo Neruda*.United States, Farrar, Straus and Giroux, 2015.

Nguyen, Viet Thanh. *Race and Resistance: Literature and Politics in Asian America Race and American Culture*.USA,Oxford University Press, 2002.

Rich, Adrienne. *Collected Poems: 1950-2012.* United States,W. W. Norton, 2016.

Stoltz, Pauline. *Gender, Resistance and Transnational Memories of Violent Conflicts*.Germany, Springer International Publishing, 2020.

Williams, Nerys. *Contemporary Poetry*. United Kingdom, Edinburgh University Press, 2011.

Zimmermann, Jérémie, et al. Cypherpunks: *Freedom and the Future of the Internet*. United Kingdom, OR Books, 2016.

e-resources

https://swatantryavaadini.in/

https://www.thegoodtrade.com/features/inspiring-female-poets

On Literature and Resistance https://againstthecurrent.org/atc074/p1835/

SEMESTER IV

FIRST DEGREE PROGRAMME IN

BA ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course 4:EN 1441 British Literature II

No. of Credits: 4 **No. of instructional hours: 5 per week [Total: 90 Hours]**

Aim: Introduce the historical and philosophical shifts in English literature since 17th century.

Objectives:

1. Familiarize the history of English literature from the 18th century to the Victorian age
2. Understand the socio-political, historical and cultural contexts
3. Be able to identify the changing trends in English literature in the 18th and 19th centuries

Course Outcome:

CO 1: Sensitize students to the changing trends in English literature in the 18th and 19th centuries and connect it with the sociocultural and political developments.

CO 2: Develop the critical thinking necessary to discern literary merit

CO 3: Be able to recognize paradigm shifts in literature

CO 4: Be able to identify techniques, themes and concerns

CO 5: Connect literature to the historical developments that shaped the English history.

COURSE OUTLINE

Module I

History: Age of prose and reason– Critical/literary essay – Sentimental Comedy - anti-sentimental comedy –heroic drama - Neoclassical poetry

1. John Dryden: "A Song for St. Cecilia's Day, 1687" https://www.poetryfoundation.org/poems/44185/a-song-for-st-cecilias-day-1687
2. Lady Mary Wortley Montagu: "The Lover, A Ballad" https://www.poetryfoundation.org/poems/44761/the-lover-a-ballad
3. Oliver Goldsmith – *She Stoops to Conquer* https://www.gutenberg.org/files/383/383-h/383-h.htm

Module II

Transitional Poets – Periodical essay – Rise of the English novel – Fielding, Richardson, Sterne and Smollett

1. Thomas Gray : "Elegy Written in a Country Churchyard"
   https://www.poetryfoundation.org/poems/44299/elegy-written-in-a-country-churchyard
2. Elizabeth Carter: "Written Extempore on the Sea Shore"
   https://www.eighteenthcenturypoetry.org/works/o4984-w0350.shtml
3. Richard Steele – "The Spectator Club"
   https://www.bartleby.com/27/7.html

Module III

French Revolution – Romantic Revival – first and younger generations of Romantics - Lyrical Ballads – familiar/personal essay – Lamb, Hazlitt, De Quincey - fiction in the Romantic age– Walter Scott, Jane Austen

1. William Blake – "The Tyger", "The Lamb"
   https://www.poetryfoundation.org/poems/43687/the-tyger
   https://www.poetryfoundation.org/poems/43670/the-lamb-56d222765a3e1
2. William Wordsworth – "The Kitten at Play"
   https://www.poetrynook.com/poem/kitten-play
3. Mary Lamb: "Choosing a Profession"
   https://www.poetryfoundation.org/poems/51930/choosing-a-profession
4. Charles Lamb – "Dream Children, a Reverie"
   http://essays.quotidiana.org/lamb/dream_children_a_reverie/
5. Jane Austen – *Pride and Prejudice*

Module IV

Victorian poets – Pre-Raphaelite Poetry - Victorian prose writers – Victorian Compromise - Victorian novelists – Women novelists

1. Robert Browning – "My Last Duchess"
   https://www.poetryfoundation.org/poems/43768/my-last-duchess
2. Charlotte Bronte: "On the Death of Anne Bronte"
   https://www.poetryfoundation.org/poems/43710/on-the-death-of-anne-bronte
3. Christina Rossetti – "Goblin Market"
   https://www.poetryfoundation.org/poems/44996/goblin-market
4. R. L. Stevenson – "Walking Tour"
   https://www.thoughtco.com/walking-tours-by-robert-louis-stevenson-1690301
5. Charles Dickens – *A Tale of Two Cities*

Recommended Reading

Alexander, Michael. *A History of English Literature*. Macmillan. 2000

Armstrong, Isobel. *Victorian Poetry: Poetry, Poets and Politics* (Routledge Critical History of Victorian Poetry S). : Routledge. 1996

Baugh, A.C. *A History of English Literature*.Routledge. 2013.

Carter, Ronald, John McRay. *The Routledge History of Literature in English*.

Routledge, 2017

Daiches, David. *A Critical History of English Literature*, Vol. 3, Allied Publishers. 1979

FWH Myers, AC Bradley. *The Complete Works of William Wordsworth*.Imagination Books. 2018

McLane, M. (2008).*The Cambridge Companion to British Romantic Poetry* (Cambridge Companions to Literature) (J. Chandler, Ed.). Cambridge: Cambridge University Press.

Peck, John, Martin Coyle. *A Brief History of English literature*. Palgrave 2003

Poplawski, Paul. *English Literature in Context*. CUP.1993

Quintana, Ricardo. *Oliver Goldsmith as a Critic of the Drama.* Studies in English Literature, 1500-1900. Vol. 5, No. 3, Restoration and Eighteenth Century (Summer, 1965), pp. 435-454 (20 pages) Published By: Rice University

Wordsworth, Jonathan. *The Penguin Book of Romantic Poetry* (Penguin Classics) Paperback .2005

e-resources

http://www.victorianweb.org/previctorian/nc/ncintro.html

https://www.britannica.com/art/Romanticism

https://www.bl.uk/romantics-and-victorians/articles/the-romantics

https://www.gutenberg.org/files/36773/36773-h/36773-h.htm

https://www.gutenberg.org/files/9622/9622-h/9622-h.htm

https://www.gutenberg.org/ebooks/search/?query=wordsworth&submit_search=Go%21

https://library.unt.edu/rarebooks/exhibits/women/17th.htm

SEMESTER IV

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course 5: EN 1442 Literature of the 20th Century

No. of Credits: 3 **No. of instructional hours: 4 per week [Total: 72 Hours]**

Aim Introduce the literary narratives of the 20th century in close connection with the historical time period.

Objectives

1. Examine the ways in which political, cultural and social events in British and European history of the first half of the 20th century, esp. world wars and holocaust, shaped the literature of this period
2. Develop the ability to analyze literary texts of this period in their symbiotic relationship with non-literary developments of the times
3. Acquaint the learners with the significant historical, cultural and imaginative force in 20th century literature

Course Outcome

CO 1: Understand social, political, aesthetic and cultural transformations of early twentieth century in relation to literary texts with their specific formal features.

CO 2**:** Know the stylistic features of Modernism and its various literary and aesthetic movements

CO 3: Critically engage the ideas that characterise the period, especially the crisis of modernity

CO 4: Understand contemporary responses to the historical incidents that mark the period

CO 5: Understand and use critical strategies that emerged in the early twentieth century.

Module I 1900 – 1920

BACKGROUND:

Early Modernism – Suffragette Movement- World War I - the Irish Revolution - the Russian Revolution - War Poetry-the crisis of modernity—stream of consciousness—expressionism—imagism—science fiction

WRITERS ABOUT WHOM AN OVERVIEW IS TO BE GIVEN:

The War Poets (two types), John Galsworthy, Yeats, Joyce, Joseph Conrad, Rudyard Kipling, Arnold Bennett, G.K. Chesterton, E.M. Forster, Ford Maddox Ford, G B Shaw and the realists and those others whose texts are being taught.

Core Texts

1. Augusta Lady Gregory: *The Rising of the Moon* (play). Seven Short Plays, Project Gutenberg, 2012. Pp 75-91. https://www.gutenberg.org/files/41653/41653-h/41653-h.htm#Page_93
2. H.G. Wells: *The War in the Air* (novel), Project Gutenberg, 2008. https://www.gutenberg.org/files/780/780-h/780-h.htm
3. G.B. Shaw: *How He Lied to Her Husband* (play), Project Gutenberg, 2009. https://www.gutenberg.org/files/3544/3544-h/3544-h.htm
4. Ezra Pound: "In a station of the metro" (poem), Poetry: A Magazine of Verse, 1913. https://www.poetryfoundation.org/poetrymagazine/browse?contentId=12675
5. James Joyce: "The Dead" (short story), Dubliners, 1914, Project Gutenberg, 2009. https://www.gutenberg.org/files/2814/2814-h/2814-h.htm#chap15
6. W.B. Yeats: "Easter 1916" (poem), https://www.poetryfoundation.org/poems/43289/easter-1916
7. Wilfred Owen/ "Futility" (poem), https://www.poetryfoundation.org/poems/57283/futility-56d23aa2d4b57

Module II 1920 - 1939

BACKGROUND:

Life between the two World Wars – The Great Depression—rise and spread of fascism—"High" Modernism –World War II – The Fall of the British Empire – Holocaust—revival of poetic drama

WRITERS ABOUT WHOM AN OVERVIEW IS TO BE GIVEN:

Eliot, Auden, Lawrence, Woolf, Graham Greene, Kafka, Aldous Huxley, George Orwell, C.S. Lewis, J.R.R. Tolkien, Sean O' Casey, Katherine Mansfield and those others whose texts are being taught

Core Texts:

1. Virginia Woolf: Chapter 3, A Room of One's Own, pp 35-48 (non-fictional text), http://seas3.elte.hu/coursematerial/PikliNatalia/Virginia_Woolf_-A_Room_of_Ones_Own.pdf
2. T.S. Eliot: "Marina" (poem), https://www.poetrynook.com/poem/marina-0
3. Franz Kafka: "The Bridge" (short story), The Great Wall of China, Trans. Edwin and Willa Muir, https://genius.com/Franz-kafka-the-bridge-annotated
4. W.H. Auden: "The Unknown Citizen" (poem), https://poets.org/poem/unknown-citizen

Module III 1946 - 1966

BACKGROUND:

Rise of New Literatures – Movement poetry—The Absurd—Confessional poetry—The transition to Postmodernism

WRITERS ABOUT WHOM AN OVERVIEW IS TO BE GIVEN:

Philip Larkin and the Movement Poets, Ted Hughes, George Orwell, Kingsley Amis, Samuel Beckett, Harold Pinter, Tom Stoppard and those others whose texts are being taught

Core Texts:

1. Wole Zoyinka / Lion and the Jewel
2. Dylan Thomas/ "Do not go gentle into that good night" (poem), https://poets.org/poem/do-not-go-gentle-good-night
3. Sylvia Plath/ "The Colossus" (poem), The Colossus and Other Poems, https://www.poetryfoundation.org/poems/89119/the-colossus
4. Elizabeth Jennings/ "One Flesh" (poem), http://famouspoetsandpoems.com/poets/elizabeth_jennings/poems/14189

Module IV Holocaust Literature

Background:

Antisemitism –Auschwitz - Genocide – Racism –banality of evil (Hannah Arendt)

Core Texts:

1. Anne Frank: *The Diary of a Young Girl*, http://www.rhetorik.ch/Aktuell/16/02_13/frank_diary.pdf
2. ImreKertesz/ *Fatelessness* (a.k.a. translated as *Fateless*; a novel)
3. Alexander Kimel/ "I Cannot Forget" (poem), https://remember.org/witness/kimel2

Recommended Reading

Bennet, Michael Y.*The Cambridge Introduction to Theatre and Literature of the Absurd*.Cambridge UP, 2015.

Bradbury, Malcolm and James Mcfarlane, editors. Modernism: A Guide to European Literature 1890—1930. Penguin, 1978.

Brooker, Peter, editor.*Modernism/Postmodernism*.Longman Critical Readers.Routledge, 2014.https://www.ebooks.com/en-us/book/1798494/modernism-postmodernism/peter-brooker/

Brooks, David. "Modernism."Encyclopedia of Literature and Criticism.Edited by Martin Coyle et al.First Edition.Routledge, 1991. PP. 119-130.

Esslin, Martin. *The Theatre of the Absurd*.Pelican, 1980.

Ford, Boris. The Modern Age.The Pelican Guide to English Literature 7.Penguin, 1961.

Kirsh, Adam. *The Wounded Surgeon: Confession and Transformation in Six American Poets*. W.W. Norton, 2005

Morrison, Blake. *The Movement: English Poetry and Fiction of the 1950s.*Methuen, 1986.

Nicholls, Peter. *Modernisms: A Literary Guide*. Macmillan, 1995.

SEMESTER IV

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Complementary Course 7: EN1431 Philosophy for Literature

No. of Credits: 2 No. of instructional hours: 3 per week [Total: 54 Hours]

Aim: Engage with the philosophy of literary representations.

Objectives

1. Give the students a historical overview of the major figures in philosophy
2. Introduce to them some of the significant schools of thought that has influenced human perception.
3. Inform students how an understanding of philosophy is vital to the reading of literature.

COURSE OUTCOMES

CO 1: Have a diachronic understanding of the evolution of philosophy from the time of Greek masters to 20th century

CO 2: Have an awareness of the major schools of thought in western philosophy.

CO 3: Have a healthy epistemological foundation at undergraduate level that ensures scholarship at advanced levels of learning.

CO 4: Talk about some of the key figures in Philosophy.

CO 5: Analyze and appreciate texts critically, from different philosophical perspectives

COURSE OUTLINE

Module 1: The World of Greeks

Heraclitus—Flux and the unity of opposites—Socrates—Nature of Poet and Rhapsode—Dialogue with Ion—Plato—Concept of Forms—Ideal vs Physical—Aristotle—Concept of Soul—Beauty—Art—Nature

1. Robert Frost. "West- Running Brook," (the unity of opposites) https://www.internal.org/Robert_Frost/West_Running_Brook
2. S T Coleridge. "Kubla Khan," (Socratic idea of poet as light, winged, holy), https://www.poetryfoundation.org/poems/43991/kubla-khan
3. P B Shelley. "Ozymandias," (Plato's idealism) https://www.poetryfoundation.org/poems/46565/ozymandias
4. John Keats. "Endymion" (First 33 lines) (Aristotle's idea of soul, beauty, art and nature)

https://www.poetryfoundation.org/poems/44469/endymion-56d2239287ca5

Module 2: Enlightenment and After

Rene Descartes—Rationalism—Dualism—Spinoza—idea of Nature and God—Pantheism—concept of substance and modes—Cartesian dualism vs Spinoza's monism—John Locke—Liberalism—Empiricism—Immanuel Kant—Transcendental Idealism—Edmund Husserl—Phenomenology—Karl Marx—Critique of Capitalist Society—Base and Superstructure

1. Emily Dickinson. "The Brain—is wider than the Sky" (Debate the Cartesian mind body or material immaterial dualism)https://www.poemhunter.com/poem/the-brain-is-wider-than-the-sky/
2. Walt Whitman. "On the Beach at Night Alone." (Spinoza's pantheism), https://www.poetryfoundation.org/poems/48856/on-the-beach-at-night-alone
3. William Ross Wallace. "The Liberty Bell," (Locke's liberalism and the turn of humanity), https://allpoetry.com/The-Liberty-Bell8
4. D. H. Lawrence. "How Beastly the Bourgeois Is?" (Marx's idea of social class), https://poets.org/poem/how-beastly-bourgeois

Module 3: Nihilism, Existentialism and Afterwards

Friedrich Nietzsche—Death of God—Nihilism—Martin Heidegger—Dasein and the question of Being—Sigmund Freud—Id—Ego—Super-ego—Libido—Jean-Paul Sartre—Ontology of Being and Nothing—Simone de Beauvoir—Social and Historical construction of Gender

1. Wallace Stevens. "Sad Strains of a Gay Waltz," (Nietzsche's idea of nihilism and the death of god), https://poeticresolution.wordpress.com/2012/01/31/sad-strains-of-a-gay-waltz-by-wallace-stevens/
2. W H Auden. "Who's Who?" (Heidegger's idea of Dasein and Geworfenheit, "Being-thrown-in-the-world), https://sonnetsatlagcc.wordpress.com/2016/10/30/whos-who-by-w-h-auden/
3. Ted Hughes. "Hawk Roosting," (ego that mediates the instinctual id and the critical super-ego), https://allpoetry.com/Hawk-Roosting
4. Maya Angelou. "When I think of myself," (de Beauvoir's concept of becoming), https://allpoetry.com/poem/14326523-When-I-Think-About-Myself-by-Maya-Angelou

Recommended Reading

Durrant, Will. *The Story of Philosophy*, Simon & Schuster, 1991.

Gaarder, Jostein. *Sophie's World*: 20th Anniversary Edition. Orion, 2015.

Garvey, James and Jeremy Stangroom.*The Story of Philosophy: A History of Western Thought*.

Quercus, 2013.

Gibson, John. *The Philosophy of Poetry*.Oxford UP, 2015.

Ghosh, Ranjan, Lutz Koepnick, et al. *Philosophy and Poetry*: Continental Perspectives.

Columbia UP, 2019.

Russell, Bertrand. *History of Western Philosophy*.Routledge, 2016.

e-resources

Stanford Encyclopedia of Philosophy
https://plato.stanford.edu/?gclid=CjwKCAjwlID8BRAFEiwAnUoK1VLA5qiyuVNYZmNU8foMZGAfKurtC8Ve2xTbCGk_BEq6AB0KI_i3ChoCkwgQAvD_BwE

https://www.philosophybasics.com/general_whatis.html (What is Philosophy)

http://www.rosenfels.org/Durant.pdf (*The Story of Philosophy* – Will Durrant)

https://archive.org/details/SophiesWorld_989/page/n5/mode/2up (Sophie's World)

http://www.ntslibrary.com/PDF%20Books/History%20of%20Western%20Philosophy.pdf

(*History of Western Philosophy*)

SEMESTER V

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course 6: EN 1541 Literature of Late 20th Century and 21st Century

No. of Credits: 4 No. of instructional hours: 5 per week [Total: 90 Hours]

Aim: Engage with the diversity of forms and contexts of more recent literatures.

Objectives

1. Expose students to the literatures of this period in their relationship with historical (social, cultural and political) developments

2. Introduce them to the basics of Postmodern writing and the conditions of its emergence and development

3. Sensitize them to the plurality and diversity of the literature of this period reflecting the reality of a multi-cultural world and polyphonic cultural sphere

Course Outcome

CO 1:Identify the various socio-cultural changes that evolved in the late modernist period

CO 2: Relate to the diverse currents of postmodern literature and its reflections in the contemporary ethos

CO 3: Assimilate the inherent multiplicities and fluidity of societal perspectives

CO 4: Develop an innate sympathy for the tragedies of Holocaust and an awareness regarding the environmental impasses threatening the modern world

CO 5: Empathise with the marginalised and comprehend their predicament.

Module I: Postmodernism

Background:

Developments leading to Postmodernism –Metafiction – Intertextuality – Pastiche – magic realism – minimalism – hyperreality

Core Texts:

1. Denise Riley: "Pastoral." Selected Poems. Reality Street Editions, 2000. Pp. 64-65. https://docplayer.net/84625719-Denise-riley-selected-poems.html
2. Harold Pinter. *Homecoming*. Faber, 1991

http://shiraz.fars.pnu.ac.ir/portal/file/?970459/%20Pinter_Harold%20_-_Plays_3_Faber_1991_.pdf

3. E.L.Doctorow: *Ragtime*. Random House, 1975.

Module II: African-American Literature

Key Concepts:

Racism - Slavery - Civil rights – Mulatto- Harlem Renaissance—Afro-American feminism—1968 riots

Core Texts:

1. Toni Morrison: "Recitacif" (short story). https://www.cusd80.com/cms/lib/AZ01001175/Centricity/Domain/1073/Morrison_recitatifessay.doc.pdf
2. Gwendolyn Brooks: "The Mother" (poem). https://www.poetryfoundation.org/poems/43309/the-mother-56d2220767a02
3. Maya Angelou: *I Know Why the Caged Bird Sing*, Chapters 33-34.
4. August Wilson. Ma Rainey's Black Bottom (play). https://augustwilsonstudygroup.files.wordpress.com/2018/02/ma-rainey-_1_.pdf

Module III: Digital Literature

Key Concepts:

Evolution of the reader – Electracy vs Literacy –E-books - Role playing games - interactive fiction–hypertexts – network fiction – locative narratives – non-linearity – animated poetry – insta poems- chatterbots – Twitterature - importance of connectivity

Core Texts:

1. Carpenter, J.R: "Along the Briny Beach." https://collection.eliterature.org/3/works/along-the-briny-beach/index.html
2. Wah, Fred, et al: "High Muck a Muck." https://collection.eliterature.org/3/works/high-muck-a-muck/index.html
3. Bouchardon, Serge and Vincent Volckaert: "Loss of Grasp." https://bouchard.pers.utc.fr/deprise/home

Module IV: Climate Fiction

Key concepts:

Anthropocene - greenhouse effect - global warming - climate activists – dystopia

Core Texts:

1. Ian McEwan: *Solar*
   https://www.you-books.com/book/I-Mcewan/Solar
2. Maja Lunde: *The History of Bees*. Translated by Diane Oatley. Touchstone, 2015.
   https://www.scribd.com/read/354121952/The-History-of-Bees-A-Novel#

Recmmended Reading

Anderson, Gregera. Climate Fiction and Cultural Analysis.Taylor and Francis, 2019.

Butler, Christopher. *Postmodernism: A Very Short Introduction*. OUP 2002.

Docherty, Thomas. *Postmodernism, A Reader*. Taylor and Francis, 2016.

Ellis Erle C, Erle Christopher Ellis. Anthropocene A Very Short Introduction.OUP, 2018.

Graham, Maryemma, Jerry W. Ward, Jr. The Cambridge istory of African American Literature.

Gregson, Ian. Postmodern Literature.Bloomsbury Academic, 2004.

Jameson, Fredric. Postmodernism or the Cultural Logic of Late Capitalism.Duke University Press, 1991.

Len Platt, Sarah Upstone. Postmodern Literature and Race.CUP, 2015.

MScHale,Brian. Len Platt. *The Cambridge History of Postmodern Literature*.CUP, 2016.

Rettberg, Scott. Electronic Literature.Wiley, 2018.

SEMESTER V

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS SYSTEM)

Core Course 7: EN 1542 Postcolonial Literatures

No. of Credits: 4 **No. of Instructional Hours: 4[Total: 72 Hours]**

Aim Introduce the varied narratives of decolonization

Objectives

1. Initiate critical thought on colonialism and after
2. Introduce the fundamental concepts in postcolonial theory
3. Understand the global effects of the colonial enterprise

Course Outcome

CO 1: Ability to critique colonial history

CO 2: Awareness of the socio-political contexts of colonialism and postcolonialism

CO 3: Understanding of the effects of colonialism in various nations

CO 4: Knowledge of the key terms in post-colonial thought

CO 5: Study of the race and gender dynamics in postcolonial literature

COURSE OUTLINE

Module I: Key Terms

Colonization-Orientalism-decolonisation-hybridity-appropriation-mimicry-negritude-othering, third world- aboriginality-transnationalism-multiculturalism-diaspora

Module II: Poetry

1. Andrew Suknaski: "Indian Site on the Edge of Tonita Pasture" https://www.tesisenred.net/bitstream/handle/10803/8113/TNBR17de17.pdf?sequence=17&isAllowed=y
2. Derek Walcott:"A Far Cry from Africa" https://poets.org/poem/far-cry-africa
3. Oodgeroo Noonuccal:"Gooboora, the Silent Pool" https://www.poetrylibrary.edu.au/poets/noonuccal-oodgeroo/poems/gooboora-the-silent-pool-0719052
4. John Pepper Clark:"Night Rain"

https://allpoetry.com/poem/10602495-Night-Rain-by-John-Pepper-Clark

5. Louise Bennett Coverley:"Colonisation in Reverse" https://www.poetrybyheart.org.uk/poems/colonization-in-reverse-2/
6. Alamgir Hashmi:"Pakistan Movement" https://englishsummary.com/pakistan-movement-hashmi-text/
7. Leslie Marmon Silko:"Toe'osh: A Laguna Coyote Story" http://english.fib.unpad.ac.id/wp-content/uploads/2012/04/Leslie-Marmon-Silko-Toe%E2%80%99osh-A-Laguna-Coyote-Story.pdf
8. Octavio Paz:"The Broken Water Jug" http://mexicobob.blogspot.com/2013/03/the-raina-broken-water-jar.html

Module III: Prose

Non-fiction

1. Ngugi wa Thiong'o – extract from "The Language of African Literature" (Thiong'o, Ngugi wa. *Decolonising the Mind: The Politics of Language in African Literature*. Oxford Currey, 2011) https://postcolonial.net/wp-content/uploads/2019/04/Ngugi_Excerpts_Language_of_African_Lit.pdf

Fiction

1. Doris Lessing : *No Witchcraft for Sale*https://www.polk.k12.ga.us/userfiles/826/Classes/182955/No%20Witchcraft%20for%20Sale.pdf
2. Jean Rhys : *Wide Sargasso Sea*

Module IV: Drama and Visual Media

1. Jane Harrison – *Stolen* https://www.uibk.ac.at/anglistik/staff/davis/stolen-by-jane-harrison.pdf
2. Chimananda Ngozi Adichie – "The Danger of a Single Story" (Ted Talk) https://www.youtube.com/watch?v=D9Ihs241zeg
3. Niki Caro (dir) – *Whale Rider* (Caro, Niki, and Witi Ihimaera. *Whale Rider*. Icon Home Entertainment, 2008)

Recommended Reading

Ashcroft, Bill, Gareth Griffiths and Helen Tiffin, *The Empire Writes Back: Theory and Practice in Post-Colonial Literatures* (London/New York: Routledge, 2002)

Ashcroft, Bill, Gareth Griffiths and Helen Tiffin, *Concepts in Postcolonial Studies* (London: Routledge, 1998)

Loomba, Ania, *Colonialism/Postcolonialism* (London: Routledge, 2005)

McLeod, John, *Beginning Postcolonialism* (Manchester: Manchester University Press, 2010)

Mohanty, Chandra T, ‘Under Western Eyes: Feminist Scholarship and Colonial Discourses’ (in Williams, Patrick, and Laura Chrisman. *Colonial Discourse and Post-Colonial Theory: A Reader.* London: Routledge. 2013)

Nayar, Pramod K, *Postcolonialism: A Guide for the Perplexed* (London: Continuum, 2010)

Spivak, Gayatri C, ‘Can the Subaltern Speak?’ ((in Williams, Patrick, and Laura Chrisman. *Colonial Discourse and Post-Colonial Theory: A Reader*. London: Routledge. 2013)

e-resources

http://www.postcolonialweb.org/

https://scholarblogs.emory.edu/postcolonialstudies/

https://www3.dbu.edu/mitchell/postcold.htm

SEMESTER V

FIRST DEGREE PROGRAMME IN

BA ENGLISH LANGUAGE AND LITERATURE (CBCS SYSTEM

Core Course 8: EN 1543 20th Century Malayalam Literature in Translation

Number of Credits: 3 **No. of Instructional Hours: 4 per week [Total: 72]**

Aim Introduce literary narratives of 20th century Malayalam Literature

Objectives

1. Introduce the students to the historical and socio-cultural atmosphere in which Malayalam literature became enriched
2. Provide the students a basic understanding of Malayalam literature
3. Get an understanding of the gradual transformation of Malayalam literature from the early modern to the post modern

Course Outcome

CO 1: Generate knowledge about the varied milieu of the development and growth of Malayalam literature and be sensitive to its socio cultural and political implications.

CO 2: Get a basic knowledge of the literary and the non-literary works produced inMalayalam

CO 3: Discern the vibrancy of Malayalam literature

CO 4: Sense the distinctness of the socio-cultural arena in which Malayalam literature isproduced

CO 5: Know the value of literature produced in regional languages and key role oftranslation in the growth of language and literature.

COURSE OUTLINE

Module I Poetry

Background to the growth of Malayalam poetry – beginning of modernism in Malayalam poetry - the major poets – contemporary Malayalam poetry

1. Nalapat Balamani Amma: "The Housewife" www.poetryfoundation.org
2. Edasseri Govindan Nair: "The Cooking Pot and the Sickle" https://www.edasseri.org/English/translations/PuthankalavumArivalum.htm
3. D. Vinayachandran: "Advent"
4. Sugatha Kumari: "The Temple Bell"
5. K. G. Sankara Pillai: "Goorkha"

https://www.poetryinternational.org/pi/poem/8733/auto/0/0/K-G-Sankara-Pillai/Goorkha/en/tile

6. Anitha Thampi: "While Sweeping the Front Yard" https://www.poemhunter.com/poem/while-sweeping-the-front-yard/ https://www.poetryinternational.org/pi/poem/19138/auto/0/0/Anitha-Thampi/Sweeping-the-Front-Yard/en/tile
7. Vipitha: "The Snakes have Hollows" http://www.modernliterature.org/2020/09/09/poems-by-vipitha/

MODULE II Fiction

A brief history of Malayalam Fiction– Major writers - Emergence of Novel – major novelists – contemporary Malayalam fiction – major female writers --- transformation from modern to post – modern themes and techniques.

Short Story

1. O.V Vijayan: " After the Hanging" https://www.google.co.in/books/edition/Wind_Flowers/GHHX2QDHYxgC?hl=en&gbpv=1 (from *Wind Flowers* (Ed. R. E. Asher, V. Abdulla).Penguin. 2004
2. Sarah Joseph: "Inside Every Woman Writer" (from *Breaking the Silence: An Anthology of Women's Literature.*(Ed. Dr. Shobhana Kurien, Bookmates Publishers, 2017.
3. N. S. Madhavan: "Higuita"
4. Maythil Radhakrishnan: "Pythagoras"
5. C. Ayyappan: "Spectral Speech"
6. Ashitha : "In the Moonlit Land"
7. Sithara S. : "Fire"

(Stories Sl.no: 3-7) from *The Oxford India Anthology of Malayalam Literature* (2- Volume Set) OUP, 2017)

Novel

1. Lalithambika Antharjanam: *Agnisakshi Fire, My Witness* OUP, 2015
2. Vaikkom Muhammed Basheer: *Pathumma's* Goat.

MODULE III Non-Fiction

1. K. K. Kochu: "Writing the History of Kerala: Seeking a Dalit Space" K Satyanarayana, Susie J Tharu. *No Alphabet in Sight* Penguin, 2011
2. J Devika: "Imagining Women's Social Space in Early Modern Keralam", Section II Page no 9-16) (opendocs.ids.ac.uk,2002)https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/2932/wp329.pdf;sequence=1

MODULE IV Drama

Evolution of Drama – influence of colonialism in the emergence of drama – major dramatists.

1. Kavalam Narayana Panikkar: *The Lone Tusker*. *The Oxford India Anthology of Malayalam Literature* (2- Volume Set) OUP, 2017.

Recommended Reading

George, K.M. *ASurvey of Malayalam Literature*, Asia Publishing House, 1968.

---, *Western Influence on Malayalam Language and Literature*, Sahitya Academy. 1972.

Paniker, K Ayyappa. *A Short History of Malayalam Literature*. Dept of Public Relations, Govt of Kerala, 1977.

Nair, Sreedevi. K. *Women Writers of Kerala*. SSS Publications, 2012.

e-resources

https://www.edasseri.org/ListenToEdasseriPoems.htm

https://www.poemhunter.com/i/ebooks/pdf/edasseri_govindan_nair_2012_9.pdf

http://keralasahithi.synthasite.com/

http://sahitya-akademi.gov.in/library/meettheauthor/kadammanitta_ramakrishnan.pdf

SEMESTER V

FIRST DEGREE PROGRAMME

BA ENGLISH LANGUAGE AND LITERATURE

Core Course 9: EN 1544 Linguistics and Structure of the English Language

No. of Credits: 4 **No. of instructional hours: 4 per week (Total: 72 hours)**

Aim Understand the language Structure of the English Language

Objectives

1. Give the students a preliminary idea regarding the nature, function and scope of languages, in general
2. Sensitize the students to the specificities of the oral and written dimensions of English.
3. Appreciate Linguistics as a branch of learning with its own defined material and methodology

Course Outcome

CO 1: Understand the phonological and grammatical structure of English Language

CO 2: Be able to analyse actual speech in terms of the principle of linguistics

CO 3: Improve the accent and pronunciation of the language

CO 4: Introduce the students to internationally accepted forms of speech and writing in English.

CO 5: Explore the ancient linguistic tradition of India

COURSE OUTLINE

Module I: Linguistics

Introduction - Nature and scope of Linguistics – Types of Linguistics – Historical Linguistics, Phonetics, Phonology, Morphology, Syntax, Semantics and Pragmatics, Lexicography Approaches to the study of language – Diachronic and Synchronic – Prescriptive and Descriptive Language as a system of signs – Sign, Signifier and Signified, Langue and Parole, Competence and Performance, Syntagmatic and Paradigmatic axes.

Varieties of Language – Dialect, Register, Pidgin and Creole.

Significance of Received Pronunciation (RP)

Module II Phonetics and Phonology

Phonetics – definition – types – Articulatory, Acoustic and Auditory.

Speech mechanism – Organs of speech – Speech sounds – classification - Vowels , Cardinal vowels, Consonants – three part labelling

Phonology – Phonemes – Allophones and their distribution

Syllable structure – Suprasegmental features - Stress – word stress and sentence stress – Strong and weak forms - Rhythm –Juncture –Intonation – Assimilation – Elision

Transcription (sentences and passages) – IPA

Module III Morphology and Syntax

Morphology – Morphemes – classification – Free and Bound – Roots and Affixes – Lexical and Grammatical – Inflectional and Derivational - Allomorphs and their distribution

Syntax – Word classes – Form class and Function class – Formal features

Traditional Grammar – Structural and Functional study of grammatical categories – Grammaticality and Acceptability

Structural grammar – Introduction to IC Analysis – Phrase Structure (PS) Grammar – Transformational Generative (TG) Grammar

Module IV Linguistics in Ancient India

Major practitioners – Panini - Ashtadhyayi – Karaka theory, Katyayana – Va:rttika , Patanjali – Mahabhasya, Bharthruhari – Vakyapadiya – Sphota theory

Influence on Modern Linguistics

Texts for Reference:

Balasubramanian, T. *A Textbook of English Phonetics for Indian Students*.Second Edition. Madras: Macmillan, 2013. Print.

Chalker, Sylvia. *The Little Oxford Dictionary of English Grammar*. Oxford: OUP, 1995. Print.

Davidappleyard.com/English/pronunciation.htm.Web

Hocket, F. Charles. *A Course in Modern Linguistics*. New Delhi: Macmillan, 1958. Print.

Jones, Daniel. *English Pronouncing Dictionary*.Seventeenth Edition. Cambridge, CUP, 2006. Print.

Kapoor, Kapil. *Language Linguistics and Literature: The Indian Perspective*. Academic Foundation, 1994.

Lyons, John. *Language and Linguistics: An Introduction*. Cambridge, CUP, 1989. Print.

Marks, Jonathan. *English Pronunciation in Use: Elementary*. Cambridge, CUP, 2008. Print.

Rani, D. Sudha.*A Manual for English Language Laboratories*. New Delhi: Pearson, 2010. Print.

T. Eastwood, John. *Oxford Guide to English Grammar*. New Delhi: OUP, 1994. Print.

Trask, R. L. *Key Concepts in Language and Linguistics*. London, Routledge, 2004. Print.

SEMESTER V

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course 10: EN 1545 Criticism and Theory

No. of Credits: 4 **No. of instructional hours: 5 [Total: 90 Hours]**

Aim Provide a historical and critical over view of the origin and development of literary criticism

Objectives

1. Give the students a historical overview of the critical practices from classical period to the present.
2. Introduce to them some of the significant concepts that had a seminal influence on the development of critical thought.
3. To develop in them a critical perspective and capacity to relate and compare various critical practices and schools.

Course Outcome.

CO 1: Analyze and appreciate texts critically, from different perspectives.

CO 2: Appreciate Indian Aesthetics and find linkages between Western thought and Indian critical tradition.

CO 3: Show an appreciation of the relevance and value of multidisciplinary theoretical models in literary study.

CO 4: Demonstrate an understanding of important theoretical methodologies and develop an aptitude for critical analysis of literary works.

CO 5: Gain a critical and pluralistic understanding and perspective of life

COURSE OUTLINE

Module I Western Critical Thought

1. **Classical:**

Plato-Mimesis and the critique of poetry

Aristotle: Tragedy

Longinus: The Sublime

2. Neo Classical:

Dryden: Defense of Poetry

3. Romantic:

William Wordsworth: Definition of poetry

S.T. Coleridge: Fancy and Imagination

4. Victorian:

Matthew Arnold: Function of poetry, Touchstone method

5. Modernism:

T.S. Eliot: Theory of Impersonality, Dissociation of Sensibility, Objective Correlative, Tradition and Individual Talent

Module II Indian Aesthetics

The Evolution of Indian Poetics-Art and Aesthetics of Dramatic Experience-Bharatamuni-Natyasastra - Rasa Theory-Alamkara- Ritisiddhant- Dhwani Siddhant- Vakrokti- Auchitya-Thinai Poetics

(Mention the importance of the above schools of thought in Indian Criticism and their relation to Western Criticism like Rasa is equivalent to purgation or catharsis, Dhvani and symbolism, vibhavas and objective correlative, Alamkara and Rhetorics, Vakrokti and Ambiguity etc.)

Module III A Brief Introduction to Critical Theory

1. New Criticism - Russian Formalism
2. Structuralism(Langue/Parole, Sign-Signifier-Signified)
3. Deconstruction
4. Feminisms (Waves of Feminism, Womanism, Intersectionality, Gynocriticism)
5. Psychoanalytic Criticism: (Id, Ego, Super ego)
   (The Real, the Imaginary, the Symbolic)
6. Postcolonial Criticism: (Orient/Occident, Eurocentrism, Othering, Negritude, Subaltern)
7. Gender and Sexuality: (Performativity)
8. Modernism, Postmodernism (Parody and Pastiche)

Module IV Practical Criticism

1. Literary Forms and Devices
2. Criticism of an unseen passage (Prose OR Poetry) using any of the theories prescribed.

Recommended Reading

Barry, Peter. *Beginning Theory - An Introduction to Literary and Cultural Theory*.Fourth Ed.

Manchester UP, 2017.

Cuddon, J A and M A R Habeeb. *The Penguin Dictionary of Literary Terms and Literary Theory:* Fifth Edition. Penguin: 2015.

Das, B and J M Mohanty.*Literary Criticism: A Reading*. Oxford UP, 1997.

Habeeb, M A R. *Literary Criticism from Plato to the Present: An Introduction*. Wiley-Blackwell,

2011

Lodge, David and Nigel Wood.*Modern Criticism and Theory*: A Reader. Routledge, 2014.

Nagarajan, M S. English *Literary Criticism and Theory*. Hyderabad: Orient Blackswan, 2011.

Pollock, Sheldon. *A Rasa Reader: Classical Indian Aesthetics*. Columbia UP, 2016.

Seturaman, V S. *Indian Aesthetics*. Laxmi Publications, 2017.

Upadhyay, Ami. *A Handbook of The Indian Poetics and Aesthetics*. Bareilly: Prakash Book

Depot, 2017.

e-resources

Classical Criticism http://www.egyankosh.ac.in/bitstream/123456789/22610/1/Unit-1.pdf

Classical Criticism
https://www.academia.edu/35408906/CLASSICAL_CRITICISM_A_CRITICAL_ENQUIRY

From Plato to the Present

http://elibrary.bsu.az/books_400/N_33.pdf

Longinus –On the Sublime https://sites.google.com/site/zhmlit/literary-criticism/longinus-s-ideas-on-the-sublime

John Dryden https://literariness.org/2017/11/17/literary-criticism-of-john-dryden/

Criticism of Dryden http://www.eajournals.org/wp-content/uploads/Dryden-as-the-Father-of-English-Criticism.pdf

Classical and Neo classical criticism https://ddceutkal.ac.in/Syllabus/MA_English/Paper_02.pdf

Dr Johnson as a Critic

https://literariness.org/2017/12/05/literary-criticism-of-samuel-johnson/

Romantic Criticism https://ddceutkal.ac.in/Syllabus/MA_English/Paper_07.pdf

Romantic Criticism
http://studymaterial.unipune.ac.in:8080/jspui/bitstream/123456789/4853/1/Romantic%20Criticism.pdf

Wordsworth's theory of poetry
https://dducollegedu.ac.in/Datafiles/cms/ecourse%20content/B.A.%20(Hons)%20ENG%20PAPER%209%20WORDSWORTH_S_THEORY_OF_POETRY_IN_THE_LYR.pdf

Coleridge as critic
https://dducollegedu.ac.in/Datafiles/cms/ecourse%20content/B.A.%20(Hons)%20ENG%20PAPER%209%20Coleridges_Biographia_Literaria_1817.pdf

Matthew Arnold as critic https://www.lsj.org/literature/essays/arnold

Arnold and High culture https://sites.udel.edu/britlitwiki/matthew-arnold/

T S Eliot as critic https://sites.google.com/site/nmeictproject/presentations/4-1-introduction-t-s-eliot-as-a-critic

Indian Aesthetics https://www.openart.in/general-topics/indian-aesthetics/

A Student's Handbook of Indian Aesthetics
https://www.cambridgescholars.com/download/sample/63790

Rasa Theory

https://www.lkouniv.ac.in/site/writereaddata/siteContent/202004120632194631nishi_Rasa_Theory.pdf

The Rasa Theory https://sg.inflibnet.ac.in/bitstream/10603/126482/9/09_chapter%203.pdf

Rasa- Indian Aesthetic Theory https://globalphilosophyresources.com/2017/08/10/rasa-indian-aesthetic-theory/

Literary Theory https://courses.lumenlearning.com/introliterature/chapter/introduction-to-critical-theory/

Held, D. (1980). Introduction to critical theory: Horkheimer to Habermas. Berkeley: University of California Press.

Literary Theory http://ekladata.com/Tn8NJwPeVe21wsE0MuX7LyFQ6Gg/Literary-Theory_an-overview.pdf

Literary Theory http://elibrary.bsu.az/books_400/N_92.pdf

Literary theory https://mthoyibi.files.wordpress.com/2011/05/literary-theory_an-introduction_terry-eagleton.pdf

Practical criticism
https://www.danielxerri.com/uploads/4/5/3/0/4530212/teaching_practical_criticism.pdf

Practical criticism http://egyankosh.ac.in/bitstream/123456789/22635/1/Unit-1.pdf

https://iep.utm.edu/literary/ (What is Literary Theory)

https://courses.lumenlearning.com/suny-britlit1/chapter/literary-criticism/ (Literary Criticism)

http://site.iugaza.edu.ps/ahabeeb/files/2012/02/An_Introduction_to_Literature__Criticism_and_Theory.pdf (Introduction to Literary Theory and Criticism)

https://ayushnanda.com/history-indian-aesthetics-brief-notes (History of Indian Aesthetics)

https://www.cambridgescholars.com/download/sample/63790 (A Student's Handbook of Indian Aesthetics)

https://www.slideshare.net/m_b2011/comparative-aesthetics (Comparison between Indian and Western Aesthetics)

SEMESTER V

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Open Course: 1 EN 1551.1 Communicative Applications in English

No: of Credits: 2 **No. of Instructional Hours 3[Total 54]**

Aim To excel in communicative capabilities

Objectives

1. Help the students overcome their inhibitions about speaking in English about their day-to-day life and learning experiences within and outside college
2. Develop them into clear, unpretentious and effective communicators, both in speech and in writing
3. Give them the rudiments of grammar, with an emphasis on the correct usage of the language in various contexts

Course Outcome

CO 1: Learners majoring in some subject other than English will have a working knowledge of the type of English that is required in real life situations, especially the globalized workplace.

CO 2: Well trained to write clear, well-framed, polite but concise formal letters and e-mails for a variety of purposes

CO 3: Acquire some of the soft-skills that go hand in hand with English –namely, the ability to prepare for an interview and face it confidently, the ability to participate boldly a group discussion and contribute meaningfully to it, the ability to make a simple and interesting presentation of 5-10 minutes before a mixed audience on anything that they have learnt in the previous semesters of the UG programme

NOTE TO COURSE INSTRUCTORS AND QUESTION PAPER SETTERS

This course does not have any "Core" reading material. A list of useful reference books and other resources has been provided, but it must be emphasized that none of them should be used exclusively, in the manner of core books. Instead the teacher and students must exercise their discretion and take whatever is useful from them.

Module I Talking about Oneself

- One's basic details –academic career from Plus 2 onwards
- One's home village or locality

- Family members and what they do
- Interests/hobbies
- Abilities and strengths (with illustrative examples/anecdotes)
- Weaknesses (with illustrative examples/anecdotes)
- Brief narrative with a few "highlights" of things learnt during the first 2 years of the degree programme (this could include curricular and co-curricular things such as participation in NCC or NSS or some club)
- Aims and ambitions in life (both career and social aims)
- Any one person who inspires or (in the past) inspired/used to inspire the student and proved to be a role-model for her/him
- A memorable experience in the life of the student and why it is so memorable

BALL GAME FOR BREAKING DOWN INHIBITIONS

- This may be played as often as possible with a small basketball or volleyball.
- The teacher and all the students in class stand in a circle around a cleared space either indoors or outdoors.
- The teacher throws the ball to a student randomly loudly saying, "My name is …….. (her name) I come from ……. (her home village/locality).
- The student has to repeat those sentences substituting the teacher's name and place with her own and throw the ball back at the teacher. If she gets it correctly, the teacher throws the ball to the next student. If not the teacher repeats the utterance with a stress on the word/part to be corrected and throws the ball back to the same person.
- This is to be repeated till the student gets it right and also speaks in a voice loud enough to be heard by everybody.

Writing about Oneself

1. Basic Grammar: Gender Agreement, Number Agreement, Subject-Verb Agreement, Use of Articles and Tenses

2. Exercises –Note: Students need not remember the names of the tense forms but they must know develop the ability to use them correctly. Teachers handling this course can take 3 or more items from Module I and make the students write about them in a simple, conversational style. This writing can then be checked for gender and number agreement as well as the proper use of articles and tense forms and feedback can be given with a view to reinforcing their ability to write grammatically.

Module II Communicating with Others

1. INTRODUCING OTHERS

- Introducing a classmate to an audience mentioning their basic details, good qualities, interests and achievements and also narrating some shared experience or something that one has found striking about them

- Researching a celebrity and introducing a classmate as if he/she were that person

NOTE: The number of classmates and "celebrities" introduced like this by each student can be fixed depending on the number of students in the class and the time available.

- Compeering a programme

2. ROLE PLAY

- Opening and concluding conversations with familiars and strangers

- A student talking to a bank manager enquiring about study loans

- A traveler asking for help at a railway enquiry counter

- A tourist asking for information at an enquiry counter about places to visit in a new state, hotel rates, how to get to those places, etc.

- A citizen journalist reports on some special event or untoward situation happening near him/ her in the background

3. GROUP DISCUSSION on one or more of the following:

- Some issue of common concern from the students' lives

- A recent news item

- A recent film

Guidelines

The first 2 rounds of discussion may be on non-controversial topics and the discussion group may be given some preparation time; the next 2 should be spontaneous and on slightly more controversial topics. The class may be split into 2 (or 4) groups. While one group is carrying on the discussion, another group of people may be posted to observe them. Each participant should have a watcher unknown to him/her, who will make notes on that person and give them to the teacher for a feedback. Points to be watched shall be –the student's level of participation, body language, voice, manner, confidence level and overall contribution to the discussion. Through this method the principles of healthy group discussion can be "derived" and taught. Observer students should be required to take notes during discussion and the teacher should guide them in refining their notes.

4. INTERVIEW

- A brief recapitulation of how to prepare a CV or resume (since the students would have done this in their 1st semester)
- How to write an application letter to go with it
- Preparation for an interview: researching the subject/organization, the responsibilities on the job one is seeking –things to do on the previous day
- Non-Verbal factors: Dress, punctuality, body language, eye contact, sitting posture
- Types of interview questions: fact seeking, searching or opinion seeking, confirmatory, open and closed questions
- Ways of disagreeing politely with the panelists, refusing to take provocations, asking for clarifications
- What to do before and during a telephonic interview

Module III Letters, Mails and Notices

1. Drawing up brief notices for various events
2. Basic elements of an email and some points of netiquette
3. Formal letters and emails for the following purposes:

- Applying for a job
- Seeking information
- Ordering a product
- Making enquiries and bookings
- Making a complaint
- Giving negative feedback tactfully
- Asking for help
- Apologizing for mistakes made
- Thanking people for services/help received
- Writing a proposal for a grant/ project/ scholarship (basic structure)

Fine Tuning One's English

1. What is Mother-tongue Interference and why does it happen? –Speech sounds in English that are NOT found in Malayalam –some English sounds/words commonly mispronounced by Malayalis

2. 2-3 sessions of listening to British speech –2 -3 sessions of listening to American speech

3. Getting the most out of a dictionary –how to look for a word –some common words with multiple meanings (all widely used) –meaning of 'connotation', 'pejorative', 'dialect', 'slang', 'expletive' and 'profanity' with an example each

4. Making a 5-10 minute presentation on any topic chosen by the student and approved by the teacher

5. Writing for Social Media platforms and creating content for various purposes targeted at Social Media readers/ viewers

6. Personal blog writing

Recommended Reading

Basic Communication Skills (book with CD). P. Kiranmai Dutt and Geetha Rajeevan. Foundation Books, CUP, 2011: Part I and III. Price: 150/

Essential English Grammar: A self-study reference and practice book for elementary students of English (with answers) 2nd Edition. Raymond Murphy. CUP, 2010.

The Craft of Business Letter Writing. Matthew M. Monippally. Tata McGraw Hill, 2006: Especially Part I and II (Chapters 1-6), Chapter 9 and 10 in Part III and the Appendix, "Rogues' Gallery".

E-Mailing (book with CD).Louise Pile. Viva Books, 2009.

Communication for Business: A Practical Approach (4th Edition). Shirley Taylor. Pearson Education, 2006: Relevant Chapters in Units 3, 4, 5, 6, 8 and 18.

A Dictionary of Contemporary English (New Edition with DVD ROM). Pearson Longman, 2009.

e-resources:

1. www.grammar-monster.com

2. Powerpoint Presentation in www.wikipedia.org on English spelling

3. BBC World resources on learning English

SEMESTER V

FIRST DEGREE PROGRAMME IN

BA ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Open Course1: EN 1551.2 Theatre Studies

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hours)**

Aim: Introduce and Equip dramatic methods and production

Objectives

1. Give an introduction to the world of drama and its techniques
2. Provide exposure to different experimental theatres
3. Develop the skills among students to create and perform drama

Course Outcome

CO 1: Understand the various theatres, techniques and practices

CO 2: Appreciate the medium of drama

CO 3: Initiate collaborative performances.

CO 4: Attempt production of plays

CO 5: Equip learners to choose a career in theatre.

COURSE OUTLINE

Module I Origin and Growth of Theatre

Greek Stage – Sophocles, Aeschylus, Euripides, Aristophanes – The Chorus

Tragedy, Comedy – Comedy of Humours – Comedy of Manners – Problem Play – One-Act Plays – Flash drama.

Aristotle's definition of Tragedy – Six components of Tragedy – The Roman Stage – The Medieval Stage – Elizabethan Stage – Marlowe, Shakespeare – Jacobean Theatre – Restoration Theatre – 19th Century Theatre – Modern Theatre – Epic Theatre, Theatre of the Absurd.

Module II Indian Theatre

Indian classical drama – Kalidasa – Major contributors of Indian English drama – Girish Karnad-–Mahasweta Devi.

Origin of Theatre in Kerala – Theatre movements in Kerala –KPAC - Discuss the major plays including Edasseri Govindan Nair's Koottukrishi and Thoppil Bhasi's plays – An overview of Thanathu Nataka Vedi and Radio plays – Contemporary stage.

Module III Praxis

Preparation of a script – writing a one-act play – various techniques – plot, characterisation, etc. – activities to be organised by dividing the students into groups.

Assignment (5 marks): To write the script from a novel or short story.

Recommended Reading:

Banks, R.A. *Drama and Theatre Arts*.Hodder Arnold H&S, 1985.

Bhatia, Nandi (ed.). *Modern Indian Theatre: A Reader*. Oxford University Press, 2009.

Butcher, Samuel Henry.*The Poetics of Aristotle.* Create Space Independent Publishing Platform, 2017.

Esslin, Martin. "Introduction".*Theatre of the Absurd*.Bloomsbury Academic, 2015.

Keith, Berriedale. The Sanskrit Drama in its Origin, Development Theory and Practice.Motilal ,1992.

Menon, A. Sreedhara. *Social and Cultural History of Kerala*.Sterling Publishers, 1979.

Storey, Ian C. and Arlene Allan.*A Guide to Ancient Greek Drama*.Wiley Publishers, 2014.

SEMESTER V

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Open Course1: EN 1551.3 Film Appreciation

No. of credits: 2 No. of instructional hours: 3 per week [Total 54 hours]

Aim Introduce the world of movies and sensitize its representative politics

Objectives

1. Enable the students from various disciplines to decipher the meaning of a movie
2. Familiarize students with the emerging area of film studies
3. Make them aware of the evolution of the filmic medium.

Course Outcome

CO 1: Decipher the meaning of a movie

CO 2: Watch, understand and analyze films from a critical perspective

CO 3: Connect movies to its multidisciplinary scope of appreciation and learning.

CO 4: Equip them to write critically about film.

CO 5: Equip them to be resourceful to find a career in areas related to film

COURSE OUTLINE

Module I Evolution and Key concepts

Defining film – A brief history(Lumiere brothers and the beginning) - Language of Cinema – Types of Shots, Angles – Camera Movements –180 degree Rule – 30 degree rule- Focus – Use of colour and lighting, sound- music- Editing – Different styles of Editing - Mise-en-Scene, Auteur theory- Major film genres–Famous Adaptations - Different stages of Production – Censorship.

Module II Major Movements and the Masters (Discuss only the basics and the major film makers)

- Soviet Cinema and Montage
- German Expressionism
- Italian Neo Realism

- French Poetic Realism and French New Wave
- Third World cinema
- Documentary films
- Short films
- The Digital world
- OTT platforms

Famous Directors: Alfred Hitchcock, Charlie Chaplin, Ingmar Bergman, Andrei Tarkovsky, Luis Buñuel, Akira Kurosawa, Satyajit Ray.

Module III Indian and Malayalam Cinema

Beginning of Indian cinema – Dada SahebPhalke – Golden age of Indian cinema – Satyaji Ray – popular Bollywood cinema – beginning and growth of Malayalam cinema – parallel cinema in Malayalam – AdoorGopalakrishnan – contemporary Malayalam cinema.

Practical Sessions: Script Analysis and Writing Reviews

Writing about film – the basics of film review – analyse the films based on the theoretical approaches in the above modules.

Case studies – Script Analysis and Review

The Titanic

Mother India

Manichithrathazhu

Recommended Reading:

Alex Clayton and Andrew Klevan – *The Language and Style of Film Criticism* 2011.

Amy Villarejo. *Film Studies: The Basics*. Routledge, 2013.

Andrew Dix. *Beginning Film Studies*.Manchester University Press, 2013.

Geoffrey Nowell-Smith: *The Oxford History of World Cinema*. OUP, 1997.

James Monaco – *How to Read a Film*. Harbor Electronic Publishing, 2013.

Jill Nelmes: *Introduction to Film Studies*. Routledge, 2011.

Madhu Muttam: *Manichithrathazhu Screenplay*. DC Books, 2010.

Renu Saran. *History of Indian Cinema*. Diamond Books, 2012

Robert Stam. *Literature through Film*.Taylor & Francis, 2011.

Robert Stam and Alessandra Raengo (ed.). Literature and Film.Wiley-Blackwell, 2004.

Steve Katz: Film Directing Shot by Shot: *Visualizing from Concept to Screen*. Focal Press, 1991.

Steven Ascher. *The Filmmaker's Handbook.*Penguin, 2012.

Susan Hayward. *Cinema Studies: The Key Concepts*. Taylor & Francis Ltd/Routledge, 2000.

e-resources:

https://www.cs.ubc.ca/~udls/slides/udls-sampoorna-biswas-film-appreciation-1.pdf

https://nofilmschool.com/Film-theory-basic-terms

http://www.jccsskc.edu.hk/newweb/modules/cjaycontent/content/1112prefectPhoto/Act06/Film Appreciation.pdf

https://plato.stanford.edu/entries/film/

SEMESTER VI

FIRST DEGREE PROGRAMME IN

BA ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course 11: EN 1641 Gender Studies

No: of Credits: 4 **No of Instructional Hours: 5 [Total: 90hours]**

Aim: Introduce and problematize gender constructs.

Objectives

1. Explore the historical variables that have contributed towards the social norms of gender and sexuality
2. Understand the significance of making gender an integral concept of social analysis
3. Develop a conceptual understanding of the field of gender studies

Course Outcome

CO 1: Recognize the patriarchal bias in the formation of history and knowledge.

CO 2: Analyse the ways in which gender, race, ethnicity class, caste and sexuality construct the social, cultural and biological experience of both men and women in all societies.

CO 3: Recognize and use the major theoretical frames of analysis in gender studies

CO 4: CO 5: Interrogate the social constructions of gender and the limiting of the same in to the male-female binary in its intersections with culture, power, sexualities and nationalities

CO 5: Examine gender issues in relation to the sustainable goals of development

COURSE OUTLINE

Module I Introduction to Gender Studies

Gender, Patriarchy- Family- Identities- Essentialism- Difference- Ideology- Intersectionality- Feminisms-Womanism-Dalit Feminism-Islamic Feminism

1. bell hooks. "Feminist Politics:Where we Stand" *Feminism is for Everybody*: *Passionate Politics*. London: Pluto, 2000: pp.1-6. https://excoradfeminisms.files.wordpress.com/2010/03/bell_hooks-feminism_is_for_everybody.pdf
2. Judith Lorber. "The Social Construction of Gender." https://ieas.unideb.hu/admin/file_9695.pdf
3. Vijila Chirappad: "Wasteland" (poem) https://feminisminindia.com/2018/01/11/5-dalit-women-poets/

Module II Gender and Sexuality

Body-Sexualities-Performativity-Heterosexuality-Sexual Orientation-Non-normative Sexualities-Desire-Heteronormativity-Homosexuality-LGBTQI-Queer-Transgender-Pride Parade-Posthuman Orientation.

1. A. Revathi. *The Truth about Me:A Hijra Life Story*(Life Narrative)
2. Margaret Atwood: "Helen of Troy Does Countertaps" Dancing (poem) https://apoemaday.tumblr.com/post/181494581744/helen-of-troy-does-countertop-dancing
3. Kalki Subramaniam: "Breaking Binaries, Establishing Identity" TEDxDumas https://www.youtube.com/watch?v=_j1NzEGMNdo

Module III Gender and Culture

Culture, Modernity, Consumption, Sexual Economies, Commodity Culture

1. Nivedita Menon: "India: Section 377: How Natural is Normal?" http://www.sacw.net/SexualityMinorities/nivedita01Jan2004.html
2. Maya Angelou: "Phenomenal Woman" (poem) https://www.poetryfoundation.org/poems/48985/phenomenal-woman
3. Meena Kandasamy: "Mascara" (poem) https://www.poemhunter.com/poem/mascara-4/

Module IV: Gender, Power and Human Rights

Power, Sexual Politics, Discourse, Sexual Citizenship, Discrimination, Human Rights, Gender Justice

1. Alice Walker: *Meridian* (Novel)
2. Mahaswetha Devi: *Draupadi* (Short Fiction)
3. Mayilamma:Chapter 13. "Protest: The First Year" (Pages 55 – 59) Jyothibai Pariyadathu*Mayilamma: The Life of a Tribal Eco-warrior*. Orient Blackswan, 2018.

Recommended Reading

Butler, Judith. Gender Trouble: *Feminism and the Subversion of Identity*. New York: Routledge, 1990.

Cranny-Francis,Anne. Wendy Waring, Pam Stavropoulos, Joan Kirkby. *Gender Studies Terms and Debates*.Macmillan, 2017.

Delap, Lucy. *Feminisms: A Global History*. Penguin, 2020.

Foucault, Michel. *History of Sexuality*.Penguin Books: 1977

Kate, Millet. *Sexual Politics*. New York: Doubleday. 1969.

Kumar, A.*The History of Doing*, New Delhi: Kali for Women,1998.

Marao, Lori, J. *Fifty-One Key Feminist Thinkers*. Taylor and Francis, 2016.

Naples, Nancy A. *Companion to Women's and Gender Studies*. Wiley, 2020.

Roth, Benita. *Separate Roads to Feminism*. CUP,2004.

Sullivan, Nikki. *A Critical Introduction to Queer Theory*.NYU, 2003.

e- resources

https://kalkisubramaniam.com/

https://www.e-ir.info/2017/02/06/online-resources-feminism/

https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(19)30239-9/fulltext

https://plato.stanford.edu/entries/feminist-philosophy/

http://www.gender.cawater-info.net/knowledge_base/rubricator/feminism_e.htm

https://guides.lib.purdue.edu/c.php?g=352219&p=2375079

SEMESTER VI

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course 12: EN 1642 Indian Writing in English

No. of Credits: 4 No. of Instructional Hours: 5 per week [Total 90 hours]

Aim: Trace the growth and development of Indian English Writing

Objectives

1. Familiarize the students with the genesis of Indian Writing in English.
2. Acquaint them with the major movements in Indian Writing in English and their historical connections.
3. Introduce them to the stalwarts of Indian Literature in English through the study of selected literary texts

Course Outcome

CO 1: Make students aware of different aspects of colonization like cultural colonization.

CO 2: Trace the historical and literary genesis and development of Indian Writing in English

CO 3:Acquaint them with the major movements in Indian Writing in English across varied period and genres

CO 4: Address the plurality of literary and socio-cultural representations within Indian life as well as letters.

CO 5:Enhance the literary and linguistic competence of students by making them aware of how language works through literature written in the subcontinent.

COURSE OUTLINE

Module I Introduction

Colonialism- Macaulay's Minutes- historical context for the rise of Indian writing in English

1. K. Satchidanandan: "The Plural and the Singular The Making of Indian Literature" *Positions: Essays on Indian Literature.* New Delhi: Niyogi Books, 2019.

Module II Poetry

Impact of Romanticism- Impact of Nationalism on Indian English Poetry- Aurobindo Ghose- Rabindranath Tagore- Sarojini Naidu- Nissim Ezekiel- A. K. Ramanujan- Jayantha Mahapatra-

R. Parthasarathy- Give Patel- Vikram Seth- Meena Aledander- Mamang Dai- Mamata Kaliya- Eunice De Souza- Karthika Nair- Vivek Narayan- Jeet Thayil- Meena Kandasamy

1. Michael Madhusudan Dutt: "I Sigh for Albion's Distant Shore"http://archive.thedailystar.net/2004/11/13/d41113210292.htm
2. Toru Dutt: "A Tree of Life" https://www.poetrycat.com/toru-dutt/the-tree-of-life
3. Rabindranath Tagore: "Where the Mind is Without Fear" https://allpoetry.com/where-the-mind-is-without-fear
4. Arvind Krishna Mehrotra: "Aligarh" https://www.poetryfoundation.org/poetrymagazine/poems/150263/aligarh
5. Kamala Das : "An Introduction" https://www.poemhunter.com/poem/an-introduction-2/
6. Eunice de Souza: "Advice to Women" https://www.poemhunter.com/poem/advice-to-women-2/
7. Arundhathi Subramaniam: "When Landscape Becomes Woman"https://www.usawa.in/poetry/three-poems-by-arundhati-subramaniam.html
8. Shalim M. Hussain : "Golluckgonj"https://www.nezine.com/info/ZWFybmZZL0htZk95SVRQeWNtcHExZz09/a-few-poems-by-shalim-m-hussain.html

Module III Fiction and Non Fiction

Pre independence fiction-partition fiction- Raja Rao- Mulk Raj Anand- Fiction of the Diaspora- V.S. Naipaul- Salman Rushdie- Chitra Divakaruni- Kiran Desai- Shashi Deshpande- Gita Hariharan- Arundhati Roy- Shashi Tharoor- Mukul Kesavan-Manu Joseph- Anees Salim

Short stories

1. R.K. Narayan: "Father's Help"
2. Anita Desai: "Games at Twilight"
3. Jhumpa Lahiri :"A Temporary Matter"

Novel

1. Amitav Ghosh: *The Glass Palace*
2. Easterine Kire: *A Terrible Matriarchy: A Novel*

Essays

1. Salman Rushdie: "Imaginary Homelands" https://www.terrain.org/wp-content/uploads/2015/11/Rushdie1992ImaginaryHomelands.pdf

Module IV Drama

Indian Classical Drama- Modern Drama- Social Drama- Amateur Theatre- Street Theatre- Indigenous Theatre- Vijay Tendulkar- Badal Sircar- Safdar Hashmi-Mahasweta Devi- Mahesh Dattani- Manjula Padmanabhan

1. Girish Karnad: *Nagamandala*

Recommended Reading

Chaudhuri, Rosinka. A History of Indian Poetry in English. Cambridge, Cambridge University Press, 2016

Desai, Anita. Games at Twilight.Random House, 2011.

De, Souza, Eunice. Ed. These my Words The Penguin Book of Indian Poetry. Penguin Books, 2012.

Dodiya, Jaydising. Indian English Poetry Critical Perspective.

Iyengar .R.Srinivasa.Indian Writing in English. Sterling Publishers Private Limited. 1983.

Lahiri, Jumpa. Interpreter of Maladies.Houghton Mifflin Harcourt, 2000

Mehrotra, Arvind Krishna (ed). A History of Indian Literature in English. New York: Columbia University Press, 2003

Mukherjee, Meenakshi. The Perishable Empire.OUP. 2000.

Naik, M.K, ed. Aspects of Indian Writing in English. Macmillan India Limited. 1982.

---. A History of Indian English Literature. Sahitya Akademi. 2009.

Narayan, R.K Malgudi Days.Pengin Publishing Group. 2006

Roy, Arundhati. The God of Small Things. Penguin Random House Private Limited, 2017

Singh, Kushwanth. Train to Pakistan. Ravi Dayal Publisher, 2013

Rushdie, Salman. Imaginary Homelands. Randm House, 2012

Tayil, Jeet. 60 Indian Poets. Penguin Books Limited, 2008.

e- resources

https://www.tagoreweb.in/

https://www.bookgeeks.in/best-indian-authors-and-their-novels-in-english/

https://poetsindia.com/

SEMESTER VI

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course 13: EN 1643 Film Studies

No. of credits: 4 No. of instructional hours: 5 per week (Total: 90 hours)

Aim: Introduce the theoretical study of films

Objectives

1. Familiarize students with the emerging area of film studies and make them equipped to decipher the meaning of a movie.
2. Enable the students to understand the medium of cinema with an ample knowledge of the basic terminologies
3. Help them trace the evolution of the different movements in the film history

Course Outcome

CO 1: Recognize the language of films and use it creatively**.**

CO 2: Analyze films from both technical and non-technical perspectives

CO 3: Engage questions of social justice and gender justice by critiquing representations of culture.

CO 4: Use film as a medium of communication

CO 5: Derive an interest in various careers related to film

Module I The Basics

The basic understanding of the word 'film'- film as art, business and technology – three aspects of a movie: literary, dramatic, cinematic–- a brief history – optical illusion – series photography – motion picture – projection – the evolution of narratives- studios.

Language of Cinema- Types of Shots, Angles –Camera Movements –Focus – Use of colour and lighting, Sound- Editing – Different styles of Editing -30 degree rule and 180 degree rule- Mise-en-Scene, Auteur theory- Major film genres: Western, Romance, Musical, Horror, Buddy etc.

Different stages of Production: Preproduction, Production, Postproduction – Censorship – Remakes - films in the new era - - the Digital Era – OTT platforms.

Suggested Viewing: *Arrival of a Train at a Station* (Lumiere), *A Trip to Moon* (Méliès), *The Great Train Robbery* (Edwin S Porter), *The Birth of a Nation* (D W Griffith).

Module II Major Movements in Film history

The Silent Era – Soviet Cinema – Eisenstein and Montage– German Expressionism – The New German Cinema (Fassbinder, Herzog, Wenders)- Italian Neo Realism -Beyond Neo Realism (Fellini)- French poetic realism and French New Wave – Scandinavian Cinema(Ingmar Bergman)- Spanish cinema (Luis Buñuel)- The Polish School – Japanese cinema-Third World Cinema- Classical Hollywood Cinema and after- Documentary films- Nanook of the North- Dogme 95

Suggested Viewing: *Battleship Potemkin* (Eisenstein), *Cabinet of Dr. Caligari* (Robert Wiene), *Bicycle Thieves* (De Sica), *The Jazz Singer, Man with a Movie Camera, Citizen Kane, The Seventh Seal.*

Module III Film Studies in Context: Indian cinema

A brief history – Phalke- Indian Cinema from 30s to 60s – The golden 50s – Indian parallel cinema – the Indian masters– contemporary Indian Cinema.

History of Malayalam cinema –the beginning - New wave – Contemporary trends- Film Society movements- Remakes in Malayalam Cinema.

Suggested Viewing: *Raja Harishchandra* (Phalke), *Pather Panchali* (Satyajit Ray), *Mother India, Elipathayam, Chemmeen.*

Module IV Adaptation

Adaptation- Intersemiotic Transposition – literature and film – three types of adaptation – narration and point of view in film and novel - Fidelity criticism-Intertextuality- Famous adaptations.

Writing about film – A few case studies.

Films for close viewing:

1. *Rashomon*
2. *Psycho*
3. *Chidambaram*

Recommended Reading:

Andreu Dix.*Beginning Film Studies*.Manchester UP. 2008.

Ascher, Steven. *The Filmmaker's Handbook*.Penguin, 2012.

Birdwell, David and Kristin Thomson.*Film Art: An Introduction*. MacGraw Hill, 2012.

Clayton, Alex and Andrew Klevan.*The Language and Style of Film Criticism*

Cook, David A. *A History of Narrative Film*.W W Norton, 1996.

Dix, Andrew. *Beginning Film Studies*.Manchester University Press, 2013.

Gokulsing, K. Moti and Wimal Dissanayake. Routledge *Handbook of Indian Cinema*.Routledge, 2018.

HaHayes, Susan. *Cinema Studies: The Key Concepts.*Taylor & Francis Ltd/Routledge, 2000.

Katz, Steve. *Film Directing Shot by Shot: Visualizing from Concept to Screen*. Focal Press, 1991.

Kristeva, Julia. Intertexuality: Theories and Practices

Monaco, James. *How to Read a Film*. Harbor Electronic Publishing, 2013.

Muttam, Madhu. *Manichithrathazhu Screenplay*. DC Books, 2010.

Nelmes, Jill. *Introduction to Film Studies*.Routledge, 2011.

Nowell-Smith, Geoffrey. *The Oxford History of World Cinema*.OUP, 1997.

Ray, Satyajit. *Our Films, Their Films*. Orient Blackswan, 2001.

Stam, Robert and Alessandra Raengo (ed.). *Literature and Film*.Wiley-Blackwell, 2004.

Stam, Robert. *Literature through Film.*Taylor & Francis, 2011.

Saran, Renu.*History of Indian Cinema*.Diamond Books, 2012.

Villarejo, Amy. Film Studies: The Basics. Routledge, 2013.

e-resources:

https://www.cs.ubc.ca/~udls/slides/udls-sampoorna-biswas-film-appreciation-1.pdf

https://nofilmschool.com/Film-theory-basic-terms

http://www.jccsskc.edu.hk/newweb/modules/cjaycontent/content/1112prefectPhoto/Act06/Film Appreciation.pdf

https://plato.stanford.edu/entries/film /

https://youtu.be/gNoKDkGlgjw

https://cpb-ap-se2.wpmucdn.com/thinkspace.csu.edu.au/dist/5/1410/files/2015/10/Cinema-Studies-Key-Concepts-1-289afca.pdf

SEMESTER VI

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course 14: EN 1644 World Classics

No: of Credits: 3 No: of Instructional Hours: 4 [Total: 72 hours]

Aim: Introduce the timeless classics of world literature

Objectives:

1. The course will aid the learner to have a comprehensive study of the historical evolution of classical works from the classical age to the present postmodern age.
2. Enable the learner to imbibe the significance of Classics as a major cultural influence in literatures around the world
3. Understand major Western and non-western literary forms of written and oral traditions.

Course Outcome

CO 1: Understand the study of Classics as a means of discovery and enquiry into the formations of great literary works and how the rich imagery of these classical works continues beyond the twentieth century.

CO 2: Recognize the diversity of cultures and the commonalities of human experience reflected in the literature of the world.

CO 3: Imbibe a fair knowledge in the various Classical works from different parts of the world, at different time periods, across cultures.

CO 4: Examine oneself and one's culture through multiple frames of reference, including the perception of others from around the world.

CO 5: Develop and aesthetic sense to appreciate and understand the various literary works with a strong foundation in the World Classics.

COURSE OUTLINE

Module I Prose

Course Description:

Literary classics: definitions – critical concepts – the emergence of classics – a brief survey –

Greek and Roman: Homer, Virgil, Aeschylus, Sophocles – Euripides – Aristophanes – Nikos Kazantzakis

Italian: Dante, Boccaccio – Tasso- Ariosto – Machiavelli

Sanskrit: Vyasa- Valmiki – Kalidasa – Sudraka – Bhasa – Shriharsha – Jayadeva

German: Goethe – Hermann Hesse

Russian: Dostoevsky – Tolstoy – Gorky – Solzhenitsyn

British: Aphra Behn – Mary Shelley –James Joyce

Core Reading:

1. T S Eliot's "What is a Classic?" Online Source: http://bracchiumforte.com/PDFs/tseliot.pdf

Module II: Poetry

1. Ovid's *Metamorphoses, Selections* - 'Bacchus' (Book III), lines from 512-733, (Plautus. The Pot of Gold, Tr. E F Watling. Harmondsworth: Penguin, 1965. https://johnstoniatexts.x10host.com//ovid3html.html

Module III: Drama

1. Kalidasa's *Abhijñāna Śākuntalaṁ*. (Ed. Ramesh Chandra. Tr. A H Edgren. New Delhi: Global Vision, 2004). http://www.gutenberg.org/files/16659/16659-h/16659-h.htm

Module IV: Fiction

1. Dostoevsky's *Notes from the Underground*. (Penguin Classics) https://www.planetebook.com/free-ebooks/notes-from-the-underground.pdf
2. Gabriel Garcia Marquez: *One Hundred Years of Solitude*. Harper Collins. 2004

Recommended Reading

Abrams. M H, Geoffrey Harpham. *A Glossary of Literary Terms*. Cengaga Learninf, 2012

Beard Mary, and John Henderson. *Classics: A Very Short Introduction*. Indian Edition, OUP, 2006.

Nicoll, Allardyee. *World Drama from Aeschylus to Anouilh*. New York: Harcourt Brace, 1950.

e-resources

Homer's Odyssey.http://www.gutenberg.org/files/1727/1727-h/1727-h.htm

Virgil's Aeneid.http://www.gutenberg.org/files/228/228-h/228-h.htm

Du Fu' Poems.http://www.chinese-poems.com/due.html

Jayadeva. Gita Govinda. http://www.ocasopress.com/pdf/jayadeva_gita_govinda_translation.pdf

Sophocles. Oedipus Rex. https://www.slps.org/site/handlers/filedownload.ashx?moduleinstanceid=22453&dataid=25126&FileName=Sophocles-Oedipus.pdf

Shri Harsha .Nagananda .http://www.yorku.ca/inpar/nagananda_boyd.pdf

Johann Wolfgang von Goethe. Faust.http://www.gutenberg.org/files/14591/14591-h/14591-h.htm

Samuel Butler. Waiting for Godot.http://srgm.org.in/English%20121%20Samuel%20%20Beckett%20Waiting%20for%20Godot.pdf

Nathaniel Hawthorn. Scarlet Letter.https://www.gutenberg.org/files/25344/25344-h/25344-h.htm

Mary Shelley. Frankenstein.https://www.planetebook.com/free-ebooks/frankenstein.pdf

Charlotte Bronte. Jane Eyre. https://www.planetebook.com/free-ebooks/jane-eyre.pdf

James Joyce's Ulysses.https://planetpdf.com/planetpdf/pdfs/free_ebooks/Ulysses_NT.pdf

SEMESTER VI

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Elective Course1: EN 1661.1 Translation Studies

No. of credits 2 No. of instructional hours: 3 per week [Total: 54]

Aim Equip learners with a professional skill

Objectives

1 Familiarize the students with the basics and nuances of translation.
2 Understand the theory and practice of translation and get well versed in the uniqueness of language structures.
3 Prepare students to take up translation as a profession.

Course Outcome

CO 1: Comprehend and practise the skills required to become a professional translator

CO 2: Help learners recognize the art involved in translation and encourage translation as a profession

CO 3: Acquire clarity regarding problems of translation

CO 4: Procure and improve language and vocabulary skills

CO 5: undertake an independent translation project.

COURSE OUTLINE

Module I Fundamentals of translation

Definitions-a brief history of translation in Malayalam-Theories of translation-linguistic-literary-cultural-communicative-Types of translation-Literary-Non-Literary-Technology aided translation. Source language-Target language-Afterlife-Linguistic and cultural systems-fidelity-untranslatability- confusions-equivalence- Principles of Translation- Types of Translation

Module II Case Studies

1. Analysis of a translated Text:

a. From Malayalam to English

i. A story

ii. A poem

b. From English to Malayalam

1. A story

2. Problems of translations

Module III: Translation Practice

a. Non-Literary(Equivalent technical terms-idioms, phrases, proverbs in English and Malayalam-Translation of sentences and passages from English to Malayalam and vice-versa)

b. Literary(Translation of short literary prose pieces including fiction from English to Malayalam and vice-versa)

COURSE MATERIAL

Core reading

Harishankar, V. Bharathi, Mini Krishnan and G.S. Jayasree.*Word Worlds: Translation and Communication*. OUP, 2013.

Recommended Reading

Abdulla, V. and R.E.Asher,Ed.Wind Flowers, New Delhi: Penguin,2004.

Ashly, C,N O. Henriyude Theranjedutha Kathakal Papion,Kozhikodu.

Basheer, Vaikom Muhammed. Poovan Banana and Other Stories. Abdulla,V.tr. Hyderabad: Orient Black Swan,2009.

Hatim, Basil and Jeremy Munday, *Translation: An Advanced ResourceBook*.London: Routledge,2004.

Palumbo, Giuseppe. *Key Terms in Translation Studies*. Continuum,2009.

Ramakrishnan, Malayattoor. Roots. Abdulla, V.tr.Hyderabad: Orient Black Swan,2009.

Vasudevan Nair, M.T. *Kuttiedathi and Other Stories.* Abdulla,V.tr. Hyderabad:Orient Black Swan,2009.

'Vanampadiyodu' by Vyloppilly Sreedhara Menon.(Translation of Keats' Ode to a Nightingale)

SEMESTER VI

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Elective Course 2: EN 1661.2 American Literature

No. of credits 2 No. of instructional hours: 3 per week [Total: 54 hours]

Aim: Introduce the uniqueness and diversity of American Literature

Objectives

1. Provide knowledge of the writers who have steered the course of American literature
2. Provide insight into the techniques and stylistic peculiarities of American literature
3. Equip students to identify ideas and themes typical of American literature

Course Outcome

1. Instill a sense of the "Americanness" that characterizes American literature
2. Enable the students to place American literature within the corpus of world literature even while identifying its uniqueness.
3. Identify the themes and narratives particular to American literary expressions
4. Generate interest in a field of specialization
5. Enquire about the recent and more popular forms of literature.

COURSE OUTLINE

Module I: Poetry

1. Walt Whitman – "O Captain! My Captain!"
2. Anne Sexton: "Her Kind"
3. Wallace Stevens – "The Snowman"
4. Charles Bukowski: "So You Want To Be A Writer"
5. Denise Levertov: "What Were They Like?"
6. Archibald MacLeish: "Ars Poetica"

Module II: Drama

1. Tennessee Williams – *Lord Byron's Love Letter*
2. Saul Bellow – *The Wrecker*

Module III: Prose

1. Martin Luther king Jr. – "Letter from Birmingham Jail"
2. Alice Walker – "Saving the Life That Is Your Own: The Importance of Models in the Artist's Life"

Module IV: Fiction

1. Mark Twain – "The Celebrated Jumping Frog of Calaveras Country" https://www.gutenberg.org/files/10947/10947-h/10947-h.htm
2. Bret Harte"The Outcasts of Poker Flat" https://www.gutenberg.org/files/1312/1312-h/1312-h.htm
3. Toni Morrison: *Beloved*

Recommended Reading

Burt, Daniel S. The Chronology of American Literature.Houghton Mifflin, 2004.

Harper, Michael, S, Antony Walton. The Vintage book of African American Poetry

New York, Knopf Doubleday Publishing Group, 2012.

Hart, Stephen, M. The Cambridge Companion to Latin American Poetry, Cambridge, Cmbridge University Press, 2008.

SEMESTER VI

FIRST DEGREE PROGRAMME IN

BA ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Elective Course 3: EN 1661.3 Creative Writing

No. of credits 2 **No. of instructional hours: 3 per week [Total: 54 hours]**

Aim Generate interest and prompt creativity.

Objectives

1. Recognise the elements needed to give expression to their creativity.
2. Encourage students to use these self-recognized elements to develop their creative writing talent.
3. Sensitize them to the fact that creative writing has gone beyond the traditional genres in today's world and includes many new forms that have grown with the media and social media boom, thereby blurring the boundaries between "creative" and "functional" writing.

Course Outcome

CO 1: Create a body of original creative works which exhibit basic elements of literary writing.

CO 2: Generate the ability to apply the creative as well as critical approaches to the reading and writing of literary genres.

CO 3: Critique and support the creative writing of peers in a guided workshop environment.

CO 4: Engage in literary output by identifying, analyzing and expressing socially sensitive and personally abstract themes and ideas.

CO 5: Gain expertize in providing critical readings of works of literary expressions.

COURSE OUTLINE

Module I: Art and Craft of Writing

- Introduction

Creative Writing definition – Measuring Creativity – Inspiration and Agency – Creativity and Resistance – Imagination – Importance of Reading

- The Art and Craft of Writing

Tropes and Figures – Style and Register – Formal/Informal Usage – Varieties of English – Language and Gender – Word Power – Grammar and Word Order – Tense and Time

Module II: Creative Writing across Genres

- Poetry

Definition – Beginning to write poems – Shape, Form, Technique – Rhyme and Reason – Fixed forms and Free Verse – Modes of Poetry (Lyrical, Narrative, and Dramatic) – Voices – Indian English poets/works – Problems with writing poetry – Beginning to write

Individual Creative Activity

Poems

- Fiction

Fiction – Literary and Popular Fiction – Short Story – Analysis of a short story – A Conversation with a creative writer – Beginning to write

Individual Creative Activity

Short Stories

- Drama

Concepts and characterization of drama – Verbal/non-verbal elements – Different styles of contemporary theatre in Indian English – Developing a situation – Creating a sequence of events – Transforming it into a scene for a play

Individual Creative Activity

One Act Play

- Writing for Children

Children's literature – writing verse – fiction – scripting for children's theatre

Individual Creative Activity

Poems/Short Stories/Plays for children

Module III: Creative Writing in Other Forms

Reviews

Book reviews, Film reviews

Travel Writing

Travelogues

Life Writings

Memoirs, Diary Entry, Biography, Autobiography

Blogs

Personal/Social/Cultural/Instagram poem/blogs

Creative Writing in Commercial Sphere

Forms

Advertisements, Tourist brochure, Recipe Writing

Individual Creative Activity

Book/film reviews, Travelogues, Memoirs, Diary Entry, Biography (Max. 300 words), Autobiography (Max. 300 words), Personal/Social/Cultural/Instagram poems/blogs

Course Material

Modules I & II

Creative Writing: A Beginner's Manual by Dev, Anjana Neira et al. Pearson Longman, 2009.

Reference

Modules III

Book Review

www.writingcenter.unc.edu/tips-and-tools/book-reviews/

www.writingcenter.unc.edu/esl/resources/writing-critique/

Film Review

www.wikihow.com

"How to Write a Movie Review (With Sample Reviews)"

Travelogues

www.researchgate.net/publication/274640565_TRAVELOGUES_AN_INNOVATIVE_AND CREATIVE_GENRE_OF_LITERATURE

www.academichelp.net/create-writing/write-travelogue.html

Memoir

www.selfpublishingschool.com/how_to_write_a_memoir/

“How to Fast Draft Your Memoir with Rachael Herron”

www.youtube.com

Diary Entry

www.reliving.co.uk/write-a-diary-entry-expressing-your-feelings/

Biography

www.masterclass.com/articles/how-to-write-a-biography#6-tips-on-how-to-write-a-biography/

Autobiography

www.theclassroom.com/write-autobiography-university-4581.html/

“How to Write an Autobiography: The Ultimate Guide with Pro Tips”

www.essaypro.com/blog/autobiography

Blogs

“How to Write a Blog Post: A Step-by-Step Guide”

blog.hubspot.com

www.wordstream.com>blog>2015/02/09>how-to-write-a-blog-post

Instagram Poems/Blogs

www.writersxp.com>how-to-become-an-instagram-poet

www.business2community.com>instagram>14-blogging...>02308043

Advertisements

“Creativity in Advertising-Harvard Business Review by Werner Reinartz and Peter Saffert

www.hbr.org>2013/06>creativity-in-advertising-when-it-w.../

Tourist Brochure

www.library.uncg.edu>nclitmap>TravelBrochureInclusion

www.wikihow.com>...>ArtMedia>Brochures>

Recipe Writing

www.sharonpalmer.com>rules-for-good-recipe-writing

www.thekitchn.com>how-to-write-a-recipe-58522

"How to write a recipe" by Jessica Focht 1 Nov. 2019

www.grammarly.com/blog/how-to-recipe/

Reviews - Commercial

Product

www.impactbnd.com/blog/how-to-write-product-reviews/

General Reference

Abrams, M. H., Geoffrey Galt Harpham. A Glossary of Literary Terms Eleventh Edition. Cengage Learning

Cheney, Theodore A. Rees. Writing Creative Nonfiction: Fiction Techniques for Crafting Great Non-Fiction Writing and Journalism. Ten Speed Press

Cuddon, J. A., Dictionary of Literary Terms & Literary Theory. Penguin.

Earnshaw, Steven. Ed. The Handbook of Creative Writing.Edinburgh University Press.

Mills, Paul. The Routledge Creating Writing Coursebook.Routledge.

Morley, David. The Cambridge Introduction to Creative Writing.Cambridge University Press.

Prasad B. A Background to the Study of English Literature. Macmillan

Roney, Lisa. Serious Daring: Creative Writing in Four Genres. Oxford University Press.

Zinsser, William. On Writing Well: The Classic Guide to Writing Non-Fiction.HarperCollins.

https://www.scribendi.com/advice/best_book_blogs_2015.en.html

Note: How to implement this course

Students should be exposed to the above as far as possible in the classroom sessions. Since there are many forms listed, group work and division of work along with self-teaching activities may be resorted to. Keeping this in view, certain items in the syllabus have been listed for individual/team writing. Writing workshops should also be conducted.

SEMESTER VI

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Elective Course 4: EN 1661.4 English for the Media

No. of credits: 2 **No. of instructional hours: 3per week [Total: 54 hours]**

Aim: To introduce the essential requirements of writing for the media.

Objectives

1. To familiarize students with the process of writing for the media
2. To make them familiar with the specific use of English in the field of media
3. To generate interest in various aspects of media and thereby to equip them with the basic writing skills required for the same.

Course Outcome

CO 1: Generate interest in various aspects of media and thereby to equip them with the basic writing skills required for the same.

CO 2: Enable the students to take up jobs in the media industry- both in the print, broadcast and the new media.

CO 3: Equip the students with the necessary writing procedures so that they can initiate themselves into the media industry even without doing a specialized programme on the topic.

CO 4: Promote their writings with the help of the new media

CO 5: Instill confidence in learners to choose a profession in media.

Module I Writing for the print media

Newspaper: Writing headlines – Analysing newspaper articles - Practising interview skills – Planning and writing a newspaper article

Magazine: Composing magazine covers – Planning the contents of a magazine – Giving instructions for a photo shoot – Planning and writing a true life story.

Module II Writing for Radio, Television and Film

Radio: Understanding the language of radio presenters – Understanding the production process – Planning a newslist – Giving post production feedback.

Television: Understanding the pre-production process – Organising a filming schedule – Filming on location – Editing a TV documentary

Film: Writing a screenplay – Pitching successfully – Organising a shoot –Writing a film review.

Module III Writing for advertisements and New media

Advertisement and Marketing: Selling your services to a potential client – Creating a print advert – Creating a screen advert – Presenting a finished advert – Analysing market trends and taking action – Setting up a marketing communication strategy – Organising the relaunch of a product – Evaluating the success of a relaunch.

New Media: Briefing a website designer – Analysing problems and providing solutions – Planning and writing a blog – Creating a podcast.

Core Reading:

Ceramella, Nick and Elizabeth Lee.Cambridge English for the Media.Cambridge UP, 2008.

Recommended Reading

Allen, Victoria, Karl Davis et al. Cambridge Technicals Level 3 Digital Media. Hodder,2016.

Axford,Barrie and Richard Huggins. New Media and Politics. Sage,2001.

Hayward, Susan. Cinema studies: The Key Concepts. Routledge, 1996.

Manovich, Lev. The Language of New Media. Cambridge: MIT P, 2002.

Ogilvy, David. Ogilvy on Advertising.Welbeck. 2007.

Ouellette, Laurie. The Media Studies Reader.Routledge, 2012.

Parthasarathy, Rangaswami. Here is the News! Reporting for the Media.Sterling Publications. 1998.

Raman, Usha. Writing for the Media.OUP, 2009.

Ryan, Michael and James W Tankard.Writing for Print and Digital Media.McGraw-Hill, 2005.

e-resources

https://www.google.co.in/books/edition/Designing_New_Media/

https://www.google.co.in/books/edition/AS_Media_Studies

https://www.google.co.in/books/edition/Social_Media_and_Democracy

https://www.google.co.in/books/edition/Writing_Feature_Articles

https://www.google.co.in/books/edition/Writing_Space

http://downloads.bbc.co.uk/writersroom/scripts/bbcradioscene.pdf

https://indiegroundfilms.files.wordpress.com/2014/01/titanic-numbered.pdf

https://podcasts.google.com/

SEMESTER VI

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Elective Course 5: EN 1661.5 20th Century Regional Literatures in English Translation

No. of credits: 2 **No. of instructional hours: 3per week [Total: 54 hours]**

Aim : Introduce and broaden the knowledge about the richness of regional literatures.

Objectives

1. Introduce the diversity of the nature and features of literary productions within the country and to synthesis ideas that connect them
2. Equip to analyze and defend a plurality of paradigms that will enable a greater understanding of the complex and interdisciplinary nature of translation.
3. Enhance the competence and skill development in the area of translation studies.

Course Outcome

CO 1: Think creatively and critically within and beyond the singularity of regional literature

CO 2: Overcome language barrier in the appreciation of literature

CO 3: Equip to identify the uniqueness as well as the shared history of the regional literatures

CO 4: Engage in translating regional texts into English

CO 5: Be able to evaluate their own competences in translation and will be capable of selecting specialized translation courses for higher studies and also as profession.

COURSE OUTLINE

Module I: Poetry

1. Amrita Pritam (Punjabi) " Oedipus" http://apnaorg.com/books/english/selected-poems-amrita-pritam/selected-poems-amrita-pritam.pdf
2. Ka. Naa. Subramanyam (Tamil)"Experience" Sachidananda,K. ed. Signature: *One Hundred Indian Poets.* NBT 2006.
3. Navakanta Baruna (Asamiya) "Tete-a-tete" https://www.poemhunter.com/poem/tete-a-tete-4/
4. Sitakant Mahapatra (Oriya) 'Death of Krishna" (*Death Of Krishna And Other Poems* by Sitakant Mahapatra Calcutta : Rupa & Co., 1992.
5. K.Ayappa Paniker "Bhagavathykunjamma's Bharatanatyam"

https://www.poemhunter.com/ayyappa-paniker/poems/

Module II:

Fiction/ Non-Fiction

1. Perumal Murgan :*Poonachi: or the Story of a Black Goat* Pushkin Press, 2020.
2. U R Ananthamurthy : *Samskara: A Rite for A Dead Man* New Delhi Oxford University Press 2013

Short Story:

1. Ismat Chughtai 'The Quilt"https://archive.org/stream/LihaafTheQuiltIsmatChughtai/Lihaaf%20%5BThe%20Quilt%5D%20-%20Ismat%20Chughtai_djvu.txt.
2. Fakir Mohan Senapati "Rebati" https://www.scoop.it/topic/tghpnpv/p/4099690484/2018/07/24/rebati-by-fakir-mohan-senapati-pdf995
3. Amin Kamil: "Cock Fight" http://kamil.neabinternational.org/cockfight.htm

Module III: Drama

1. Vijay Tendulkar : *His Fifth Woman* (*THE CYCLIST and HIS FIFTH WOMAN*Oxford University Press, 2006.
2. Salish Alekar:*The Dread Departure* (Collected Plays of Satish Alekar by Satish Alekar New Delhi ; Oxford : Oxford University Press, 2010)

Recommended Reading

Abdulla, V.and R.E. Asher, Ed. *Wind Flowers*. New Delhi: Penguin, 2004.

Adil Jussawalla (ed) *New Writing in India* Harmondsworth: Penguin.1974.

Ashly C N .tr.*O Hendriyude Theranjedutha Kathakal* by. Papion, Kozhikodu.

Bhattacharya, Bhabani (ed.) *Contemporary Indian short stories Volume II* Sahitya Akademi, 2006

Catford, J. C. 1965. *A Linguistic Theory of Translation. London: Oxford University Press.*

Gokak V.K. (ed). Literatures in Modern Delhi: The Publication Indian Languages Division,

1957

Hatim, Basil and Jeremy Munday.*Translation: An Advanced Resource Book*. London: Routledge,2004.

Mukherjee, Meenakshi and Nissim Ezekiel.(ed) *Another India*, New Delhi: Penguin,1990.

Nandi, Pritish ed. *Selected Poems of Amrita Pritam Dialogue* Calcutta Publication, 2001.

Sachidananda, K. ed *Signature: One Hundred Indian Poets* . NET India New Delhi 2000

Palumbo, Giuseppe. *Key Terms in Translation Studies*.Continuum, 2009.

Vasudevan Nair, M.T. *Kuttiedathi and Other Stories.* Abdulla, V. tr. Hyderabad: Orient Black Swan,2009.

Ramakrishnan, Malayattoor. *Roots.* Abdulla, V. tr. Hyderabad: Orient Black Swan, 2009.

.Basheer, Vaikom Muhammed.*Poovan Banana and Other Stories*. Abdulla, V. tr. Hyderabad: Orient Black Swan, 2009.

Sreedhara Menon ,Vyloppilly .Vanampadiyodu' (Translation of Keats' Ode to a Nightingale)

e-resources:

(http://kamil.neabinternational.org/cockfight.htm)

(https://www.scoop.it/topic/tghpnpv/p/4099690484/2018/07/24/rebati-by-fakir-mohan-senapati-pdf995)

https://archive.org/stream/LihaafTheQuiltIsmatChughtai/Lihaaf%20%5BThe%20Quilt%5D%20-%20Ismat%20Chughtai_djvu.txt

https://www.poemhunter.com/ayyappa-paniker/poems/

https://www.epw.in/engage/article/case-collaborative-translation-literary-texts-south-asia

https://www.poetrytranslation.org/poems/from/india

https://kitaab.org/2018/01/19/100-great-indian-poems-editors-note-and-8-poems/

http://indianpoetrytranslations.blogspot.com

https://www.worldliteraturetoday.org/blog/poetry/three-poems-india-kedarnath-singh

https://zubaanbooks.com/found-in-translation-stories-from-india/

http://osou.ac.in/eresources/CIT-01-Unit-01-Meaning,%20Nature%20and%20Scope%20of%20Translation.pdf

SEMESTER VI

FIRST DEGREE PROGRAMME IN

B A ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Elective Course 6: EN 1661.6 Copy Editing

No. of credits: 2 **No. of instructional hours: 3per week [Total: 54 hours]**

Aim: Introduce a skill and career oriented course

Objectives

1. Familiarize students with the concepts of copy- editing and impart basic copy-editing skills.
2. Give exposure to the practice of copy editing
3. Open up areas of further possibilities regarding choice of career.

Course Outcome

CO 1: Gain Through knowledge og the theoretical and practical knowledge of copy editing

CO 2: Copy-edit non–technical materials of moderate difficulty.

CO 3: Produce consistently well-organized written discourse.

CO 4: Find employment in the editing field as copy-editors, sub-editors and webeditors.

CO 5: Help them find employment in the publishing field

COURSE OUTLINE

Module I

What is copy-editing - scope and need - various typescripts - electronic - conversion of manuscripts - copy-editing - preliminary steps.

Module II

Preparing the text - the quantity of copyediting needed - interacting with the author - creation of selfcontained, well-edited copies and books - coherence and consistency - the question of copyrights - acknowledgements and other legal issues - incorporating illustrations - copy-editing blurbs and titles and cover descriptions - dealing with multiauthorship - proof-reading - repeated proofs.

Module III

The problem of style - the concept of in-housestyle - in-house style manuals - the question of grammar – abbreviations – concord – nouns - proper nouns – punctuation – spelling – ambiguity – dates – money measurements - a brief understanding of the make-up of a standard book - preliminary pages - indexing a book - bibliographical references - special books like scientific and technological books - On-screen copy editing – definition - scope - different types - technical issues involved - legal and safety concerns - software tools.

Module IV

Practice session On grammatical trouble points - use of MLA Handbook as an in-house style manual – basic copyediting using materials such as assignments and projects from students - use of electronic versions of these materials for onscreen copy- editing practice.

Recommended Reading

Butcher, Judith, et al. Butcher's Copy-editing, Fourth Edition. New Delhi:

Chicago Manual of Style, 15th Edition of Manual of Style. University of Chicago, 2003.

Greenbaum, Sidney and Janet Whitcut, Longman Guide to English Usage. Harmondsworth: Penguin,1996.

Huddleston, R and Geoffrey K. Pulia, A Student's Introduction to English Grammar. CUP, 2005.

New Hart's Rules; The Handbook of Style for Writers and Editors.Oxford University Press, 2005.

New Oxford Dictionary for Writers and Editors: The Essential A to Z Guide to the Written Word. OUP, 2005.

Suttcliffe, Andrea J, Ed., The New York Public Library Writer's Guide to Style and Usage. Macmillan, 2000.

Turtoa, ND and Heaton, JB.Dictionary of Common Errors.Longman, 1998.

SEMESTER VI

FIRST DEGREE PROGRAMME (CBCS System)

Common guidelines for Project/Dissertation

B.A. ENGLISH LANGUAGE AND LITERATURE: EN 1645

Credits: 4 **Total Instructional hours: 3 per week [Total: 54 hours]**

A. Guidelines for Teachers:

1. The Project/Dissertation should be done under the direct supervision of a teacher of the department, preferably the Faculty Advisor for the sixth semester. However the work of supervising the Projects should be distributed equally among all the faculty members of the department.

2. The teaching hours allotted in the sixth semester for the Project/Dissertation [i.e., 3 hours/week] is to be used to make the students familiar with Research Methodology and Project writing.

3. A maximum of five students will work as a group and submit their project as a [single] copy for the group. The members of a group shall be identified by the supervising teacher. Subsequently each group will submit a project/dissertation and face the viva individually/separately.

4. The list containing the groups and its members should be finalized at the beginning of the sixth semester.

5. Students should identify their topics from the list provided in consultation with the supervising teacher or the Faculty Advisor of the class [Semester 6] as the case may be. The group will then collectively work on the topic selected.

6. Credit will be given to original contributions. So students should not copy from other projects.

7. There will be an external evaluation of the project by an External examiner appointed by the University. This will be followed by a viva voce, which will be conducted at the respective college jointly by the external examiner who valued the projects/dissertations and an internal examiner. All the members within the group will have to be present for the viva voce. The grades obtained [for external evaluation and viva voce] will be the grade for the project/dissertation for each student within that group.

8. The Project/Dissertation must be between 20 and 25 pages. The maximum and minimum limits are to be strictly observed.

9. A Works Cited page must be submitted at the end of the Project/Dissertation.

10. There should be a one-page Preface consisting of the significance of the topic, objectives and the chapter summaries.

11. Two copies have to be submitted at the department by each group. One copy will be forwarded to the University for valuation and the second copy is to be retained at the department.

B. General guidelines for the preparation of the Project:

• Paper must of A4 size only.

• One side Laser Printing.

• Line Spacing: double.

• Printing Margin: 1.5 inch left margin and 1 inch margin on the remaining three sides.

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• Font: Times New Roman only.

• Font size: Main title -14/15 BOLD & matter - 12 normal.

• The project need be spiral-bound only.

• Paragraphs and line spacing: double space between lines [MLA format].

• Double space between paragraphs. No additional space between paragraphs.

• Start new Chapter on a new page.

• Chapter headings (bold/centred) must be identical as shown:

Chapter One

Introduction

• Sequence of pages in the Project/Dissertation:

i. Cover Page.

ii. First Page.

iii. Acknowledgement, with name & signature of student.

iv. Certificate (to be signed by the Head of the Dept and the Supervising Teacher).

v. Contents page with details of Chapter Number, Chapter Heading & Page Numbers.

• Specimen copies for (i), (ii), (iv) and (v) will be sent to the colleges.

• Chapter divisions: Total three chapters.

Preface

Chapter One: Introduction - 5 pages

Chapter Two: Core chapter - 15 pages

Chapter Three: Conclusion - 5 pages.

Works Cited

[Numbering of pages to be done continuously from Chapter One onwards, on the top right hand

corner]

C. Specific guidelines for preparation of Project:

1. Only the Title of the Project Report, Year and Programme/Subject should be furnished on the cover page of the University copy of the Project. The identity of the College should not be mentioned on the cover page.

2. Details like Names of the Candidates, Candidates' Codes, Course Code, Title of Programme, Name of College, Title of Dissertation, etc. should be furnished only on the first page.

3. Identity of the Candidate/College should not be revealed in any of the inner pages.

4. The pages containing the Certificate, Declaration and Acknowledgement are not to be included in the copy forwarded to the University.

5. The Preface should come immediately before the Introductory Chapter and must be included in all the copies.

D. Selection of Topics:

Students are permitted to choose from any one of the following areas/topics. Selection of topics/areas has to be finalized in the course of the first week of the final semester itself with the prior concurrence of the Faculty Advisor / Supervisor:

1. Post-1945 literature. This must not include the prescribed work/film coming under Core study. [Works/films other than the prescribed ones can be taken for study]

2. Analysis of a film script.

3. Analysis of advertisement writing [limited to print ads]. Study should focus on the language aspect or be analyzed from a theoretical perspective [up to a maximum of 10 numbers].

4. Analysis of news from any of these news stations/channels: AIR, Doordarshan, NDTV, Headlines Today, Times Now, BBC, and CNN. [News from 5 consecutive days highlighting local, regional, national, international, sports, etc]

5. Celebrity Interview: from film, politics, sports and writers [Only one area or one personality to be selected].

6. Studies on individual celebrities in the fields of arts and literature. Example: a Nobel Prize winner, a dancer/singer/musician/film star, etc, of repute [Only one personality to be selected].

7. Studies based on any 5 newspaper editorials or articles by leading international or national columnistslike Thomas Friedman, Paul Krugman, Anees Jung, etc.

8. Compilation and translation of any 5 folk stories of the region.

9. Analysis of the language used in email and sms. The study should focus on the language aspect used in such modes of messaging, limiting to 10 pieces of email/sms. [Reference: David Crystal Txtng: the GR8 Dbt. OUP, 2008]

10. Studies on popular folk art forms like Koodiyattam, Theyyam, Pulikali, Chakyar Koothu, Nangyar Koothu, Kalaripayattu, Kathakali, Mohiniyattam, Maargamkali, Oppanna, etc. [Only one art form to be selected].

11. Study on any 5 popular songs in English. Songs of popular bands like the ABBA, Boney M, Backstreet Boys, Beatles, Pink Floyd, Rolling Stones, Westlife, Boyzone, etc can be selected.

12. Study based on the life and works of one Nobel Prize winner in literature.

E. Details of Course Contents:

(1) Academic writing: The following areas are to be made familiar to the students during the course of the 3 instructional hours/week set aside for the same in the sixth semester:

(a) Selecting a Topic

(b) Compiling a Working Bibliography

(c) Writing Drafts

(d) Plagiarism and Academic Integrity

(e) Mechanics of Writing

(f) Methods of quoting texts:

(g) Format of the Research Paper

Reference text: *M.L.A. Handbook* 8th Edition.

(2) Documentation of sources in the works cited page(s): Samples of different types of sources will be provided.

Question Paper Pattern

No questions should be asked from Additional/ Suggested/ Recommended Reading.

Max. Marks: 80 **Time: 3 hours**

Part One

10 questions to be answered, each in a word or sentence. **(10 x 1=10marks)**

Part Two

Eight questions to be answered from a total of 12 and to be written in not more than 50 words.

(8 x 2= 16marks)

Part Three

Six questions to be answered from a total of 9 and to be written in around 100words.

(6 x 4 = 24marks)

Part Four

Two questions to be answered out of four and to be written in not less than 300 words.

(2 x 15= 30marks)

FIRST DEGREE PROGRAMMES (CBCS System)

English Language /Foundation Courses for BA/BSc Programmes

SEMESTERS I to IV - COURSE BREAKUP

Sem No	Course No	Course Title	Instructional hours	credits
1	EN 1111.1	Language Course 1: Listening, Speaking, and Reading	5	4
1	EN 1121	Foundation Course 1: Writings on Contemporary Issues	4	2
2	EN 1211.1	Language Course 3: Environmental Studies	6	4
2	EN 1212.1	Language Course 4: Modern English Grammar and Usage	4	3
3	EN 1311.1	Language Course 6: Writing and Presentation Skills	5	4
4	EN 1411.1	Language Course 8: Readings in Literature	5	4

English Language Courses for BCom Programmes

SEMESTERS I to IV - COURSE BREAKUP

Sem No	Course No	Course Title	Instructional hours	credits
1	EN 1111.2	Language Course 1: Listening, Speaking, and Reading	5	4
2	EN 1211.2	Language Course 3: Modern English Grammar and Usage	5	4
3	EN 1311.2	Language Course 4: Writing and Presentation Skills	3	3
4	EN 1411.2	Language Course 6 : Readings in Literature	3	3

English Language/Complementary Courses for 2(a) Programmes

SEMESTERS I to IV - COURSE BREAKUP

Sem No	Course No	Course Title	Instructional hours	credits
1	EN 1111.3	Language Course 1: Listening Speaking and Reading	5	4
2	EN 1211.3	Language Course 3: Modern English Grammar and Usage	5	3
3	EN 1311.3	Language Course 5: Writing and Presentation Skills	5	4
3	EN 1331.3	Complementary Course 3: Creative Writing [Career related – 2(a)]	5	4
4	EN 1411.3	Language Course 6 : Readings in Literature	5	4
4	EN 1431	Complementary Course 4: English for the Media [Career related - 2(a)]	5	4

English Language Courses for 2(b) Programmes

SEMESTERS I & II - COURSE BREAKUP

Sem No	Course No	Course Title	Instructional hours	credits
1	EN 1111.4	Language Course 1: Listening and Speaking Skills	3	2
2	EN 1211.4	Language Course 2: Writing and Presentation Skills	3	2

UNDERGARDUATE PROGRAMMES

CAREER-RELATED FIRST DEGREE PROGRAMMES (CBCS System) in JOURNALISM AND MASS COMMUNICATION & VIDEO PRODUCTION

SEMESTERS III to IV - COURSE BREAKUP

[2015 Admission onwards]

Sem No	Course No	Course Title	Instructional hours	credits
1	EN 1331.3	Complementary Course: Creative Writing [Career-related 2(a)]	5	4
2	EN 1431.3	Complementary Course: English for the Media	5	4

FIRST DEGREE PROGRAMMES (CBCS System) in B.A. ENGLISH & COMMUNICATIVE ENGLISH

SEMESTERS I to VI - COURSE BREAKUP

[2015 Admission onwards]

Sem No	Course No	Course Title	Instructional hours	credits
1	EN 1111.3	Language Course 1: Listening, Speaking, and Reading	5	4
1	CG 1121.3	Foundation Course 1: Writings on Contemporary Issues	3	2
1	CG 1141	Core Course 1: Reading Poetry	5	3
1	CG 1171	Vocational Course 1: Basics of Communication	3	3
1	CG 1131	Complementary Course 1: History of English Literature 1	4	4
1		Language Course 2 (Additional Language 1)	5	3
2	EN 1211.3	Language Course 3: Modern English Grammar and Usage	5	3
2	CG 1241	Core Course 2: Reading Drama	5	4
2	CG 1271	Vocational Course 2: Environmental Studies	6	4
2	CG 1231	Complementary Course 2: History of English Literature 2	4	4
2		Language Course 4 (Additional Language 2)	5	3
3	EN 1311.3	Language Course 5: Writing and Presentation Skills	5	4
3	CG 1321	Foundation Course 2: Informatics	4	3

3	CG 1341	Core Course 3: Reading Fiction	4	3
3	CG 1342	Core Course 4: 20thC Malayalam Literature in English Translation	3	3
3	CG 1331	Complementary Course 3: History of English Literature 3	4	4
3	CG 1371	Vocational Course 3: Copy Editing	4	4
4	EN 1411.3	Language Course 6 : Readings in Literature	5	4
4	CG1441	Core Course 5: Reading Prose	4	3
4	CG 1442	Core Course 6: World Classics	4	3
4	CG 1431	Complementary Course 4: History of English Language and Phonetics	4	4
4	CG 1471	Vocational Course 4: Print and Online Writing	4	4
4	CG 1472	Vocational Course 5: Theatre Studies	4	4
5	CG 1541	Core Course 7: Literary Criticism	5	4
5	CG 1542	Core Course 8: Film Studies	4	3
5	CG 1543	Core Course 9: Indian Writing in English	3	3
5	CG 1551.1	Open Course 1: Creative Writing	3	2
	CG 1551.2	Open Course 1: Translation Studies		
	CG 1551.3	Open Course 1: English for the Media		
5	PE 1551	Open Course 1: Health and Fitness Education	3	2
5	CG 1571	Vocational Course 6: English Language Teaching	4	4
5	CG 1572	Vocational Course 7: The Language of Advertisements	3	3
5	CG 1573	Vocational Course 8: Audio Visual Writing	3	3
6	CG 1641	Core Course 10: Travel Literature	5	3
6	CG 1642	Core Course 11: Women's Writing	5	3
6	CG 1643	Core Course 12: Methodology and Perspectives of Humanities	4	3
6	CG 1661.1	Elective Course: American Literature	3	2
	CG 1661.2	Elective Course: Communicative Applications in English		
6	CG 1671	Vocational Course 9: Technical English	3	3
6	CG 1672	Vocational Course 10: Business Communication in English	3	3
6	CG 1644	Project/Dissertation	3	4

FIRST DEGREE PROGRAMMES (CBCS System) in B.A. ENGLISH LANGUAGE & LITERATURE

SEMESTERS I to VI - COURSE BREAKUP

[2015 Admission onwards]

Sem No	Course No	Course Title	Instructional hours	credits
1	EN 1111.1	Language Course 1: Listening Speaking and Reading	5	4
1		Language Course 2: (Additional Language 1)	4	3
1	EN 1121	Foundation Course 1: Writings on Contemporary Issues	4	2
1	EN 1141	Core Course 1: Reading Poetry	6	4
1	EN 1131	Complementary Course 1: History of English Literature 1	3	3
1		Complementary Course 2 (External)	3	2
2	EN 1211.1	Language Course 3: Environmental Studies	6	4
2	EN 1212.1	Language Course 4: Modern English Grammar & Usage	4	3
2		Language Course 5: (Additional Language 2)	4	3
2	EN 1241	Core Course 2: Reading Drama	6	4
2	EN 1231	Complementary Course 3: History of English Literature 2	3	3
2		Complementary Course 4 (External)	3	3
3	EN 1311.1	Language Course 6: Writing and Presentation Skills	5	4
3		Language Course 7: (Additional Language 3)	5	4
3	EN 1341	Core Course 3: Reading Fiction	4	3
3	EN 1342	Core Course 4: 20th Century Malayalam Literature in English Translation	5	4
3	EN 1331	Complementary Course 5: History of English Literature 3	3	3
3		Complementary Course 6 (External)	3	3
3	EN 1331.3	Complementary Course : Creative Writing [Career 2(a)]	5	4
4	EN 1411.1	Language Course 8: Readings in Literature	5	4
4		Language Course 9: (Additional Language 4)	5	4
4	EN 1441	Core Course 5: Reading Prose	5	4
4	EN 1421	Foundation Course 2: Informatics	4	3
4	EN 1431	Complementary Course 7: History of English Language	3	2
4		Complementary Course 8 (External)	3	3
4	EN 1431.3	Complementary Course : English for the Media	5	4
5	EN 1541	Core Course 6: Literary Criticism	5	4
5	EN 1542	Core Course 7: Indian Literature in English	5	4
5	EN 1543	Core Course 8: Film Studies	3	2

5	EN 1544	Core Course 9: Linguistics and Phonetics	4	4
5	EN 1545	Core Course 10: Post Colonial Literatures in English	5	4
5	EN 1551.1	Open Course 1: Communicative Applications in English	3	2
	EN 1551.2	Open Course 1: Theatre Studies		
	PE 1551	Open Course 1: Health and Fitness Education		
6	EN 1641	Core Course 11: World Classics	5	4
6	EN 1642	Core Course 12: Methodology & Perspectives of Humanities	5	4
6	EN 1643	Core Course 13: English for the Media	5	4
6	EN 1644	Core Course 14: Women's Writing	4	3
6	EN 1661.1	Elective Course : Translation Studies	3	2
	EN 1661.2	Elective Course: Copy Editing		
	EN 1661.3	ElectiveCourse: Creative Writing		
6	EN 1645	Project	3	4

FIRST DEGREE PROGRAMMES (CBCS SYSTEM)

B.A/B.Sc.

Revised Syllabi for 2015 Admissions onwards

Semesters 1 to 4

LANGUAGE & FOUNDATION COURSES IN ENGLISH

Semester I

First Degree Programme in English (CBCS System)

Common for

B.A/BSc[EN1111.1], B.Com [EN1111.2] &2(a) [EN 1111.3]

Listening, Speaking and Reading

No. of Credits: 4 **No. of instructional hours: 5 per week (Total 90 hrs)**

General Objectives

The general objective of the course is to make the students proficient communicators in English. It aims to develop in the learners the ability to understand English in a wide range of contexts. The main thrust is on understanding the nuances of listening, speaking and reading English. The course is a step towards preparing the learners to face situations with confidence and to seek employment in the modern globalized world. As knowledge of English phonetics will help the students to listen and to speak English better, they would be given rudimentary training in English phonetics. It also enhances the student's general standard of spoken English. The knowledge of the phonetic alphabets/symbols will help the students to refer the dictionary for correct pronunciation.

Module I Listening

Introduction, definition of listening, listening Vs hearing, process of listening, problems students face in listening, sub-skills of listening, what is good listening? strategies of listening, barriers to listening, listening in the workplace, activities that help you to become better listeners.

Module II Speaking

English, the *lingua franca,* varieties of English; Indian English, Received Pronunciation, Why phonetics? Organs of speech and speech mechanism; Classification of English sounds- vowels; consonants; IPA symbols, transcription, the syllable, syllable structure, stress and intonation, some rules of pronunciation, Indian English and deviations from RP, Speaking as a skill; speaking on formal and informal occasions; how to perform a wide range of language functions such as greeting, thanking, complaining, apologizing.

Module III Reading: Introduction, The Reading Process, Reading and Meaning, Methods to Improve Reading, Strengthening Your Vocabulary, Understanding Graphics and Visual Aids, Previewing, Reading in Thought Groups, Avoiding the re-reading of the Same Phrases, Barriers to Reading, Skills for Speed Reading, Sub-skills of Reading, Skimming, Scanning, Extensive Reading, Intensive Reading, Reading E-mail, E-books, Blogs and Web pages

Module IV

Dialogue Practice

Course Material

Modules 1-3

Core Reading: *English Language Skills for Communication I*

Module 4

Core Reading: *Dramatic Moments: A Book of One Act Plays*. Orient Black Swan, 2013

The following one act plays are prescribed:

H.H.Munro	*The Death Trap*
Philip Moeller	*Helena's Husband*
Serafin and Joaquin Alvarez Qunitero	*Sunny Morning: A Comedy of Madrid*
Margaret Wood	*Day of Atonement*

For further Reading

Marks Jonathan. *English Pronunciation in Use*. New Delhi: CUP, 2007.

Lynch, Tony. *Study Listening*. New Delhi. CUP, 2008.

Kenneth, Anderson, Tony Lynch, Joan Mac Lean. *Study Speaking*. New Delhi: CUP, 2008.

Reference

Jones, Daniel. *English Pronouncing Dictionary 17the edition*. New Delhi: CUP, 2009.4

SEMESTER I

FIRST DEGREE PROGRAMME IN ENGLISH (CBCS System)

Foundation Course I for BA/BSc - WRITINGS ON CONTEMPORARY ISSUES: EN 1121

No. of credits: 2 **No. of instructional hours: 4 per week (Total 72 hrs.)**

AIMS

1. To sensitize students to the major issues in the society and the world.
2. To encourage them to read literary pieces critically.

OBJECTIVES

On completion of the course, the students should be able to

1. have an overall understanding of some of the major issues in the contemporary world.
2. respond empathetically to the issues of the society.
3. read literary texts critically.

COURSE OUTLINE

Module I: Globalization and its Consequences

Essays: (1) "The Globalized World" – Avinash Jha.

(2) "Globalization and Education: Third World Experience" – Amit Bhaduri.

Poem: "Unending Love" - Rabindranath Tagore

Module II: Environmental Issues

Essay: "Forests and Settlements" - Romila Thapar Poems: (1) "God's Grandeur" - G.M.Hopkins (2) "The World is too Much with Us" - Wordsworth

Module III: Human Rights

Essay: "Thinking about Human Rights" - Manisha Priyam, Krishna Menon & Madhulika Banerjee,
Poem: "London" - William Blake
Fiction: *Untouchable* [an extract] – Mulk Raj Anand

Module IV: The Gender Question

Essays: "Gender, Culture and History" – Manisha Priyam, Krishna Menon & Madhulika Banerjee, Fiction: "The Elder Sister" – M. T. Vasudevan Nair

COURSE MATERIAL

Modules 1 - 4

Core reading: *Meeting the World: Writings on Contemporary Issues*. Pearson, 2013.

Semester II

First Degree Programme in English (CBCS System)

Common for B.A/B Sc [EN1211.1] & 2(a) [CG1271]

No. of Credits: 4

No. of instructional hours: 6 per week (Total 90 hrs)

ENVIRONMENTAL STUDIES

Module 1

Environmental studies: Definition, Need, Scope and Importance, Need for public awareness. Natural resources- Forest resources, water resources, mineral resources, food resources, energy resources, land resources- over exploitation, case studies.

Module 2

Eco-system- structure and function, producers, consumers and decomposers energy flow in the ecosystem, ecological succession, forest ecosystem, grassland ecosystem, desert ecosystem and aquatic ecosystem. Biodiversity and its value and conservation, hot spots of biodiversity, India as a mega-diversity nation, endangered and endemic species of India, conversation of bio-diversity. In-situ and Ex-situ conversation of bio-diversity. Sustainable use of forest – water- land -resources –Human population and its impact on environment.

Module 3

Pollution: air, water, soil and marine, noise, thermal and nuclear hazards. Solid waste management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Disaster management. Social issues and the Environment: from unsustainable to sustainable development, water conversation-rain water harvesting; global warming; consumerism and waste products: various acts to protect the environment; Environment protection Act; Air (Prevention and Control of Pollution) Act; Water (Prevention and Control of pollution) Act; Wild Life Protection Act; Forest Conversation Act:

Module 4

Human population and Environment: Population explosion, Family Welfare Programmes, Environment and human health; human rights, HIV/AIDS, Women and Child Welfare, Role of Information Technology in Environment and Human health.

Field work and Project- Visit to ecologically polluted spots: Study of nature: study of forest, insects, animals, birds and plants. Project Report on the basis of field work about 15 pages.

Total Marks: 100 **Written Exam: 60 Marks**

Internal Assessment: 15 Marks (Attendance- 5 marks+ 10 test paper)

Field work and project: 25 Marks

Books for Reference:

Adams, W.M. Future Nature: A Vision for Conservation. London: Earthscan, 2003.

Arnold, David and Ramachandra Guha, ed. Nature, Culture and Imperialism:Essays on the Environmental History of South Asia. New Delhi: Oxford UPM 2001.

Bahuguna, Sunderlal. "Environment and Education". The Cultural Dimension of Ecology. Ed. Kapila Vatsyayan. New Delhi: D.K. Printworld. 1998.

Crson, Rachel. Silent Spring. Boston: Houghton Mifflin, 1962.

Guha, Ramachandra- Environmentalism: A Global History,New Delhi: Oxford UP, 2000.

Hayward, Tim. Ecological Thought: An Introduction: Cambridge; polity, 1994.

Merchant, Crolyn. The Death of Nature. New York: Harper, 1990.

Gleick H.P. 1993. Water in Crisis, Pacific Institute for Studies in development Environment and security. Stockholm Env Institute. OUP 473 p.

Heywood V and Watson R.E. 1995. Global biodiversity Assessment. CUP 1140p

Odum FP. 1971. Fundamentals of Ecology. W.B Saunders Co. USA 574p

Rao. M. N and Dutta A.K. 1987. Waste Water Treatmentt. Oxford and IBH Publ Co Pvt.

Wagner K.D. 1998. Environmental Management. WB Saunders Co. Philadelphia, USA. 499p.

SEMESTER II

FIRST DEGREE PROGRAMME (CBCS System)

MODERN ENGLISH GRAMMAR AND USAGE

Common for BA/BSc: EN 1212.1, BCom: 1211.2 & Career related 2(a):1211.3

(2012 Admission onwards)

No. of credits: 3 **No. of instructional hours: 4 per week (Total 72 hrs.)**

AIMS: 1. To help students have a good understanding of modern English grammar.

2. To enable them produce grammatically and idiomatically correct language.
3. To help them improve their verbal communication skills.
4. To help them minimise mother tongue influence.

OBJECTIVES: On completion of the course, the students should be able to

1. have an appreciable understanding of English grammar.
2. produce grammatically and idiomatically correct spoken and written discourse.
3. spot language errors and correct them.

COURSE CONTENTS

Module 1:

- Modern English grammar - what and why and how of grammar - grammar of spoken and written language
- Sentence as a self-contained unit – various types of sentence – simple – compound – complex – declaratives – interrogatives – imperatives – exclamatives.
- Basic sentence patterns in English - constituents of sentences – subject – verb - object - complement - adverbials.
- Clauses - main and subordinate clauses - noun clauses - relative clauses - adverbial clauses - finite and non-finite clauses - analysis and conversion of sentences – Active to Passive and vice versa – Direct to Indirect and vice versa – Degrees of Comparison, one form to the other.
- Phrases - various types of phrases - noun, verb, adjectival and prepositional phrases.
- Words - parts of speech – nouns – pronouns - adjectives verbs - adverbs – prepositions – conjunctions - determinatives.

Module 2:

- Nouns - different types - count and uncount – collective - mass - case - number – gender.
- Pronoun - different types - personal, reflexive - infinite-emphatic – reciprocal.
- Adjectives - predicative - attributive - pre- and post-modification of nouns.
- Verbs - tense-aspect - voice -mood - Concord - types of verbs – transitive - intransitive-finite - non-finite.
- Helping verbs and modal auxiliaries - function and use.

Module 3:

- Adverbs - different types - various functions - modifying and connective.
- Prepositions - different types - syntactic occurrences - prepositional phrases - adverbial function.
- Conjunctions - subordinating and coordinating Determinatives articles - possessives - quantifiers

Module 4:

- Remedial grammar - error spotting - errors in terms of specific grammatical concepts like constituents of sentences - parts of speech - concord – collocation - sequences of tense - errors due to mother tongue influence.
- Written Composition – precis writing – outline story – expansion of proverb – short essay.

COURSE MATERIAL

Modules 1 - 4

Core Reading: *Concise English Grammar* by Prof. V. K. Moothathu. Oxford University Press, 2012.

Further Reading:

1. Leech, Geoffrey et al. *English Grammar for Today: A New Introduction.* 2nd Edition. Palgrave, 2008.
2. Carter, Ronald and Michael McCarthy. *Cambridge Grammar of English.* CUP, 2006.
3. Greenbaum, Sidney. *Oxford English Grammar.* Indian Edition. Oxford University Press, 2005.
4. Sinclair, John ed. *Collins Cobuild English Grammar*. Harper Collins publishers, 2000.
5. Driscoll, Liz. *Common Mistakes at Intermediate and How to Avoid Them*.CUP, 2008.
6. Tayfoor, Susanne. *Common Mistakes at Upper-intermediate and How to Avoid Them*. CUP, 2008.
7. Powell, Debra. *Common Mistakes at Advanced and How to Avoid Them.*CUP, 2008.
8. Burt, Angela. *Quick Solutions to Common Errors in English*. Macmillan India Limited,2008.
9. Turton. *ABC of Common Grammatical Errors*. Macmillan India Limited, 2008.
10. Leech, Geoffrey, Jan Svartvik. *A Communicative Grammar of English.* Third Edition. New Delhi: Pearson Education, 2009.

Direction to Teachers: The items in the modules should be taught at application level with only necessary details of concepts. The emphasis should be on how grammar works rather than on what it is. The aim is the correct usage based on Standard English and not conceptual excellence.

SEMESTER III

FIRST DEGREE PROGRAMME (CBCS System)

Language Course VI (English IV) - WRITING AND PRESENTATION SKILLS

Common for B. A, B. Sc EN: 1311.1 &

Language Course V (English III): for Career related 2(a) EN: 1311.3

No. of credits: 4 **No. of instructional hours: 5 per week (Total 90 hrs.)**

AIMS

1. To familiarize students with different modes of general and academic writing.
2. To help them master writing techniques to meet academic and professional needs.
3. To introduce them to the basics of academic presentation
4. To sharpen their accuracy in writing.

OBJECTIVES

On completion of the course, the students should be able to

1. understand the mechanism of general and academic writing.
2. recognize the different modes of writing.
3. improve their reference skills, take notes, refer and document data and materials.
4. prepare and present seminar papers and project reports effectively.

COURSE OUTLINE

Module 1

Writing as a skill – its importance – mechanism of writing – words and sentences - paragraph asa unit of structuring a whole text – combining different sources – functional use of writing – personal, academic and business writing – creative use of writing.

Module 2

Writing process - planning a text – finding materials - drafting – revising – editing - finalizing the draft - computer as an aid – key board skills - word processing - desk top publishing.

Module 3

Writing models – essay - précis - expansion of ideas – dialogue - letter writing – personal letters formal letters - CV – surveys – questionnaire - e-mail – fax - job application - report writing. Academic writing - writing examinations - evaluating a text - note-making- paraphrasing – summary writing - planning a text – organizing paragraphs – introduction – body – conclusion – rereading and rewriting - copy editing - accuracy.

Module 4

Presentation as a skill - elements of presentation strategies – audience – objectives – medium – key ideas - structuring the material - organizing content - audio-visual aids – handouts - use of power point - clarity of presentation - non-verbal communication - seminar paper presentation and discussion.

COURSE MATERIAL

Modules 1 – 4

Core reading: *English for Effective Communication*. Oxford University Press, 2013.

Further reading:

1. Robert, Barraas. *Students Must Write*. London: Routledge, 2006.
2. Bailey, Stephen. *Academic Writing.*Routledge, 2006.
3. Hamp-Lyons, Liz, Ben Heasley. *Study Writing.* 2nd Edition. Cambridge Uty Press, 2008.
4. Ilona, Leki. *Academic Writing*. CUP, 1998.
5. McCarter, Sam, Norman Whitby. *Writing Skills.* Macmillan India, 2009.
6. Jay. *Effective Presentation*. New Delhi: Pearson, 2009.

Reference:

Mayor, Michael, et al, Ed. *Longman Dictionary of Contemporary English.* 5th Edition. London: Pearson Longman Ltd, 2009.

SEMESTER IV

FIRST DEGREE PROGRAMME (CBCS System)

Language Course - READINGS IN LITERATURE

Common for BA/BSc: EN 1411.1 & Career related 2(a): EN 1411.3

No. of credits: 4 **No of instructional hours: 5 hours/week [Total 90 hours]**

AIMS

1. To sensitize students to the aesthetic, cultural and social aspects of literature.
2. To help them analyze and appreciate literary texts.

OBJECTIVES

On completion of the course, the students should be able to:

1. understand and appreciate literary discourse.

2. look at the best pieces of literary writing critically.

3. analyze literature as a cultural and interactive phenomenon.

Module 1

What is literature – literature and context – genres – literature and human values – creative use of language – inculcation of aesthetic sense.

Poetry – what is poetry – different types of poetry – poetic diction – figurative language – themes – stanza– rhyme.

Module 2

Drama Scope and definition – different types – one act plays - structure – dialogue – characters – action.

Module 3

Prose What is prose – different types – personal – impersonal – technical.

Module 4: Fiction. What is fiction – different types – plot – characters – setting – point of view – short story – its characteristics.

COURSE MATERIAL

Module 1

Core reading: *Readings in Literature*. Department of Publications, University of Kerala. Poems prescribed:

1. William Shakespeare: *To Be or Not to Be* (*Hamlet*, Act III, Scene 1) 2. William Blake: *The Tiger*
3. William Wordsworth: *Lucy Gray*
4. Alfred Lord Tennyson: *Tithonus*
5. Emily Dickinson: *The Wind Tapped like a Tired Man*.
6. Rabindranath Tagore: *Leave This Chanting* (Poem 11 from *Gitanjali)*
7. T S Eliot: *Marina*
8. Ted Hughes: *Full Moon and Little Frieda*.

Module 2 Core reading:

Vincent Godefroy - *Fail not our Feast*

[from *Dramatic Moments: A Book of One Act Plays.* Orient Black Swan, 2013]

Module 3

Core reading: *Readings in Literature*. Department of Publications, University of Kerala.

Essays prescribed:

1. Robert Lynd: *The Pleasures of Ignorance*
2. Martin Luther King: *I Have a Dream*
3. Stephen Leacock: *The Man in Asbestos*
4. Isaac Asimov: *The Machine That Won the War.*
5. E.R. Braithwaite: *To Sir, with Love* [extract]

Module 4

Core reading:

Stories for Life, Indian Open University.

Stories prescribed:

(i) Catherine Mansfield: *A Cup of Tea*.
(ii) O Henry: *The Last Leaf*.
(iii) Rabindranth Tagore: *The Postmaster*.
(iv) Oscar Wilde: *The Happy Prince.*
(v) Ernest Hemingway: *A Day's Wait*

Further reading

1. *A Concise Companion to Literary Forms.* Emerald, 2013.
2. Abrams, M. H. *A Glossary of Literary Terms*.
3. Klarer, Mario. *An Introduction to Literary Studies.* Second edition. Routledge, 2009.

Direction to Teachers

The introduction to various genres is intended for providing basic information and no conceptual analysis is intended.

FIRST DEGREE PROGRAMMES (CBCS SYSTEM) - B.Com

Revised Syllabi for 2015 Admissions onwards

Semesters 1 to 4

LANGUAGE & FOUNDATION COURSES IN ENGLISH

Semester I

First Degree Programme in English (CBCS System)

Common for

B.A/BSc[EN1111.1], B.Com [EN1111.2] &2(a) [EN 1111.3]

Listening, Speaking and Reading

No. of Credits: 4 **No. of instructional hours: 5 per week (Total 90 hrs)**

General Objectives

The general objective of the course is to make the students proficient communicators in English. It aims to develop in the learners the ability to understand English in a wide range of contexts. The main thrust is on understanding the nuances of listening, speaking and reading English. The course is a step towards preparing the learners to face situations with confidence and to seek employment in the modern globalized world. As knowledge of English phonetics will help the students to listen and to speak English better, they would be given rudimentary training in English phonetics. It also enhances the student's general standard of spoken English. The knowledge of the phonetic alphabets/symbols will help the students to refer the dictionary for correct pronunciation.

Module I Listening

Introduction, definition of listening, listening Vs hearing, process of listening, problems students face in listening, sub-skills of listening, what is good listening? strategies of listening, barriers to listening, listening in the workplace, activities that help you to become better listeners.

Module II Speaking

English, the *lingua franca,* varieties of English; Indian English, Received Pronunciation, Why phonetics? Organs of speech and speech mechanism; Classification of English sounds- vowels; consonants; IPA symbols, transcription, the syllable, syllable structure, stress and intonation, some rules of pronunciation, Indian English and deviations from RP, Speaking as a skill; speaking on formal and informal occasions; how to perform a wide range of language functions such as greeting, thanking, complaining, apologizing.

Module III Reading

Introduction, The Reading Process, Reading and Meaning, Methods to Improve Reading, Strengthening Your Vocabulary, Understanding Graphics and Visual Aids, Previewing, Reading in Thought Groups, Avoiding the re-reading of the Same Phrases, Barriers to Reading, Skills for Speed Reading, Sub-skills of Reading, Skimming, Scanning, Extensive Reading, Intensive Reading, Reading E-mail, E-books, Blogs and Web pages

Module IV

Dialogue Practice

Course Material

Modules 1-3

Core Reading: *English Language Skills for Communication I.*

Oxford University press,2015 .

Module 4

Core Reading: *Dramatic Moments: A Book of One Act Plays*. Orient Black Swan, 2013

The following one act plays are prescribed:

H.H.Munro	*The Death Trap*
Philip Moeller	*Helena's Husband*
Serafin and Joaquin Alvarez Qunitero	*Sunny Morning: A Comedy of Madrid*
Margaret Wood	*Day of Atonement*

For further Reading

Marks Jonathan. *English Pronunciation in Use*. New Delhi: CUP, 2007.

Lynch, Tony. *Study Listening*. New Delhi. CUP, 2008.

Kenneth, Anderson, Tony Lynch, Joan Mac Lean. *Study Speaking*. New Delhi: CUP, 2008.

Reference

Jones, Daniel. *English Pronouncing Dictionary 17the edition*. New Delhi: CUP, 2009.

SEMESTER II

FIRST DEGREE PROGRAMME (CBCS System)

MODERN ENGLISH GRAMMAR AND USAGE

Common for BA/BSc: EN 1212.1, BCom: 1211.2 & Career related 2(a):1211.3

(2012 Admission onwards)

No. of credits: 4 **No. of instructional hours: 5 per week (Total 90 hrs.)**

AIMS: 1. To help students have a good understanding of modern English grammar.

2. To enable them produce grammatically and idiomatically correct language.
3. To help them improve their verbal communication skills.
4. To help them minimise mother tongue influence.

OBJECTIVES: On completion of the course, the students should be able to

1. have an appreciable understanding of English grammar.
2. produce grammatically and idiomatically correct spoken and written discourse.
3. spot language errors and correct them.

COURSE CONTENTS

Module 1:

- Modern English grammar - what and why and how of grammar - grammar of spoken and written language
- Sentence as a self-contained unit – various types of sentence – simple – compound – complex – declaratives – interrogatives – imperatives – exclamatives.
- Basic sentence patterns in English - constituents of sentences – subject – verb - object - complement - adverbials.
- Clauses - main and subordinate clauses - noun clauses - relative clauses - adverbial clauses - finite and non-finite clauses - analysis and conversion of sentences – Active to Passive and vice versa – Direct to Indirect and vice versa – Degrees of Comparison, one form to the other.
- Phrases - various types of phrases - noun, verb, adjectival and prepositional phrases.
- Words - parts of speech – nouns – pronouns - adjectives verbs - adverbs – prepositions – conjunctions - determinatives.

Module 2:

- Nouns - different types - count and uncount – collective - mass - case - number – gender.
- Pronoun - different types - personal, reflexive - infinite-emphatic – reciprocal.
- Adjectives - predicative - attributive - pre- and post-modification of nouns.
- Verbs - tense-aspect - voice -mood - Concord - types of verbs – transitive - intransitive-finite - non-finite.
- Helping verbs and modal auxiliaries - function and use.

Module 3:

- Adverbs - different types - various functions - modifying and connective.
- Prepositions - different types - syntactic occurrences - prepositional phrases - adverbial function.
- Conjunctions - subordinating and coordinating Determinatives articles - possessives – quantifiers

Module 4:

- Remedial grammar - error spotting - errors in terms of specific grammatical concepts like constituents of sentences - parts of speech - concord – collocation - sequences of tense - errors due to mother tongue influence.
- Written Composition – precis writing – outline story – expansion of proverb – short essay.

COURSE MATERIAL

Modules 1 - 4

Core Reading: *Concise English Grammar* by Prof. V. K. Moothathu. Oxford University Press, 2012.

Further Reading:

1. Leech, Geoffrey et al. *English Grammar for Today: A New Introduction.* 2nd Edition. Palgrave, 2008.
2. Carter, Ronald and Michael McCarthy. *Cambridge Grammar of English.* CUP, 2006.
3. Greenbaum, Sidney. *Oxford English Grammar.* Indian Edition. Oxford University Press, 2005.
4. Sinclair, John ed. *Collins Cobuild English Grammar*. Harper Collins publishers, 2000.
5. Driscoll, Liz. *Common Mistakes at Intermediate and How to Avoid Them*.CUP, 2008.

6. Tayfoor, Susanne. *Common Mistakes at Upper-intermediate and How to Avoid Them*. CUP, 2008.
7. Powell, Debra. *Common Mistakes at Advanced and How to Avoid Them.*CUP, 2008.
8. Burt, Angela. *Quick Solutions to Common Errors in English*. Macmillan India Limited,2008.
9. Turton. *ABC of Common Grammatical Errors*. Macmillan India Limited, 2008.
10. Leech, Geoffrey, Jan Svartvik. *A Communicative Grammar of English.* Third Edition. New Delhi: Pearson Education, 2009.

Direction to Teachers: The items in the modules should be taught at application level with only necessary details of concepts. The emphasis should be on how grammar works rather than on what it is. The aim is the correct usage based on Standard English and not conceptual excellence.

SEMESTER III

FIRST DEGREE PROGRAMME (CBCS System)

Language Course IV - WRITING AND PRESENTATION SKILLS: EN 1311.2 for B.Com

No. of credits: 3 **No. of instructional hours: 3 per week (Total 54 hrs.)**

AIMS

1. To familiarize students with different modes of general and academic writing.
2. To help them master writing techniques to meet academic and professional needs.
3. To introduce them to the basics of academic presentation
4. To sharpen their accuracy in writing.

OBJECTIVES

On completion of the course, the students should be able to

1. understand the mechanism of general and academic writing.
2. recognize the different modes of writing.
3. improve their reference skills, take notes, refer and document data and materials.
4. prepare and present seminar papers and project reports effectively.

COURSE OUTLINE

Module 1

Writing as a skill – its importance – mechanism of writing – words and sentences - paragraph as a unit of structuring a whole text – combining different sources – functional use of writing – personal, academic and business writing – creative use of writing.

Module 2

Writing process - planning a text – finding materials - drafting – revising – editing - finalizing the draft - computer as an aid – key board skills - word processing - desk top publishing.

Module 3

Writing models – essay - précis - expansion of ideas – dialogue - letter writing – personal letters formal letters - CV – surveys – questionnaire - e-mail – fax - job application - report writing.

Module 4

Presentation as a skill - elements of presentation strategies – audience – objectives – medium – key ideas - structuring the material - organizing content - audio-visual aids – handouts - use of power point - clarity of presentation - non-verbal communication - seminar paper presentation and discussion.

COURSE MATERIAL

Modules 1 – 4

Core reading: *English for Effective Communication*. Oxford University Press, 2013.

Further reading:

1. Robert, Barraas. *Students Must Write*. London: Routledge, 2006.
2. Bailey, Stephen. *Academic Writing.*Routledge, 2006.
3. Hamp-Lyons, Liz, Ben Heasley. *Study Writing.* 2nd Edition. Cambridge Uty Press, 2008.
4. Ilona, Leki. *Academic Writing*. CUP, 1998.
5. McCarter, Sam, Norman Whitby. *Writing Skills.* Macmillan India, 2009.
6. Jay. *Effective Presentation*. New Delhi: Pearson, 2009.

Reference:

Mayor, Michael, et al, Ed. *Longman Dictionary of Contemporary English.* 5th Edition. London: Pearson Longman Ltd, 2009.

SEMESTER IV

FIRST DEGREE PROGRAMME (CBCS System)

Language Course - READINGS IN LITERATURE: EN 1411.2 for BCom

No.of credits: 3 **No of instructional hours: 3 hours/week [Total 54 hours]**

AIMS:

1. To sensitize students to the aesthetic, cultural and social aspects of literature.
2. To help them analyze and appreciate literary texts.

OBJECTIVES:

On completion of the course, the students should be able to:
1. understand and appreciate literary discourse.
2. look at the best pieces of literary writing critically.
3. analyze literature as a cultural and interactive phenomenon.

Module 1

What is literature – literature and context – genres – literature and human values – creative use of language inculcation of aesthetic sense.

Poetry – what is poetry – different types of poetry – poetic diction – figurative language – themes – stanza – rhyme.

Module 2

Drama - Scope and definition – different types – structure – dialogue –characters – action.

Module 3

Prose - What is prose – different types – personal – impersonal – technical.

Module 4

Fiction - What is fiction – different types – plot – characters – setting – point of view – short story – its charactersitics.

COURSE MATERIAL

Module 1

Core reading: Selection of poems from *Readings in Literature*. Department of Publications, University of Kerala.

Poems prescribed:

1. William Shakespeare: *To Be or Not to Be* (*Hamlet*, Act III, Scene 1)
2. William Blake: *The Tiger*
3. William Wordsworth: *Lucy Gray*
4. John Keats: Ode to Autumn
5. Rabindranath Tagore: *Leave This Chanting* (Poem 11 from *Gitanjali)*
6. Ted Hughes: *Full Moon and Little Frieda*.

Module 2 Core reading:

Vincent Godefroy - *Fail not our Feast* - from *Dramatic Moments: A Book of One Act Plays.* Orient Black Swan, 2013.

Module 3

Core reading

Readings in Literature (Published by the University of Kerala)

Essays prescribed:

1. Robert Lynd: *The Pleasures of Ignorance*
2. Martin Luther King: *I Have a Dream*
3. E.R. Braithwaite: *To Sir, with Love* [extract]

Module 4 Core reading:

Stories for Life [Indian Open University] Stories prescribed:

(i) Catherine Mansfield *A Cup of Tea*.
(ii) O Henry: *The Last Leaf*.
(iii) Rabindranth Tagore: *The Postmaster*.
(iv) Oscar Wilde: *The Happy Prince.*
(v) Ernest Hemingway: *A Day's Wait*.

Further reading

1. *A Concise Companion to Literary Forms.* Emerald, 2013.
2. Abrams, M. H. *A Glossary of Literary Terms*.
3. Klarer, Mario. *An Introduction to Literary Studies.* Second edition. Routledge, 2009.

Direction to Teachers

The introduction to various genres is intended for providing basic information and no conceptual analysis is intended.

FIRST DEGREE PROGRAMMES (CBCS SYSTEM) Career related 2(a)

Revised Syllabi for 2015 Admissions onwards

Semesters 1 to 4

LANGUAGE COURSES IN ENGLISH

Semester I

First Degree Programme in English (CBCS System)

Common for

B.A/BSc[EN1111.1], B.Com [EN1111.2] &2(a) [EN 1111.3]

Listening, Speaking and Reading

No. of Credits: 4 **No. of instructional hours: 5 per week (Total 90 hrs)**

General Objectives

The general objective of the course is to make the students proficient communicators in English. It aims to develop in the learners the ability to understand English in a wide range of contexts. The main thrust is on understanding the nuances of listening, speaking and reading English. The course is a step towards preparing the learners to face situations with confidence and to seek employment in the modern globalized world. As knowledge of English phonetics will help the students to listen and to speak English better, they would be given rudimentary training in English phonetics. It also enhances the student's general standard of spoken English. The knowledge of the phonetic alphabets/symbols will help the students to refer the dictionary for correct pronunciation.

Module I Listening

Introduction, definition of listening, listening Vs hearing, process of listening, problems students face in listening, sub-skills of listening, what is good listening? strategies of listening, barriers to listening, listening in the workplace, activities that help you to become better listeners.

Module II Speaking

English, the *lingua franca,* varieties of English; Indian English, Received Pronunciation, Why phonetics? Organs of speech and speech mechanism; Classification of English sounds- vowels; consonants; IPA symbols, transcription, the syllable, syllable structure, stress and intonation, some rules of pronunciation, Indian English and deviations from RP, Speaking as a skill; speaking on formal and informal occasions; how to perform a wide range of language functions such as greeting, thanking, complaining, apologizing.

Module III Reading: Introduction, The Reading Process, Reading and Meaning, Methods to Improve Reading, Strengthening Your Vocabulary, Understanding Graphics and Visual Aids, Previewing, Reading in Thought Groups, Avoiding the re-reading of the Same Phrases, Barriers to Reading, Skills for Speed Reading, Sub-skills of Reading, Skimming, Scanning, Extensive Reading, Intensive Reading, Reading E-mail, E-books, Blogs and Web pages

Module IV: Dialogue Practice

Course Material

Modules 1-3: Core Reading: *English Language Skills for Communication I*

Module 4

Core Reading: *Dramatic Moments: A Book of One Act Plays*. Orient Black Swan, 2013

The following one act plays are prescribed:

H.H.Munro	*The Death Trap*
Philip Moeller	*Helena's Husband*
Serafin and Joaquin Alvarez Qunitero	*Sunny Morning: A Comedy of Madrid*
Margaret Wood	*Day of Atonement*

For further Reading

Marks Jonathan. *English Pronunciation in Use*. New Delhi: CUP, 2007.
Lynch, Tony. *Study Listening*. New Delhi. CUP, 2008.
Kenneth, Anderson, Tony Lynch, Joan Mac Lean. *Study Speaking*. New Delhi: CUP, 2008.

Reference

Jones, Daniel. *English Pronouncing Dictionary 17the edition*. New Delhi: CUP, 2009.4

SEMESTER II

FIRST DEGREE PROGRAMME (CBCS System)

MODERN ENGLISH GRAMMAR AND USAGE

Common for BA/BSc: EN 1212.1, BCom: 1211.2 & Career related 2(a):1211.3

(2012 Admission onwards)

No. of credits: 3 **No. of instructional hours: 5 per week (Total 90 hrs.)**

AIMS: 1. To help students have a good understanding of modern English grammar.
2. To enable them produce grammatically and idiomatically correct language.
3. To help them improve their verbal communication skills.
4. To help them minimise mother tongue influence.

OBJECTIVES: On completion of the course, the students should be able to

1. have an appreciable understanding of English grammar.
2. produce grammatically and idiomatically correct spoken and written discourse.
3. spot language errors and correct them.

COURSE CONTENTS

Module 1:

- Modern English grammar - what and why and how of grammar - grammar of spoken and written language
- Sentence as a self-contained unit – various types of sentence – simple – compound – complex – declaratives – interrogatives – imperatives – exclamatives.
- Basic sentence patterns in English - constituents of sentences – subject – verb - object - complement - adverbials.

- Clauses - main and subordinate clauses - noun clauses - relative clauses - adverbial clauses - finite and non-finite clauses - analysis and conversion of sentences – Active to Passive and vice versa – Direct to Indirect and vice versa – Degrees of Comparison, one form to the other.
- Phrases - various types of phrases - noun, verb, adjectival and prepositional phrases.
- Words - parts of speech – nouns – pronouns - adjectives verbs - adverbs – prepositions – conjunctions -determinatives.

Module 2:

- Nouns - different types - count and uncount – collective - mass - case - number – gender.
- Pronoun - different types - personal, reflexive - infinite-emphatic – reciprocal.
- Adjectives - predicative - attributive - pre- and post-modification of nouns.
- Verbs - tense-aspect - voice -mood - Concord - types of verbs-transitive-intransitive-finite-non-finite.
- Helping verbs and modal auxiliaries - function and use.

Module 3:

- Adverbs - different types - various functions - modifying and connective.
- Prepositions - different types - syntactic occurrences - prepositional phrases - adverbial function.
- Conjunctions - subordinating and coordinating Determinatives articles - possessives - quantifiers

Module 4:

- Remedial grammar - error spotting - errors in terms of specific grammatical concepts like constituents of sentences - parts of speech - concord – collocation - sequences of tense - errors due to mother tongue influence.
- Written Composition – precis writing – outline story – expansion of proverb – short essay.

COURSE MATERIAL

Modules 1 - 4

Core Reading: *Concise English Grammar* by Prof. V. K. Moothathu. Oxford University Press, 2012.

Further Reading:

1. Leech, Geoffrey et al. *English Grammar for Today: A New Introduction.* 2nd Edition. Palgrave, 2008.
2. Carter, Ronald and Michael McCarthy. *Cambridge Grammar of English.* CUP, 2006.
3. Greenbaum, Sidney. *Oxford English Grammar.* Indian Edition. Oxford University Press, 2005.
4. Sinclair, John ed. *Collins Cobuild English Grammar*. Harper Collins, 2000.
5. Driscoll, Liz. *Common Mistakes at Intermediate and How to Avoid Them*.CUP, 2008.
6. Tayfoor, Susanne. *Common Mistakes at Upper-intermediate and How to Avoid Them*. CUP, 2008.
7. Powell, Debra. *Common Mistakes at Advanced and How to Avoid Them.*CUP, 2008.
8. Burt, Angela. *Quick Solutions to Common Errors in English*. Macmillan India Limited,2008.
9. Turton. *ABC of Common Grammatical Errors*. Macmillan India Limited, 2008.
10. Leech, Geoffrey, Jan Svartvik. *A Communicative Grammar of English.* Third Edition. New Delhi: Pearson Education, 2009.

Direction to Teachers: The items in the modules should be taught at application level with only necessary details of concepts. The emphasis should be on how grammar works rather than on what it is. The aim is the correct usage based on Standard English and not conceptual excellence.

SEMESTER III

FIRST DEGREE PROGRAMME (CBCS System)

Language Course VI (English IV) - WRITING AND PRESENTATION SKILLS

Common for B. A, B. Sc EN: 1311.1 &

Language Course V (English III): for Career related 2 (a) EN: 1311.3

No. of credits: 4 **No. of instructional hours: 5 per week (Total 90 hrs.)**

AIMS

1. To familiarize students with different modes of general and academic writing.
2. To help them master writing techniques to meet academic and professional needs.
3. To introduce them to the basics of academic presentation
4. To sharpen their accuracy in writing.

OBJECTIVES

On completion of the course, the students should be able to

1. understand the mechanism of general and academic writing.
2. recognize the different modes of writing.
3. improve their reference skills, take notes, refer and document data and materials.
4. prepare and present seminar papers and project reports effectively.

COURSE OUTLINE

Module 1: Writing as a skill – its importance – mechanism of writing – words and sentences - paragraph asa unit of structuring a whole text – combining different sources – functional use of writing – personal, academic and business writing – creative use of writing.

Module 2: Writing process - planning a text – finding materials - drafting – revising – editing - finalizing the draft - computer as an aid – key board skills - word processing - desk top publishing.

Module 3: Writing models – essay - précis - expansion of ideas – dialogue - letter writing – personal letters formal letters - CV – surveys – questionnaire - e-mail – fax - job application - report writing. Academic writing - writing examinations - evaluating a text - note-making- paraphrasing – summary writing - planning a text – organizing paragraphs – introduction – body – conclusion – rereading and rewriting - copy editing - accuracy.

Module 4: Presentation as a skill - elements of presentation strategies – audience – objectives – medium – key ideas - structuring the material - organizing content - audio-visual aids – handouts - use of power point - clarity of presentation - non-verbal communication - seminar paper presentation and discussion.

COURSE MATERIAL

Modules 1 – 4

Core reading: *English for Effective Communication*. Oxford University Press, 2013.

Further reading:

1. Robert, Barraas. *Students Must Write*. London: Routledge, 2006.

2. Bailey, Stephen. *Academic Writing.*Routledge, 2006.
3. Hamp-Lyons, Liz, Ben Heasley. *Study Writing.* 2nd Edition. Cambridge Uty Press, 2008.
4. Ilona, Leki. *Academic Writing*. CUP, 1998.
5. McCarter, Sam, Norman Whitby. *Writing Skills.* Macmillan India, 2009.
6. Jay. *Effective Presentation*. New Delhi: Pearson, 2009.

Reference:

Mayor, Michael, et al, Ed. *Longman Dictionary of Contemporary English.* 5th Edition. London: Pearson Longman Ltd, 2009.

SEMESTER IV

FIRST DEGREE PROGRAMME (CBCS System)

Language Course - READINGS IN LITERATURE

Common for BA/BSc: EN 1411.1 & Career related 2(a): EN 1411.3

No.of credits: 4 **No of instructional hours: 5 hours/week [Total 90 hours]**

AIMS

1. To sensitize students to the aesthetic, cultural and social aspects of literature.
2. To help them analyze and appreciate literary texts.

OBJECTIVES

On completion of the course, the students should be able to:

1. understand and appreciate literary discourse.
2. look at the best pieces of literary writing critically.
3. analyze literature as a cultural and interactive phenomenon.

Module 1

What is literature – literature and context – genres – literature and human values – creative use of language – inculcation of aesthetic sense.

Poetry – what is poetry – different types of poetry – poetic diction – figurative language – themes – stanza – rhyme.

Module 2 Drama.

Scope and definition – different types – one act plays - structure – dialogue – characters – action.

Module 3 Prose

What is prose – different types – personal – impersonal – technical.

Module 4: Fiction.

What is fiction – different types – plot – characters – setting – point of view – short story – its characteristics.

COURSE MATERIAL

Module 1

Core reading: *Readings in Literature*. Department of Publications, University of Kerala. Poems prescribed:

1. William Shakespeare *To Be or Not to Be* (*Hamlet*, Act III, Scene 1) 2. William Blake: *The Tiger*
3. William Wordsworth *Lucy Gray*
4. Alfred Lord Tennyson *Tithonus*
5. Emily Dickinson *The Wind Tapped like a Tired Man*.
6. Rabindranath Tagore *Leave This Chanting* (Poem 11 from *Gitanjali)*
7. T S Eliot *Marina*
8. Ted Hughes *Full Moon and Little Frieda*.

Module 2 Core reading:

Vincent Godefroy *Fail not our Feast*

[from *Dramatic Moments* *A Book of One Act Plays*. Orient Black Swan, 2013]

Module 3

Core reading: *Readings in Literature*. Department of Publications, University of Kerala.

Essays prescribed:

1. Robert Lynd: *The Pleasures of Ignorance*
2. Martin Luther King: *I Have a Dream*
3. Stephen Leacock: *The Man in Asbestos*
4. Isaac Asimov: *The Machine That Won the War.*
5. E.R. Braithwaite: *To Sir, with Love* [extract]

Module 4

Core reading:

Stories for Life, Indian Open University.

Stories prescribed:

(i) Catherine Mansfield: *A Cup of Tea*.
(ii) O Henry: *The Last Leaf*.
(iii) Rabindranth Tagore: *The Postmaster*.
(iv) Oscar Wilde: *The Happy Prince.*
(v) Ernest Hemingway: *A Day's Wait*

Further reading

1. *A Concise Companion to Literary Forms.* Emerald, 2013.
2. Abrams, M. H. *A Glossary of Literary Terms*.
3. Klarer, Mario. *An Introduction to Literary Studies.* Second edition. Routledge, 2009.

Direction to Teachers

The introduction to various genres is intended for providing basic information and no conceptual analysis is intended.

FIRST DEGREE PROGRAMMES

(CBCS SYSTEM) Career related 2(b)

Revised Syllabi for 2015 Admissions onwards

Semesters 1 & 2

LANGUAGE COURSES IN ENGLISH

SEMESTER I

FIRST DEGREE PROGRAMME IN ENGLISH (CBCS System)

LISTENING AND SPEAKING SKILLS: EN 1111.4

Language Course I (English I) for Career related 2 (b)

No. of credits: 2 **No. of instructional hours: 3 per week (Total 54 hrs.)**

AIMS 1. To familiarize students with English sounds and phonemic symbols. 2. To enhance their ability in listening and speaking.

OBJECTIVES: On completion of the course, the students should be able to

1. listen to lectures, public announcements and news on TV and radio.
2. engage in telephonic conversation.
3. communicate effectively and accurately in English.
4. use spoken language for various purposes.

COURSE OUTLINE

Module 1: Pronunciation

Phonemic symbols – consonants – vowels –syllables – word stress - strong and weak forms - intonation.

Module 2: Listening Skills

Difference between listening and hearing –active listening – barriers to listening - academic listening - listening for details - listening to announcements - listening to news programmes.

Module 3: Speaking Skills

Interactive nature of communication -importance of context - formal and informal - set expressions in different situations – greeting – introducing - making requests - asking for / giving permission - giving instructions and directions – agreeing / disagreeing - seeking and giving advice - inviting and apologizing telephonic skills - conversational manners.

COURSE MATERIAL

Modules 1 – 3

Core reading: *English for Effective Communication*. Oxford University Press, 2013.

Further reading

1. Marks, Jonathan. *English Pronunciation in Use*. New Delhi: CUP, 2007.
2. Lynch, Tony. *Study Listening*. New Delhi: CUP, 2008.
3. Kenneth, Anderson, Tony Lynch, Joan MacLean. *Study Speaking*. New Delhi: CUP, 2008.

SEMESTER II

FIRST DEGREE PROGRAMME (CBCS System)

WRITING AND PRESENTATION SKILLS

Language Course for Career related 2(b) - EN 1211.4

No. of credits: 2 **No. of instructional hours: 3 per week (Total 54 hrs.)**

AIMS

1. To familiarize students with different modes of general and academic writing.
2. To help them master writing techniques to meet academic and professional needs.
3. To introduce them to the basics of academic presentation
4. To sharpen their accuracy in writing.

OBJECTIVES

On completion of the course, the students should be able to

1. understand the mechanism of general and academic writing.
2. recognize the different modes of writing.
3. improve their reference skills, take notes, refer and document data and materials.
4. prepare and present seminar papers and project reports effectively.

COURSE OUTLINE

Module 1: Writing as a skill – its importance - mechanism of writing – words and sentences - paragraph as a unit of structuring a whole text - combining different sources – functional use of writing – personal, academic and business writing – creative use of writing.

Module 2: Writing process - planning a text - finding materials – drafting – revising – editing -finalizing the draft - computer as an aid - key board skills.

Module 3: Writing models – essay - précis - expansion of ideas –- letter writing - personal letters - formal letters - CV – surveys – questionnaire - e-mail – fax - job application - report writing.

Module 4: Presentation as a skill-elements of presentation strategies-audience-objectives- medium-key ideas - structuring the material-organizing content-audio-visual aids-hand-outs-seminar paper presentation and discussion.

COURSE MATERIAL

Modules 1 – 4

Core reading: *English for Effective Communication*. Oxford University Press, 2013.

Further reading

1. Robert, Barraas. *Students Must Write*. London: Routledge, 2006.
2. Bailey, Stephen. *Academic Writing.* Routledge, 2006.
3. Hamp-Lyons, Liz, Ben Heasley. *Study Writing.* 2nd Edition. Cambridge University Press, 2008.
4. Ilona, Leki. *Academic Writing*. CUP, 1998.
5. McCarter, Sam, Norman Whitby. *Writing Skills.* Macmillan India, 2009.

FIRST DEGREE PROGRAMMES (CBCS SYSTEM)

ENGLISH LANGUAGE AND LITERATURE (CBCS SYSTEM)

Revised Syllabi for 2015 Admissions onwards

(Core, Complementary & Open Courses)

Semesters 1 to 6

SEMESTER I

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course I – READING POETRY: EN 1141

No. of credits: 4 **No. of instructional hours: 6 per week (Total: 108 hrs)**

AIMS

1. To sensitize students to the language, forms and types of poetry.
2. To make them aware of the diverse poetic devices and strategies.
3. To help them read, analyse and appreciate poetry.
4. To enhance the level of literary and aesthetic experience and to help them respond creatively.

OBJECTIVES

On completion of the course, the students should be able to

1. identify the various forms and types of poetry
2. explain the diverse poetic devices and strategies employed by poets.
3. read, analyse and appreciate poetry critically.
4. respond critically and creatively to the world around.

COURSE OUTLINE

Module 1:

- Subjective and Objective Poetry
- Types of Poetry: Lyric, Ode, Sonnet, Elegy, Ballad, Epic, Mock Epic, Dramatic Monologue, Haiku.
- Stanza – couplet, tercet, terza rima, ottava rima, quatrain, spensarian stanza, rime royal.
- Poetic devices: alliteration, assonance, simile, metaphor, image, symbol, rhythm, rhyme.
- Meter: Heroic Couplet, Free Verse and Blank Verse.

Module 2: Representative poetry from British literature.

Module 3: Representative poetry from American, Irish, German, Russian, Australian and Indian literatures.

Module 4: Practical criticism – intensive reading of poems at phonological, structural and semantic levels. Critical analysis and appreciation of unseen poem.

COURSE MATERIAL

Module 1:

Core reading: Chapter 1 from *A Concise Companion to Literary Forms.* Emerald, 2013.

Reference

1. Abrams, M.H. *A Glossary of Literary Terms* (Rev. ed.)
2. Hobsbaum, Philip. *Metre, Rhyme and Verse Form*. New Critical Idiom. Indian Reprint.Routledge, 2007.

Reading List

1. Wainwright, Jeffrey. *The Basics: Poetry*. Indian Reprint. Routledge, 2009.
2. Hudson, W.H.: *An Introduction to the Study of English Literature* (Chapter 3, The Study of Poetry)

Modules 2:

1.	William Shakespeare	Sonnet 18 (Shall I compare Thee to a Summer's Day)
2.	John Donne	A Valediction Forbidding Mourning
3.	Thomas Gray	Elegy Written in a Country Churchyard
4.	Samuel Taylor Coleridge	Kubla Khan
5.	Lord Byron	Darkness
6.	Robert Browning	Porphyria's Lover
7.	Siegfried Sassoon	A Subaltern
8.	T.S. Eliot	Macavity: The Mystery Cat
9.	U. A. Fanthorpe	Not my Best Side

Core reading: *Aeolian Harp: An Anthology of Poetry in English*. Scientific International Pvt. Ltd, 2013.

Module 3:

1.	W.B. Yeats	The Circus Animals' Desertion
2.	Robert Frost	The Road Not Taken
3.	Bertolt Brecht	General, Your Tank
4.	Louis Macneice	Prayer Before Birth
5.	Peter Porter	A Consumer's Report
6.	Kamala Das	An Introduction

Core reading: *Aeolian Harp: An Anthology of Poetry in English*. Scientific International Pvt. Ltd, 2013.

Module 4:

Practical criticism – intensive reading of poems at phonological, structural and semantic levels.

Core reading: *Aeolian Harp: An Anthology of Poetry in English*. Scientific International Pvt. Ltd, 2013.

Reference:

A Concise Companion to Literary Forms. Emerald, 2013.

Seturaman, V.S, Ed. *Practical Criticism*. Chennai: Macmillan, 2007.

Bernard Blackstone. *Practical English Prosody: a handbook for students.* Longman, 2009.

Instruction to Teachers:

- The work of each author has to be placed against the literary backdrop of the age.
- The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have an awareness of the respective works.
- Questions are not to be asked from such details at the examination.

SEMESTER I

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Complementary Course - HISTORY OF ENGLISH LITERATURE [Semesters 1 to 3]

Common for

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

NOTE TO TEACHERS:

The syllabus - a rationale

Books, and the authors who write them, have a complex relationship with the societies that produce them. It is hoped that this syllabus will help students develop both an understanding and an appreciation of some of the complexities involved in the production of and reception of British literature.

This syllabus is organised chronologically. It is intended to enable a student to understand the following things:

- One, how people lived during various ages in Britain.
- Two, what sort of social and political organisations evolved there.
- Three, what the beliefs and practices of the people were ie. how the culture of Britain evolved.
- Four, what kind of literature emerged out of these conditions.

None of these are dealt with at depth. A broad overall picture is what the student is expected to gain.

It is hoped that, apart from giving valuable background information that will enable students to understand and appreciate individual works from any age better, the syllabus will also help them develop a sense of history and the ability to organise, evaluate and present ideas from one coherent body of knowledge. This mental training should be as important as the facts that they study. Therefore teachers should take care to get students to read books and access other authentic sources to learn more about the topics covered.

SEMESTER I

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

Complementary Course – HISTORY OF ENGLISH LITERATURE- 1

Common for EN 1131 & CG 1131

B.A. English Main - Complementary Course I: EN 1131

No. of credits: 3 **No. of instructional hours: 3 per week (Total: 54 hrs)**

B.A. Career related 2(a) English and Communicative English - Complementary Course I: CG 1131
No. of credits: 4

No. of instructional hours: 4 per week (Total: 72 hrs)

COURSE DESCRIPTION

Module 1:

The Early history of England - Roman Britain - The coming and settlement of the Germanic tribes - The arrival of Christianity - The Anglo Saxon Heptarchy - The Viking invasions - The reassertion of British control - Old English literature – Bede, *Beowulf*, King Alfred.

Module 2:

The Norman invasion – Feudalism - Middle English literature – Langland - *Sir Gawain and the Green Knight* - Medieval romances, alliterative verse – Chaucer – *The Canterbury Tales* - The beginnings of English drama - Miracle, morality and mystery plays, and Interludes.

Module 3:

The Renaissance - The Tudors - The English Reformation and Counter-reformation - Trade and colonialism - The Stuart Age - Elizabethan poetry – Spenser - Renaissance drama - Ben Jonson - The University Wits – Shakespeare – Bacon - Thomas More - Authorised (King James) Version of the Bible.

Core texts:

(1) *A Concise History of English Literature and Language,* Primus Books, Delhi 2013.

(2) Ashok, Padmaja. *The Social History of England*. Orient Black Swan 2011.

Books recommended:

Peck, John and Martin Coyle. *A Brief History of English Literature*. Palgrave, 2012. Poplawski, Paul Ed. *English Literature in Context*. CUP, 2008.

Thornley G C and Gwyneth Roberts. *An Outline of English Literature*. Pearson, 2011.

SEMESTER II

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course II – READING DRAMA: EN 1241

No. of credits: 4 **No. of instructional hours: 6 per wk (Total: 108 hrs)**

AIMS

1. To enable the students to read, analyse and appreciate drama
2. To sensitize them to the verbal and visual language of drama
3. To help them watch, write about, and perform plays

OBJECTIVES

On completion of the Course, the students should be able to

1. identify the various forms and schools of drama
2. analyse and appreciate drama
3. write critically about and engage actively in producing / performing drama

COURSE OUTLINE

Module 1:

- Drama – Origins and early forms: Greek Drama, Mystery plays, Miracle Plays, Morality Plays and Interludes.
- The Major Dramatic Genres: Tragedy, Comedy, and Tragi-Comedy.
- Types of comedy – Romantic Comedy, Comedy of Humours, Comedy of Manners/ Restoration Comedy, Sentimental Comedy, farce, burlesque, black comedy.
- Types of Tragedy: Revenge Tragedy, Domestic Tragedy, Heroic Drama.
- Other forms: melodrama, masque, One-Act Plays, epic drama, absurdist drama, kitchen-sink drama
- Dramatic Devices – irony, soliloquy, aside, chorus.

Module 2: Shakespeare

Module 3: Modern drama (British / European)

Module 4: One-Act plays.

COURSE MATERIAL

Module 1

Core reading: Chapter 2 from *A Concise Companion to Literary Forms.* Emerald, 2013.

Module 2

Core reading: Shakespeare: *Julius Caesar*

Module 3

Core reading: Shaw: *Arms and the Man* (Edited by AC Ward, Orient Blackswan)

Module 4

Core reading

1 .	J.M. Synge:	*Riders to the Sea* (Orient Blackswan)
2.	Chekhov:	*The Swan Song*
3.	Eugene O'Neill:	*Thirst*.
4.	M. Sajitha:	*Matsyagandhi*.

Core text: One Act plays 2 – 4 from *Golden Threshold: An Anthology of Anthology of One Act Plays and Stories.* Orient Blackswan, 2013.

Instruction to Teachers:

- The work of each author has to be placed against the literary backdrop of the age.
- The literary significance of the work is to be briefly discussed in the classroom and hence students is are expected to have an awareness of the respective works.
- Questions are not to be asked from such details at the examination

SEMESTER II

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

Complementary Course – HISTORY OF ENGLISH LITERATURE - II

Common for EN 1231 & CG 1231

B.A. English Main - Complementary Course III: EN 1231

No. of credits: 3 **No. of instructional hours: 3 per week (Total: 54 hrs)**

B.A. Career related 2(a) English and Communicative English - Complementary Course II: CG 1231 No. of credits: 4

No. of instructional hours: 4 per week (Total: 72 hrs)

COURSE DESCRIPTION

Module 1:

The rise of Puritanism - The Civil War, Colonial Expansion, the Commonwealth and the Restoration in England, the impact of these on literature and social life - Donne and the metaphysical – Milton – John Bunyan - Restoration theatre.

Module 2:

The Eighteenth Century - Enclosures, urbanisation and the rise of the middle class – general literary ambience of the period.

Module 3:

The Enlightenment - the rise of modern science and the rise of capitalism - Coffee Houses in London as centres of social and political discussions - Essay and Novel - Neo-classical verse - Pope, Dryden, Swift, Dr Johnson and Daniel Defoe – periodicals – Addison, Steele.

Module 4:

The Romantic Age - Basic tenets of the Romanticism – French Revolution – Gothic writings -The precursors : Blake and Burns - Wordsworth and the Lake Poets – Coleridge - Keats, Shelley, Byron – Charles Lamb – Imperialism - Orientalism and slavery - The fiction of Jane Austen and Mary Shelley.

Core texts:

(1) *A Concise History of English Literature and Language,* Primus Books, Delhi 2013.

(2) Ashok, Padmaja. *The Social History of England*. Orient Black Swan 2011.

Books recommended:

Peck, John and Martin Coyle. *A Brief History of English Literature*. Palgrave, 2012. Poplawski, Paul Ed. *English Literature in Context*. CUP, 2008.

Thornley G C and Gwyneth Roberts. *An Outline of English Literature*. Pearson, 2011.

SEMESTER III

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

READING FICTION

Common for ENGLISH LANGUAGE AND LITERATURE Core Course III: EN 1341

&

CAREER-RELATED FIRST DEGREE PROGRAMME (CBCS) - Group 2 (a) IN ENGLISH & COMMUNICATIVE ENGLISH Core Course III: CG 1341

No. of credits: 3 **No. of instructional hours: 4 per week (Total: 72 hrs)**

AIMS:

1. To make students aware of the diverse fictional forms in prose.
2. To enable them to analyse and appreciate various fictional writings.
3. To give them an insight into other cultures.
4. To help them think and write imaginatively.

OBJECTIVES

On completion of the course, the students should be able to

1. identify different fictional forms
2. analyse and appreciate fictional writings.
3. write imaginatively.

COURSE OUTLINE

Module 1

- Prose fiction - fable, short story, novel.
- Elements of fiction - plot, theme, characterization (flat and round characters), setting, point of view.
- Types of Novel – romance, picaresque novel, sentimental novel, epistolary novel, historical novel, gothic novel, science fiction, detective fiction, utopian, dystopian fiction, Bildungsroman - Creative-non fiction
- Narrative strategies - stream of consciousness, Meta fiction.

Module 2: Modern British fiction

Module 3: Modern European fiction

Module 4: Short Stories

COURSE MATERIAL

Module 1

Core reading: Chapter 3 from *A Concise Companion to Literary Forms.* Emerald, 2013.

Module 2

Core reading George Orwell: *Animal Farm* (Penguin Edition)

Module 3

Core reading: Voltaire: *Candide* (Penguin Classics)

Module 4

Core reading: *Golden Threshold: An Anthology of One Act Plays and Stories,* Orient Blackswan, 2013. The following short stories:

O'Henry:	"Romance of a Busy Broker"
Katherine Mansfield:	"The Little Girl"
A.C. Doyle:	"The Red-headed League"
Norah Burke:	"The Family Man"
R.K.Narayan:	"Lawley Road"

Further reading

1. Klarer, Mario. *An Introduction to LiteraryStudies*. Sec. Ed. Indian Reprint. Routledge, 2009. (Section: Fiction)
2. Hudson,W. H. *An Introduction to the Study of English Literature*. (Chapter IV: The Study of Prose Fiction)

Instruction to Teachers:

- The work of each author has to be placed against the literary backdrop of the age.
- The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have an awareness of the respective works.
- Questions are not to be asked from such details at the examination.
- While discussing fiction, the formal, structural and stylistic aspects of the work should be referred to.

SEMESTER III

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System) ENGLISH & COMMUNICATIVE ENGLISH

Core Course IV –20th CENTURY MALAYALAM LITERATURE IN ENGLISH TRANSLATION

Common for EN 1342 & CG 1342

No. of Credits: 4 **No. of instructional hours: 5 per week [Total: 90 hours]**

Aims: 1. To introduce the students to the richness of twentieth century Malayalam writing
2. To provide the students a basic understanding of twentieth century Malayalam Writing
3. To introduce to them some of the major twentieth century Malayalam writers
4. To help them analyse and appreciate twentieth century Malayalam literature.

Objective: On completion of the course, the students should be able to

1. Discern the richness of twentieth century Malayalam writing
2. Discern the distinctiveness of twentieth century Malayalam writing
3. Discuss the salient features of the works of major twentieth century Malayalam writers
4. Analyse and appreciate twentieth century Malayalam writing

COURSE OUTLINE

Module 1: Introduction to Malayalam Literature in the twentieth century

Module 2: Malayalam Poetry in the twentieth century

Module 3: Malayalam Fiction in the twentieth century

Module 4: Malayalam Drama in the twentieth century

COURSE MATERIAL

Module 1: Introduction to Malayalam Literature in the twentieth century.

Malayalam Literature 'After Independence' - The modern age – characteristics – rise of the Malayalam novel – the Romantics in Malayalam poetry – major poets – rise of drama – novel and the short story in the 20th century – Malayalam literature after independence – poetry – fiction – drama.

Reference Text:

A Short History of Malayalam Literature - K. Ayyappa Paniker - Information & Public Relations Department, Kerala State, April 2006.

[ebook available on: www.suvarnakeralam.kerala.gov.in/book.pdf]

Module 2: Malayalam Poetry in the twentieth century.

The modern age – characteristics – the Romantics in Malayalam poetry – second generation of romantics and the early 20th century – modernist phase in malayalam poetry – O.N.V. Kurup, Vyloppilli Sreedhara

Menon, Ayyappa Paniker, Sugathakumari, Kadammanitta Ramakrishnan, Balamani Amma, Vishnu Narayanan Namboodiri, D. Vinayachandran, Sachidanandan, Balachandran Chullikad,etc.

Detailed study of the following poems:

1.	ONV Kurup	–	"A Requiem to Mother Earth"
2.	Balachandran Chullikkad	–	"Where is John?"
3.	Vishnu Narayanan Namboodiri	–	"The Autograph Tree"
4.	Sugatha Kumari	–	"The Temple Bell"
5.	Nalapat Balamani Amma	-	"The Story of the Axe"
6.	Vyloppilli Sreedhara Menon	-	"The Son of Sahyan"
7.	K. Ayyappa Paniker	-	"Lay of the Anklet"
8.	D. Vinayachandran	-	"Advent"

Core reading: *In the Shade of the Sahyadri: Selections from Malayalam Poetry and Short Fiction***.** OUP, 2012.

Module 3: Malayalam Fiction in the twentieth century.

Malayalam fiction in translation – socio-educational influences – conditions favouring birth of Malayalam novel – Appu Nedungadi and Chandu Menon – translation of *Indulekha* - modernity in Malayalam fiction - late forties: works of M.T. Vasudevan Nair, Malayattoor Ramakrishnan – development into the present - O.V.Vijayan, M. Mukundan, etc - characteristics of their fiction.

Malayalam short story in English translation – representative masters of the craft - Thakazhi, Basheer, Lalithambika Antharjanam, Paul Zacharia, etc. – new generation writers - modern women short story writers.

Non-detailed study:

(a) Novels:

- Malayatoor Ramakrishnan, *Roots* (Novel), Tr. V. Abdulla, Orient Blackswan, 2009.
- M. T. Vasudevan Nair, *Mist*. Orient Longman.

(b) Short stories:

1.	Thakazhy Sivasankara Pillai	–	"In the Flood"
2.	Vaikkom Muhammed Basheer	–	"The World Renowned Nose"
3.	T.Padmanabhan	–	"The Girl Who Spreads Light"
4.	Paul Zacharia	–	"The Last Show"
5.	Lalithambika Antherjanam	–	"Wooden Cradles"
6.	C. Ayyappan	–	"Spectral Speech"
7.	Gracy	–	"Orotha and the Ghosts"
8.	Ashita	–	"In the Moonlit Land"
9.	Chandramati	–	"The (Postmodern) Story of Jyoti Vishwanath"
10	K.R. Meera	–	"The Vein of Memory"

Core reading: *In the Shade of the Sahyadri: Selections from Malayalam Poetry and Short Fiction***.** OUP, 2012.

Recommended reading:

Introduction to *Ten Women Writers of Kerala.* Sreedevi K. Nair (ed) pages x – xx. [for 'Modern women short story writers']

Module 4: Malayalam Drama in the twentieth century.

Malayalam drama - post Independence period – influence of N. Krishna Pillai - N.N. Pillai, K.T. Mohamed - Kavalam Narayana Panikker, G. Sankara Pillai - C.N Sreekantan Nair's *Kanchanasita* - experimental works of Narendra Prasad - P.K. Venukuttan Nair.

Core reading: [Detailed study]: C.N. Sreekantan Nair. *Kanchana Sita*. *In the Shade of the Sahyadri: Selections from Malayalam Poetry and Short Fiction***.** OUP, 2012.

Instruction to Teachers [Modules 1- 4]:

- Students may be given sufficient background information about the authors/genre included in Modules 2-4. Questions are to be asked only from the prescribed poems, fiction and drama in Modules 2 to 4.
- The work of each writer mentioned in modules 2 – 4 has to be placed against the literary backdrop of the age. The text referred to in Module 1 is to used for the purpose.
- The literary significance of the work prescribed is to be briefly discussed in the classroom. However the student is expected to have only a general awareness of the respective author.
- The major works of the writers mentioned in module 1 have to be made familiar to the students.
- Questions are not to be asked from Module 1 at the examination.

SEMESTER III

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

Complementary Course – HISTORY OF ENGLISH LITERATURE - III

Common for EN 1331 & CG 1331

B.A. English Main - Complementary Course V: EN 1331

No. of credits: 3 **No. of instructional hours: 3 per week (Total: 54 hrs)**

B.A. Career related 2(a) English and Communicative English - Complementary Course III: CG 1331 No. of credits: 4

No. of instructional hours: 4 per week (Total: 72 hrs)

COURSE DESCRIPTION

Module 1:

The Victorian Age - The Reform Acts - Changes in social life - Industrialisation and its impact on the society - Rise of Oxford and Cambridge Universities - Spread of science and technology and its impact –

Marx, Darwin, J.S. Mill, Freud - India and the Empire - The Victorian novel - Charles Dickens, George Eliot and Thomas Hardy - Victorian poetry - Arnold, Browning and Tennyson – Pre-Raphaelites – Oscar Wilde and the aestheticians.

Module 2:

Early 20th century - Influences on the social milieu - The First World War - The war poets – Modernism - T S Eliot, Yeats, Auden, Joyce, D.H. Lawrence, Virginia Woolf, Joseph Conrad, G B Shaw and the realists.

Module 3:

The mid-twentieth century and after - World War II - Life between the two World Wars - Effects of the Wars on society and literature - The dissolution of the British empire - The welfare state – Modern to the Post-modernism - Feminism and environmentalism.

Module 4:

Poetry, fiction and drama of the period - Life in the 60s, 70s and 80s - Larkin and the Movement - Ted Hughes, Carol Ann Duffy - George Orwell, Kingsley Amis, Graham Green, Salman Rushdie - Samuel Beckett, Harold Pinter and Tom Stoppard – new trends in English theatre – Literature and New Media in Contemporary England - Contemporary life in England.

Core texts:

(1) *A Concise History of English Literature and Language,* Primus Books, Delhi 2013.

(2) Ashok, Padmaja. *The Social History of England*. Orient Black Swan 2011.

Books recommended:

Peck, John and Martin Coyle. *A Brief History of English Literature*. Palgrave, 2012. Poplawski, Paul Ed. *English Literature in Context*. CUP, 2008.

Thornley G C and Gwyneth Roberts. *An Outline of English Literature*. Pearson, 2011.

SEMESTER IV

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course V – READING PROSE: EN 1441

No. of credits: 4 **No. of instructional hours: 5 per week (Total: 90 hrs.)**

AIMS

1. To help students understand and appreciate different types of prose writing.
2. To introduce to them the basics concepts of style and literary devices in prose.
3. To acquaint them with cultural diversity and divergence in perspectives.
4. To enable them to write creatively and critically.

OBJECTIVES

On completion of the course, the students should be able to:

1. recognize various types of prose writings.

2. analyse, understand and appreciate prose writings
3. write creatively and critically in an expository or argumentative way.

COURSE OUTLINE

Module 1

- Essay – formal/impersonal essay and informal/personal essay
- Types of essays: periodical essay, critical essay
- Life Writing: biography, autobiography, memoir and diaries.

Module 2: Prose up to the 18th Century.

Module 3: 19th Century Prose

Module 4: Modern Prose

COURSE MATERIAL

Module 1: Core reading: Chapter 4 from *A Concise Companion to Literary Forms*. Emerald, 2013.

Module 2: Core reading: *Reflections* (A Collection of Essays published by Pearson Education) Essays: 1. Bacon: Of Studies

2. Samuel Pepys: (An extract from Pepys' Diaries) 1660 Jan - Feb.
3. Addison: *Sir Roger at the Assizes*
4. James Boswell: (An extract from *Life of Samuel Johnson*)

Further reading

Hudson, W.H. *An Introduction to the Study of English Literature*. Chapter: The Study of The Essay.

Module 3: Core reading: *Reflections*

Essays*:* *1. Lamb: Dream Children*
2. Hazlitt: *On Familiar Style*
3. Ruskin: *On Reading*

Module 4: Core reading: *Reflections*

Essays: 1. Robert Lynd: *Indifference*
2. Camus: *Nobel Prize Acceptance Speech*
3. Anne Frank: *The Diary of a Young Girl* (an extract)

Instruction to Teachers:

- The work of each author has to be placed against the literary backdrop of the age.
- The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have an awareness of the respective works.
- Students should be made to listen to and read speeches and prose passages.
- Questions are not to be asked from such details at the examination

SEMESTER IV

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Foundation Course II – INFORMATICS: EN 1421

No. of credits: 3 **No. of instructional hours: 4 per week (Total: 72 hrs)**

AIMS

1. To update and expand basic informatics skill and attitudes relevant to the emerging knowledge society
2. To equip students to utilize the digital knowledge resources effectively for their chosen fields of study

OBJECTIVES

On completion of the course, the students should be able to

1. update and expand their knowledge in the field of informatics
2. understand the nature of the emerging digital knowledge society
3. use digital knowledge resources effectively for their studies

COURSE OUTLINE

Module 1: Informatics: an introduction.

History and development of computers – Types of computers – Personal Computers (PC) – Workstations – Laptops – Palmtops – Mobile devices – Notebooks – Mainframe computers – Super computers – IT and the Internet - Cyber ethics and cyber crimes like hacking and morphing.

Module 2: Basic Hardware and Software.

Monitor – CRT and LCD – CPU – Mouse – Keyboard – Ports – USB – Input/output devices – Printers – Scanners – Pen drives - Modems – Microphones – Speakers – Bluetooth devices.

Module 3: Operating Systems:

Microsoft Word – Excel – PowerPoint – Linux – Computer virus – Antivirus tools – File formats – jpg – jpeg – mp3 – zip – RAR.

Module 4: Net working and Internet:

What is networking? – LAN – WAN – Search engines – Social Net working.

COURSE MATERIAL

Modules 1 – 4:

Ravindran Asari - *The Basics of Informatics.* Scientific International Pvt. Ltd, 2013.

Reading list:

1. Alexis and Mathew Leon. *Fundamentals of Information Technology.* Leon Vikas
2. Beekman, George and Eugene Rathswohl. *Computer Confluence.* Pearson Education.
3. Norton, Peter. *Introduction to Computers*. Indian Ed.2. Evans, Alan, Kendal Martin et al *Technology in Action.* Pearson Prentice Hall, 2009.
4. Norton, Peter. *Introduction to Computers*. Indian Ed
5. Rajaraman, V. *Introduction to Information Technology*. Prentice Hall.

SEMESTER IV

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

Complementary Course - HISTORY OF ENGLISH LANGUAGE

Common for EN 1431 & CG 1431

B.A. English Main - Complementary Course VII: EN 1431

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

B.A. Career related 2(a) English and Communicative English - Complementary Course IV: CG 1431 No. of credits: 4

No. of instructional hours: 4 per week (Total: 72 hrs)

AIMS

1. To familiarize students with the origin and development of the English Language
2. To make them aware of the changes in different areas of the language.

OBJECTIVES

On completion of the course, the students should be able to

1. identify the various language families
2. trace the evolution of the English language
3. list the changes in the different areas of the language

COURSE OUTLINE

Module 1

Nature of language – human languages and animal communication systems – flux in language – language families – Indo-European family – Germanic group – the descent of English – broad characteristics.

Module 2

Periods in the history of English language – **Old English** – Celtic, Latin and Scandinavian influences – effect on grammar and syntax – Norman conquest – French influence – growth of national feeling – adoption of English – **Middle English** – decay of inflection – loss of grammatical gender – French Influence on the vocabulary – dialectal diversity – the rise of standard English – contribution of major writers to the English language – Chaucer, Spenser, Shakespeare, Milton – the impact of Bible Translations on the English language.

Module 3

Modern English – Renaissance and after – general characteristics of English – changes in pronunciation and grammar – attempts to reform English – Spelling through the ages – problems and prospects of spelling reform – Development of Dictionaries – Dr. Johnson's dictionary – slang and standard speech – English dialects – evolution of English as a global language.

Module 4

Word formation and growth of vocabulary – makers of English – Semantics – changes of meaning – widening, restriction, amelioration, radiation, concatenation, synaesthesia, metonymy, synecdoche, faded metaphors, euphemism, divergence of meaning – some present-day trends in the English language – slang and jargon – varieties of dialects – various 'Englishes' – influence of the colonies.

Core text:

A Concise History of English Literature and Language, Primus Books, Delhi 2013.

Reading list

Modules 1 to 4

1. Baugh A.C. *A History of the English Language*. Chennai: Allied Published, 1978.
2. Barber C.L. *The Story of Language*. Penguin, 1982.
3. Wood F.T. *An Outline History of the English Language.* Macmillan, 2008.
4. Crystal, David. *English as a Global Language.* London: Cambridge University Press, 1997.
5. Mugglestone. *Oxford History of English*, Indian Edition: Oxford University Press, 2009.

SEMESTER V

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System) ENGLISH & COMMUNICATIVE ENGLISH

Core Course - LITERARY CRITICISM:

Common for EN 1541 & CG 1541

B.A. English Main – Core Course VI: EN 1541

No. of credits: 4 **No. of instructional hours: 5 per week (Total: 90 hrs)**

B.A. Career related 2(a) English and Communicative English – Core Course VII: CG 1541 No. of credits: 4

No. of instructional hours: 5 per week (Total: 90 hrs)

AIMS

1. To give the students a historical overview of the critical practices from classical period to the present.
2. To introduce to them some of the significant concepts that had a seminal influence on the development of critical thought.
3. To develop in them a critical perspective and capacity to relate and compare various critical practices and schools.
4. To help them read and analyze literary texts from different perspectives.

OBJECTIVES

On completion of the course, the students should be able to

1. trace the development of critical practices from ancient times to the present.
2. explain the critical concepts that emerged in different periods
3. analyze and appreciate texts critically, from different perspectives.

COURSE OUTLINE

Module I

A. Classical Criticism:

Nature and function of criticism – contributions of Plato – concept of mimesis and inferiority of art – Aristotle –major concepts – mimesis, katharsis, hamartia – definition of tragedy – parts of tragedy – Horace and the concept of decorum –Longinus – the sublime.

B. Indian Aesthetics: Theory of Rasa, Vyanjana and Alankara.

[The relationship between Unit A and Unit B to be discussed. For eg. The concept of Rasa and purgation, Alankara and figures of speech, etc.]

Core reading [Unit B]:

Sethuraman. V.S. Ed. *Indian Aesthetics: An Introduction.* Macmillan, India, 1992.

- Das Gupta,S.N. "The Theory of Rasa", (pp 191-196) in *Indian Aesthetics: An Introduction.* Ed. V.S. Sethuraman. Macmillan, India,1992.
- KuppuswamiSastri. "The Highways of Literary Criticism in Sanskrit" (pp. 173–190), in *Indian Aesthetics:An Introduction.* Ed. V.S.Sethuraman. Macmillan India, 1992.
- Raghavan, V. "Use and Abuse of Alankara" (pp. 235–244) in *Indian Aesthetics: An Introduction*. Macmillan India, 1992.

Module 2: Renaissance and Neo-Classical Criticism:

Sir Philip Sidney – his "Defence of Poetry" – definition of poetry – neo-classicism – Dryden – estimate of authors – Johnson – **"**Lives of Poets" – Shakespeare criticism – moral judgment of literature.

Module 3: Romantic and Victorian Criticism:

Romanticism – Wordsworth – "Preface to Lyrical Ballads" – definition of poetry – concept of poetic diction and language – Coleridge – definition of poetry – Fancy and Imagination.

The Victorian Period: Arnold – concept of culture – the function of poetry – touchstone method – disinterestedness and high seriousness – moralistic criticism.

Module 4: Twentieth Century Criticism:

Eliot and Modernism – "Tradition and Individual Talent" – historic sense – impersonality – poetic emotion –objective correlative – dissociation of sensibility – Richards and "Practical Criticism" – poetry and synaesthesia – scientific and emotive uses of language – four kinds of meaning.

COURSE MATERIAL

Modules 1 – 4 Core reading:

Nagarajan, M.S. *English Literary Criticism and Theory*: *An Introductory History*. Hyderabad: Orient Longman, 2006.

Further reading:

1. Abrams, M.H. *A Glossary of Literary Terms*.Seventh Edition. Singapore: Thomson & Heinle, 1999.
2. Wimsatt Jr., William K. and Cleanth Brooks. *Literary Criticism: A Short History*. Calcutta: Oxford and IBH, 1957.
3. Waugh, Patricia. *Literary Theory and Criticism: An Oxford Guide.* New Delhi: OUP, 2009.
4. Seldon, Raman et al, *A Reader's Guide to Contemporary Literacy Theory.* New Delhi: Pearson Education, 2005.
5. Bennet Andrews and Nicholas Royale. *Introduction to Literature, Criticism and* edition. New Delhi: Pearson Education, 2009.
6. Harmon, William, Hugh Holman.*A Handbook to Literature.* 10th Edition. New Delhi: Pearson Education, 2009.

SEMESTER V

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course VII - INDIAN LITERATURE IN ENGLISH: EN 1542

No. of credits: 4 **No. of instructional hours: 5 per week (Total: 90 hrs)**

AIMS

1. To introduce students to Indian writing in English.
2. To broaden and sharpen their aesthetic and analytical skills.

OBJECTIVES

On completion of the course, the students should be able to

1. trace the development of Indian writing in English.
2. explain the Indianness in Indian literature in English.
3. read and appreciate Indian literature.
4. analyse the strength and constraints of Indian English as a literary medium.

COURSE OUTLINE

Module 1: Poetry

Module 2: Prose - Essays

Module 3: Prose - Fiction

Module 4: Drama:

COURSE MATERIAL

Module 1: Poetry:

1) Henry Derozio: The Harp of India
2) Sarojini Naidu: Love and Death
3) Aurobindo: Life and Death

4) Nissim Ezekiel: Entertainment
5) Jayanta Mahapatra: Evening Landscape by the River
6) Rabindranath Tagore: Where the Mind is Without fear
7) Harindranath Chattopadhyaya: Shaper Shaped

Core reading: *Indian Yarns: An Anthology of Indian English Writing.* Cambridge University Press, 2013.

Module 2: Prose - Essays:

1) Jawaharlal Nehru: "A Tryst with Destiny"
2) Sashi Tharoor: "Ajanta and Ellora in the Monsoon".

Core reading: *Indian Yarns: An Anthology of Indian English Writing.* Cambridge University Press, 2013.

Module 3: Prose - Fiction:

(a) Short Story:

1) Mulk Raj Anand: A Pair of Mustachios
2) R.K.Narayan: Out of Business
3) Rabindranath Tagore: The Auspicious Vision
4) Kamala Das: Darjeeling
5) Ruskin Bond: The Thief

Core reading: *Indian Yarns: An Anthology of Indian English Writing.* Cambridge University Press, 2013.

(b) Novel:

Jayashree Mishra: *Ancient Promises*

Module 4: Drama:

Core reading: Girish Karnad: *Hayavadana* (OUP)

Instruction to Teachers:

The work of each author has to be placed against the literary backdrop of the age. The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have an awareness of the respective works. Questions are not to be asked from such details at the examination.

SEMESTER V

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE & LITERATURE (CBCS System)

Core Course VIII - FILM STUDIES: EN 1543

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

AIMS

1. To give the students basic knowledge in the history, art and culture of motion picture.
2. To introduce to them the key concepts in film studies.
3. To help them analyze and appreciate films.
4. To enable them pursue higher studies and careers in film.

OBJECTIVES

On completion of the course, the students should be able to

1. discover the language of cinema
2. explain the key concepts in film studies.
3. analyse films as texts.
4. write critically about films.

COURSE OUTLINE

Module 1: **Understanding film.**

What is film – its hybrid nature – the language of cinema – authorship - a brief history – film movements – Montage theory and Soviet cinema of the 20s – German expressionism and experiments with mise-en-scene – French poetic realism – classical Hollywood cinema and genre – Italian neo-realism – French New wave - contemporary international trends.

Module 2: **Indian Cinema.**

Phalke and the desi enterprise – Indian cinema 30s to the 60s – The golden 50s – Indian art cinema and the Indian New wave – History of Malayalam Cinema – New wave in Malayalam cinema – Contemporary trends in Malayalam cinema.

Module 3: Literature and Film.

Literary language and Film language- adaptation and notions of fidelity- Narrative structure and strategies in film and fiction - time, space, character and setting - dialogue – music – sound effects.

Module 4: **Film analysis.**

Films for close viewing:

Rashomon
My Fair Lady
Chemmeen

COURSE MATERIAL

Core text:

Introduction to Film Studies [Reading the Popular series]by. Orient Blackswan, 2013.

Reading list:

1. Villarejo, Amy. *Film Studies: the Basics.* Routledge, Indian Reprint, 2009.
2. Hayward, Susan. *Key Concepts in Cinema Studies.* London: Routledge, 1997.
3. Bywater, Tim and Thomas Sobchack. *Introduction to Film Criticism*. Pearson India, 2009.
4. Corrigan, Timothy, J. *A Short Guide to Writing about Film*. Pearson India, 2009.
5. Kupsc, Jarek. *The History of Cinema for Beginners.* Chennai: Orient Blackswan, 2006.
6. Dix, Andrew. *Beginning Film Studies*. New Delhi: Viva Books, 2010.
7. Stam, Robert and Alessandra Raengo. *Literature and Film: A Guide to Theory and Adaptation.* Oxford: Blackwell, 2003.

Suggested viewing list:

Michael Radford's	*Il Postino*
Robert Wiene's	*The Cabinet of Dr. Caligari*
Sergei Eisenstein's	*Battleship Potemkin*
Victorio De Sica's	*Bicycle Thief*
John Ford's	*Stagecoach*
Alfred Hitchcock's	*Psycho*
Mehboob's	*Mother India*
Satyajit Ray's	*Pather Panchali*
Abbas Kiarostami	*Ten*

Note to the Teacher:

The objective of this course is to enable literature students to understand the language of cinema as also the ways in which that language is different from a literary language. Simultaneously they could also be taught the specificities of medium, narrative and the history of cinema. The lectures should use a lot of clips from different films to illustrate the points. It is strongly recommended that films or film clips should be screened as far as possible for every topic of this course. Any film of the teacher's choice other than the ones suggested may also be screened to illustrate the specific topics. The three films selected for close analysis help in understanding the narrative techniques of cinema, its engagements with sound, music and songs as also modes of adaptation from genres such as short story, play and novel.

SEMESTER V

FIRST DEGREE PROGRAMME IN ENGLISH LANGUAGE & LITERATURE (CBCS System)

Core Course IX - LINGUISTICS AND PHONETICS: EN 1544

No. of credits: 4 **No. of instructional hours: 4 per week (Total: 72 hours)**

AIMS:

1. To equip students with a thorough knowledge of the various aspects of the English language
2. To sensitize them to the nuances of spoken and written forms of English
3. To help them overcome specific problems resulting from mother tongue interference

OBJECTIVES:

On completion of the course, the students should be able to

1. explain the key concepts in linguistics
2. develop a neutral accent and improve their general standard of pronunciation
3. speak globally intelligible English

COURSE OUTLINE

Module 1

Linguistics – branches of linguistics – approaches to the study of language – diachronic & synchronic – prescriptive & descriptive – traditional & modern – key concepts – langue & parole – competence &

performance – grammaticality & acceptability – traditional & structural grammars – Morphology – morphemes – classification – allomorphs – Syntax – word classes – form class – function class – formal features – IC analysis – PS Grammar – TG Grammar.

Module 2

Varieties of Language – regional/class – discourse – individual – national varieties – British – American – General Indian – Australian – spoken and written – RP and BBC English.

Module 3

Phonetics – articulatory phonetics – speech mechanism – organs of speech classification of speech sounds – vowels – consonants – Phonology – phonemes – classification – distribution – syllable structure – transcription –allophones – suprasegmentals – stress – word stress and sentence-stress – rhythm – juncture – intonation – assimilation – elision.

Module 4

Indian Explorations – different systems of thought – Panini – Karaka theory – Patanjali –Bhartrhari.

COURSE MATERIAL

Modules 1–4 Core Text: [To be incorporated]

Reference:

T. Balasubramanian. *A Textbook of English Phonetics for Indian Sudents.* Second edition. Macmillan, 2013.

Reading list:

Aslam, Mohammed, and Aadil Amion Kak.*Introduction to English Phonetics and Phonology*. Foundation Books, 2007.

Crystal, David. *Linguistics*.

Palmer, Frank. *Grammar*.

Lyons, John. *Language and Linguistics: An Introduction*.CUP, 1981.

Verma, S. K., and N. Krishnaswamy. *Modern Linguistics: An Introduction*. OUP, 1989.

Gimson , A.C., and Edward Arnold. *An Introduction to the Pronunciation of English*. CUP, 1980.
Roach, Peter. *English Phonetics and Phonology*. CUP, 2009.

Yule, George. *The Study of Language*. CUP, 2006.

Collins, Beverley and Inger Mees.*Practical Phonetics and Phonology: A Resource Book for Students*. Routledge, 2005.

Rani, D Sudha.*A Manual for English Language Laboratories*. New Delhi: Pearson, 2010.

Reference:

1. Jones, Daniel. *English Pronouncing Dictionary*.17th Edn.CUP.
2. Marks, Jonathan. *English Pronunciation in Use: Elementary*. CUP, 2008.
3. Raja, Kunjunni K. *Indian Theories of Meaning*. Adyar Library, 1963.

Direction to Teachers:

IC analysis, PS Grammar and TG Grammar should be discussed only at introductory level.

SEMESTER V

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course X - POST COLONIAL LITERATURES IN ENGLISH – EN 1545

No. of credits: 4 **No. of instructional hours: 5 per week (Total: 90 hrs)**

AIMS

l. To introduce students to Post Colonial literature, life and culture

2. To broaden their aesthetic and intellectual faculties

OBJECTIVES

On completion of the course, the students should be able to

1. identify what is distinctly Post Colonial literature
2. read and appreciate Post Colonial literature with insight
3. understand Post Colonial culture and its varying modes of literary expression

COURSE OUTLINE

Module 1: Poetry

Module 2: Drama

Module 3: Fiction

COURSE MATERIAL

Module 1: Poems:

Walt Whitman	–	"Beat! Beat! Drums!" - 1819
Emily Dickinson	–	"Hope" is the thing with feathers (314) - 1830
Robert Frost	–	A Prayer in Spring - 1874
Pablo Neruda	–	A Dog has Died - 1904
A.D. Hope	–	The Death of the Bird - 1907
Elizabeth Bishop	–	The Fish - 1911
Judith Wright	–	Train Journey - 1915
Wislawa Szymborska	–	Possibilities -1923
Nissim Ezekiel	–	Enterprise - 1924
Derek Walcott	–	Ruins of a Great House - 1930
John Pepper Clark	–	Casualities - 1935
Yasmine Gooneratne	–	This Language, This Woman - 1935
Margaret Atwood	–	Notes Towards a Poem That Can Never be Written. [1939]

Core reading: *After the Sunset: An Anthology of Post Colonial Literatures in English.* Oxford University Press, 2013.

Module 2: Drama

Wole Soyinka - The Strong Breed. Oxford University Press.

Core reading: After the Sunset: An Anthology of Post Colonial Literatures in English. Oxford University Press, 2013.

Module 3: Fiction

(a) F.Scott Fitzgerald - *The Great Gatsby.* Cambridge University Press.

(b) Gabriel Marquez - *Chronicle of a Death Foretold.* Penguin.

Instruction to Teachers:

The work of each author has to be placed against the literary backdrop of the age. The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have an awareness of the respective works. Questions are not to be asked from such details at the examination.

SEMESTER V

FIRST DEGREE PROGRAMME (CBCS System)

ENGLISH LANGUAGE AND LITERATURE

OPEN COURSES

Open Course I - COMMUNICATIVE APPLICATIONS IN ENGLISH: EN 1551.1

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

AIM

1. To help the students attain high level proficiency in all the four language skills.
2. To equip them for competitive examinations and various International English Language Tests.
3. To enhance their career prospects and employability.
4. To help them develop their personality by fine tuning their communication and presentation skills.

OBJECTIVES

On completion of the course, the students should be able to

1. use English for international communication.
2. engage in all kinds of communication activities – informal, formal/business related and academic.
3. perform well in language tests and competitive examinations.

COURSE OUTLINE

Module 1

Listening and Speaking: varieties of modern English – British, American, Indian – basic sounds – deviations in American and other varieties – syllable structure – stress – word – stress and sentence stress – intonation.

Verbal Communication: conversation – basic techniques – how to begin, interrupt, hesitate and end – how to express time, age, feelings and emotions – how to respond – using language in various contexts/ situations – talking about oneself, others – describing persons, places, incidents, events and objects – attending an interview – addressing an audience – using audio-visual aids – making short speeches – compering – group discussion.

Non-verbal Communication: body language : postures – orientation – eye contact – facial expression – dress – posture – self concept – self image – self-esteem – attitudes – values and perception.

Module 2: Reading and Writing

Skimming and scanning – fast reading – writing short messages – e mails – preparing notes and reports based on visuals, graphs and diagrams – letters – informal, formal/official/business related – preparing agenda, minutes – CV – Describing persons, places, incidents and events – writing ads – short argumentative essays

Words often confused and misused – synonyms – antonyms – idioms commonly used – corresponding American expressions.

Module 3: Writing for Specific Purposes

Scientific writing – business writing – preparation of project proposals – writing of summaries and reviews of movies and books in English/regional languages.

Module 4: Practical Sessions

Language Skills Test (Written)

Teachers could encourage the students at the following tasks:

1. Translation of short and simple passages – from Malayalam to English
2. Providing captions for photos and pictures
3. Symposium – presenting different aspects of a debatable topic.

COURSE MATERIAL

Reading list

1. Mukhopadhyay, Lina et al. *Polyskills: A Course in Communication Skills and Life Skills*. Foundation, 2012.
2. O'Conner, J. D. *Better English Pronunciation.* CUP.
3. Swan, Michael. *Practical English Usage.* OUP.
4. Driscoll, Liz. *Cambridge: Common Mistakes at Intermediate.* CUP.

Reference

1. Jones, Daniel. *English Pronouncing Dictionary*, 17th Edn. CUP.

SEMESTER V

FIRST DEGREE PROGRAMME (CBCS System)

ENGLISH LANGUAGE AND LITERATURE

OPEN COURSES

Open Course I - THEATRE STUDIES: EN 1551.2

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

Aims:

1. To provide an introduction to theatre studies
2. Familiarize the students with fundamental theories on theatre
3. Introduce the students to Western and Indian theatre

Objectives:

1. To sensitize students that theatre is praxis
2. To develop the listening and writing skill of students
3. To help students appreciate theatre
4. Respond creatively to the world around

COURSE OUTLINE

Module 1: Origin of Western theatre.

Origin of Drama – eminent Greek playwrights – Chorus and its evolution – miracle, morality and mystery plays – Aristotle's theory of drama – Elizabethan stage – Restoration theatre.

Module 2: Introduction to Indian theatre.

Bharata and Natya sastra - relevance – contributions of Bhasa and Kalidasa – dance drama – folk theatre - theatre in Kerala – Kathakali – Kutiyattam – recent trends in Indian theatre.

Module 3: Sub-genres.

Problem Play – trends in 20th century drama - Epic theatre – Absurd theatre – Postcolonial theatre.

Module 4 Praxis

Writing dialogues – Preparation of script for acting based on narratives/stories/reports – Learning the process of staging a play through an enactment of the prepared script(s) which may be group activity in the class. The class may be divided into groups and they can be assigned specific tasks involved in the production of a play such as script writing, stage setting, properties, make up and music which can finally lead to the production of the script.

(This module must be effectively used by the teacher for internal/continuous assessment and so no separate texts for study are provided)

COURSE MATERIAL

References

Module 1

1. John Gassner and Edward Quinn. *The Reader's Encyclopedia of World Drama*. London: Methuen, 1975.
2. Harold Bloom Ed. *Greek Drama*. Philadelphia: Chelsea House.
3. Peter Womack. *English Renaissance Drama*. Oxford: Blackwell. 2006.

Module 2

1. P.Venugopalan Ed. *Kutiyattam Register* "Kutiyattam" Thiruvananthapuram: Margi, 2007. 21–34.
2. K.P.S. Menon. *A Dictionary of Kathakali*. Orient Blackswan.

Module 3

Martin Esslin. *The Theatre of the Absurd*. 3rd Ed. Britain: Penguin. 1980.

Module 4: **General reference**

Keir Alam. *The Semiotics of Theatre and Drama*. London, Methuen, 1980.

SEMESTER VI

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE & LITERATURE (CBCS System)

Core Course XI - WORLD CLASSICS: EN 1641

No. of credits: 4 **No. of instructional hours: 5 per week (Total: 90 hrs)**

AIMS

1. To introduce students to the world of the classics in literature.
2. To broaden their outlook and sensibility.

OBJECTIVES

On completion of the Course, the students should be able to

1. read and appreciate classical works.
2. evaluate classical texts critically.
3. place and assess their own culture and classics.

COURSE OUTLINE

Module 1

Classics – literary classics – definition – critical concepts – the emergence of classics – a brief survey of the classics.

Greek and Roman: Homer – Virgil – Aeschylus – Sophocles – Euripides – Aristophanes – Nikos Kazantzakis.

Italian: Dante – Boccaccio – Tasso – Ariosto - Machiavelli – Alberto Moravia. Sanskrit: Vyasa – Valmiki – Kalidasa – Sudraka – Bhasa – Shri Harsa – Jayadeva. German: Goethe – Hesse –

Russian: Pushkin – Gogol – Dostoevsky – Tolstoy - Chekhov – Gorky – Pasternak – Solzhenitsyn.

Module 2: Poetry

Module 3: Drama

Module 4: Fiction

COURSE MATERIAL

Module 1

Reference

1. Beard, Mary, and John Henderson. *Classics; A Very Short Introduction.* Indian Edition, OUP, 2006.
2. Highet, G. *The Classical Tradition*. Oxford University Press, 1949.
3. Eliot, T.S. 'What is a Classic?
4. Nicoll, Allardyce. *World Drama from Aeschylus to Anouilh*. New York: Harcourt Brace, 1950.
5. Hadas, Moses. *Greek Drama*. Bantam Classics, 1983.
6. Abrams, M.H. *A Glossary of Literary Terms.*

Module 2

Core reading: Kalidasa: *Ritusamhara.* Canto One. Summer (From KALIDASA: THE LOOM OF TIME translated by Chandra Rajan, Penguin Books).

Module 3

Core reading: Sophocles: *Antigone* (Cambridge University Press)

Module 4

Core reading: 1. Tolstoy: *The Death of Ivan Ilyich* (Penguin Classics) 2. Kazantzakis: *Zorba the Greek* (Penguin Classics)

Instruction to Teachers [Modules 1 to 4]:

- The work of each author in Module 1 has to be placed against the literary backdrop of the age.
- Only the major works of the writers mentioned in Module 1 are to be made familiar to the students.
- Only short answer-type questions [Qn. II] and Short Essay-type questions [Qn. III] are to be asked from Module 1 at the examination.
- The literary significance of the works prescribed for study in Modules 2 – 4 are also to be discussed in the classroom. However the student is expected to have only a general awareness of the respective author/work.

SEMESTER VI

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE & LITERATURE (CBCS System)

B.A. ENGLISH LANGUAGE AND LITERATURE

Core Course XII

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System) ENGLISH & COMMUNICATIVE ENGLISH

Core Course IV - METHODOLOGY AND PERSPECTIVES OF HUMANITIES

Common for EN 1642 & CG 1643

B.A. English Main - EN 1642

No. of credits: 4 **No. of instructional hours: 5 per week (Total: 90 hrs)**

B.A. Career related 2(a) English and Communicative English - CG 1643

No. of credits: 3 **No. of instructional hours: 4 per week (Total: 72 hrs)**

AIMS

1. To introduce students to the methodological issues specific to the humanities
2. To develop in them a critical perspective in pursuing literary studies

OBJECTIVES

On completion of the course, the students should be able to

1. explain the key concepts in literary theory and criticism
2. make sense of literature
3. read literature critically from a theoretical perspective.

COURSE OUTLINE

Module 1: Key Concepts:

Humanities – Differences between natural, social and human sciences – facts and interpretation – history and fiction – objectivity versus subjectivity.

Module 2

A critical overview of literature from the perspective of the Humanities.

Impact of society on literature – text types – genres – literary canon – literary interpretation and evaluation.

Module 3

Literary terms – Text oriented approaches – philology – rhetoric – stylistics – new criticism – semiotics – ambiguity.

COURSE MATERIAL

Modules 1 – 3

Core text:

Humanities: **Methodology and Perspectives**, by Dr K Kamala, published by mainSpring publisher, Chennai, 2014.

Reading list:

1. Kundu, Abhijit. "Understanding the Humanities." *The Humanities*: *Methodology and Perspectives*. New Delhi: Pearson Education, 2009.
2. Eagleton, Terry. "What is Literature?"
3. Klarer, Mario. *An Introduction to Literary Studies*. Special Indian Edition: Routledge, 2009.
4. Guerin, Wilfred L, et al. *A Handbook of Critical Approaches to Literature.* New Delhi: OUP, 2009.
5. Nagarajan, M.S. *English Literary Criticism and Theory.* Hyderabad: Orient Longman, 2007.
6. Holghman,William, Hugh Holman. *A Handbook to Literature.* New Delhi: Pearson Education, 2009.
7. Seldon, Ramon, et al. *A Reader's Guide to Contemporary Literary Theory.* ND: Pearson Education, 2005.
8. Bennet, Andrews, Nicholas Royale. *Introduction to Literature, Criticism and Theory,* 3rd Edn. ND: Pearson Education, 2009.
9. Barnet, Sylvan, William Cain. *A Short Guide to Writing about Literature,* 9th Edition. ND: Pearson, 2008.

Direction to Teachers

The various approaches to literature should be discussed with illustrations, where ever necessary.

SEMESTER VI

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE & LITERATURE (CBCS System)

B.A. ENGLISH LANGUAGE AND LITERATURE

Core Course XIII - ENGLISH FOR THE MEDIA: EN 1643

No. of Credits: 4 **No. of Instructional hours: 5 per week [Total: 90 hours]**

AIMS

1. To sensitize students to the English language used in the media
2. To make them professionally skilled and employable in the media.

OBJECTIVES

On completion of the Course, the students should be able to

1. explain the nature and scope of the communication media
2. write headlines and articles for newspapers and magazines and design their content
3. produce and present scripts and programmes for Radio and TV
4. design and write webs, blogs and advertisements

COURSE OUTLINE

Module 1

Main-stream media: nature, characteristics, purpose - Print – broadcast - visual media – new/digital media – power and vulnerability of each – media convergence.

Newspapers: News stories, features – Headlines, subheads, captions, reviews.

Vocabulary that can affect the slant, emotive words and neutral words. Cohesion techniques, use of passive structures.

- Writing to answer the five Ws and H
- The inverted pyramid style
- Writing an editorial
- Editing: Cutting dead wood

Planning and Writing features – Editorials – Op-Ed pieces – Interviews: skills needed – Language used - The phrases that areused for the interview for Introductions - Interrupting - Markers for buying time, to elicit more clarity - how to use linguistic ploys – use of connectives to help progression and continuity - use of the right pace, punctuating explanations using the right words - the art of questioning and its overall philosophy.

Analysing news stories and features – political ideologies and language of newspapers – style - House styles of leading newspapers – emphasis given to use of desi words and foreign words.

Magazines: Writing for specific audience - magazine covers – layout - planning content – writing a true-life story - The Magazine Cover lines – The use of imperatives, use of questions in Cover lines - use of rhyming and alliteration - The use of specific verb forms used to express future - importance of photographs.

Module 2

Radio: Role of presenters – importance of voice, diction, delivery and language - introducing the guests/ features/news/Introducing different genres of music, Pre-teach - Vocabulary, relevance of the topic sentence, language used in debriefing, contextual use of phrasal verbs of a DJ or a presenter.

Format of the Radio script- Radio Programming- Writing for different Radio programmes: interviews, talk shows, reviews, music programmes, phone-in or on demand programmes - Translating creative works from other medium: delivering plays and classics, Radio news – news value – news script

TV: Scripts for TV- The pre-production process - Required vocabulary to understand process - The phrases used in conversation, Script writing - Editing a T.V. Documentary - roles of an editor and output editor, – selection of news – language of news writing/reporting.

TV programming: – use of formal/conversational language - abbreviations used in the filming schedule and its relevance - collocations used in T.V. as a medium - the technical vocabulary

Film: Writing a screenplay – films as a social commentary – language in film: mirroring in-vogue vocabulary, changes with genre - The features of spoken dialogues, how language helps to pitch successfully - The relevance of log line. Vocabulary for Pre-production – Language used in explaining potential problems, presenting solutions

Writing Film Reviews: Pre – Teach Vocabulary, Structure of the Content, Mapping the different stages of how a film is born, Language devices used, Use of Contrasting Information & Additional Information, Vocabulary used.

Module 3

Digital/New Media: E- writing – rules – writing news for the web – House Style of popular news-based websites - blogs - planning and writing a blog - technical writing – search engine optimization – writing for the social media. Use of Noun phrases, the use of pronouns, contractions, comparatives and clauses, the language used for informing and language used in a good blog.

Module 4

Advertising: elements of an advertisement – headlines, subheads, body, slogans etc– writing for advertisements / language of advertisements – creating a print ad –TV ad – radio ad – presenting a finished ad. Language used in print advert, the language of old advertisements and new advertisements, The language of International Brand advertisements and National Advertisements, the multimodalities.

The variety of language devices used in slogans, use of adjectives and verbs, Language of advertising campaigns, Vocabulary of pre-production, Preparing and presenting a finished advertisements, Art in advertising - Importance of photography – Use of minimalism in language – Writing shadowed by Visual effect - use of Music.

COURSE MATERIAL

Modules 1 - 4

Core reading:. *English for the Media*, Cambridge University Press, 2013**.**

Further reading

1. Ceramella, Nick and Elizabeth Lee. *Cambridge English for the Media*, CUP, 2008**.**
2.. Kaushik, Sharda, *Script to Screen: An Introduction to TV Journalism*. Macmillan, 2003.
3. Booher, Dianna. *E- Writing: 21st Century Tools for Effective Communication.* Macmillan, 2008.

SEMESTER VI

FIRST DEGREE PROGRAMME (CBCS System)

Common for ENGLISH LANGUAGE AND LITERATURE - Core Course XIV: EN 1644

&

CAREER-RELATED FIRST DEGREE PROGRAMME (CBCS) - Group 2 (a) IN ENGLISH & COMMUNICATIVE ENGLISH - Core Course XI - CG 1642

WOMEN'S WRITING

No. of Instructional hours : 4 per week (Total: 72 hrs) – for EN 1644

5 per week (Total: 90 hrs) - for CG 1642

No. of Credits : 3 [EN 1644 & CG 1642]

Aims:

1. To introduce students to the development of women's writing in various countries.
2. To familiarize them with the diverse concerns addressed by feminism.
3. To motivate them to critically analyse literary works from a feminist perspective.

Objectives: On completion of the course, the students should be able to

1. The students will have an awareness of class, race and gender as social constructs and about how they influence women's lives.
2. The students will have acquired the skill to understand feminism as a social movement and a critical tool.
3. They will be able to explore the plurality of female experiences.
4. They will be equipped with analytical, critical and creative skills to interrogate the biases in the construction of gender and patriarchal norms.

COURSE OUTLINE

Module 1: Essays

Module 2: Poetry

Module 3: Short Fiction

Module 4: Drama

COURSE MATERIAL

Module 1: Essays **[Detailed study]**

1. Virginia Woolf: "Shakespeare and his Sister" (Excerpt from *A Room of One's Own*)
2. Alice Walker: "In Search of our Mothers' Gardens" (From *In Search of Our Mother's Gardens*)
3. Jasbir Jain: Indian Feminisms: The Nature of Questioning and the Search for Space in Indian Women's writing. (From *Writing Women Across Cultures)*

Module 2: Poetry. **[Detailed study]**

1. Elizabeth Barrett Browning : **"**A Musical Instrument"

2.	Marianne Moore	:	"Poetry"
3.	Adrienne Rich	:	"Aunt Jennifer's Tigers"
4.	Sylvia Plath	:	"Lady Lazarus"
5.	Margaret Atwood	:	"Spelling"
6.	Kishwar Naheed	:	"I am not That Woman"
7.	Suniti NamJoshi	:	"The Grass Blade"
8.	Nikki Giovanni	:	"Woman"

Module 3: Short Fiction **[Non-detailed study]**

1.	Katherine Mansfield	:	"The Fly"
2.	Shashi Deshpande	:	"A Wall is Safer"
3.	Sara Joseph	:	"Inside Every Woman Writer"
4.	Amy Tan	:	"Rules of the Game"

Module 4: Drama **[Non-detailed study]**

1.	Sheila Walsh	:	"Molly and James"
2.	Mamta G Sagar	:	"The Swing of Desire"

Core text:

Modules 1 – 4: Dr Sobhana Kurien, ed. *Breaking the Silence: An Anthology of Women's Literature*. ANE Books.

Books for reference:

Beauvoir, Simone de. *The Second Sex*. UK: Hammond Worth, 1972. Davis, Angela. *Women, Race and Class*. New York: Random, 1981. Devi, Mahasweta. *Breast Stories*. Calcutta: Seagull, 1998.

Gilbert, Sandra and Susan Gubar. *The Mad Woman in the Attic: The Woman Writer*. Yale UP, 1978. Goodman, Lisbeth ed. *Literature and Gender*. New York: Routeledge, 1996.

Green, Gayle and Copelia Kahn. *Making a Difference: Feminist Literary Criticism*. New York: Routeledge. Humm, Maggie ed. *Feminisms: A Reader*. New York: Wheat Sheaf, 1992.

Jain, Jasbir ed. *Women in Patriarchy: Cross Cultural Readings.* New Delhi: Rawat, 2005 Millett, Kate. *Sexual Politics*. New York: Equinox-Avon, 1971.

Rich, Adrienne. *Of Woman Born*. New York: Norton.

Roudiex, Leos S. ed. *Desire in Language*. New York: Columbia UP, 1975. Showalter, Elaine. *A Literature of their Own*.

Spacks, Patricia Mayor. *The Female Imagination*. New York: Avon, 1976.

Tharu, Susie and K Lalitha. *Women Writing in India Vol I & II*. New Delhi: OUP, 1991. Walker, Alice. *In Search of our Mothes' Gardens*. New York: Harcourt Brace Jovanovich, 1983. Woolf, Virginia. *A Room of One's Own*. London: Hogarth, 1929.

Instruction to Teachers [Modules 1- 4]:

- The work of each writer mentioned in Modules 1 – 4 has to be placed against the literary backdrop of the age.
- The major works of the writers mentioned in the modules can be made familiar to the students

- The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have only a general awareness of the respective author..
- Questions are to be asked only from the prescribed poems, fiction and drama.

SEMESTER VI

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE & LITERATURE (CBCS System)

B.A. ENGLISH LANGUAGE AND LITERATURE

Elective Course – TRANSLATION STUDIES: EN 1661.1

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

AIMS

1. To familiarize students with the concepts and theories of translation.
2. To introduce to them the art of translation.
3. To help them pursue translation as a profession.

OBJECTIVE

On completion of the course, the students should be able to

1. explain the concepts and theories of translation.
2. undertake various translation works.
3. find employment as translators.

COURSE OUTLINE

Module 1: Fundamentals of translation

Definitions – a brief history of translation in Malayalam – Theories of translation – linguistic – literary – cultural – communicative – Types of translation – Literary – Non-Literary – Technology aided translation.

Module 2: Key Concepts

Source language – Target language – Afterlife – Linguistic and cultural systems – faithfulness – confusions – equivalence

Module 3: Case Studies

1. Analysis of a translated Text:
    a. From Malayalam to English
        i. A story
        ii. A poem
    b. From English to Malayalam

1. A story
2. Problems of translations

Module 4: Translation practice

a. Non – Literary (Equivalent technical terms – idioms, phrases, proverbs in English and Malayalam – Translation of sentences and passages from English to Malayalam and vice–versa)

b. Literary (Translation of short literary prose pieces including fiction from English to Malayalam and vice-versa)

COURSE MATERIAL

Modules 1 - 4

Core reading

Word Worlds (Oxford University Press)

Further reading

1. Hatim, Basil and Jeremy Munday.*Translation: An Advanced Resource Book.* London: Routledge, 2004.
2. Palumbo, Giuseppe. *Key Terms in Translation Studies*. Continuum, 2009.
3. Vasudevan Nair, M.T. *Kuttiedathi and Other Stories*. Abdulla, V. tr. Hyderabad: Orient Black Swan, 2009.
4. Ramakrishnan, Malayattoor. *Roots*. Abdulla, V. tr. Hyderabad: Orient Black Swan, 2009.
5. Basheer, Vaikom Muhammed. *Poovan Banana and Other Stories*. Abdulla, V. tr. Hyderabad: Orient Black Swan, 2009.
6. Abdulla, V.and R.E. Asher, Ed. *Wind Flowers*. New Delhi: Penguin, 2004.
7. *O. Hendriyude Theranjedutha Kathakal* tr. by C N Ashly. Papion, Kozhikodu.
8. *'Vanampadiyodu'* by Vyloppilly Sreedhara Menon. (Translation of Keats' Ode to a Nightingale)

SEMESTER VI

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE & LITERATURE (CBCS System)

B.A. ENGLISH LANGUAGE AND LITERATURE

Elective Course - COPY-EDITING: EN 1661.2

No. of Credits: 2 **No. of Instructional hours: 3 per week (Total: 54 hrs)**

AIMS: 1. To familiarize students with the concepts of copy- editing.

2. To impart to them basic copy-editing skills.

3. To help them find employment in the publishing field.

OBJECTIVES: On completion of the course, the students should be able to

1. copy-edit non–technical materials of moderate difficulty.
2. produce consistently well-organized written discourse.
3. find employment in the editing field as copy-editors and sub-editors.

COURSE OUTLINE

Module 1: What is copy-editing—scope and need—various typescripts—electronic — conversion of manuscripts — copy-editing — preliminary steps.

Module 2: Preparing the text—the quantity of copy-editing needed— interacting with the author—creation of self-contained, well edited copies and books—coherence and consistency—the question of copyrights - acknowledgements and other legal issues—incorporating illustrations—copy-editing blurbs and titles and cover descriptions—dealing with multiauthorship— proof-reading—repeated proofs.

Module 3: The problem of style - the concept of in-house-style – inhouse style manuals - the question of grammar-abbreviations-concord-nouns -proper nouns- punctuation-spelling-ambiguity-dates - money-measurements-a brief understanding of the make -up of a standard book-preliminary pages- indexing a book-bibliographical references-special books like scientific and technological books On-screen copy editing-definition-scope-different types-technical issues involved-legal and safety concerns-software tools

Module 4

Practice Session: Grammatical trouble points - use of MLA Handbook as an in-house style manual - basic copy-editing using materials such as assignments and projects from students - use of electronic versions of these materials for on-screen copy-editing practice.

COURSE MATERIAL

Reading List

1. *Chicago Manual of Style,* 15th Edition of *Manual of Style.* University of Chicago, 2003.
2. Greenbaum, Sidney and Janet Whitcut, Longman *Guide to English* Usage. Harmondsworth: Penguin,1996.
3. Huddleston, R and Geoffrey K. Pulia, A *Student's Introduction to English Grammar.* CUP, 2005.
4. New Hart's Rules; The *Handbook of Style for Writers and Editors*. Oxford University Press, 2005.
5. *New Oxford Dictionary for Writers and Editors:* The *Essential A to Z Guide to the Written Word.* Oxford University Press, 2005.
6. Turtoa, ND and Heaton, JB. *Dictionary of Common Errors*. Longman, 1998.
7. Suttcliffe,Andrea J*,* Ed., *The New York Public Library Writer's Guide to Style and Usage.* Macmillan, 2000.

Reference: Butcher, Judith, et al. *Butcher's Copy-editing,* Fourth Edition. New Delhi: CUP, 2007.

SEMESTER VI

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE & LITERATURE (CBCS System)

B.A. ENGLISH LANGUAGE AND LITERATURE

Elective Course - CREATIVE WRITING: EN 1661.3

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

AIMS

1. To make the students aware of the various aspects of Creative Writing.

2. To expose and familiarise the students to representative English writers and their works.
3. To equip the students to attempt at practical creative writing.
4. To strengthen the creative talents and writing skills.

OBJECTIVES

1. To identify different poetic forms.
2. To analyse and appreciate poems and short stories.
3. To write book and film reviews.
4. To appreciate literary works.

COURSE OUTLINE

Module 1

Poetry - introduction: Chief elements: theme, structure, imagery and symbols, rhythm – reference to major poetic forms [with representative/select examples] like lyric, sonnet, ode, ballad, epic, dramatic monologue, and free verse.

Practice sessions: critical appreciation of the given poems - emphasis on theme, structure, style, symbols, images, rhythm and diction.

- William Blake - "The Lamb"
- Emily Dickinson - "I Heard a Fly Buzz When I Died"
- Wole Soyinka - "Telephone Conversation"
- Rabindranath Tagore - "Where the Mind is Without Fear"
- Kamala Das - "A Hot Noon in Malabar"

Poetry writing sessions: based on common/everyday themes in various forms – to initiate students into poetry writing.

Module 2

Short Story - introduction: Characteristic features of short stories in general – plot construction, characterization, narration, local colour, atmosphere and title.

Short story appreciation: critical appreciation of the given stories and their authors - emphasis on theme, structure, style, images and dialogue.

- Edgar Allan Poe - "The Oval Portrait"
- Chinua Achebe - "The Voter"
- A.C. Doyle - The Adventure of the Speckled Band
- Kushwanth Singh - "The Portrait of my Grandmother"

Short story writing sessions: based on topics/themes - to be given in the class - from everyday life and situations.

Module 3

(a) **Writing for Children**: Varieties – themes – fantasy - language – imparting values and morals – illustrative examples.

Required reading:

- Lewis Carroll – *Alice in Wonderland* [Abridged version]

- C.S. Lewis - *The Chronicles of Narnia: The Lion, the Witch and the Wardrobe.*
- Khyrunnisa A – *Howzzat Butterfingers!* Puffin Books, 2010.

(b) **Science Fiction**: Characteristic features – characterization - plot construction – setting – title - impact on films – representative examples: R.L.Stevenson: *Dr. Jekyll and Mr. Hyde*, H.G. Wells: *Time Machine*, Jules Verne: *20,000 Leagues Under the Sea*.

Module 4

Book and Film reviewing: Elements of book/film reviewing – pertinent questions that a good review must answer – aim/purpose of book and film reviews - sample book/film reviews from newspapers and magazines.

Practice sessions: Writing book and film reviews - of classics and recently published/released books/films.

COURSE MATERIAL

Books for general reference

1. Abrams, M.H. *A Glossary of Literary Terms*. Seventh Edition.
2. Prasad, B. *A Background to the Study of English Literature*. Macmillan.
3. Bernays, Anne and Pamela Painter. *What If: Writing Exercises for Fiction Writers*. William Morrow & Company, Nov 1991.

Direction to the Teachers

- Focus should be on the main points mentioned in the contents of the syllabus. These are to be illustrated with the examples mentioned in the respective modules.
- Practice sessions should be arranged within the classroom to enable the students to try their hands at the various categories mentioned within each module. Multiple examples may also be mentioned in the class.
- Questions are not to be asked from any of the individual titles/works mentioned and will only be on general comprehension: on the contents of the course structure mentioned in each module, including the writers mentioned in the syllabus.

SEMESTER 6

FIRST DEGREE PROGRAMME (CBCS System)

Common guidelines for Project/Dissertation

B.A. ENGLISH LANGUAGE AND LITERATURE: EN 1645

CAREER RELATED FIRST DEGREE PROGRAMME 2(a)

IN ENGLISH & COMMUNICATIVE ENGLISH: CG 1644

Total Instructional hours: 3/week **Credits: 4**

Total Instructional hours: 3/week **Credits: 4**

A. Guidelines for Teachers:

1. The Project/Dissertation should be done under the direct supervision of a teacher of the department, preferably the Faculty Advisor for the sixth semester. However the work of supervising the Projects should be distributed equally among all the faculty members of the department.

2. The teaching hours allotted in the sixth semester for the Project/Dissertation [i.e., 3 hours/week] is to be used to make the students familiar with Research Methodology and Project writing.

3. A maximum of five students will work as a group and submit their project as a [single] copy for the group. The members of a group shall be identified by the supervising teacher. Subsequently each group will submit a project/dissertation and face the viva individually/separately.

4. The list containing the groups and its members should be finalized at the beginning of the sixth semester.

5. Students should identify their topics from the list provided in consultation with the supervising teacher or the Faculty Advisor of the class [Semester 6] as the case may be. The group will then collectively work on the topic selected.

6. Credit will be given to original contributions. So students should not copy from other projects.

7. There will be an external evaluation of the project by an External examiner appointed by the University. This will be followed by a viva voce, which will be conducted at the respective college jointly by the external examiner who valued the projects/dissertations and an internal examiner. All the members within the group will have to be present for the viva voce. The grades obtained [for external evaluation and viva voce] will be the grade for the project/dissertation for each student within that group.

8. The Project/Dissertation must be between 20 and 25 pages. The maximum and minimum limits are to be strictly observed.

9. A Works Cited page must be submitted at the end of the Project/Dissertation.

10. There should be a one-page Preface consisting of the significance of the topic, objectives and the chapter summaries.

11. Two copies have to be submitted at the department by each group. One copy will be forwarded to the University for valuation and the second copy is to be retained at the department.

B. <u>General guidelines for the preparation of the Project:</u>

- Paper must of A4 size only.
- One side Laser Printing.
- Line Spacing: double.
- Printing Margin: 1.5 inch left margin and 1 inch margin on the remaining three sides.
- Font: Times New Roman only.
- Font size: Main title -14/15 BOLD & matter - 12 normal.
- The project need be spiral-bound only.
- Paragraphs and line spacing: double space between lines [MLA format].
- Double space between paragraphs. No additional space between paragraphs.
- Start new Chapter on a new page.
- Chapter headings (bold/centred) must be identical as shown:

Chapter One

Introduction

- Sequence of pages in the Project/Dissertation:
  i. Cover Page.
  ii. First Page.

iii. Acknowledgement, with name & signature of student.

iv. Certificate (to be signed by the Head of the Dept and the Supervising Teacher).

v. Contents page with details of Chapter Number, Chapter Heading & Page Numbers.

- Specimen copies for (i), (ii), (iv) and (v) will be sent to the colleges.
- Chapter divisions: Total three chapters.

Preface

Chapter One: Introduction - 5 pages Chapter Two: Core chapter - 15 pages Chapter Three: Conclusion - 5 pages. Works Cited

[Numbering of pages to be done continuously from Chapter One onwards, on the top right hand corner]

C. Specific guidelines for preparation of Project:

1. Only the Title of the Project Report, Year and Programme/Subject should be furnished on the cover page of the University copy of the Project. The identity of the College should not be mentioned on the cover page.
2. Details like Names of the Candidates, Candidates' Codes, Course Code, Title of Programme, Name of College, Title of Dissertation, etc should be furnished only on the first page.
3. Identity of the Candidate/College should not be revealed in any of the inner pages.
4. The pages containing the Certificate, Declaration and Acknowledgement are not to be included in the copy forwarded to the University.
5. The Preface should come immediately before the Introductory Chapter and must be included in all the copies.

D. Selection of Topics:

Students are permitted to choose from any one of the following areas/topics. Selection of topics/areas have to be finalized in the course of the first week of the final semester itself with the prior concurrence of the Faculty Advisor / Supervisor:

1. Post-1945 literature. This must not include the prescribed work/film coming under Core study. [Works/ films other than the prescribed ones can be taken for study]
2. Analysis of a film script.
3. Analysis of advertisement writing [limited to print ads]. Study should focus on the language aspect or be analyzed from a theoretical perspective [up to a maximum of 10 numbers].
4. Analysis of news from any of these news stations/channels: AIR, Doordarshan, NDTV, Headlines Today, Times Now, BBC, and CNN. [news from 5 consecutive days highlighting local, regional, national, international, sports, etc]
5. Celebrity Interview: from film, politics, sports and writers [Only one area or one personality to be selected].
6. Studies on individual celebrities in the fields of arts and literature. Example: a Nobel Prize winner, a dancer/singer/musician/film star, etc, of repute [Only one personality to be selected].
7. Studies based on any 5 newspaper editorials or articles by leading international or national columnists like Thomas Friedman, Paul Krugman, Anees Jung, etc.

8. Compilation and translation of any 5 folk stories of the region.

9. Analysis of the language used in email and sms. The study should focus on the language aspect used in such modes of messaging, limiting to 10 pieces of email/sms. [Reference: David Crystal *Txtng: the GR8 Dbt.* OUP, 2008]

10. Studies on popular folk art forms like Koodiyattam, Theyyam, Pulikali, Chakyar Koothu, Nangyar Koothu, Kalaripayattu, Kathakali, Mohiniyattam, Maargamkali, Oppanna, etc. [Only one art form to be selected].

11. Study on any 5 popular songs in English. Songs of popular bands like the ABBA, Boney M, Backstreet Boys, Beatles, Pink Floyd, Rolling Stones, Westlife, Boyzone, etc can be selected.

12. Study based on the life and works of one Nobel Prize winner in literature.

E. Details of Course Contents:

(1) Academic writing: The following areas are to be made familiar to the students during the course of the 3 instructional hours/week set aside for the same in the sixth semester:

(a) Selecting a Topic: pages 6–7.

(b) Compiling a Working Bibliography: pages 31-33.

(c) Writing Drafts: pages 46-49.

(d) Plagiarism and Academic Integrity: pages 51-61.

(e) Mechanics of Writing: pages [Spelling & Punctuation]: pages 63-78.

(f) Methods of quoting texts: pages 92 – 101.

(g) Format of the Research Paper: pages 115-121.

Reference text: *M.L.A. Handbook* 7th edition.

(2) Documentation of sources in the works cited page(s): Samples of different types of sources will be provided.

FIRST DEGREE PROGRAMME IN CAREER RELATED 2(a)

ENGLISH AND COMMUNICATIVE ENGLISH

(CBCS SYSTEM)

2015 Admissions onwards

SEMESTERS I to 6

(Core, Complementary, Vocational Open Courses)

SYLLABI

SEMESTER I

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

COMMUNICATIVE ENGLISH

Core Course I – READING POETRY: CG 1141

No. of credits: 3 **No. of instructional hours: 5 per week (Total: 90 hrs)**

AIMS

1. To sensitize students to the language, forms and types of poetry.
2. To make them aware of the diverse poetic devices and strategies.
3. To help them read, analyse and appreciate poetry.
4. To enhance the level of literary and aesthetic experience and to help them respond creatively.

OBJECTIVES

On completion of the course, the students should be able to

1. identify the various forms and types of poetry
2. explain the diverse poetic devices and strategies employed by poets.
3. read, analyse and appreciate poetry critically.
4. respond critically and creatively to the world around.

COURSE OUTLINE

Module 1:

- Subjective and Objective Poetry
- Types of Poetry: Lyric, Ode, Sonnet, Elegy, Ballad, Epic, Mock Epic, Dramatic Monologue, Haiku.
- Stanza – couplet, tercet, terza rima, ottava rima, quatrain, spensarian stanza, rime royal.
- Poetic devices: alliteration, assonance, simile, metaphor, image, symbol, rhythm, rhyme.
- Meter: Heroic Couplet, Free Verse and Blank Verse.

Module 2:

Representative poetry from British literature.

Module 3:

Representative poetry from American, Irish, German, Russian, Australian and Indian literatures.

Module 4:

Practical criticism – intensive reading of poems at phonological, structural and semantic levels. Critical analysis and appreciation of unseen poem.

COURSE MATERIAL

Module 1:

Core reading: Chapter 1 from *A Concise Companion to Literary Forms.* Emerald, 2013.

Reference

1. Abrams, M.H. *A Glossary of Literary Terms* (Rev. ed.)
2. Hobsbaum, Philip. *Metre, Rhyme and Verse Form*. New Critical Idiom. Indian Reprint.Routledge, 2007.

Reading List

1. Wainwright, Jeffrey. *The Basics: Poetry*. Indian Reprint. Routledge, 2009.
2. Hudson, W.H.: *An Introduction to the Study of English Literature* (Chapter 3, The Study of Poetry)

Modules 2:

1.	William Shakespeare	-	Sonnet 18 (Shall I compare Thee to a Summer's Day)
2.	John Donne	-	A Valediction Forbidding Mourning
3.	Thomas Gray	-	Elegy Written in a Country Churchyard
4.	Samuel Taylor Coleridge	-	Kubla Khan
5.	Robert Browning	-	Porphyria's Lover
6.	Siegfried Sassoon	-	A Subaltern

Core reading: *Aeolian Harp: An Anthology of Poetry in English*. Scientific International Pvt. Ltd, 2013.

Module 3:

1.	Robert Frost	-	The Road Not Taken
2.	Bertolt Brecht	-	General, Your Tank
3.	Louis Macneice	-	Prayer Before Birth
4.	Peter Porter	-	A Consumer's Report
5.	Kamala Das	-	An Introduction

Core reading: *Aeolian Harp: An Anthology of Poetry in English*. Scientific International Pvt. Ltd, 2013.

Module 4:

Practical criticism – intensive reading of poems at phonological, structural and semantic levels.

Core reading: *Aeolian Harp: An Anthology of Poetry in English*. Scientific International Pvt. Ltd, 2013.

Reference:

A Concise Companion to Literary Forms. Emerald, 2013.

Seturaman, V.S, Ed. *Practical Criticism*. Chennai: Macmillan, 2007.

Bernard Blackstone. *Practical English Prosody: a handbook for students.* Longman, 2009.

Instruction to Teachers:

- The work of each author has to be placed against the literary backdrop of the age.
- The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have an awareness of the respective works.
- Questions are not to be asked from such details at the examination.

SEMESTER I

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

COMMUNICATIVE ENGLISH

Vocational Course I - BASICS OF COMMUNICATION: CG 1171

No of credits: 3 **No of instructional hours: 3 per week (Total 54 hrs)**

AIM

1. To provide the students with an ability to build and enrich their communication skills.
2. To make them familiar with different types ofcommunication.
3. to understand the barriers to effective communication
4. engage students in meaningful communication through effective tasks.

OBJECTIVES

On completion of the course students should be able to:

1. Identify the basic principles of communication
2. Analyse the various types of communication
3. Make use of the essential principles of communication.
4. identify the prominent methods and models of Communication.

Module 1

Communication - definition – meaning – elements - basics of communication - communication process - importance of communication - the seven C's of communicationcompletness - conciseness – consideration – conctretness - claritycourtsey and correctness.

Module 2

Models of communication

Ancient - rhetorics - Aristotle - modern —Linear model - dynamic models

Module 3

Channels of communication - formal and informal – verbalnon – verbal - body language - sign language -para language circumstantial language - intrapersonal and interpersonal communication - group and mass communication - network communication - impact of IT on communication - pathways ofcommunication - downward – upward - horizontal.

Module 4

Barriers to communication - sender-centric – receiver-centric and organizational – socio-cultural - information overload - overcoming communication barriers.

COURSE MATERIAL

Reading list

1. Fisk, J. Introduction to Communicative Studies, 1990. London: Routledge.
2. Aggrval, Shalini. Essential Communication Skills, 2009. New Delhi: Anne Books.
3. Marsen, Sky. Communication Studies 2009. New York, Palg rave.
4. Knapp .M. Essentials of Non-Verbal Communication Theory Rea. 1995Orlando, FL: Harcourt.
5. Cobley. P. (ed.) The Communication Theory reader 1995, London: Routledge.
6. McQuail d. Communication, 1975; London; Longman.
7. Prince. S. Communication Studies, 1997. London. Longman.
8. Beck, Andrew et al, AS Communication Studies: The Essential Introduction. 2004. London. Routledge.

SEMESTER I

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Complementary Course - HISTORY OF ENGLISH LITERATURE [Semesters 1 to 3]

Common for FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

NOTE TO TEACHERS:

The syllabus - a rationale Books, and the authors who write them, have a complex relationship with the societies that produce them. It is hoped that this syllabus will help students develop both an understanding and an appreciation of some of the complexities involved in the production of and reception of British literature.

This syllabus is organised chronologically. It is intended to enable a student to understand the following things:

- One, how people lived during various ages in Britain.
- Two, what sort of social and political organisations evolved there.
- Three, what the beliefs and practices of the people were ie. how the culture of Britain evolved.
- Four, what kind of literature emerged out of these conditions.

None of these are dealt with at depth. A broad overall picture is what the student is expected to gain.

It is hoped that, apart from giving valuable background information that will enable students to understand and appreciate individual works from any age better, the syllabus will also help them develop a sense of history and the ability to organise, evaluate and present ideas from one coherent body of knowledge. This mental training should be as important as the facts that they study. Therefore teachers should take care to get students to read books and access other authentic sources to learn more about the topics covered.

SEMESTER I

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

Complementary Course – HISTORY OF ENGLISH LITERATURE- 1

Common for EN 1131 & CG 1131

B.A. English Main - Complementary Course I: EN 1131

No. of credits: 3 **No. of instructional hours: 3 per week (Total: 54 hrs)**

B.A. Career related 2(a) English and Communicative English -

Complementary Course I: CG 1131

No. of credits: 4 **No. of instructional hours: 4 per week (Total: 72 hrs)**

COURSE DESCRIPTION

Module 1:

The Early history of England - Roman Britain - The coming and settlement of the Germanic tribes - The arrival of Christianity - The Anglo Saxon Heptarchy - The Viking invasions - The reassertion of British control - Old English literature – Bede, *Beowulf*, King Alfred.

Module 2:

The Norman invasion – Feudalism - Middle English literature – Langland - *Sir Gawain and the Green Knight* - Medieval romances, alliterative verse – Chaucer – *The Canterbury Tales* - The beginnings of English drama - Miracle, morality and mystery plays, and Interludes.

Module 3:

The Renaissance - The Tudors - The English Reformation and Counter-reformation - Trade and colonialism - The Stuart Age - Elizabethan poetry – Spenser - Renaissance drama - Ben Jonson - The University Wits – Shakespeare – Bacon - Thomas More - Authorised (King James) Version of the Bible.

Core texts:

(1) *A Concise History of English Literature and Language,* Primus Books, Delhi 2013.

(2) Ashok, Padmaja. *The Social History of England*. Orient Black Swan 2011.

Books recommended:

Peck, John and Martin Coyle. *A Brief History of English Literature*. Palgrave, 2012. Poplawski, Paul Ed. *English Literature in Context*. CUP, 2008.

Thornley G C and Gwyneth Roberts. *An Outline of English Literature*. Pearson, 2011.

SEMESTER II

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Core Course II – READING DRAMA: CG 1241

No. of credits: 4 **No. of instructional hours: 5 per wk (Total: 90 hrs)**

AIMS

1. To enable the students to read, analyse and appreciate drama
2. To sensitize them to the verbal and visual language of drama
3. To help them watch, write about, and perform plays

OBJECTIVES

On completion of the Course, the students should be able to

1. identify the various forms and schools of drama
2. analyse and appreciate drama
3. write critically about and engage actively in producing / performing drama

COURSE OUTLINE

Module 1:

- Drama – Origins and early forms: Greek Drama, Mystery plays, Miracle Plays, Morality Plays and Interludes.
- The Major Dramatic Genres: Tragedy, Comedy, and Tragi-Comedy.
- Types of comedy – Romantic Comedy, Comedy of Humours, Comedy of Manners/ Restoration Comedy, Sentimental Comedy, farce, burlesque, black comedy.
- Types of Tragedy: Revenge Tragedy, Domestic Tragedy, Heroic Drama.
- Other forms: melodrama, masque, One-Act Plays, epic drama, absurdist drama, kitchen-sink drama
- Dramatic Devices – irony, soliloquy, aside, chorus.

Module 2: Shakespeare

Module 3: Modern drama (British / European/American)

Module 4: One-Act play.

COURSE MATERIAL

Module 1

Core reading: Chapter 2 from *A Concise Companion to Literary Forms.* Emerald, 2013.

Module 2

Core reading: Shakespeare: *Julius Caesar*

Module 3

Core reading: Arthur Miller: *All My Sons* (Oxford University Press)

Module 4

Core reading: J.M. Synge: *Riders to the Sea* (Orient Blackswan Edition)

Instruction to Teachers:

- The work of each author has to be placed against the literary backdrop of the age.
- The literary significance of the work is to be briefly discussed in the classroom and hence students are expected to have an awareness of the respective works.
- Questions are not to be asked from such details at the examination

SEMESTER II

First Degree Programme in English (CBCS System)

Common for B.A/B Sc [EN1211.1] & 2(a) [CG1271]

No. of Credits: 4 **No. of instructional hours: 6 per week (Total 90 hrs)**

ENVIRONMENTAL STUDIES

Module 1

Environmental studies: Definition, Need, Scope and Importance, Need for public awareness. Natural resources- Forest resources, water resources, mineral resources, food resources, energy resources, land resources- over exploitation, case studies.

Module 2

Eco-system- structure and function, producers, consumers and decomposers energy flow in the ecosystem, ecological succession, forest ecosystem, grassland ecosystem, desert ecosystem and aquatic ecosystem. Biodiversity and its value and conservation, hot spots of biodiversity, India as a mega-diversity nation, endangered and endemic species of India, conversation of bio-diversity. In-situ and Ex-situ conversation of bio-diversity. Sustainable use of forest – water- land -resources –Human population and its impact on environment.

Module 3

Pollution: air, water, soil and marine, noise, thermal and nuclear hazards. Solid waste management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Disaster management. Social issues and the Environment: from unsustainable

to sustainable development, water conversation-rain water harvesting; global warming; consumerism and waste products: various acts to protect the environment; Environment protection Act; Air (Prevention and Control of Pollution) Act; Water (Prevention and Control of pollution) Act; Wild Life Protection Act; Forest Conversation Act:

Module 4

Human population and Environment: Population explosion, Family Welfare Programmes, Environment and human health; human rights, HIV/AIDS, Women and Child Welfare, Role of Information Technology in Environment and Human health.

Field work and Project- Visit to ecologically polluted spots: Study of nature: study of forest, insects, animals, birds and plants. Project Report on the basis of field work about 15 pages.

Total Marks: 100

Written Exam: 60 Marks

Internal Assessment: 15 Marks (Attendance- 5 marks+ 10 test paper)

Field work and project: 25 Marks

Books for Reference:

Adams, W.M. Future Nature: A Vision for Conservation. London: Earthscan, 2003.

Arnold, David and Ramachandra Guha, ed. Nature, Culture and Imperialism:Essays on the Environmental History of South Asia. New Delhi: Oxford UPM 2001.

Bahuguna, Sunderlal. "Environment and Education". The Cultural Dimension of Ecology. Ed. Kapila Vatsyayan. New Delhi: D.K. Printworld. 1998.

Crson, Rachel. Silent Spring. Boston: Houghton Mifflin, 1962.

Guha, Ramachandra- Environmentalism: A Global History,New Delhi: Oxford UP, 2000.

Hayward, Tim. Ecological Thought: An Introduction: Cambridge; polity, 1994.

Merchant, Crolyn. The Death of Nature. New York: Harper, 1990.

Gleick H.P. 1993. Water in Crisis, Pacific Institute for Studies in development Environment and security. Stockholm Env Institute. OUP 473 p.

Heywood V and Watson R.E. 1995. Global biodiversity Assessment. CUP 1140p

Odum FP. 1971. Fundamentals of Ecology. W.B Saunders Co. USA 574p

Rao. M. N and Dutta A.K. 1987. Waste Water Treatmentt. Oxford and IBH Publ Co Pvt.

Wagner K.D. 1998. Environmental Management. WB Saunders Co. Philadelphia, USA. 499p.

SEMESTER II

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

Complementary Course – HISTORY OF ENGLISH LITERATURE - II

Common for EN 1231 & CG 1231

B.A. English Main - Complementary Course III: EN 1231

No. of credits: 3 **No. of instructional hours: 3 per week (Total: 54 hrs)**

B.A. Career related 2(a) English and Communicative English - Complementary Course II: CG 1231

No. of credits: 4 **No. of instructional hours: 4 per week (Total: 72 hrs)**

COURSE DESCRIPTION

Module 1:

The rise of Puritanism - The Civil War, Colonial Expansion, the Commonwealth and the Restoration in England, the impact of these on literature and social life - Donne and the metaphysical – Milton – John Bunyan - Restoration theatre.

Module 2:

The Eighteenth Century - Enclosures, urbanisation and the rise of the middle class – general literary ambience of the period.

Module 3:

The Enlightenment - the rise of modern science and the rise of capitalism - Coffee Houses in London as centres of social and political discussions - Essay and Novel - Neo-classical verse - Pope, Dryden, Swift, Dr Johnson and Daniel Defoe – periodicals – Addison, Steele.

Module 4:

The Romantic Age - Basic tenets of the Romanticism – French Revolution – Gothic writings -The precursors : Blake and Burns - Wordsworth and the Lake Poets – Coleridge - Keats, Shelley, Byron – Charles Lamb – Imperialism - Orientalism and slavery - The fiction of Jane Austen and Mary Shelley.

Core texts:

(1) *A Concise History of English Literature and Language,* Primus Books, Delhi 2013.

(2) Ashok, Padmaja. *The Social History of England*. Orient Black Swan 2011.

Books recommended:

Peck, John and Martin Coyle. *A Brief History of English Literature*. Palgrave, 2012. Poplawski, Paul Ed. *English Literature in Context*. CUP, 2008.

Thornley G C and Gwyneth Roberts. *An Outline of English Literature*. Pearson, 2011.

SEMESTER III

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

Foundation Course II – INFORMATICS: CG 1321

No. of credits: 3 **No. of instructional hours: 4 per week (Total: 72 hrs)**

AIMS

1. To update and expand basic informatics skill and attitudes relevant to the emerging knowledge society
2. To equip students to utilize the digital knowledge resources effectively for their chosen fields of study

OBJECTIVES

On completion of the course, the students should be able to

1. update and expand their knowledge in the field of informatics
2. understand the nature of the emerging digital knowledge society
3. use digital knowledge resources effectively for their studies

COURSE OUTLINE

Module 1: Informatics: an introduction.

History and development of computers – Types of computers – Personal Computers (PC) – Workstations – Laptops – Palmtops – Mobile devices – Notebooks – Mainframe computers – Super computers – IT and the Internet - Cyber ethics and cyber crimes like hacking and morphing.

Module 2: Basic Hardware and Software.

Monitor – CRT and LCD – CPU – Mouse – Keyboard – Ports – USB – Input/output devices – Printers – Scanners – Pen drives - Modems – Microphones – Speakers – Bluetooth devices.

Module 3: Operating Systems:

Microsoft Word – Excel – PowerPoint – Linux – Computer virus – Antivirus tools – File formats – jpg – jpeg – mp3 – zip – RAR.

Module 4: Net working and Internet:

What is networking? – LAN – WAN – Search engines – Social Net working.

COURSE MATERIAL

Modules 1 – 4:

Ravindran Asari - *The Basics of Informatics.* Scientific International Pvt. Ltd, 2013.

Reading list:

1. Alexis and Mathew Leon. *Fundamentals of Information Technology.* Leon Vikas
2. Beekman, George and Eugene Rathswohl. *Computer Confluence.* Pearson Education.
3. Norton, Peter. *Introduction to Computers*. Indian Ed.2. Evans, Alan, Kendal Martin et al *Technology in Action.* Pearson Prentice Hall, 2009.
4. Norton, Peter. *Introduction to Computers*. Indian Ed
5. Rajaraman, V. *Introduction to Information Technology*. Prentice Hall.

SEMESTER III

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

READING FICTION

Common for

ENGLISH LANGUAGE AND LITERATURE Core Course III: EN 1341

&

CAREER-RELATED FIRST DEGREE PROGRAMME (CBCS) - Group 2 (a) IN ENGLISH & COMMUNICATIVE ENGLISH Core Course III: CG 1341

No. of credits: 3 **No. of instructional hours: 4 per week (Total: 72 hrs)**

AIMS:

1. To make students aware of the diverse fictional forms in prose.
2. To enable them to analyse and appreciate various fictional writings.
3. To give them an insight into other cultures.
4. To help them think and write imaginatively.

OBJECTIVES

On completion of the course, the students should be able to

1. identify different fictional forms
2. analyse and appreciate fictional writings.
3. write imaginatively.

COURSE OUTLINE

Module 1

- Prose fiction - fable, short story, novel.
- Elements of fiction - plot, theme, characterization (flat and round characters), setting, point of view.
- Types of Novel – romance, picaresque novel, sentimental novel, epistolary novel, historical novel, gothic novel, science fiction, detective fiction, utopian, dystopian fiction, Bildungsroman - Creative-non fiction
- Narrative strategies - stream of consciousness, Meta fiction.

Module 2: Modern British fiction

Module 3: Modern European fiction

Module 4: Short Stories

COURSE MATERIAL

Module 1

Core reading: Chapter 3 from *A Concise Companion to Literary Forms.* Emerald, 2013.

Module 2

Core reading: George Orwell: *Animal Farm* (Penguin Edition)

Module 3

Core reading: Voltaire: *Candide* (Penguin Classics)

Module 4

Core reading: *Golden Threshold: An Anthology of One Act Plays and Stories One Act Plays,* Orient Blackswan, 2013:

The following short stories:

O'Henry	:	"Romance of a Busy Broker"
Katherine Mansfield	:	"The Little Girl"
A.C. Doyle	:	"The Red-headed League"
Norah Burke	:	"The Family Man"
R.K.Narayan	:	"Lawley Road"

Further reading

1. Klarer, Mario. *An Introduction to Literary Studies*. Sec. Ed. Indian Reprint. Routledge, 2009. (Section: Fiction)
2. Hudson,W. H. *An Introduction to the Study of English Literature*. (Chapter IV: The Study of Prose Fiction)

Instruction to Teachers:

- The work of each author has to be placed against the literary backdrop of the age.
- The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have an awareness of the respective works.
- Questions are not to be asked from such details at the examination.
- While discussing fiction, the formal, structural and stylistic aspects of the work should be referred to.

SEMESTER III

CAREER RELATED FIRST DEGREE PROGRAMME 2(a)

IN ENGLISH & COMMUNICATIVE ENGLISH

Core Course IV

20th CENTURY MALAYALAM LITERATURE IN ENGLISH TRANSLATION: CG 1342

No. of instructional hours: 3 per week **No of Credits: 3**

Aims: 1. To introduce the students to the richness of twentieth century Malayalam writing
2. To provide the students a basic understanding of twentieth century Malayalam Writing
3. To introduce to them some of the major twentieth century Malayalam writers
4. To help them analyse and appreciate twentieth century Malayalam literature.

Objective: On completion of the course, the students should be able to

1. Discern the richness of twentieth century Malayalam writing
2. Discern the distinctiveness of twentieth century Malayalam writing
3. Discuss the salient features of the works of major twentieth century Malayalam writers
4. Analyse and appreciate twentieth century Malayalam writing

COURSE OUTLINE

Module 1: Malayalam Poetry in the twentieth century

Module 2: Malayalam Novel in the twentieth century

Module 3: Malayalam Short Fiction in the twentieth century

COURSE MATERIAL

Module 1: Malayalam Poetry in the twentieth century.

The modern age – characteristics – the Romantics in Malayalam poetry – major poets – second generation of romantics and the early 20th century – Malayalam literature after independence – modernist phase in malayalam poetry – Changampuzha, O.N.V. Kurup, Vyloppilli Sreedhara Menon, Ayyappa Paniker, Sugathakumari, Kadammanitta Ramakrishnan, Balamani Amma, Vishnu Narayanan Namboodiri, D. Vinayachandran, Sachidanandan, Balachandran Chullikad,etc.

Detailed study of the following poems:

1.	ONV Kurup	-	"A Requiem to Mother Earth"
2.	Balachandran Chullikkad	-	"Where is John?"
3.	Sugatha Kumari	-	"The Temple Bell"
4.	Nalapat Balamani Amma	-	"The Story of the Axe"

Core Text: *In the Shade of the Sahyadri: Selections from Malayalam Poetry and Short Fiction***.** OUP, 2012.

Module 2: Malayalam Novel in the twentieth century

Malayalam short story in English translation – representative masters of the craft - Thakazhi Sivasankara Pillai, Basheer, Lalithambika Antharjanam, Paul Zacharia, etc.

Non-detailed study:Novels:

- Malayatoor Ramakrishnan, *Roots* (Novel), Tr. V. Abdulla, Orient Blackswan, 2009, 140 p.
- M. T. Vasudevan Nair, *Creature of Darkness*. Orient Longman

Module 3: Malayalam Short Fiction in the twentieth century

Malayalam short story in English translation – representative masters of the craft - Thakazhi Sivasankara Pillai, Basheer, Lalithambika Antharjanam, Paul Zacharia, etc. – new generation writers - modern women short story writers.

Short stories:

1)	Thakazhy Sivasankara Pillai	-	"In the Flood"
2)	Vaikkom Muhammed Basheer	-	"The World Renowned Nose"
3)	T.Padmanabhan	-	"The Girl Who Spreads Light"

4)	Paul Zacharia	-	"The Last Show"
5)	Lalithambika Antherjanam	-	"Wooden Cradles"
6)	C. Ayyappan	-	"Spectral Speech"
7)	Gracy	-	"Orotha and the Ghosts"
8)	Ashita	-	"In the Moonlit Land"
9)	Chandramati	-	"The (Postmodern) Story of Jyoti Vishwanath"
10)	K.R. Meera	-	"The Vein of Memory"

Core Text: *In the Shade of the Sahyadri: Selections from Malayalam Poetry and Short Fiction***.** OUP, 2012.

Recommended reading:

A Short History of Malayalam Literature - K. Ayyappa Paniker - Information & Public

Relations Department, Kerala State, April 2006. [available on: www.suvarnakeralam.kerala.gov.in/book.pdf] Introduction to *Ten Women Writers of Kerala.* Sreedevi K. Nair (ed) pages x – xx. [for 'Modern women short story writers']

Instruction to Teachers [Modules 1- 4]:

- Students may be given sufficient background information about the authors/genre included in Modules 2
- 4. Questions are to be asked only from the prescribed poems, fiction and drama in Modules 2 to 4.
- The work of each writer mentioned in modules 2 – 4 has to be placed against the literary backdrop of the age. The text referred to in Module 1 is to used for the purpose.
- The literary significance of the work prescribed is to be briefly discussed in the classroom. However the student is expected to have only a general awareness of the respective author.
- The major works of the writers mentioned in module 1 have to be made familiar to the students.
- Questions are not to be asked from Module 1 at the examination.

SEMESTER III

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

Complementary Course – HISTORY OF ENGLISH LITERATURE - III

Common for EN 1331 & CG 1331

B.A. English Main - Complementary Course V: EN 1331

No. of credits: 3 **No. of instructional hours: 3 per week (Total: 54 hrs)**

B.A. Career related 2(a) English and Communicative English -

Complementary Course III: CG 1331

No. of credits: 4 **No. of instructional hours: 4 per week (Total: 72 hrs)**

COURSE DESCRIPTION

Module 1:

The Victorian Age - The Reform Acts - Changes in social life - Industrialisation and its impact on the society - Rise of Oxford and Cambridge Universities - Spread of science and technology and its impact – Marx, Darwin, J.S. Mill, Freud - India and the Empire - The Victorian novel - Charles Dickens, George Eliot and Thomas Hardy - Victorian poetry - Arnold, Browning and Tennyson – Pre-Raphaelites – Oscar Wilde and the aestheticians.

Module 2:

Early 20th century - Influences on the social milieu - The First World War - The war poets – Modernism - T S Eliot, Yeats, Auden, Joyce, D.H. Lawrence, Virginia Woolf, Joseph Conrad, G B Shaw and the realists.

Module 3:

The mid-twentieth century and after - World War II - Life between the two World Wars - Effects of the Wars on society and literature - The dissolution of the British empire - The welfare state – Modern to the Post-modernism - Feminism and environmentalism.

Module 4:

Poetry, fiction and drama of the period - Life in the 60s, 70s and 80s - Larkin and the Movement - Ted Hughes, Carol Ann Duffy - George Orwell, Kingsley Amis, Graham Green, Salman Rushdie - Samuel Beckett, Harold Pinter and Tom Stoppard – new trends in English theatre – Literature and New Media in Contemporary England - Contemporary life in England.

Core texts:

(1) *A Concise History of English Literature and Language,* Primus Books, Delhi 2013.

(2) Ashok, Padmaja. *The Social History of England*. Orient Black Swan 2011.

Books recommended:

Peck, John and Martin Coyle. *A Brief History of English Literature*. Palgrave, 2012. Poplawski, Paul Ed. *English Literature in Context*. CUP, 2008.

Thornley G C and Gwyneth Roberts. *An Outline of English Literature*. Pearson, 2011.

SEMESTER III

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

COMMUNICATIVE ENGLISH

Vocational Course III: COPY EDITING: CG 1371

No. of credits: 4 **No. of instructional hours: 4 per week (Total: 72 hrs)**

AIMS

1. To familiarize students with the concepts of copy- editing.
2. To impart to them basic copy-editing skills.
3. To help them find employment in the publishing field.

OBJECTIVES

On completion of the course, the students should be able to

1. copy-edit non–technical materials of moderate difficulty.
2. produce consistently well-organized written discourse.
3. find employment in the editing field as copy-editors and sub-editors.

COURSE OUTLINE

Module 1

What is copy-editing - scope and need - various typescripts - electronic - conversion of manuscripts - copy-editing - preliminary steps.

Module 2

Preparing the text - the quantity of copyediting needed - interacting with the author - creation of self-contained, well-edited copies and books - coherence and consistency - the question of copyrights - acknowledgements and other legal issues - incorporating illustrations - copy-editing blurbs and titles and cover descriptions - dealing with multiauthorship - proof-reading - repeated proofs.

Module 3

The problem of style - the concept of in-housestyle - in-house style manuals - the question of grammar – abbreviations-concord-nouns - proper nouns-punctuation-spelling-ambiguity – dates – money measurements - a brief understanding of the make-up of a standard book - preliminary pages - indexing a book - bibliographical references - special books like scientific and technological books - On-screen copy editing – definition - scope - different types - technical issues involved - legal and safety concerns - software tools.

Module 4 Practice session

On grammatical trouble points - use of MLA Handbook as an in-house style manual – basic copy-editing using materials such as assignments and projects from students - use of electronic versions of these materials for onscreen copy- editing practice.

COURSE MATERIAL

Reading list

1. *Chicago Manual of Style,* 15th Edition of *Manual of Style.* University of Chicago, 2003.
2. Greenbaum, Sidney and Janet Whitcut, Longman *Guide to English* Usage. Harmondsworth: Penguin,1996.
3. Huddleston, R and Geoffrey K. Pulia, A *Student's Introduction to English Grammar.* CUP, 2005.
4. New Hart's Rules; The *Handbook of Style for Writers and Editors*. Oxford University Press, 2005.
5. *New Oxford Dictionary for Writers and Editors:* The *Essential A to Z Guide to the Written Word.* OUP, 2005.
6. Turtoa, ND and Heaton, JB. *Dictionary of Common Errors*. Longman, 1998.
7. Suttcliffe, Andrea J, Ed., *The New York Public Library Writer's Guide to Style and Usage.* Macmillan, 2000.

Reference

Butcher, Judith, et al. *Butcher's Copy-editing,* Fourth Edition. New Delhi:

SEMESTER IV

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

Core Course V – READING PROSE: CG 1441

No. of credits: 3 **No. of instructional hours: 4 per week (Total: 72 hrs.)**

AIMS

1. To help students understand and appreciate different types of prose writing.
2. To introduce to them the basics concepts of style and literary devices in prose.
3. To acquaint them with cultural diversity and divergence in perspectives.
4. To enable them to write creatively and critically.

OBJECTIVES

On completion of the course, the students should be able to:

1. recognize various types of prose writings.
2. analyse, understand and appreciate prose writings
3. write creatively and critically in an expository or argumentative way.

COURSE OUTLINE

Module 1

- Essay – formal/impersonal essay and informal/personal essay
- Types of essays: periodical essay, critical essay
- Life Writing: biography, autobiography, memoir and diaries.

Module 2: Prose up to the 18th Century.

Module 3: 19th Century Prose

Module 4: Modern Prose

COURSE MATERIAL

Module 1:

Core reading: Chapter 4 from *A Concise Companion to Literary Forms.* Emerald, 2013.

Module 2:

Core reading: *Reflections* (A Collection of Essays published by Pearson Education) Essays: 1. Bacon: of Studies

2. Samuel Pepys: (An extract from Pepys' Diaries) 1660 Jan - Feb.
3. Addison: *Sir Roger at the Assizes*
4. James Boswell: (An extract from *Life of Samuel Johnson*)

Further reading

Hudson, W.H. *An Introduction to the Study of English Literature*. Chapter: The Study of The Essay.

Module 3:

Core reading: *Reflections* (A Collection of Essays published by Pearson Education) Essays*:* 1. Lamb: *Dream Children*

2. Hazlitt: *On Familiar Style*
3. Ruskin: *On Reading*

Module 4:

Core reading: *Reflections* (A Collection of Essays published by Pearson Education) Essays: 1. Robert Lynd: *Indifference*

2. Camus: *Nobel Prize Acceptance Speech*
3. Anne Frank: *The Diary of a Young Girl* (an extract)

Instruction to Teachers:

- The work of each author has to be placed against the literary backdrop of the age.
- The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have an awareness of the respective works.
- Students should be made to listen to and read speeches and prose passages.
- Questions are not to be asked from such details at the examination

SEMESTER IV

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

Core Course XI - WORLD CLASSICS: CG 1442

No. of credits: 3 **No. of instructional hours: 4 per week (Total: 72 hrs)**

AIMS

1. To introduce students to the world of the classics in literature.
2. To broaden their outlook and sensibility.

OBJECTIVES

On completion of the Course, the students should be able to

1. read and appreciate classical works.
2. evaluate classical texts critically.
3. place and assess their own culture and classics.

COURSE OUTLINE

Module 1

Classics – literary classics – definition – critical concepts – the emergence of classics – a brief survey of the classics.

Greek and Roman: Homer – Virgil – Aeschylus – Sophocles – Euripides – Aristophanes – Nikos Kazantzakis.

Italian: Dante – Boccaccio – Tasso – Ariosto - Machiavelli – Alberto Moravia. Sanskrit: Vyasa – Valmiki – Kalidasa – Sudraka – Bhasa – Shri Harsa – Jayadeva. German: Goethe – Hesse –

Russian: Pushkin – Gogol – Dostoevsky – Tolstoy - Chekhov – Gorky – Pasternak – Solzhenitsyn.

Module 2: Poetry

Module 3: Drama

Module 4: Fiction

COURSE MATERIAL

Module 1

Reference

1. Beard, Mary, and John Henderson. *Classics; A Very Short Introduction.* Indian Edition, OUP, 2006.
2. Highet, G. *The Classical Tradition*. Oxford University Press, 1949.
3. Eliot, T.S. 'What is a Classic?
4. Nicoll, Allardyce. *World Drama from Aeschylus to Anouilh*. New York: Harcourt Brace, 1950.
5. Hadas, Moses. *Greek Drama*. Bantam Classics, 1983.
6. Abrams, M.H. *A Glossary of Literary Terms.*

Module 2

Core reading: Kalidasa: *Ritusamhara.* Canto One. Summer (From KALIDASA: THE LOOM OF TIME translated by Chandra Rajan, Penguin Books).

Module 3

Core reading: Sophocles: *Antigone* (Cambridge University Press)

Module 4

Core reading: Kazantzakis: *Zorba the Greek* (Penguin Classics)

Instruction to Teachers [Modules 1 to 4]:

- The work of each author in Module 1 has to be placed against the literary backdrop of the age.
- Only the major works of the writers mentioned in Module 1 are to be made familiar to the students.
- Only short answer-type questions [Qn. II] and Short Essay-type questions [Qn. III] are to be asked from Module 1 at the examination.
- The literary significance of the works prescribed for study in Modules 2 – 4 are also to be discussed in the classroom. However the student is expected to have only a general awareness of the respective author/work.

SEMESTER IV

First Degree Programme in English (CBCS System)

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH (CG 1431)

COMPLEMENTARY COURSE- HISTORY OF ENGLISH LANGUAGE AND PHONETICS

No. of Credits: 4 **No. of instructional hours: 4 per week (Total 72 hrs)**

Module I

Nature of Language –Indo European family-Germanic group-the descent of English-the rise of standard English-contribution of major writers to the English language- Chaucer, Spenser, Shakespeare, Milton- the impact of bible translations on the English Language.

Module II

Development of Dictionaries-Dr. Johnson's Dictionary-word formation and growth of vocabulary-Semantics- present day trends in English language- English as a global language.

Module III

What is phonetics? Speech Mechanism and organs of speech, Received Pronunciation- Classification of speech sounds-Vowels-consonants-Description of vowels and consonants-transcription, syllable, syllable structure.

Module IV

Stress, word stress, sentence stress, rhythm, intonation- falling, rising, assimilation, elision, practice sessions, use of language lab.

Reference

1. Jones, Daniel. English Pronouncing Dictionary. 17th Edn. CUP
2. Marks, Jonathan. English Pronunciation in Use. Elementary. CUP, 2008.
3. Baugh. A.C. A History of the English Language
4. Barber. C.L. The Story of Language. Penguin, 1982.
5. Wood F.T. An Outline History of the English Language. Macmillan, 2008.
6. Crystal, David. English as a Global Language. London: Cambridge University Press. 1997.

SEMESTER IV

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) IN

ENGLISH & COMMUNICATIVE ENGLISH

Vocational Course IV - PRINT AND ONLINE WRITING: CG 1471

No of credits: 4 **No of instructional hours: 4 per week (Total 72 hrs)**

COURSE OUTLINE

Module 1:

- Introduction to print media; History and its development.
- Brief history of printing and publication in India.

Module 2

- News; News value; element of news; News Gathering techniques in general
- Types of reporting ; Qualities of a reporter
- Structure and format of news-pyramid, inverted pyramid, hour glass style
- Changing trends in journalistic writing.

Module 3:

- Online writing; Evolution, development, Features
- Online communication; Blogs; WWW, Social Networking sites.
- Cyber crime, E- Governance, Mobile Governance, Wiki leaks

COURSE MATERIAL

Reference:

Print

1. Ahuja B.N and S S Chabra. *Principles and Techniques of Journalism*. Surjeet Publications, 2006.
2. Aluwalia J.P. *Modern News Structure in Print Media and Electronic Media*. Adyayan Publishers New Delhi, 2007.
3. Burns, Lynette Sheridan. *Understanding Journalism.* Vistar Publications, New Delhi 2002.
4. Khandekar Vanitha Kochler; *The Indian Media Business*. Vivek Mehta response Books, New Delhi, 2003.

5. Parthasarathy Rangaswami. *Journalism in India*. Sterling Publishers, New Delhi, 1997.
6. Parthasarathy Rangaswami. *Basic Journalism India*. Macmillan India Ltd, Madras 1997.
7. Prabhakar Navel and Basu Narendra. *Encyclopedia of Mass Media and Communication in the 21st Century* V.1. Commonwealth Publishers, New Delhi , 2006.

Cyber Journalism

1. Dewdney Andrew and Ride Peter, *New Media Hand Book*, Routledge, London, 2009
2. Dorner Jane. *Writing for the Internet*. Oxford , New York, 2002
3. Kumar Arawind, *Online News*, Amnol Publishers, New Delhi, 2011.
4. Ray Tapas, *Online Journalism,* Cambridge University Press, New Delhi, 2009.
5. Siapera Eugenia, *Understanding New Media*, Sage publications 2012.

SEMESTER IV

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System)

ENGLISH & COMMUNICATIVE ENGLISH

Vocational Course V - THEATRE STUDIES: CG 1472

No. of credits: 4 **No. of instructional hours: 4 per week (Total: 72 hrs)**

Aims

1. To provide an introduction to theatre studies
2. Familiarize the students with fundamental theories on theatre
3. Introduce the students to Western and Indian theatre

Objectives

1. To sensitize students that theatre is praxis
2. To develop the listening and writing skill of students
3. To help students appreciate theatre
4. Respond creatively to the world around

COURSE OUTLINE

Module 1: Origin of Western theatre

What is theatre? — Short intro to Greek playwrights and practice –Seneca – Miracles – Moralities – Mysteries – Chorus and its evolution – Aristotle's theory of drama – mimesis – catharsis – Elizabethan stage and conventions – Jacobean theatre – Restoration theatre conventions – 19th century English theatre.

Core reading

1. Harold Bloom Ed. *Greek Drama*. Aristotle, *Poetics.* Philadelphia: Chelsea House. 2004. 35 – 50.
2. Harold Bloom Ed. *Greek Drama*. Friedrich Nietzsche*, The Birth of Tragedy.* 97 – 114.

References

1. Harold Bloom Ed. *Greek Drama*. Friedrich Schiller "The Use of the Chorus in Tragedy." Philadelphia: Chelsea House. 2004. 17 – 24.

2. Harold Bloom Ed. *Greek Drama*. Lane Cooper: "Introduction to *Ten Greek Plays"* 25 – 34.

3. Harold Bloom Ed. *Greek Drama*. William Arrowsmith*:* "The Criticism of Greek Tragedy" 51 – 78.

4. Peter Womack. *English Renaissance Drama*. Oxford: Blackwell. 2006.

5. John O'Brien. "Drama: Genre, Gender, Theatre." *A Concise Companion to the Restoration and Eighteenth Century*. Ed. Cynthia Wall. Oxford: Blackwell. 2005. 183 – 201.

Module 2: **Introduction to Indian theatre**

Temple culture – Folk theatre – Basic concepts of art experience – Sah daya – Bhasa – Kalidasa – Dance drama – Theatre in Kerala – Kathakali – Kutiyattam - 20th century Indian theatre.

Core reading: M. Hiriyanna. "The Number of Rasas." *Art Experience*. Mysore: Kavyalaya. 1997. 69 – 72.

References

1. M.L.Varadpande. *History of Indian Theatre*. "Origins."New Delhi: Abhinav Publications. 2005. 9 – 38.

2. Philip B. Zarrilli. "A Social history of Kathakali: Personage, Connoisseurship and Aesthetics."*Kathakali Dance-drama: where gods and demons come to play*. London: Routledge, 2000. 17 – 38.

3. P.Venugopalan Ed. *Kutiyattam Register* "Kutiyattam" Thiruvananthapuram:Margi, 2007. 21–34.

4. Ananda Lal. "A Historiography of Modern Indian Theatre." *Modern Indian Theatre: A Reader*. Ed. Nandi Bhatia. New Delhi: Oxford UP. 2009. 31 – 40.

5. Mahesh Dattani. "Contemporary Indian Theatre and its Relevance." *Modern Indian Theatre: A Reader.* 469 – 472.

Module 3

Sub-genres: Problem Play – Poetic drama – Epic theatre – Radio play – Absurd theatre – Metatheatre – Postcolonial theatre.

Core reading

1. Martin Esslin. "Introduction: The Absurdity of the Absurd." *The Theatre of the Absurd*. 3rd Ed. Britain: Penguin. 1980. 19 – 28.

2. Helen Gilbert & Joanne Tompkins. "Introduction: Re-acting (to) Empire" *Post-Colonial Drama: Theory, Practice, Politics.* London & New York: Routledge. 1996. 1 – 14.

Reference

Kenneth Pickering. *Key Concepts in Drama and Performance*. New York: Palgrave Macmillan, 2005.

Module 4

Praxis: Writing dialogues – Preparation of script for acting based on narratives/stories/reports – Learning the process of staging a play through an enactment of the prepared script(s) which may be group activity in the class. The class may be divided into groups and they can be assigned specific tasks like script writing, choreography etc which can finally lead to the production of the script.

(This module must be effectively used by the teacher for internal/continuous assessment and so no separate texts for study is provided)

General reference

1. Keir Alam. *The Semiotics of Theatre and Drama*. London, Methuen, 1980.
2. Christopher M. Byrski. *The Concept of Ancient Indian Theatre*. New Delhi, Munshilal Manohardas, 1974.
3. Rachel Baumer and James Brandon, eds. *Sanskrit Drama in Performance*. Honolulu, Univ of Hawaii Press, 1981

SEMESTER V

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE AND LITERATURE (CBCS System)

&

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) (CBCS System) ENGLISH & COMMUNICATIVE ENGLISH

Core Course - LITERARY CRITICISM:

Common for EN 1541 & CG 1541

B.A. English Main – Core Course VI: EN 1541

No. of credits: 4 **No. of instructional hours: 5 per week (Total: 90 hrs)**

B.A. Career related 2(a) English and Communicative English – Core Course VII: CG 1541
No. of credits: 4

No. of instructional hours: 5 per week (Total: 90 hrs)

AIMS

1. To give the students a historical overview of the critical practices from classical period to the present.
2. To introduce to them some of the significant concepts that had a seminal influence on the development of critical thought.
3. To develop in them a critical perspective and capacity to relate and compare various critical practices and schools.
4. To help them read and analyze literary texts from different perspectives.

OBJECTIVES

On completion of the course, the students should be able to

1. trace the development of critical practices from ancient times to the present.
2. explain the critical concepts that emerged in different periods
3. analyze and appreciate texts critically, from different perspectives.

COURSE OUTLINE

Module I

A. Classical Criticism:

Nature and function of criticism – contributions of Plato – concept of mimesis and inferiority of art – Aristotle –major concepts – mimesis, katharsis, hamartia – definition of tragedy – parts of tragedy – Horace and the concept of decorum –Longinus – the sublime.

B. Indian Aesthetics:

Theory of Rasa, Vyanjana and Alankara.

[The relationship between Unit A and Unit B to be discussed. For eg. The concept of Rasa and purgation, Alankara and figures of speech, etc.]

Core reading [Unit B]:

Sethuraman. V.S. Ed. *Indian Aesthetics: An Introduction.* Macmillan, India, 1992.

- Das Gupta,S.N. "The Theory of Rasa", (pp 191-196) in *Indian Aesthetics: An Introduction.* Ed. V.S. Sethuraman. Macmillan, India,1992.
- KuppuswamiSastri. "The Highways of Literary Criticism in Sanskrit" (pp. 173–190), in *Indian Aesthetics:An Introduction.* Ed. V.S.Sethuraman. Macmillan India, 1992.
- Raghavan, V. "Use and Abuse of Alankara" (pp. 235–244) in *Indian Aesthetics: An Introduction*. Macmillan India, 1992.

Module 2: Renaissance and Neo-Classical Criticism:

Sir Philip Sidney – his "Defence of Poetry" – definition of poetry – neo-classicism – Dryden – estimate of authors – Johnson – **"**Lives of Poets" – Shakespeare criticism – moral judgment of literature.

Module 3: Romantic and Victorian Criticism:

Romanticism – Wordsworth – "Preface to Lyrical Ballads" – definition of poetry – concept of poetic diction and language – Coleridge – definition of poetry – Fancy and Imagination.

The Victorian Period: Arnold – concept of culture – the function of poetry – touchstone method – disinterestedness and high seriousness – moralistic criticism.

Module 4: Twentieth Century Criticism:

Eliot and Modernism – "Tradition and Individual Talent" – historic sense – impersonality – poetic emotion –objective correlative – dissociation of sensibility – Richards and "Practical Criticism" – poetry and synaesthesia – scientific and emotive uses of language – four kinds of meaning.

COURSE MATERIAL

Modules 1 – 4 Core reading:

Nagarajan, M.S. *English Literary Criticism and Theory*: *An Introductory History*. Hyderabad: Orient Longman, 2006.

Further reading:

1. Abrams, M.H. *A Glossary of Literary Terms*.Seventh Edition. Singapore: Thomson & Heinle, 1999.
2. Wimsatt Jr., William K. and Cleanth Brooks. *Literary Criticism: A Short History*. Calcutta: Oxford and IBH, 1957.
3. Waugh, Patricia. *Literary Theory and Criticism: An Oxford Guide.* New Delhi: OUP, 2009.
4. Seldon, Raman et al, *A Reader's Guide to Contemporary Literacy Theory.* New Delhi: Pearson Education, 2005.

5. Bennet Andrews and Nicholas Royale. *Introduction to Literature, Criticism and* edition. New Delhi: Pearson Education, 2009.

6. Harmon, William, Hugh Holman.*A Handbook to Literature.* 10th Edition. New Delhi: Pearson Education, 2009

SEMESTER V

FIRST DEGREE PROGRAMME (CBCS System)

CAREER-RELATED FIRST DEGREE PROGRAMME (CBCS) - Group 2 (a) IN

ENGLISH & COMMUNICATIVE ENGLISH

Core Course VIII - FILM STUDIES: CG 1542

No. of credits: 3 **No. of instructional hours: 4 per week (Total: 72 hrs)**

AIMS

1. To give the students basic knowledge in the history, art and culture of motion picture.
2. To introduce to them the key concepts in film studies.
3. To help them analyze and appreciate films.
4. To enable them pursue higher studies and careers in film.

OBJECTIVES

On completion of the course, the students should be able to

1. discover the language of cinema
2. explain the key concepts in film studies.
3. analyse films as texts.
4. write critically about films.

COURSE MATERIAL

Module 1: **Understanding film**

What is film – its hybrid nature – the language of cinema – authorship - a brief history – film movements – Montage theory and Soviet cinema of the 20s – German expressionism and experiments with mise-en-scene – French poetic realism – classical Hollywood cinema and genre – Italian neo-realism – French New wave - contemporary international trends.

Module 2: **Indian Cinema**

Phalke and the desi enterprise – Indian cinema 30s to the 60s – The golden 50s – Indian art cinema and the Indian New wave – History of Malayalam Cinema – New wave in Malayalam cinema – Contemporary trends in Malayalam cinema

Module 3: Literature and Film

Literary language and Film language- adaptation and notions of fidelity- Narrative structure and strategies in film and fiction - time, space, character and setting - dialogue – music – sound effects.

Module 4: **Film analysis**

Films for close viewing:

Psycho

Rashomon

My Fair Lady

Chemmeen

COURSE MATERIAL

Core text:

Introduction to Film Studies [Reading the Popular series]. Orient Blackswan, 2013.

Reading list

1. Villarejo, Amy. *Film Studies: the Basics.* Routledge, Indian Reprint, 2009.
2. Hayward, Susan. *Key Concepts in Cinema Studies.* London: Routledge, 1997.
3. Bywater, Tim and Thomas Sobchack. *Introduction to Film Criticism*. Pearson India, 2009.
4. Corrigan, Timothy, J. *A Short Guide to Writing about Film*. Pearson India, 2009.
5. Kupsc, Jarek. *The History of Cinema for Beginners.* Chennai: Orient Blackswan, 2006.
6. Dix, Andrew. *Beginning Film Studies*. New Delhi: Viva Books, 2010.
7. Stam, Robert and Alessandra Raengo. *Literature and Film: A Guide to Theory and Adaptation.* Oxford: Blackwell, 2003.

Suggested viewing list

Michael Radford's *Il Postino*

Robert Wiene's *The Cabinet of Dr. Caligari*

Sergei Eisenstein's *Battleship Potemkin*

Victorio De Sica's *Bicycle Thief*

John Ford's *Stagecoach*

Mehboob's *Mother India*

Satyajit Ray's *Pather Panchali*

Abbas Kiarostami *Ten*

Note to the teacher

The objective of this course is to enable literature students to understand the language of cinema as also the ways in which that language is different from a literary language. Simultaneously they could also be taught the specificities of medium, narrative and the history of cinema. The lectures should use a lot of clips from different films to illustrate the points. It is strongly recommended that films or film clips should be screened as far as possible for every topic of this course. Any film of the teacher's choice other than the ones suggested may also be screened to illustrate the specific topics. The four films selected for close analysis help in understanding the narrative techniques of cinema, its engagements with sound, music and songs as also modes of adaptation from genres such as short story, play and novel.

SEMESTER V

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) IN

ENGLISH & COMMUNICATIVE ENGLISH

Core Course IX - INDIAN WRITING IN ENGLISH: CG 1543

No. of credits: 3 **No. of instructional hours: 3 per week (Total: 54 hrs)**

AIMS

1. To introduce students to Indian writing in English.
2. To broaden and sharpen their aesthetic and analytical skills.

OBJECTIVES

On completion of the course, the students should be able to

1. trace the development of Indian writing in English.
2. explain the Indianness in Indian literature in English.
3. read and appreciate Indian literature.
4. analyse the strength and constraints of Indian English as a literary medium.

COURSE OUTLINE

Module 1: Poetry.

Module 2: Drama.

Module 3: Fiction.

COURSE MATERIAL

Module 1: Poetry.

Core reading:

Poems:

1. Toru Dutt: The Lotus [*The Golden Treasury*]
2. Sarojini Naidu: Village Song [*The Golden Treasury*]
3. Keki Dharuwalla: The Ghagra in Spate [*Ten Twentieth Century Indian Poets*]
4. Kamala Das: My Grandmother's House [*Ten Twentieth Century Indian Poets*]
5. Nissim Ezekiel: Goodbye Party for Miss Pushpa T.S. [*Ten Twentieth Century Indian Poets*]
6. R. Parthasarthy: from Exile [*Ten Twentieth Century Indian Poets*]
7. Gieve Patil: On Killing a Tree [*Ten Twentieth Century Indian Poets*]
8. A.K. Ramanujan: A River [*Ten Twentieth Century Indian Poets*]

Core reading:

(a) *The Golden Treasury of Indo-Anglian Poetry* Ed. V. K. Gokak. Sahiyta Akademi.

(b) *Ten Twentieth Century Indian Poets*. Ed. R. Parthasarathy. OUP.

Module 2: Drama.

Core text: *Instant Impact: A Selection of Six One-Act Plays*. Indian Open University Publishers, Chennai.

Non detailed study of the following short plays:

Rabindranath Tagore: *Chandalika.*

Mahashweta Devi: *Bayen.*

Module 3: Fiction.

Core reading: M. T. Vasudevan Nair. *The Mist*. (Tr. Premila V. M.) Orient Blackswan.

Recommended Reading:

1. Iyengar, K. R. Srinivasa. *Indian Writing in English.*
2. Naik, M.K. *A History of Indian English Literature.*

Instruction to Teachers:

The work of each author has to be placed against the literary backdrop of the age. The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have an awareness of the respective works. Questions are not to be asked from such details at the examination.

SEMESTER V

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) IN

ENGLISH & COMMUNICATIVE ENGLISH

Open Course I - CREATIVE WRITING: CG 1551.1

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

AIMS

1. To make the students aware of the various aspects of Creative Writing.
2. To expose and familiarise the students to representative English writers and their works.
3. To equip the students to attempt at practical creative writing.
4. To strengthen the creative talents and writing skills.

OBJECTIVES

1. To identify different poetic forms.
2. To analyse and appreciate poems and short stories.
3. To write book and film reviews.
4. To appreciate literary works.

COURSE OUTLINE

Module 1

Poetry - introduction: Chief elements: theme, structure, imagery and symbols, rhythm – reference to major poetic forms [with representative/select examples] like lyric, sonnet, ode, ballad, epic, dramatic monologue, and free verse.

Practice sessions: critical appreciation of the given poems - emphasis on theme, structure, style, symbols, images, rhythm and diction.

- William Blake - "The Lamb"
- Emily Dickinson – "I Heard a Fly Buzz When I Died"
- Wole Soyinka – "Telephone Conversation"
- RabindranathTagore – "Where the Mind is Without Fear"
- Kamala Das – "A Hot Noon in Malabar"

Poetry writing sessions: based on common/everyday themes in various forms – to initiate students into poetry writing.

Module 2

Short Story - introduction: Characteristic features of short stories in general – plot construction, characterization, narration, local colour, atmosphere and title.

Short story appreciation: critical appreciation of the given stories and their authors - emphasis on theme, structure, style, images and dialogue.

- Edgar Allan Poe – "The Oval Portrait"
- Chinua Achebe – "The Voter"
- A.C. Doyle: The Adventure of the Speckled Band
- Kushwanth Singh – "The Portrait of my Grandmother"

Short story writing sessions: based on topics/themes - to be given in the class - from everyday life and situations.

Module 3

(a) **Writing for Children**: Varieties – themes – fantasy - language – imparting values and morals – illustrative examples.

Required reading:

- Lewis Carroll – *Alice in Wonderland* [Abridged version]
- C.S. Lewis - *The Chronicles of Narnia: The Lion, the Witch and the Wardrobe.*
- Khyrunnisa A – *Howzzat Butterfingers!* Puffin Books, 2010.

(b) Science Fiction: Characteristic features – characterization - plot construction – setting – title - impact on films – representative examples: R.L.Stevenson: *Dr. Jekyll and Mr. Hyde*, H.G. Wells: *Time Machine*, Jules Verne: *20,000 Leagues Under the Sea*.

Module 4

Book and Film reviewing: Elements of book/film reviewing – pertinent questions that a good review must answer – aim/purpose of book and film reviews - sample book/film reviews from newspapers and magazines.

Practice sessions: Writing book and film reviews - of classics and recently published/released books/films.

Books for general reference

1. Abrams, M.H. *A Glossary of Literary Terms*. Seventh Edition.
2. Prasad, B. *A Background to the Study of English Literature*. Macmillan.

3. Bernays, Anne and Pamela Painter. *What If?: Writing Exercises for Fiction Writers*. William Morrow & Company, Nov 1991.

Direction to the Teachers

- Focus should be on the main points mentioned in the contents of the syllabus. These are to be illustrated with the examples mentioned in the respective modules.
- Practice sessions should be arranged within the classroom to enable the students to try their hands at the various categories mentioned within each module. Multiple examples may also be mentioned in the class.
- Questions are not to be asked from any of the individual titles/works mentioned and will only be on general comprehension: on the contents of the course structure mentioned in each module, including the writers mentioned in the syllabus.

SEMESTER V

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) IN

ENGLISH & COMMUNICATIVE ENGLISH

Open Course I - TRANSLATION STUDIES - CG 1551.2

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

AIMS

1. To familiarize students with the concepts and theories of translation.
2. To introduce to them the art of translation.
3. To help them pursue translation as a profession.

OBJECTIVE

On completion of the course, the students should be able to

1. explain the concepts and theories of translation.
2. undertake various translation works.
3. find employment as translators.

COURSE OUTLINE

Module 1: Fundamentals of translation

Definitions – a brief history of translation in Malayalam – Theories of translation – linguistic – literary – cultural – communicative – Types of translation – Literary – Non-Literary – Technology aided translation.

Module 2: Key Concepts

Source language – Target language – Afterlife – Linguistic and cultural systems – faithfulness – confusions – equivalence

Module 3: Case Studies

1. Analysis of a translated Text:
    a. From Malayalam to English

i. A story
ii. A poem

b. From English to Malayalam

1. A story
2. Problems of translations

Module 4: Translation practice

a. Non – Literary (Equivalent technical terms – idioms, phrases, proverbs in English and Malayalam – Translation of sentences and passages from English to Malayalam and vice–versa)

b. Literary (Translation of short literary prose pieces including fiction from English to Malayalam and vice-versa)

COURSE MATERIAL

Modules 1 - 4

Core reading: *Word Worlds* (Oxford University Press)

Further reading

1. Hatim, Basil and Jeremy Munday. *Translation: An Advanced Resource Book*. London: Routledge, 2004.
2. Palumbo, Giuseppe. *Key Terms in Translation Studies*. Continuum, 2009.
3. Vasudevan Nair, M.T. *Kuttiedathi and Other Stories*. Abdulla, V. tr. Hyderabad: Orient Black Swan, 2009.
4. Ramakrishnan, Malayattoor. *Roots*. Abdulla, V. tr. Hyderabad: Orient Black Swan, 2009.
5. Basheer, Vaikom Muhammed. *Poovan Banana and Other Stories*. Abdulla, V. tr. Hyderabad: Orient Black Swan, 2009.
6. Abdulla, V.and R.E. Asher, Ed. *Wind Flowers*. New Delhi: Penguin, 2004.
7. *O. Hendriyude Theranjedutha Kathakal* tr. by C N Ashly. Papion, Kozhikodu.
8. *'Vanampadiyodu'* by Vyloppilly Sreedhara Menon. (Translation of Keats' Ode to a Nightingale)

SEMESTER V

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) IN

ENGLISH & COMMUNICATIVE ENGLISH

Open Course I - ENGLISH FOR THE MEDIA: CG 1551.3

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

AIMS

1. To sensitize students to the English language used in the media
2. To make them professionally skilled and employable in the media.

OBJECTIVES

On completion of the Course, the students should be able to

1. explain the nature and scope of the communication media
2. write headlines and articles for newspapers and magazines and design their content
3. produce and present scripts and programmes for Radio and TV
4. design and write webs, blogs and advertisements

COURSE OUTLINE

Module 1

Main-stream media: nature, characteristics, purpose - Print – broadcast - visual media – new/digital media – power and vulnerability of each – media convergence.

Newspapers: News stories, features – Headlines, subheads, captions, reviews.

Vocabulary that can affect the slant, emotive words and neutral words. Cohesion techniques, use of passive structures.

- Writing to answer the five Ws and H
- The inverted pyramid style
- Writing an editorial
- Editing: Cutting dead wood

Planning and Writing features – Editorials – Op-Ed pieces – Interviews: skills needed – Language used - The phrases that areused for the interview for Introductions - Interrupting - Markers for buying time, to elicit more clarity - how to use linguistic ploys – use of connectives to help progression and continuity - use of the right pace, punctuating explanations using the right words - the art of questioning and its overall philosophy.

Analysing news stories and features – political ideologies and language of newspapers – style - House styles of leading newspapers – emphasis given to use of desi words and foreign words.

Magazines: Writing for specific audience - magazine covers – layout - planning content – writing a true-life story - The Magazine Cover lines – The use of imperatives, use of questions in Cover lines - use of rhyming and alliteration - The use of specific verb forms used to express future - importance of photographs.

Module 2

Radio: Role of presenters – importance of voice, diction, delivery and language - introducing the guests/ features/news/Introducing different genres of music, Pre-teach - Vocabulary, relevance of the topic sentence, language used in debriefing, contextual use of phrasal verbs of a DJ or a presenter.

Format of the Radio script- Radio Programming- Writing for different Radio programmes: interviews, talk shows, reviews, music programmes, phone-in or on demand programmes - Translating creative works from other medium: delivering plays and classics, Radio news – news value – news script

TV: Scripts for TV- The pre-production process - Required vocabulary to understand process - The phrases used in conversation, Script writing - Editing a T.V. Documentary - roles of an editor and output editor, – selection of news – language of news writing/reporting.

TV programming: – use of formal/conversational language - abbreviations used in the filming schedule and its relevance - collocations used in T.V. as a medium - the technical vocabulary

Film: Writing a screenplay – films as a social commentary – language in film: mirroring in-vogue vocabulary, changes with genre - The features of spoken dialogues, how language helps to pitch successfully - The relevance of log line. Vocabulary for Pre-production – Language used in explaining potential problems, presenting solutions

Writing Film Reviews: Pre – Teach Vocabulary, Structure of the Content, Mapping the different stages of how a film is born, Language devices used, Use of Contrasting Information & Additional Information, Vocabulary used.

Module 3

Digital/New Media: E- writing – rules – writing news for the web – House Style of popular news-based websites - blogs - planning and writing a blog - technical writing – search engine optimization – writing for the social media. Use of Noun phrases, the use of pronouns, contractions, comparatives and clauses, the language used for informing and language used in a good blog.

COURSE MATERIAL

Modules 1 - 4

Core reading:. *English for the Media*, Cambridge University Press, 2013**.**

Further reading

1. Ceramella, Nick and Elizabeth Lee. *Cambridge English for the Media*, CUP, 2008**.**
2.. Kaushik, Sharda, *Script to Screen: An Introduction to TV Journalism.* Macmillan, 2003.
3. Booher, Dianna. *E- Writing: 21st Century Tools for Effective Communication.* Macmillan, 2008.

SEMESTER V

FIRST DEGREE PROGRAMME IN

ENGLISH LANGUAGE & LITERATURE (CBCS System) - Group 2 (a)

Vocational Course VI - ENGLISH LANGUAGE TEACHING: CG 1571

No. of credits: 4 **No. of instructional hours: 4 per week (Total: 72 hrs)**

AIMS

1. To introduce students to teaching of English as a second language.
2. To aid them in understanding learning from a teacher's perspective.

OBJECTIVES

On completion of the Course, the students should be able to

1. comprehend the concepts in language teaching.
2. understand the important psychological principles behind second language acquisition.
3. understand different approaches and methods of teaching English as second Language.
4. plan lessons effectively.

COURSE OUTLINE

Module 1

Teaching/learning distinction – Principles of language teaching – Acquisition and learning – micro teaching – Audio-visual aids – language lab.

Module 2

Theories of second language acquisition: Behaviourism – Watson – Pavlov's Classical Conditioning – Skinner's Operant Conditioning – Cognitivism – Noam Chomsky-Language Acquisition Device – Krashen-Monitor Hypothesis-Input Hypothesis-Affective Filter Hypothesis – Constructivism – Piaget, Vygotsky, Bruner – Zone of Proximal Development (ZPD) – Scaffolding.

Module 3

Approaches and Methods: Structural Approach – Oral Approach – Situational Approach – Communicative Approach – Eclectic Approach – Grammar-Translation Method – Bilingual Method – Direct Method – Silent Way.

Module 4

Planning and Evaluation: Two-column Lesson Plans for teaching language skills, prose, poetry, and grammar - Testing and Evaluation - internal and external evaluation – Types of tests-Achievement and Diagnostic tests – Types of Questions-Essay, annotation, short questions, multiple choice questions.

COURSE MATERIAL

Reading list

1. Stern, H. H. *Fundamental Concepts of Language Teaching.* OUP, 2003.
2. Larsen-Freeman, Diane. *Techniques and Principles in Language Teaching*. OUP, 2003.
3. Huebener, Theodore. *Audio-Visual Techniques in Teaching Foreign Languages*. New York UP, 1967.
4. Leonard, David C. *Learning Theories, A-Z*. Greenwood Publishing Group, 2002.
5. Richards, J. C. & Theodore S. Rodgers. *Approaches and Methods in Language Teaching.* CUP, 2007.
6. Baruah, T. C. *The English Teacher's Handbook*. New Delhi: Sterling, 2009.
7. Paliwal, A. K. *English Language Teaching*. Jaipur: Surabhi Publications, 1998.

SEMESTER V

CAREER RELATED FIRST DEGREE PROGRAMME 2(a)

IN ENGLISH & COMMUNICATIVE ENGLISH

Vocational Course VII - THE LANGUAGE OF ADVERTISING: CG 1572

No of credits: 3 **No of instructional hours: 3 per week (Total 54 hrs)**

AIMS

1. To provide the students with an ability to enrich their creative skills.
2. To make them understand the different types of advertising
3. To make them familiar to the role of advertising in the society.

OBJECTIVES

On completion of the course students should be able to:

1. Identify and analyse the various types of advertising.
2. Make use of the essential principles of advertising in ordinary situations.
3. Identify the impact of advertising in society.

COURSE OUTLINE

Module 1

- Definition - what is advertising?
- Brief history of advertising with particular reference to India
- Importance of advertising.

Module 2

- Advertising media - newspaper, magazines, radio, television, Internet, board, hoardings.
- Importance of media selection.

Module 3

- Types of advertisements - consumer ads, retail ads, business-to-business ads, trade ads and financial ads.
- Functions of advertising - promotion of sale, education, entertainment.

Module 4

- AIDA principle - Impact of advertising in society.
- Present status of advertising

COURSE MATERIAL

Reference

1. Kumar, Arun & Tyagi, *Advertising Management.* New Delhi: Atlantic Publishers and Distributors, 2004.
2. Rowse, Edward & Louis. *Fundamentals of Advertising.* USA: Kessinger Publishing, 2005.
3. Wells, Burnett & Moriarty. *Advertising: Principles and Practice.* UP: Dorling Kindersley (India) Pvt. Limited, 2007.
4. Gupta, Oma. *Advertising in India: Trends and Impact.* NewDelhi: Kalpaz Publications, 2005.
5. Ken Burtenshaw, Nik Mahon. *Caroline Barfoot: The Fundamentals of Creative Advertising,* Switzerland, AVA Publications, 2006.
6. Albert A. Reed, Kate E. Griswold, James Barrett Kirk, Leroy Fairman, George French. *Advertising and Selling.*
7. Trehan, Mukesh & Trehan, Renju. *Advertising and Sales Management,* 2010.
8. Vilanilam J.V. *Parasyam* (Malayalam). Kottayan: NBS.
9. Delly D.Larry and Jugenheimer Donald. Advertising Media Planning, PHI Learning, New Delhi, 2009.
10. Ahuja B.N and S.S. Chabra. Advertising and Public Relation

SEMESTER V

CAREER RELATED FIRST DEGREE PROGRAMME 2(a)

IN ENGLISH & COMMUNICATIVE ENGLISH

Vocational Course VIII – AUDIO VISUAL WRITING: CG 1573

No of credits: 3 **No of instructional hours: 3 per week (Total 54 hrs)**

AIMS

1. To provide the students with an ability to enrich their creative skills.
2. To make them aware of the different types of television programmes.
3. To make them familiar to the role of television in the society.

OBJECTIVES

On completion of the course students should be able to:

1. Identify and analyse the various types of television programmes.
2. Identify the impact of television in society.

COURSE OUTLINE

Module l:

- History and development of television in India
- SITE and educational television
- Production process: from idea to shooting script; research and planning location; lights; production proposal; treatment, script outline, screenplay
- Camera movements

Module 2:

- News bulletins; Scripting for TV news
- Television documentary, types of programs.
- Impact and influence of television channels

Module 3:

- Introduction to Radio, History of Radio in India
- Radio as a medium of communication-Advantages and disadvantages
- Components of a Radio program-words, music, sound effects, silence, types of radio programs

Module 4:

- Different types of radio: Community radio, Amateur radio, Internet radio, Satellite radio, Educational radio, FM radio
- Qualities of radio announcer, RJ

COURSE MATERIAL

Reference

1. Wills, Edgar (1967), *Writing Television and Radio Programmes,* New York.

2. Yorke, Ivor (1978), *The Technique of Television News,* London.
3. Sunderaj, Victor (2006), *Children and Television,* New Delhi.
4. Menon, Mridula (2007), Indian Television and Video Programmes, New Delhi, Kanishka Publishers
5. Yadav (2004), *Television and Social Change,* Lucknow.
6. P.C.Chatterji, *Broadcasting in India* (1991), Sage Publications.
7. H.R.Luthra (1986), *Indian Broadcasting,* Ministry of Information and Broadcasting, Govt. of India.
8. K.S. Rajasekharan, *Drishyabhasha* (Malayalam), Thiruvananthapuram, State Institute of Languages.
9.Vijaya Krishnan, Baiju Chandran, Prabhakaran and Sunni Joseph, *Drishyasravyamadhyamangal* (Malayalam), Thiruvananthapuram, State Institute of Languages.

Further Reading

1. Aiyer B. Alakrishnan, Digital Television Journalism, Authors press, Delhi, 2006
2. Casey Bernadette and Casey Neil; Key concepts in Television studies
3. Nalin Mehta, Television in India, Routledge, New York, 2011.
4. Orlebar Jereemy, The Television Handboook; Routledge, New York, 2011.
5. Hasen Seema, Mass Communication- principles and concepts, CBS publishers and distributers, New Delhi, 2010.

SEMESTER VI

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) IN

ENGLISH & COMMUNICATIVE ENGLISH

Core Course X - TRAVEL LITERATURE: CG 1641

No. of credits: 3 **No. of instructional hours: 5 per week (Total: 90 hrs)**

Aims:

1. To help students read and appreciate different kinds of travel literature.
2. To introduce to them the basics concepts of travel writing and literary tropes in travel.
3. Facilitate, promote and disseminate curiosity on travel writing which will lead to future research.
4. To enable them to critically analyse multi and cross-disciplinary approaches in travel writing.
5. To understand the themes of self, culture, history, writing, and travel.

Objectives:

On completion of the course, the students should be able to:

1. Read and enjoy various types of travel literature.
2. Analyse, understand and appreciate travel writings.
3. Analyse inter-cultural crossings and perceptions in a self-reflexive and critical manner.

COURSE OUTLINE

Module 1: Travel Literature: The Stalwarts

Module 2: Some Treasures of Travel Literature

Module 3: Travelling in India

Module 4: Indian Travel Literature

COURSE MATERIAL

Module 1: Travel Literature: The Stalwarts.

An introduction to early 20th century travel writing – early attempts at travel writing as a distinct genre - early British and American travel writings of repute.

Core Reading: Graham Green: *Journey without Maps* (Penguin, 1936) (Part One: "The Way to Africa", pp 11-19)

Suggested Reading: Freya Stark: *Riding to the Tigris* (1959)

Module 2: Some Treasures of Travel Literature.

Travel literature in the 70s - great travel writings - examples of some remarkable narratives of travel by British and American authors.

Core Reading: Bill Bryson: *Notes from a Small Island* (1995) Chapters 25-29

Suggested Reading:

Bruce Chatwin: *In Patagonia* (1977) Part 1-20**.**

Module 3: Travelling in India.

Contemporary travel writings on India by western authors.

Core Reading: William Dalrymple. "The Dancer of Kannur" from *Nine Lives* (2009) pp. 29-55

Suggested Reading:

1. Dervla Murphy: *On a Shoestring to Coorg* (1976)
2. Robyn Davidson: *Desert Places* (1997)

Module 4: Indian Travel Literature.

Indian perspectives in travel writing - their experiences of travel - glimpses of travel writings by Indian writers.

Core Reading: Amitav Ghosh: *Dancing in Cambodia and At Large in Burma* (1998). Dancing in Cambodia pp. 1-54.

Suggested Reading: Pico Iyer: *Falling Off the Map: Some Lonely Places in the World* (1994)

Further Reading: Modules 1 – 4:

Duncan, James and Derek Gregory. *Writes of Passage: Reading Travel Writing*. London and New York: Routledge, 1999.

Fussell, Paul. *Abroad: British Literary Travelling between the Wars*. New York: Oxford University Press, 1980.

Pratt, Mary-Louis. *Imperial Eyes: Travel Writing and Transculturation*. London & New York: Routledge, 1992.

SEMESTER VI

FIRST DEGREE PROGRAMME (CBCS System)

Common for ENGLISH LANGUAGE AND LITERATURE - Core Course XIV: EN 1644

&

CAREER-RELATED FIRST DEGREE PROGRAMME (CBCS) - Group 2 (a) IN ENGLISH & COMMUNICATIVE ENGLISH - Core Course XI - CG 1642

WOMEN'S WRITING

No. of Instructional hours : 4 per week (Total: 72 hrs) – for EN 1644

: 5 per week (Total: 90 hrs) - for CG 1642 No. of Credits : 3 [EN 1644 & CG 1642]

Aims:

1. To introduce students to the development of women's writing in various countries.
2. To familiarize them with the diverse concerns addressed by feminism.
3. To motivate them to critically analyse literary works from a feminist perspective.

Objectives: On completion of the course, the students should be able to

1. The students will have an awareness of class, race and gender as social constructs and about how they influence women's lives.
2. The students will have acquired the skill to understand feminism as a social movement and a critical tool.
3. They will be able to explore the plurality of female experiences.
4. They will be equipped with analytical, critical and creative skills to interrogate the biases in the construction of gender and patriarchal norms.

COURSE OUTLINE

Module 1: Essays

Module 2: Poetry

Module 3: Short Fiction

Module 4: Drama

COURSE MATERIAL

Module 1: Essays **[Detailed study]**

1. Virginia Woolf: "Shakespeare and his Sister" (Excerpt from *A Room of One's Own*)
2. Alice Walker: "In Search of our Mothers' Gardens" (From *In Search of Our Mother's Gardens*)
3. Jasbir Jain: Indian Feminisms: The Nature of Questioning and the Search for Space in Indian Women's writing. (From *Writing Women Across Cultures*

Module 2: Poetry. **[Detailed study]**

1. Elizabeth Barrett Browning : **"**A Musical Instrument"
2. Marianne Moore : "Poetry"

3.	Adrienne Rich	:	"Aunt Jennifer's Tigers"
4.	Sylvia Plath	:	"Lady Lazarus"
5.	Margaret Atwood	:	"Spelling"
6.	Kishwar Naheed	:	"I am not That Woman"
7.	Suniti NamJoshi	:	"The Grass Blade"
8.	Nikki Giovanni	:	"Woman"

Module 3: Short Fiction **[Non-detailed study]**

1.	Katherine Mansfield	:	"The Fly"
2.	Shashi Deshpande	:	"A Wall is Safer"
3.	Sara Joseph	:	"Inside Every Woman Writer"
4.	Amy Tan	:	"Rules of the Game"

Module 4: Drama **[Non-detailed study]**

1.	Sheila Walsh	:	"Molly and James"
2.	Mamta G Sagar	:	"The Swing of Desire"

Core text:

Modules 1 – 4: Dr Sobhana Kurien, ed. *Breaking the Silence: An Anthology of Women's Literature*. ANE Books.

Books for reference:

Beauvoir, Simone de. *The Second Sex*. UK: Hammond Worth, 1972. Davis, Angela. *Women, Race and Class*. New York: Random, 1981. Devi, Mahasweta. *Breast Stories*. Calcutta: Seagull, 1998.

Gilbert, Sandra and Susan Gubar. *The Mad Woman in the Attic: The Woman Writer*. Yale UP, 1978. Goodman, Lisbeth ed. *Literature and Gender*. New York: Routeledge, 1996.

Green, Gayle and Copelia Kahn. *Making a Difference: Feminist Literary Criticism*. New York: Routeledge. Humm, Maggie ed. *Feminisms: A Reader*. New York: Wheat Sheaf, 1992.

Jain, Jasbir ed. *Women in Patriarchy: Cross Cultural Readings.* New Delhi: Rawat, 2005 Millett, Kate. *Sexual Politics*. New York: Equinox-Avon, 1971.

Rich, Adrienne. *Of Woman Born*. New York: Norton.

Roudiex, Leos S. ed. *Desire in Language*. New York: Columbia UP, 1975. Showalter, Elaine. *A Literature of their Own*.

Spacks, Patricia Mayor. *The Female Imagination*. New York: Avon, 1976.

Tharu, Susie and K Lalitha. *Women Writing in India Vol I & II*. New Delhi: OUP, 1991. Walker, Alice. *In Search of our Mothes' Gardens*. New York: Harcourt Brace Jovanovich, 1983. Woolf, Virginia. *A Room of One's Own*. London: Hogarth, 1929.

Instruction to Teachers [Modules 1- 4]:

- The work of each writer mentioned in Modules 1 – 4 has to be placed against the literary backdrop of the age.
- The major works of the writers mentioned in the modules can be made familiar to the students

- The literary significance of the work is to be briefly discussed in the classroom and hence the student is expected to have only a general awareness of the respective author..
- Questions are to be asked only from the prescribed poems, fiction and drama.

SEMESTER VI

ENGLISH & COMMUNICATIVE ENGLISH

Core Course XII - METHODOLOGY AND PERSPECTIVES OF HUMANITIES

Common for EN 1642 & CG 1643

B.A. English Main - EN 1642

No. of credits: 4 **No. of instructional hours: 5 per week (Total: 90 hrs)**

B.A. Career related 2(a) English and Communicative English - CG 1643

No. of credits: 3 **No. of instructional hours: 4 per week (Total: 72 hrs)**

AIMS

1. To introduce students to the methodological issues specific to the humanities
2. To develop in them a critical perspective in pursuing literary studies

OBJECTIVES

On completion of the course, the students should be able to

1. explain the key concepts in literary theory and criticism
2. make sense of literature
3. read literature critically from a theoretical perspective.

COURSE OUTLINE

Module 1: Key Concepts:

Humanities – Differences between natural, social and human sciences – facts and interpretation – history and fiction – objectivity versus subjectivity.

Module 2: A critical overview of literature from the perspective of the Humanities.

Impact of society on literature – text types – genres – literary canon – literary interpretation and evaluation.

Module 3

Literary terms – Text oriented approaches – philology – rhetoric – stylistics – new criticism – semiotics– ambiguity.

COURSE MATERIAL

Modules 1 – 3

Core text:

Humanities: **Methodology and Perspectives**, by Dr K Kamala, published by mainSpring publisher, Chennai, 2014.

Reading list:

1. Kundu, Abhijit. "Understanding the Humanities." *The Humanities*: *Methodology and Perspectives*. New Delhi: Pearson Education, 2009.
2. Eagleton, Terry. "What is Literature?"
3. Klarer, Mario. *An Introduction to Literary Studies*. Special Indian Edition: Routledge, 2009.
4. Guerin, Wilfred L, et al. *A Handbook of Critical Approaches to Literature.* New Delhi: OUP, 2009.
5. Nagarajan, M.S. *English Literary Criticism and Theory.* Hyderabad: Orient Longman, 2007.
6. Holghman,William, Hugh Holman. *A Handbook to Literature.* New Delhi: Pearson Education, 2009.
7. Seldon, Ramon, et al. *A Reader's Guide to Contemporary Literary Theory.* ND: Pearson Education, 2005.
8. Bennet, Andrews, Nicholas Royale. *Introduction to Literature, Criticism and Theory,* 3rd Edn. ND: Pearson Education, 2009.
9. Barnet, Sylvan, William Cain. *A Short Guide to Writing about Literature,* 9th Edition. ND: Pearson, 2008.

Direction to Teachers

The various approaches to literature should be discussed with illustrations, where ever necessary

SEMESTER VI

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) IN

ENGLISH & COMMUNICATIVE ENGLISH

Elective Course - AMERICAN LITERATURE: CG 1661.1

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

AIMS

1. To introduce students to American literature, life and culture
2. To broaden their aesthetic and intellectual faculties

OBJECTIVES

On completion of the course, the students should be able to

1. trace the origin and development of American literature, life and culture
2. identify what is distinctly American in American literature
3. read and appreciate American literature

COURSE OUTLINE

Module 1: Origin and development of American literature

17th and 18th centuries – Literary beginnings – development in the 19th century – the Transcendentalists – Emerson – Thoreau – Poe – Dickinson – Whitman – Hawthorne – Melville – Mark Twain – Henry James – 20th century – Post-War scene – Hemingway – Fitzgerald - Faulkner – American theatre - O'Neill – Miller – Tennessee Williams – Modern Poetry - Frost – Ezra Pound.

Module 2: Poetry

Module 3: Drama

Module 4: Short Fiction

COURSE MATERIAL

Module 1

Reading list

1. Spiller, Robert E. *The Cycle of American Literature.* Macmillan.
2. Fisher, William J. Ed. *An Anthology of American Literature.* Vols. I and II.

Module 2

Core reading [Detailed study]

Poems:

1. Edgar Allan Poe: To Helen
2. Walt Whitman: I Hear America Singing
3. Emily Dickinson: Because I could not stop for Death
4. Robert Frost: Mending Wall
5. Wallace Stevens: The Emperor of Ice- Cream

Module 3

Core reading [Detailed study]

Eugene O'Neill – *Thirst* [One Act play – available on www.theatrehistory.com/plays/**thirst**001.html]

Module 4

Core reading: Fiction: Hemingway: *The Old Man and the Sea* **[Non detailed study]**

SEMESTER VI

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) IN

ENGLISH & COMMUNICATIVE ENGLISH

Elective Course - COMMUNICATIVE APPLICATIONS IN ENGLISH: CG 1661.2

No. of credits: 2 **No. of instructional hours: 3 per week (Total: 54 hrs)**

AIM

1. To help the students attain high level proficiency in all the four language skills.
2. To equip them for competitive examinations and various International English Language Tests.
3. To enhance their career prospects and employability.
4. To help them develop their personality by fine tuning their communication and presentation skills.

OBJECTIVES

On completion of the course, the students should be able to

1. use English for international communication.
2. engage in all kinds of communication activities – informal, formal/business related and academic.
3. perform well in language tests and competitive examinations.

COURSE OUTLINE

Module 1

Listening and Speaking: varieties of modern English – British, American, Indian – basic sounds – deviations in American and other varieties.

Verbal Communication: conversation – basic techniques – how to begin, interrupt, hesitate and end – how to express time, age, feelings and emotions – how to respond – using language in various contexts/ situations – talking about oneself, others – attending an interview – addressing an audience – using audio-visual aids – compering – group discussion.

Non-verbal Communication: body language : postures – orientation – eye contact – facial expression – dress – posture – self concept – self image – self-esteem – attitudes.

Module 2: Reading and Writing

Skimming and scanning – writing short messages – e mails – preparing notes and reports based on visuals, graphs and diagrams – official/business related letters – preparing agenda, minutes – CV – Describing persons, places, incidents and events – short argumentative essays.

Words often confused and misused – synonyms – antonyms – idioms commonly used – corresponding American expressions.

Module 3: Writing for Specific Purposes

Scientific writing – preparation of project proposals – writing of summaries and reviews of movies and books in English/regional languages.

Module 4: Practical Sessions

Language Skills Test (Written)

Teachers could encourage the students at the following tasks:

1. Translation of short and simple passages – from Malayalam to English
2. Providing captions for photos and pictures
3. Symposium – presenting different aspects of a debatable topic.

COURSE MATERIAL

Reading list

1. Mukhopadhyay, Lina et al. Polyskills: *A Course in Communication Skills and Life Skills*. Foundation, 2012.
2. O'Conner, J. D. *Better English Pronunciation.* CUP.
3. Swan, Michael. *Practical English Usage.* OUP.
4. Driscoll, Liz. *Cambridge: Common Mistakes at Intermediate.* CUP.

Reference

Jones, Daniel. *English Pronouncing Dictionary*, 17th Edn. CUP.

SEMESTER VI

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) IN

ENGLISH & COMMUNICATIVE ENGLISH

Vocational Course IX – TECHNICAL ENGLISH: CG 1671

No. of credits: 3 **No. of instructional hours: 3 per week (Total: 54 hrs)**

COURSE OBJECTIVES:

- To introduce learners to Language Skills in all technical and industrial specialisations
- To develop non-verbal and verbal skills in Technical English
- To enable learners to meet their professional needs like effective inter-personal skills
- To develop strategies and tactics that scientists, engineers, and others will need in order to communicate successfully on the job

COURSE OUTLINE

MODULE 1

- Technical Vocabulary - meanings in context; vocabulary for describing machines/gadgets; procedure & processes; engineering/scientific terminology
- Reading comprehension exercises with analytical questions on content – Evaluation of content

MODULE 2

- Communicating in the Technical Workplace: discussions of processes; technical problems & solutions; safety instructions
- Principles for collection of empirical data; research tools-questionnaire; sample
- Procedural Instructions: a set of operating procedures for a piece of technical equipment

MODULE 3

- Designing Documents: entering information in tabular form; Writing analytical paragraphs
- Writing general and safety instructions – Preparing checklists – Writing e-mail messages.
- Writing different types of reports like industrial accident report and survey report

MODULE 4

- Technical writing : writing extended definitions – Writing descriptions of processes – Writing paragraphs based on discussions – Writing paragraphs describing the future
- Technical Solution Proposal: a technological or scientific solution
- Technical White Paper: a short technical white paper that explains a technical process to a novice in the field who is thinking of investing in a business related to technology presented in the white paper.

COURSE MATERIAL

Reference:

Alred, Gerald J., Charles T. Brusaw, and Walter Oliu. Handbook of Technical Writing. 6th ed. Boston: Bedford/St. Martin's, 2000.

Dhanavel S.P., English and Communication skills for students of science and Engineering, Orient Black Swan, Chennai, 2011.

Krishna Mohan and Meera Banerjee, 'Developing Communication Skills', Macmillan India Ltd., (Reprinted 1994 – 2007).

Morgan, David and Nicholas Regan. Take-Off: Technical English for Engineering. Garnet Publishing Limited, 2008.

Pickett, Nell Ann, Ann A.Laster and Katherine E.Staples. Technical English: Writing, Reading and Speaking. New York: Longman, 2001.

Thorn, Michael and Alan Badrick. An Introduction to Technical English. Harlow: Prentice Hall Europe, 1993.

Rizvi, M.Ashraf. Effective Technical Communication. New Delhi: Tata McGraw-Hill PublishingCompany, 2007.

SEMESTER VI

CAREER-RELATED FIRST DEGREE PROGRAMME (CBCS) - Group 2 (a)

IN ENGLISH & COMMUNICATIVE ENGLISH

Vocational Course X – BUSINESS COMMUNICATION IN ENGLISH: CG 1672

COURSE OBJECTIVES:

- To introduce learners to Language Skills in Business English
- To develop non-verbal and verbal Business communication skills
- To equip learners with high professional expertise in Business communication
- To enable learners to meet their professional needs like effective Business management and inter-personal skills.

COURSE OUTLINE

MODULE 1

- **Business English vocabulary and usage**; Describing your job; Describing your company; Vocabulary for organising meetings (minutes, secretary, chair, etc); Vocabulary for cash flow, profit and loss accountants, terminology of finance; Internet vocabulary; IT vocabulary; Marketing Lexis - brands
- **Competence in Verbal and Non-verbal Business Communication** : Business- related speeches, dialogues, discussions; Interaction with Clients/Customers; Formal/ Public speeches - informative, persuasive, ceremonial; Talking about Total Quality Management; Talking about different management structures, philosophies
- Language/Phrases for meetings; Phrases for telephoning; Phrases for greetings, introductions, partings; Lexis for hobbies, interests, family

MODULE 2

- **Inter-personal Skills**: Soft skills, Leadership qualities and Etiquettes; Social and Professional Relationships; Levels of formality; Introducing yourself, Introducing Others, Greetings, Saying Goodbye.

- Agreeing / Disagreeing; Giving opinions; Interrupting / Dealing with interruptions; Asking for clarification; Requests; Offers; Complaining & Dealing with complaints; Making arrangements
- Resolving Workplace Conflicts; Organising meetings and events; Being interviewed and interviewing; Discussing advantages and disadvantages of candidates

MODULE 3

- **Effective Business correspondence:** Writing CVs and letters of application; Writing letters of complaint, enquiry, etc.; Writing short reports.
- Business correspondence for various purposes; Survey Questionnaires; Proofreading and Editing; typical functions of negotiation: Requests, Offers, Refusal, Acceptance; emails and faxes

MODULE 4

- **Business English in real life situations**: Advertising – effectives and impact; Marketing strategies for brands/products; Customer care services
- Describing the culture of a business/a national culture/regional culture; Describing experiences of culture clash/misunderstanding; discussions about ideal company culture
- Effective use of modern communication technology; Language of presentations, OHP, slides, etc. Texting, Tele-conference and Video-conference.

COURSE MATERIAL

Reference

Alred, Gerald J., Charles T. Brusaw, and Walter Oliu. The Business Writer's

Handbook. 6th ed. New York: St. Martin's, 2000.

Cypres, Linda. *Let's Speak Business English*. Hauppauge, NY: Barron's Educational Series, 1999.

Geffner, Andrew P. Business English. Hauppauge, New York: Barron's Educational Series, 1998.

Good, Edward C. Mightier Than the Sword. Charlottesville: Word Stone, Publications, 1989.

Guffey, Mary Ellen. Business Communication: Process and Product. 3rd ed.

Cincinnati: South-Western College Publishing, 2000.

Jones, Leo and Richard Alexander. New International Business English. New York: Cambridge University Press, 1996.

Piotrowski, Maryann V. Effective Business Writing. New York: Harper Collins, 1996.

SEMESTER VI

FIRST DEGREE PROGRAMME (CBCS System)

Common guidelines for Project/Dissertation

B.A. ENGLISH LANGUAGE AND LITERATURE: EN 1645 Total Instructional hours: 3/week

Credits: 4

CAREER RELATED FIRST DEGREE PROGRAMME 2(a) IN ENGLISH & COMMUNICATIVE ENGLISH: CG 1644

Total Instructional hours: 3/week **Credits: 4**

A. Guidelines for Teachers:

1. The Project/Dissertation should be done under the direct supervision of a teacher of the department, preferably the Faculty Advisor for the sixth semester. However the work of supervising the Projects should be distributed equally among all the faculty members of the department.
2. The teaching hours allotted in the sixth semester for the Project/Dissertation [i.e., 3 hours/week] is to be used to make the students familiar with Research Methodology and Project writing.
3. A maximum of five students will work as a group and submit their project as a [single] copy for the group. The members of a group shall be identified by the supervising teacher. Subsequently each group will submit a project/dissertation and face the viva individually/separately.
4. The list containing the groups and its members should be finalized at the beginning of the sixth semester.
5. Students should identify their topics from the list provided in consultation with the supervising teacher or the Faculty Advisor of the class [Semester 6] as the case may be. The group will then collectively work on the topic selected.
6. Credit will be given to original contributions. So students should not copy from other projects.
7. There will be an external evaluation of the project by an External examiner appointed by the University. This will be followed by a viva voce, which will be conducted at the respective college jointly by the external examiner who valued the projects/dissertations and an internal examiner. All the members within the group will have to be present for the viva voce. The grades obtained [for external evaluation and viva voce] will be the grade for the project/dissertation for each student within that group.
8. The Project/Dissertation must be between 20 and 25 pages. The maximum and minimum limits are to be strictly observed.
9. A Works Cited page must be submitted at the end of the Project/Dissertation.
10. There should be a one-page Preface consisting of the significance of the topic, objectives and the chapter summaries.
11. Two copies have to be submitted at the department by each group. One copy will be forwarded to the University for valuation and the second copy is to be retained at the department.

B. General guidelines for the preparation of the Project:

- Paper must of A4 size only.
- One side Laser Printing.
- Line Spacing: double.
- Printing Margin: 1.5 inch left margin and 1 inch margin on the remaining three sides.

- Font: Times New Roman only.
- Font size: Main title -14/15 BOLD & matter - 12 normal.
- The project need be spiral-bound only.
- Paragraphs and line spacing: double space between lines [MLA format].
- Double space between paragraphs. No additional space between paragraphs.
- Start new Chapter on a new page.
- Chapter headings (bold/centred) must be identical as shown:

Chapter One

Introduction

- Sequence of pages in the Project/Dissertation:
  i. Cover Page.
  ii. First Page.
  iii. Acknowledgement, with name & signature of student.
  iv. Certificate (to be signed by the Head of the Dept and the Supervising Teacher).
  v. Contents page with details of Chapter Number, Chapter Heading & Page Numbers.
- Specimen copies for (i), (ii), (iv) and (v) will be sent to the colleges.
- Chapter divisions: Total three chapters.

Preface

Chapter One: Introduction - 5 pages
Chapter Two: Core chapter - 15 pages
Chapter Three: Conclusion - 5 pages.

Works Cited

[Numbering of pages to be done continuously from Chapter One onwards, on the top right hand corner]

C. <u>Specific guidelines for preparation of Project</u>:

1. Only the Title of the Project Report, Year and Programme/Subject should be furnished on the cover page of the University copy of the Project. The identity of the College should not be mentioned on the cover page.
2. Details like Names of the Candidates, Candidates' Codes, Course Code, Title of Programme, Name of College, Title of Dissertation, etc should be furnished only on the first page.
3. Identity of the Candidate/College should not be revealed in any of the inner pages.
4. The pages containing the Certificate, Declaration and Acknowledgement are not to be included in the copy forwarded to the University.
5. The Preface should come immediately before the Introductory Chapter and must be included in all the copies.

D. <u>Selection of Topics:</u>

Students are permitted to choose from any one of the following areas/topics. Selection of topics/areas have to be finalized in the course of the first week of the final semester itself with the prior concurrence of the Faculty Advisor / Supervisor:

1. Post-1945 literature. This must not include the prescribed work/film coming under Core study. [Works/ films other than the prescribed ones can be taken for study]

2. Analysis of a film script.

3. Analysis of advertisement writing [limited to print ads]. Study should focus on the language aspect or be analyzed from a theoretical perspective [up to a maximum of 10 numbers].

4. Analysis of news from any of these news stations/channels: AIR, Doordarshan, NDTV, Headlines Today, Times Now, BBC, and CNN. [news from 5 consecutive days highlighting local, regional, national, international, sports, etc]

5. Celebrity Interview: from film, politics, sports and writers [Only one area or one personality to be selected].

6. Studies on individual celebrities in the fields of arts and literature. Example: a Nobel Prize winner, a dancer/singer/musician/film star, etc, of repute [Only one personality to be selected].

7. Studies based on any 5 newspaper editorials or articles by leading international or national columnists like Thomas Friedman, Paul Krugman, Anees Jung, etc.

8. Compilation and translation of any 5 folk stories of the region.

9. Analysis of the language used in email and sms. The study should focus on the language aspect used in such modes of messaging, limiting to 10 pieces of email/sms. [Reference: David Crystal *Txtng: the GR8 Dbt.* OUP, 2008]

10. Studies on popular folk art forms like Koodiyattam, Theyyam, Pulikali, Chakyar Koothu, Nangyar Koothu, Kalaripayattu, Kathakali, Mohiniyattam, Maargamkali, Oppanna, etc. [Only one art form to be selected].

11. Study on any 5 popular songs in English. Songs of popular bands like the ABBA, Boney M, Backstreet Boys, Beatles, Pink Floyd, Rolling Stones, Westlife, Boyzone, etc can be selected.

12. Study based on the life and works of one Nobel Prize winner in literature.

E. Details of Course Contents:

(1) Academic writing: The following areas are to be made familiar to the students during the course of the 3 instructional hours/week set aside for the same in the sixth semester:

- (a) Selecting a Topic: pages 6–7.
- (b) Compiling a Working Bibliography: pages 31-33.
- (c) Writing Drafts: pages 46-49.
- (d) Plagiarism and Academic Integrity: pages 51-61.
- (e) Mechanics of Writing: pages [Spelling & Punctuation]: pages 63-78.
- (f) Methods of quoting texts: pages 92 – 101.
- (g) Format of the Research Paper: pages 115-121.

Reference text: *M.L.A. Handbook* 7th edition.

(2) Documentation of sources in the works cited page(s): Samples of different types of sources will be provided.

UNIVERSITY OF KERLA

UNDERGARDUATE PROGRAMMES

[2015 Admission onwards]

FIRST DEGREE PROGRAMMES

(CBCS System)

English Language /Foundation Courses for BA/BSc Programmes

kup 221(1)/2015-'16

University of Kerala

Revised Syllabus for
M.A. Degree Programme
in
English Language and Literature

Prepared by

The P.G English Board of Studies 2014-17

The P.G English Board of Studies 2014-17

Members:

Dr G. S. Jayasree (Chairperson)

Dr Jamuna Chand

Dr B. Hariharan

Dr K. B Laila

Dr George Mathew

External Experts:

Dr Kishore Ram

Sri. R. Indulal

Contents

INTRODUCTION

The PG Degree Programme in English Language and Literature would equip students to enter the teaching profession, especially in the Higher Education sector, or to take up other employment. The programme also envisages the inculcation of human values in the learner.

The General Objectives of the M.A. Degree Programme in English Language and Literature are:

- to enable students to engage critically and creatively with a wide range of selected texts
- to develop in them an appreciation of the nuances of literary language through an understanding of the way the English language functions
- to help them understand the relationship between art and life in order to comprehend the social/ emotional/ psychological/cultural value of literary texts
- to provide students with the skills and knowledge necessary to work towards a research degree in any area of their choice and in any place of their preference
- to familiarize them with the current trends in literary research
- to give them insight into basic pedagogical principles and praxis relating to the teaching of both the English Language and Literature in English
- to give them the confidence to use their communication skills in English in a wide range of professional and practical contexts.

The Learning Outcomes at the end of the M.A Degree Programme in English Language and Literature will be:

- to demonstrate the ability to engage critically with a wide range of selected texts by offering interpretations and evaluations from multiple perspectives
- to demonstrate an understanding of the formal structure of the various genres
- to show an awareness of the literariness of literary language
- to demonstrate the ability to analyse and explain the complexities and subtleties of human experience
- to be able to relate the socio-politico-historical context to the evolution of the forms, styles, and themes of texts
- to demonstrate the research and language skills necessary to do independent, innovative research
- to show they have understood contemporary pedagogic principles and practices in teaching both language and literature
- to demonstrate an ability to communicate effectively in a variety of language situations

COURSE STRUCTURE

Semester 1	Core / Elective	Course Code	Name of Paper	Instructional hours/ week	Marks		Min Marks	
					ESE	CA	ESE	CA
Paper 1	Core	EL211	Chaucer to the Elizabethan Age	6	75	25	30	10
Paper 2	Core	EL212	Shakespeare Studies	6	75	25	30	10
Paper 3	Core	EL213	The Augustan Age	6	75	25	30	10
Paper 4	Core	EL214	Romantics and Victorians	7	75	25	30	10
Semester 2								
Paper 5	Core	EL221	From Modernism to the Present	6	75	25	30	10
Paper 6	Core	EL222	Indian Writing in English	6	75	25	30	10
Paper 7	Core	EL223	American Literature	6	75	25	30	10
Paper 8	Core	EL224	Critical Studies 1	7	75	25	30	10
Semester 3								
Paper 9	Core	EL231	Linguistics and Structure of the English Language	6	75	25	30	10
Paper 10	Core	EL232	Critical Studies 2	7	75	25	30	10
Paper 11	Elective 1	EL233._		6	75	25	30	10
Paper 12	Elective 2	EL234._		6	75	25	30	10
Semester 4								
Paper 13	Core	EL241	English Language Teaching	6	75	25	30	10
Paper 14	Core	EL242	Culture Studies	7	75	25	30	10
Paper 15	Elective 3	EL243._		6	75	25	30	10
Paper 16	Elective 4	EL244._		6	75	25	30	10
Paper 17	Compr Ppr	EL245	Comprehensive Paper		100		40	
Paper 18	Project	EL246	Project & Project based Viva Voce		80	20	35	8
Grand Total = 1800								

ELECTIVES: SELECTION OPTIONS[1]

Any ONE from each group

SEMESTERS III & IV

Semester III

Paper XI: EL233 (6 hours / week)

Electives

1.	**European Drama**	**EL233.1**
2.	**Canadian and Australian Literature**	**EL233.2**
3.	**Film Studies**	**EL233.3**
4.	**Kerala Studies**	**EL233.4**
5.	**Women's Writing**	**EL233.5**

Paper XII: EL234 (6 hours / week)

Electives

6.	**European Fiction**	**EL234.1**
7.	**African and Caribbean Literature**	**EL234.2**
8.	**Fiction and Film**	**EL234.3**
9.	**Folklore Studies**	**EL234.4**
10.	**Writing Lives, Performing Gender**	**EL234.5**

Semester IV

Paper XV: EL243 (6 hours / week)

Electives

11.	**Comparative Literature**	**EL243.1**
12.	**South Asian Literature**	**EL243.2**
13.	**Screenwriting**	**EL243.3**
14.	**Theatre Studies**	**EL243.4**
15.	**Travel Writing**	**EL243.5**

Paper XVI: EL244 (6 hours / week)

Electives

16.	**Translation Studies**	**EL244.1**
17.	**Regional Literatures in English Translation**	**EL244.2**
18.	**Media Studies**	**EL244.3**
19.	**Dalit Writing**	**EL244.4**
20.	**Theorising Sexualities**	**EL244.5**

[1] The Selection Options have been categorized to enable Colleges to select specialities across the two semesters. For example, a College can specialize in World Literatures by choosing Canadian and Australian Literature and African and Caribbean Literature in Semester III and South Asian Literature and Regional Literatures in English Translation in Semester IV. Similarly, another specialization could be Film and Media Studies.

QUESTION PAPER PATTERN

For Core Courses

(Except Shakespeare Studies, Linguistics and Structure of the English Language, English Language Teaching, Critical Studies 1 and 2, and Cultural Studies)**:**

The question paper shall be divided into 4 parts.

Part I

Very Short Answers (50 words)

- Choice 5 out of 8
- 2 marks for each question (5 x 2 = 10 marks)
- Questions to be based on Modules II and III:
    - FOUR questions from Modules II (two each from Poetry and Drama) and FOUR questions from Module III (two each from Prose and Fiction), **both detailed and non-detailed texts.**

Part II

Annotations/ Critical Comments (150 words) to be based on texts prescribed for detailed study only

- Choice 2 out of 4
- 5 marks for each question (2 x 5 = 10 marks)
- Questions to be based only on texts prescribed **for detailed study** from Modules II and III
- This part shall have **two** sections
    - Section A – TWO questions from Poetry
    - Section B - TWO questions - ONE question from Drama and ONE from Prose

Part III

Short Notes (150 words)

- Choice 2 out of 4
- 5 marks for each question (2 x 5 = 10 marks)
- ONE questions from Module I; ONE question from detailed/ non-detailed section of Module II; ONE from detailed/ non- detailed section of Module III; and ONE question from Module IV.

Part IV

Essay (500 words)

- Choice 3 out of 9
- 15 marks for each question (3 x 15 = 45 marks)
- This part shall have **three** sections. Each section shall have **three** questions. To answer **one** from each section.
    - Section A to be based on poetry and drama (i.e., Module II)

- Section B to be based on prose and fiction (i.e., Module III)
- Section C to be based on Social-political and Literary background and Critical Responses (i.e., Modules I and IV)

Difficulty levels of the questions:

- There are to be three levels of difficulty: EASY, AVERAGE and DIFFICULT.
- Part I: Very short answers (2 marks each; 5 questions to be answered out of 8): Difficulty level: EASY, for all 8 questions (10 marks)
- Part II: Critical Comments (5 marks each; 2 questions to be answered out of 4): Difficulty level: AVERAGE, for all 4 questions (10 marks)
- Part III: Short Notes (5 marks each; 2 questions to be answered out of 4): Difficulty level: AVERAGE, for all 4 questions (10 marks)
- Part IV: Essay questions (three sets of questions with each set having three questions): Difficulty level: Any one set of three questions – EASY (15 marks); any one set of three questions – AVERAGE (15 marks); any one set of three questions – DIFFICULT (15 marks)
    - Total marks: 75
    - EASY questions: 25 marks (33%)
    - AVERAGE questions: 35 marks (47%)
    - DIFFICULT questions: 15 marks (20%)

Shakespeare Studies Paper

- Part I (2 mark questions; to answer 5 out of 8): TWO questions from Module I; FOUR from Module II; and TWO from Module III.
- Part II (5 marks: Critical Comments; 2 out of 4). THREE questions from the detailed texts (with at least ONE from each play) of Module II; and ONE question from Module II Poetry).
- Part III (5 marks: Short notes; 2 out of 4). ONE from each of the four modules.
- Part IV: Essay (3 out of 9): Section A (3 questions): THREE questions from the drama texts for detailed and non-detailed study in Module II; Section B (3 questions): TWO questions from the adaptations of Shakespeare's plays, and ONE from Poetry; Section C (3 questions): From Modules I and IV with at least one from each module.
- Difficulty level: As in the core papers

Critical Studies and Cultural Studies papers

- Parts I (2 mark questions; 5 out of 8): Questions to be asked from all five modules with at least one from each module. *Maximum only 2 questions to be asked from Supplementary Reading*.
- Part II (5 marks: Short notes; 4 out of 8). From all five modules with at least one from each module. *Maximum 2 out of 8 questions to be asked from Supplementary Reading*.
- Part III: Essay (3 out of 9 questions; 1 from each section): Section A (3 questions): THREE questions from the texts for Required Reading; Section B (3 questions): THREE questions from the Course Descriptions or the texts for Supplementary Reading; Section

C: THREE questions based on critical analysis of a known or unknown short text (to be provided) from three different critical perspectives.

- Difficulty level:
    - Part I: 8 EASY questions (to answer 5) (10 marks)
    - Part II: 8 AVERAGE questions (to answer 4) (20 marks)
    - Part III:
        - Section A: 3 EASY questions (to answer 1) (15 marks)
        - Section B: 3 AVERAGE questions (to answer 1) (15 marks)
        - Section C: 1 DIFFICULT question (15 marks)

Linguistics and Structure of the English Language

- Part I (2 mark questions; to answer 5 out of 8): TWO questions each from ALL FOUR modules.
- Part II (5 marks: Short notes; 4 out of 8). TWO questions each from ALL FOUR modules.
- Part III (15 marks)
    - Section A: Essay question: To answer 2 out of 4 questions. ONE question to be asked from each of the FOUR modules
    - Section B: Practical Application:
        - ONE transcription passage (5 marks)
        - To resolve TWO ambiguities out of FOUR (through IC analysis or TG grammar) (2 ½ marks each)
        - To derive PS and T Rules for ONE singulary transformation out of THREE choices (passivisation/ interrogation/ negation) (5 marks)
- Difficulty level:
    - Part I: 8 EASY questions (to answer 5) (10 marks)
    - Part II: 8 AVERAGE questions (to answer 4) (20 marks)
    - Part III:
        - Section A: EASY (direct) questions (to answer 2) (30 marks)
        - Section B: DIFFICULT questions (15 marks)

English Language Teaching

- Part I (2 mark questions; to answer 5 out of 8): At least ONE question from each of the FIVE modules.
- Part II (5 marks: Short notes; 4 out of 8). At least ONE question from each of the FIVE modules.
- Part III (15 marks)
    - Section A: Essay question: To answer 2 out of 4 questions. The fours questions to be from the FIVE modules (with not more than ONE question from any one module).

- Section B: Lesson Plan: To answer one out of two questions. To be based on i) a given poem or ii) a given passage to teach a grammar point.

- Difficulty level:
  - Part I: 8 EASY questions (to answer 5) (10 marks)
  - Part II: 8 AVERAGE questions (to answer 4) (20 marks)
  - Part III:
    - Section A: EASY (direct) questions (to answer 2) (30 marks)
    - Section B: DIFFICULT questions (15 marks)

For Electives

Part I

- The same pattern as for core papers - very short answers of 50 words - 8 questions - 5 to be answered.
- If the paper contains Module 1: Background and/or Module 4: Critical Responses; FOUR questions each shall be asked only from Modules 2 and 3. Otherwise TWO questions each may be asked from all four modules.

Part II

- No annotations/critical comments to be asked in the elective papers. Instead, Part II of the question paper should contain **8** questions for short notes of which **4** have to be answered. The 8 questions are to be divided into TWO sections A and B.
  - Section A should contain 2 questions from Module 1 and 2 from Module II;
  - Section B should contain 2 questions from Module III and 2 from Module IV.
  - 2 questions from each section to be answered.

Part III

- Essay questions- The same pattern as for core papers

Difficulty level:

Part I: EASY; Part II: AVERAGE; Part III: One section EASY; one section AVERAGE; one section DIFFICULT

NOTE ON INTERNAL TEST QUESTION PAPER PATTERN

- The same pattern in the 2013 syllabus may be followed.

NOTE ON PROJECT GUIDELINES

- The Project Guidelines for the 2013 syllabus shall continue. **However, MLA 8th edition is to be followed for citations.**

NOTE ON ADDITIONAL READING

The Board strongly recommends the following series even if they might not appear in the Additional Reading lists of courses (Colleges may take special interest in acquiring these books):

1. The Cambridge Companion Series, published by CUP
2. The New Accents Series, published by Routledge

3. The New Critical Idiom Series, published by Routledge
4. The Key Concepts Series published by Routledge
5. The Beginning Series, published by Manchester UP
6. The Literary Criticism Online Series from Gale
7. Bloom's Modern Critical Views Series (of Texts)
8. The Norton Anthology series.
9. The Pelican/ New Pelican Guide to English Literature series.

SEMESTER I

Paper I - EL 211: Chaucer to the Elizabethan Age (6 hours /week)

Objectives

The objectives of this paper are to:

- provide students an idea of the major historical events and the socio-cultural contexts that shaped the literature of the fifteenth and sixteenth centuries
- develop in students a historical awareness of the evolution of poetry, drama, prose, fiction and literary criticism in English in these two centuries
- examine critically the contributions of poets, dramatists, prose writers and critics that marked the singularity of the age
- explore the structural/ formal and stylistic features of various representative texts of this period

Learning Outcomes

At the end of the course, students will be able to:

- display an awareness of the major historical events and the socio-cultural context which shaped the medieval and early Renaissance period and literature
- explain the impact of the Renaissance on the thought and literature of the period
- explain how socio-historical factors have influenced individual texts and how individual texts are representative of their age
- identify and explain the formal and literary features of each genre and text, and how they contribute to the complexity of values and emotions represented in the texts
- analyze and explain the similarities and differences between various types of the drama of the age
- demonstrate how different critical perspectives have resulted in various readings of selected texts

Course Description

Module I – Socio-political and Literary Background

The Norman Conquest and its consequences – the church and feudalism — the crusades — strife between the Pope and kings — Black Death - Peasants' Revolt - Wars of the Roses - decline of feudalism and the rise of benevolent despotism - The English Renaissance-Reformation - Growth of education - Caxton and printing press - rise of England as a maritime power.

Poetry: Arthurian legends — metrical romances and ballads - Geoffrey Chaucer, English, and Scottish Chaucerians - William Langland - John Gower -Thomas Wyatt, Earl of Surrey and the sonnets – Edmund Spenser - Metaphysical Poetry - John Donne, George Herbert, Henry Vaughan, Andrew Marvell, Richard Crashaw

Drama: Mystery, miracle, morality and Interludes – Thomas Sackville, Thomas Norton, Nicholas Udall - The Revenge Tragedy, Seneca - University Wits, Thomas Kyd, Christopher Marlowe - Comedy of Humours: Ben Jonson - Jacobean Drama: John Webster, Francis Beaumont and John Fletcher, Philip Massinger, Thomas Dekker.

Prose and Fiction: Medieval and Renaissance prose - Sir Thomas More - Bible Translations — John Wycliffe, William Tyndale, Miles Coverdale and *the Authorized Version* — the pamphleteers—Stephen Gosson, Philip Sydney — Robert Greene — Francis Bacon - Roger Ascham - John Lyly - Sir Walter Raleigh - Richard Hooker - Richard Hakluyt - Isaak Walton - Thomas Browne -Thomas Hobbes

Recommended Reading (Relevant sections in the following texts)

Sanders, Andrew. *The Short Oxford History of English Literature*. London: Clarendon Press, 1994. E-book.

Daiches, David. *A Critical History of English Literature in Two Volumes. Vol.I.* London: Secker & Warburg, 1961. E-book.

Poplawski, Paul. *English Literature in Context*. London: CUP, 2008. Print.

Carter, Ronald and John McRae *The Routledge History of Literature in English*. London: Routledge, 1997. E-book.

Module II – Poetry and Drama

Prescribed Texts

Detailed Study

Poetry

Geoffrey Chaucer	"The Prologue." *The Canterbury Tales*. (Tr) Nevill Coghill.
Edmund Spenser	"Prothalamion"
John Donne	"The Canonization", "The Blossom"

Drama

Christopher Marlowe	*Doctor Faustus*

Non-Detailed Study

Poetry

William Langland	*Piers the Plowman*
Sir Thomas Wyatt	"Farewell, Love"
Henry Howard,	"Alas, so all things now do hold their peace!"
Edmund Spenser	"Epithalamion"
George Herbert	"Easter Wings"
Henry Vaughan	"The Retreat" "The World"
Andrew Marvell	"To His Coy Mistress"
Richard Crashaw	"Epithalamium"
Ballads	"Sir Patrick Spens"

Drama

Kyd, Thomas	*The Spanish Tragedy*
Ben Jonson	*Everyman in His Humour*

Module III – Prose and Fiction

Prescribed Texts

Detailed Study

Francis Bacon	"Of Friendship," "Of Truth," "Of Parents and Children," "Of Marriage and Single Life"

Non-Detailed Study

Philip Sydney	*An Apologie for Poetry*
Sir Thomas More	*Utopia*

Module IV – Critical Responses

This is a set of critical responses to texts in modules 2 and 3.They are to be used as critical tools for the analysis of primary texts. No annotations are to be asked from the following texts.

Recommended Reading

Brooks, Cleanth. "The Language of Paradox." Ch1 of *The Well Wrought Urn*. New York: Harcourt, 1947.

Deats, Sara Munson. " 'Mark this Show': Magic and Theatre in Marlowe's *Doctor Faustus.*" *Placing the Plays of Christopher Marlow: Fresh Cultural Contexts.* Ed. Sara Munson Deats and Robert A. Logan. E-book. Hampshire: Ashgate, 2008. 13-24.

Greenblatt, Stephen. "Introduction." *Renaissance Self-fashioning: From More to Shakespeare.* Chicago: U of Chicago P, 2005.

Wetherbee, Winthrop. "The General Prologue." Ch. 2 of *Landmarks of World Literature New: Geoffrey Chaucer: The Canterbury Tales.* Cambridge: Cambridge UP, 2004.

Reading List

Alden, Raymond M. *Elizabethan Humours and the Comedy of Ben Jonson*. https://archive.org/stream/elizabethanhumo01clubgoog#page/n9/mode/2up

Boitani, Piero and Jill Mann Ed. *The Cambridge Companion to Chaucer*. <41.89.51.173:8787/get/pdf/2337>

Caudle, Mildred Witt. " Sir Thomas More's *Utopia*: Origins and Purposes." Social Science 45.3 (1970): 163-169. http://www.jstor.org/stable/41959507

Cheney, Peter Ed., *The Cambridge Companion to Christopher Marlowe* (esp. Ch 11 on Doctor Faustus).

Coursen, Jr, Herbert R. "The Unity of *The Spanish Tragedy.*" *Studies in Philology* 65: 5 (1968): 768-782 http://www.jstor.org/stable/4173620

Eliot, T.S. "The Metaphysical Poets." http://www.liceomeda.it/new/documenti/0809/Materiali/The%20Metaphysical%20Poets%20(T.S.%20Eliot).pdf

Ellis-Fermor, Una. *Jacobean Drama: An Interpretation*. London: Methuen, 1936.

Engeman, Thomas S. "Hythloday's Utopia and More's England: an Interpretation of Thomas More's *Utopia*." *The Journal of Politics* 44.1 (1982): 131-149. http://www.jstor.org/stable/2130287

Ford, Boris, ed. *The Age of Chaucer*. The Pelican Guide to English Literature 1. Harmondsworth: Penguin, 1972.

Grierson, H.G, *Metaphysical Lyrics and Poems of the 17th Century*. http://www.bartleby.com/105/1000.html

Hopkins, Lisa. *Christopher Marlowe: Renaissance Dramatist*. Renaissance Dramatists. Edinburg: Edinburg UP, 2008. http://site.ebrary.com/lib/inflibnet/detail.action?docID=10435299&p00=dr+faustus

Kamholtz, Jonathan Z. "Thomas Wyatt's Poetry: The Politics of Love." *Criticism* 20.4 (1978): 349-365. http://www.jstor.org/stable/23102683

Kay, Carol McGinnis. "Deception through Words: A Reading of *The Spanish Tragedy*." *Studies in Philology*. 74.1 (1977): 20-38. <http://www.jstor.org/stable/4173925>

Milena, Kostic. *The Faustian Motif in the Tragedies by Christopher Marlowe.* New Castle: Cambridge Scholars, 2013. 1-37.

Sampson, George. *The Concise Cambridge History of English Literature.*

The Cambridge History of English and American Literature (http://www.bartleby.com/cambridge/)

SEMESTER I

Paper II- EL 212: Shakespeare Studies (6 hours/week)

Objectives

The objectives of this paper are:

- to give an overview of the socio- political and historical events which were instrumental in patterning Elizabethan consciousness
- to help students appreciate Shakespeare as a pioneering figure in defining the course of English drama
- to look into Shakespeare's contributions to enriching the English language
- to identify the discourses met within the plays and to familiarize the learners with significant critical responses

Learning Outcomes

At the end of this course, students will be able to:

- evaluate the significance of the socio- political and historical events which shaped the perspective of the Elizabethan Age
- relate the texts selected for study to the genres/ subgenres they belong to and identify and explain their formal/ stylistic/ literary features
- identify discourses addressed in the plays and critically evaluate them
- analyze the similarities and differences between the various types of drama
- attempt critical reviews of Shakespearean plays based on contemporary theoretical perspectives and their reworking/ adaptations.

Course Description

Module I – Socio-political and Literary Background

Social and political environment of Elizabethan England and its reflection in Shakespearean plays - biographical details of the author - production of plays – sources, actors, theatre, collaborators, audience, structure of the Shakespearean plot - editions and emendations – folios and quartos, Hemminge and Condell, later editions - literary elements – Senecan influence, character types, women, use of the supernatural, blank verse, imagery, quibbles, soliloquy and aside, Irony (verbal, situational and prophetic), disguise - thematological classification of plays – tragedies, comedies, romances, problem plays, histories and roman plays - Shakespeare's enrichment of the English Language – words, phrases and quotable quotes - discourses encountered – humanism, imperialism, feudalism, patriarchal dominance, homosexuality - Shakespeare criticism –John Keats, Charles Lamb, A.C. Bradley, T.S. Eliot, Wilson Knight, William Empson, Leslie Stephen, Frank Kermode, Terry Eagleton, Jonathan Dollimore.

Poetry: Structure of the Shakespearean sonnet - dedication of the sonnets - Identity of the 'Dark Mistress' and the 'Rival Poet' - stock themes of the sonnets.

Recommended Reading

Kennedy, William J. "Shakespeare and the Development of English Poetry." *The Cambridge Companion to Shakespeare's Poetry*. Ed. Cheney,Patrick. Cambridge: CUP. 2007. Print

Stern, Tiffany. "The Theatre of Shakespeares' London. " *The New Cambridge Companion to Shakespeare*. Margreta de Grazia Ed. Cambridge: CUP. 2010. Print (pages 45-60)

Taylor, Gary. "Shakespeare Plays on Renaissance Stages." *The Cambridge Companion to Shakespeare on Stage*. Ed. Stanley Wells. Cambridge: CUP. 2002. Print (pages 1-20)

Ford, Boris Ed. *The New Pelican Guide to English Literature: The Age of Shakespeare*. Vol 2. London: Penguin 1992. Relevant sections from this book.

Module II – Drama

Detailed Study

Plays by Shakespeare

Hamlet

Twelfth Night

Poetry

Sonnet Nos.

18 "Shall I compare thee to a summer's day"

30 "When to the sessions of sweet silent thought"

127 "In the old age black was not counted fair"

130 "My mistress' eyes are nothing like the sun"

Non-detailed study

The Tempest

Henry IV part I

Module III - Modern Adaptations and Re-workings of Shakespeare

Non-detailed study

Tom Stoppard	*Rosencrantz and Guildenstern are Dead*
Howard Jacobson	*Shylock is My Name*
Akira Kurosawa	*Ran*

Module IV - Critical Responses

This is a set of critical reading related to modules 2 and 3.They are to be used as critical tools for the analysis of primary texts. No annotations are to be asked from the following texts.

Recommended Reading

Johnson, Dr. Samuel. *Preface to Shakespeare* (paragraphs 1-60). UK: Oxford University Press, 1966.

Brown, Paul. "This thing of Darkness I Acknowledge Mine: The Tempest and the discourse of Colonialism" from *Political Shakespeare: Essays in Cultural Materialism*. Ed. Jonathan Dollimore & Alan Sinfield. Pages 48-71.

Reading List

Barber, Cesar Lombardi. *Shakespeare's Festive Comedy: A Study of Dramatic Form and Its Relation to Social Custom*. Princeton: Princeton University Press, 1972.

Bloom, Harold. “Shakespeare’s Universalism” (pages 1 – 20). *Shakespeare. The Invention of the Human.* New York: The Berkley Publishing Group, 1999.

Bradley, A.C. Lecture 1: “The Substance of Shakespearean Tragedy” – Introduction and Sections 1&2. From *Shakespearean Tragedy*.

Bryson, Bill. Shakespeare: *The World as Stage*. London: Harper Collins. 2007.

Eliot ,T. S. “Hamlet and His Problems”. *Selected Essays*.Harcourt:Brace,1950.

Greer, Germaine: *Shakespeare’s Wife*. Harper Perennial,2009.

Hazlitt, William*. Characters of Shakespeare's Plays*. HarvardCollege Library, 1875. https://ebooks.adelaide.edu.au/h/hazlitt/william/characters-of-shakespeares plays/chapter9.html

Howlett, Kathy M. *Framing Shakespeare on Film: How the Frame Reveals Meaning*. Ohio: Ohio University Press, 2000.

Jones, Ernest. “The Psychoanalytical Solution” (Chapter Three of *Hamlet and Oedipus*, pp. 45-*70*)

Kermode, Frank. “Shakespeare’s Language”. *Explorations in Shakespeare’s Language*. University of London, 1998.

Sinfield, Alan and Jonathan Dollimore. “Introduction: Shakespeare, Cultural Materialism and the New Historicism” in *Political Shakespeare: New Essays in Cultural Materialism*. Ithaca: Cornell UP,1985.

Spurgeon, Caroline. *Shakespeare’s Imagery and What it Tells Us*. Cambridge, Cambridge University Press, 1935. Available in pdf - http://ebooks.cambridge.org/ebook.jsf?bid=CBO9780511620393. pdf.

Wells, Stanley and Lena Cowen Orlin. *Shakespeare: An Oxford Guide*. New Delhi: OUP, 2007. (Indian Edition)

Wilson, Dover. *What Happens in Hamlet*. UK: Cambridge University Press, 2003.

SEMESTER I

Paper III – EL 213: The Augustan Age (6 hours/ week)

Objectives

The objectives of this paper are to:

- familiarize the students with the major socio-political and literary trends in English literature from the Reformation to the post-Restoration era
- evaluate critically the contributions of Augustan writers
- introduce the students to the various features of Augustan poetry and prose
- examine the relative similarities and differences between the different types of Restoration drama

Learning Outcomes

At the end of the course, students will be able to

- gain a comprehensive understanding of Puritanism, its aftermath and subsequent fall and the restoration of the monarchy in England
- display an awareness of specific features of Neo-Classicism in English literature
- acquire a critical understanding of the emergence and popularity of prose and novel in England, during the period
- assess critically the conflicting trends in the literature of the age

Course Description

Module I – Socio-political and Literary Background

The Stuart Age – the Civil War – the Puritan Movement – the Interregnum – the Restoration – the Enlightenment – the Glorious Revolution – Clubs and Coffee Houses – Neo-Classicism – the French Revolution – the Age of Sensibility

Poetry: Caroline Lyricists: Robert Herrick – Thomas Carew – John Suckling – Richard Lovelace – Abraham Cowley – Waller and Denham; John Milton – grand style – satire – mock-epic - John Dryden – Alexander Pope – heroic couplet – Matthew Prior – John Gay; Poets of the Transition: William Blake – Thomas Gray – William Collins – William Cowper – Robert Burns

Drama: The drama of Milton; Restoration Comedy of Manners: William Wycherley— William Congreve – George Etherege – George Farquhar; Jeremy Collier and his critique of the Comedy of Manners; Dryden and Heroic Drama – Sentimental Comedy: Colley Cibber – Richard Steele — Anti-Sentimental Comedy: Richard Sheridan – Oliver Goldsmith

Prose: Milton's prose – John Bunyan – Jeremy Taylor – Richard Baxter; Diarists: Samuel Pepys and John Evelyn; Sir William Temple – John Locke; the Periodical Essay: Addison and Steele – Daniel Defoe – Jonathan Swift – Dr Johnson and his circle; Edmund Burke – Edward Gibbon – David Hume; Literary Criticism: Contributions of Dryden, Pope and Johnson

Fiction: Rise of the Novel: John Bunyan – Daniel Defoe - Samuel Richardson – Henry Fielding – Tobias Smollett – Laurence Sterne – the novel of sentiment and sensibility – Epistolary and Picaresque novels – Women writers: Aphra Behn – Eliza Heywood – Fanny Burney

Recommended Reading (relevant sections from the following texts)

Choudhury, Bibhash. *English Social and Cultural History: An Introductory Guide and Glossary.* New Delhi: PHI, 2005. Print.

Ford, Boris. *The Pelican Guide to English Literature- Volume 4.* London: Pelican, 1957. Print

David Daiches, David. *A Critical History of English Literature in Two Volumes*. London: Secker & Warburg, 1961.

Sampson George. *The Concise Cambridge History of English Literature*. London: CUP, 1941.

Module II – Poetry and Drama

Prescribed Texts

Poetry

Detailed Study

John Milton	*Paradise Lost Book 1*
John Dryden	*Mac Flecknoe*

Drama

R.B. Sheridan	*The Rivals*

Non-detailed Study

Poetry

Alexander Pope	"Rape of the Lock"
Aphra Behn	"On the Death of the Late Earl of Rochester"
Robert Burns	"A Red, Red Rose" "Auld Lang Syne"
Sir John Suckling	"Love Turned to Hate"
Thomas Carew	"The Unfading Beauty"
Thomas Gray	"Ode on the Death of a Favourite Cat"
William Blake	"The Lamb", "The Tyger" "A Cradle Song"
William Cowper	"The Nightingale and the Glow-Worm"

Drama

William Congreve	*The Way of the World*
Colly Cibber	*Love's Last Shift*

Module III – Prose and Fiction

Prescribed Texts

Prose

Detailed Study

Richard Steele	"The Spectator Club"
Jonathan Swift	"The Vindication of Isaac Bickerstaff"

Dr Johnson	"On Procrastination"

Non-detailed Study

Prose

John Locke	*An Essay concerning Human Understanding* – Chapter 1 "Introduction"
Jonathan Swift	*The Battle of the Books*

Fiction

Aphra Behn	*Oroonoko*
Daniel Defoe	*Robinson Crusoe*
Samuel Richardson	*Pamela*
Henry Fielding	*Joseph Andrews*

Module IV – Critical Responses

This is a set of critical responses to texts in modules 2 and 3.These are to be used as critical tools for the analysis of primary texts. No annotations are to be asked from the following texts.

Recommended Reading

Addison, Joseph. "Notes upon the Twelve Books of *Paradise Lost*" *Spectator* No. 303. Printed for a Company of stationers - 1739

Collier, Jeremy. *A Short View on the Immorality and Profaneness of the English Stage*. Introduction and Chapter 1, Paragraphs 1-15.

Kant, Immanuel. "An Answer to the Question: What is Enlightenment?" library.standrews-de.org/lists/CourseGuides/.../rs.../kant_what_is_enlightenment.pdf

Watt, Ian. "Realism and the Novel Form." *The Rise of the Novel*. Pp 9-30 (Section 1), 1957.

Reading List

Cowan, Brian William. "Mr Spectator and the Coffeehouse Public Sphere." *Eighteenth Century Studies*. 37.3 (2004): 345-366.Web. https://muse.jhu.edu/article/53861

Drabble, Margaret et al Eds. *The Concise Oxford Companion to English Literature*. Oxford UniversityPress, 2007. Print.

Fisk, Deborah Payne. Ed. *The Cambridge Companion to English Restoration Theatre*. Cambridge University Press, 2000. Print.

Foucault, Michel. "What is Enlightenment?" *The Foucault Reader*. Ed. Paul Rabinow. New York: Pantheon, 1984. 32-50.Web. https://monoskop.org/images/f/f6/Rabinow_Paul_ed_The_Foucault_Reader_1984.pdf

Frost, William. "Dryden and Satire." *Studies in English Literature 1500-1900*. 11.3 (1971): 401-416.Web. http://www.jstor.org/stable/449903?seq=1#page_scan_tab_contents

Hawthorn, Jeremy. *Studying the Novel*. London: Arnold, 1992. Print.

Holmsland, Oddvar. "Aphra Behn's "Oroonoko": Cultural Dialectics and the Novel." *ELH*.

68.1 (2001): 57-79. Web. http://www.jstor.org/stable/30031959?seq=1#page_scan_tab_contents

Lewis, C.S. *A Preface to Paradise Lost*. New Delhi: Atlantic, 1942. Print.

Lynch, Kathleen M. *The Social Mode of Restoration Comedy*. New York: Biblio and Tannen, 1926. Print.

Peck, H.W., "The Theme of *Paradise Lost*." *PMLA*. 29.2 (1914): 256-269.Web. http://www.jstor.org/stable/pdf/457078.pdf

Poplawski, Paul. Ed. *English Literature in Context*. Cambridge: Cambridge University Press, 2008. Print.

Rimmon-Kenan, Shlomith. *Narrative Fiction: Contemporary Poetics*. London, Routledge, 1983. Print

Saintsbury, George. *The English Novel*. London: J.M. Dent and Sons, 1927. https://archive.org/stream/cu31924013275254#page/n5/mode/2up

Schmidt, James. Ed. *What is Enlightenment: Eighteenth Century Answers and Twentieth Century Questions*. University of California Press, 1966.Print.

Todd, Janet. Ed. *Aphra Behn Studies*. Cambridge: Cambridge University Press, 1996.Print.

Wall, Cynthia. Ed. *A Concise Companion to the Restoration and Eighteenth Century*. Oxford: Blackwell, 2005. Print.

Watt, Ian. *Rise of the Novel.Chatto,* 1957.

SEMESTER I

Paper IV - EL 214: Romantics and Victorians (7 hours per week)

Objectives

The objectives of this paper are to:

- understand the socio-cultural, political and intellectual contexts that nourished Romantic and Victorian Literature
- evaluate critically the different phases of Romanticism, the change in mood and temper in the Victorian era and the conflict between science and religion at the turn of the century
- enable the students to evaluate critically the English mindset in the context of rapid social transformations in the nineteenth century
- identify and explain the features of the different kinds of literary texts in terms of the literary movements

Learning Outcomes

At the end of the course, students will be able to:

- relate the texts selected for study to the genres they belong to and identify and explain the structural, formal, stylistic and literary features.
- display an awareness of the contributions of the poets, novelists and prose writers
- explain and analyze the similarities and differences between the different types of novels of the Romantic and Victorian ages
- understand the social and literary changes that influenced drama in the century
- evaluate the implications of the critical responses of the period

Course Description

Module I - Socio-political and Literary Background

The French Revolution and its impact – the Industrial Revolution – urbanisation and unemployment – the Luddite Riots – Peterloo Massacre – the Reform Act of 1832 – Corn Laws– the Hungry Forties – the Oxford Movement.

change in mood and temper in the Victorian age – spread of science and technology – the conflict between science and religion – Parliamentary reform and political stability – Utilitarianism – Charles Darwin – Karl Marx and Sigmund Freud – Methodism — the rise of education – Public school system- changes in social life – politics of colonization – the Victorian dilemma – the Victorian Compromise – Victorian morality.

Poetry: The Romantic Revival and Revolt - William Wordsworth and Samuel Taylor Coleridge - the *Lyrical Ballads* – Wordsworth's theory of poetry – different phases of Romanticism – the younger Romantics –John Keats, Percy Bysshe Shelley, Lord Byron – Women poets of the Romantic age – Anna Laetitia Barbauld, Elizabeth Benger – Fleshly school of poetry – Aestheticism - Decadent poetry – Contemplative poetry, love poetry, elegy, dramatic monologue – Alfred Lord Tennyson, Matthew Arnold, A.H. Clough, Robert Browning, Elizabeth Barrett Browning – Pre-Raphaelites – D.G .Rossetti, Christina Rossetti, Algernon Swinburne, William Morris–Precursors to Modernist poetry – Thomas Hardy – Gerard Manley Hopkins, Rudyard Kipling–Symbolism – Arthur Symons

Drama: Verse drama in the Romantic age - closet drama – Samuel Taylor Coleridge - William Wordsworth –George Gordon Byron – Percy Bysshe Shelley - John Keats - Lord Tennyson – the decline of drama in the Romantic and Victorian ages – causes – dramatists of transition – T.W. Robertson and Stage Naturalism – spectacular theatre and melodrama– Pinero and Jones and the problem play– Oscar Wilde and Comedy of Manners.

Prose and Fiction: The rise of the modern review and magazines – Essay writing and criticism – Thomas De Quincey and J.G.Lockhart – Charles Lamb – the personal essay – William Hazlitt – Leigh Hunt – Coleridge's prose writings – Mary Wollstonecraft – the development of the English Novel in the first half of the nineteenth century –Walter Scott – the Historical Novel— Jane Austen– Horace Walpole, Mary Shelley – the Gothic Novel

Prose in the age of Tennyson – Thomas Carlyle – Arnold's essays – other prose writers – Walter Pater, Leslie Stephen, Thomas Huxley and John Henry Newman – Age of Fiction – Charles Dickens and the Humanitarian Movement –William Thackeray----George Eliot – the –the Bronte sisters, George Meredith, R.L.Stevenson – Hardy and the Wessex novels.

Recommended Reading (relevant sections of the following texts)

Choudhury, Bibhash. *English Social and Cultural History: An Introductory Guide and Glossary.*PHI learning*, 2005.*

Daiches, David. *A Critical History of English Literature - Volume 2*. Ronald Press Co. 1970.

Ford, Boris. *The Pelican Guide to English Literature - Volumes 5 and 6.* Penguin Books,1980.

Sampson, George. *The Concise Cambridge History of English Literature*. Cambridge University Press, 2010.

Module II - Poetry and Drama

Prescribed Texts

Detailed Study

Poetry

William Wordsworth	"Ode on the Intimations of Immortality"
Samuel Coleridge	"Dejection: An Ode"
P.B. Shelley	"Ode to the West Wind"
John Keats	"Ode on a Grecian Urn"
Lord Tennyson	"The Lotus-Eaters"
Robert Browning	"Fra Lippo Lippi"
Matthew Arnold	"Dover Beach"
G.M.Hopkins	"Pied Beauty"

Drama

Oscar Wilde	*The Importance of Being Earnest*

Non-detailed Study

Poetry

Lord Byron	"The Prisoner of Chillon"

Robert Southey	"My Days among the Dead are Past"
Emily Bronte	"No Coward Soul is Mine"
D.G. Rossetti	"The Blessed Damozel"
Elizabeth Barrett Browning	*Sonnets from the Portuguese*-14 and 22
William Morris	"The Haystack in the Floods"

Drama

P.B. Shelley	*The Cenci*

Module III- Prose and Fiction

Prescribed Texts

Detailed Study

Prose

Charles Lamb	"Oxford in the Vacation", " Mackery End, in Hertfordshire", "A Dissertation upon Roast Pig"
Matthew Arnold	"Sweetness and Light", *Culture and Anarchy*, Chapter I pages: 1-19

Non-detailed Study

Prose

William Wordsworth	*Preface to the Lyrical Ballads*
Lytton Strachey	"Dr. Arnold" *Eminent Victorians* – (pp 207-242)

Fiction

Jane Austen	*Mansfield Park*
Charles Dickens	*David Copperfield*
George Eliot	*The Mill on the Floss*
Thomas Hardy	*The Mayor of Casterbridge*

Module IV - Critical Responses

This is a set of critical responses to texts in modules 2 and 3.These are to be used as critical tools for the analysis of primary texts. No annotations are to be asked from the following texts.

Recommended Reading

Abrams, M. H. "Introduction." *The Mirror and the Lamp: Romantic Theory and the Critical Traditions.* Oxford University Press, 1953.

Bloom, Harold. "Introduction" *The Visionary Company: A Reading of English Romantic Poetry.* Cornell University Press, 1995.

Walker, Hugh. "The New Age". *The Literature of the Victorian Era*. Cambridge University Press, 2011. Pages. 1-22.

Reading List

Alexander, Michael. *A History of English Literature*. Chennai: Palgrave Macmillian, 2007. Print.

Bloom, Harold. *The Visionary Company: A Reading of English Romantic Poetry*.New York: Cornell University Press, 1971. Print.

Bowra, C.M. *The Romantic Imagination*. London, OUP, 1949. Print.

Brantlinger, Patrick. *Victorian Literature and Postcolonial Studies*. Edinburgh: Edinburgh University Press, 2009. Print.

Bush, Douglas. *Mythology and Romantic Traditions*. New York: Pageant Book Company, 1957. Print.

Cordery, Gareth. "Foucault, Dickens, and David Copperfield." *Victorian Literature and Culture* 26.1 (1998): 71-85. Web. http://www.jstor.org/stable/25058404

Evans, Ifor. *A Short History of English Literature*. USA: Penguin Books, 1990. Print.

Foster, Richard. "Wilde as Parodist: A Second Look at the Importance of Being Earnest". *College English* 18.1 (1956): 18-23. Web. http://www.jstor.org/stable/372764

Frye, Northrop. *A Study of English Romanticism*. New York: Random House,1968. Print.

Grierson, Herbert and J. C. Smith. *A Critical History of English Poetry*. London: Bloomsbury, 2013.

Hoerner, Fred. "Nostalgia's Freight in Wordsworth's 'Intimations Ode' *ELH* 62.3 (1995):631-661. Web. http://www.jstor.org/stable/30030094.

Knight, G. Wilson. *The Starlit Dome: Studies in the Poetry of Vision*. New York: Routledge, 2002. Print.

Lawrence, Karen, and Betsy Seifter. *McGrawHill Guide to English Literature, Vol.II, William Blake to D. H.Lawrence.* McGrawHill, 1985. Print.

Peck, John and Martin Coyle. *A Brief History of English Literature*. Palgrave Macmillan, 2013. Print.

Radford, Andrew and Mark Sandy. *Romantic Echoes in the Victorian Era*. Bloomington: Indiana University Press, 2010. Print.

Trilling, Lionel. *The Liberal Imagination: Essays on Literature and Society*. NewYork: New York Review Books, 1950. Print.

Watt,Ian (ed.). *The Victorian Novel*. London: Oxford University Press,1971.Print.

SEMESTER II

Paper V - EL 221: From Modernism to the Present (6 hours/ week)

Objectives

The Objectives of this course are to:

- familiarize students with the socio-cultural impulses that shaped the twentieth century English society
- introduce and examine the various movements that dominated the literature, culture, and arts of the century and which produced significant shifts in the patterns of thought and living
- introduce the students to the poets, novelists, dramatists, essayists, prose writers and critics of the age
- examine the similarities and differences between the literature of the first and the second half of the centuries

Learning Outcomes:

At the end of this course, students will be able to:

- demonstrate an understanding of how the age affected the literature and the various genres
- demonstrate a knowledge of the major movements that influenced British and European literature
- analyze critically and explain the features of modernism
- evaluate critically the texts in terms of its stylistic and formal features

Course Description

Module I – Socio-political and Literary Background

Georgian and Edwardian periods – The Irish Question – World Wars I & II and the inter-war years – Depression Years – Decline of political power – The End of the Empire – Labour Government – Mass Culture – Welfare State – Cold War – Thatcher's England – millennial England. Literature and media in the twentieth century – Role of the BBC

Poetry: Edwardian Poets: John Masefield – Walter de la Mare – A.E. Housman – Georgians: Robert Bridges — Symbolist Movement – Irish Literary Revival – W.B. Yeats – Poets of World War I: Wilfred Owen, Siegfried Sassoon, Rupert Brooke –Imagism-- Modernist Poetry: T.S. Eliot – the Poets of the thirties: W.H. Auden, Louis MacNeice, Stephen Spender et al – Surrealism: Dylan Thomas – New Apocalypse –Movement Poetry: Philip Larkin, Thom Gunn, Elizabeth Jennings – Confessional Poetry—Sylvia Plath--New poets of the 50's: Ted Hughes – John Betjeman – Mavericks: Seamus Heaney, Andrew Motion, Geoffrey Hill, R.S. Thomas – 1980s – Martians and Gorgons – Craig Raine; Contemporary: Charles Tomlinson, Donald Davie, Benjamin Zephaniah - Scottish Poets: Jackie Kay, Carol Ann Duffy

Drama: The New Drama – influence of Ibsen – Problem play – Bernard Shaw – John Galsworthy – James Barrie – The Well-made play – Poetic Drama – T.S. Eliot, Christopher Fry – Irish Dramatic Movement – Abbey Theatre – W.B. Yeats, J. M. Synge, Sean O'Casey – Post-war drama –The Kitchen-sink drama – Arnold Wesker – The Angry Young Men – John Osborne – The Theatre of the Absurd – Samuel Beckett, The Theatre of Cruelty – Comedy of

Menace – Harold Pinter, Tom Stoppard; Edward Bond, Robert Bolt - Women Dramatists: Caryl Churchill, Charlotte Keatley - In-yer-face Theatre

Prose: Criticism: T.S. Eliot, Virginia Woolf, I. A. Richards, William Empson, F. R. Leavis, Raymond Williams, Terry Eagleton – The Essay – Hilaire Belloc, G.K. Chesterton, Max Beerbohm, Bertrand Russell, A.G Gardiner, Aldous Huxley, George Orwell, E.V. Lucas – Biography: Lytton Strachey; Periodicals – the little magazine.

Novel: Edwardian Novelists: John Galsworthy – Rudyard Kipling – H.G. Wells – Psychological Novel – D. H. Lawrence – Stream-of-consciousness – James Joyce, Virginia Woolf – Joseph Conrad – E. M. Forster – George Orwell – Somerset Maugham – Detective novel – Post-war Fiction – Graham Greene, William Golding, Samuel Beckett, Campus Novel – Evelyn Waugh, C. P. Snow – Other novelists: Kingsley Amis, John Wain, Angus Wilson, Lawrence Durrell, Anthony Burgess, Christopher Isherwood, Malcolm Bradbury, Doris Lessing, Anita Brookner, Iris Murdoch, A.S. Byatt, Margaret Drabble, Muriel Spark, Angela Carter, John Fowles, Ian McEwan, Peter Ackroyd, Alan Hollinghurst, Hillary Mantel, J. K. Rowling.

Recommended Reading (Relevant sections from the following books**)**

The Short Oxford History of English Literature by Andrew Sanders

A Critical History of English Literature Vol.1V by David Daiches

English Literature in Context by Paul Poplawski

The Routledge History of Literature in English by Ronald Carter and John McRae

Module II – Poetry and Drama

Prescribed Texts

Detailed study

Poetry

W. B. Yeats	"The Second Coming" "Sailing to Byzantium"
T. S. Eliot	"The Waste Land"
W. H. Auden	"In Memory of W. B. Yeats"
Dylan Thomas	"Poem in October"
Sylvia Plath	"Daddy"
Carol Anne Duffy	"Anne Hathaway"

Drama

Samuel Beckett	*Waiting for Godot*

Non-detailed study

Poetry

Wilfred Owen	"Dulce et Decorum Est"
Philip Larkin	"Church Going"
Ted Hughes	"Thought Fox"
Seamus Heaney	"Punishment"
Alice Oswald	"The Wedding"

Benjamin Zephaniah "The British"

Drama

David Hare *Stuff Happens*

Caryl Churchill *Cloud Nine*

Module III – Prose and Fiction:

Prescribed Texts

Detailed Study

Prose

T. S. Eliot "Tradition and the Individual Talent"

Virginia Woolf "Modern Fiction"

Non-detailed Study

Prose

George Orwell "Prevention of Literature"

Raymond Williams "Seeing a Man Running"

Fiction

Novel

James Joyce *The Portrait of an Artist as a Young Man*

Angela Carter *The Nights at the Circus*

Julian Barnes *Sense of an Ending*

P.G. Wodehouse *The Code of the Woosters*

Short Story

Somerset Maugham "Rain"

Margaret Drabble "The Reunion"

Module IV- Critical Responses

This is a set of critical reading related to modules 2 and 3.They are to be used as critical tools for the analysis of primary texts. No annotations are to be asked from the following texts.

Recommended Reading

Eagleton, Terry. "The Rise of English". *Literary Theory: An Introduction*. Minnesota: University of Minnesota, 1996.

Esslin, Martin. "Chapter I". *The Theatre of the Absurd*. London: Pelican, 1980.

Fraser, G.S. "Chapter I". *The Modern Writer and His World*. London: Derek Verschoyle, 1953.

Reading List

Alegre, Sara Martín. *Post-War English Literature: 1945-1990*. UOC. Print.

Bradbury, Malcolm. *The Social Context of Modern English Literature*. Oxford: OUP, 1971.

Childs, Peter. *The Twentieth Century in Poetry: A Critical Survey.* Oxon: Routledge, 1999.

Christopher. *Modern British Drama: The Twentieth Century*. Toronto: York University, 2002. Print.

Fish, James F. *A Concise Companion to Contemporary British Fiction*. London: Blackwell, 2006. Print.

Ford, Boris, ed. *The New Pelican Guide to English Literature*. Volume 7 (*From James to Eliot*) and Volume 8 (*From Orwell to Naipaul*). London: Penguin Books, 1997. Print.

Head, Dominic. *The Cambridge Introduction to Modern British Fiction.* Cambridge: Cambridge University Press, 2002. Print.

Lane, David. *Contemporary British Drama*. Edinburgh: Edinburgh University Press, 2010. Print

Leavis, F.R. *New Bearings in English Poetry*. London: Penguin, 1994. Print.

Levenson, Michael. *The Cambridge Companion to Modernism*. London: CUP, 1999. Print.

Malcolm, David and Cheryl Alexander Malcolm. *A Companion to the British and Irish Short Story.* Oxford: Blackwell, 2009.

Morrison, Jago. *Contemporary Fiction.* London: Routledge, 2003. Print (Chapter 10)

The Cambridge History of English and American Literature

Perkins, David. *A History of Modern Poetry*. 2 Vols. Harvard: Harvard University Press, 1979, 1989. Print.

Schoene, Berthold. *The Cosmopolitan Novel*. Edinburgh: Edinburgh University Press, 2009. Print.

Sheppard, Robert. *The Poetry of Saying: British Poetry and Its Discontents, 1950-2000*. Liverpool: Liverpool University Press, 2005.

Tew, Philip. *The Contemporary British Novel.* London: Continuum, 2004.

Thomas, C.T. "Introduction". *Twentieth Century Verse: An Anglo-American Anthology*. New Delhi: Macmillan, 1979. Print.

Thwaite, Anthony. *Poetry Today: A Critical Guide to British Poetry, 1960-1995*. London: Routledge, 1996. Print.

Waugh, Patricia. *Revolutions of the Word: Intellectual Contexts for the Study of Modern Literature.* London, Arnold, 1997. Print.

Williams, Raymond: *Drama from Ibsen to Brecht*. London: Chatto and Windus, 1965. Print.

SEMESTER II

Paper VI – EL 222: Indian Writing in English (6 hours/week)

Objectives

The objectives of this paper are to:

- enable students to understand the historical and socio-cultural contexts for the emergence of English as a medium for communication and literary expression in India
- provide students a perspective on the diverse aspects of Indian Writing in English
- enable students to trace the evolution of Indian Writing in English
- enable students to get an overview of Indian English poetry, prose, drama, novel and short story
- help students to develop a general understanding of Indian aesthetics
- enable an understanding of the recent trends in Indian Writing in English

Learning Outcomes

At the end of the course, the students will be able to:

- display an in-depth awareness of the major historical events and the socio-cultural contexts which moulded the various genres in Indian Writing in English
- analyze how the sociological, historical, cultural and political context impacted the texts selected for study
- evaluate critically the contributions of major Indian English poets, dramatists, prose writers, novelists and short story writers
- develop a literary sensibility and display an emotional response to the literary texts and cultivate a sense of appreciation for them
- apply the ideas encapsulated in Indian Aesthetics to literary texts

Course Description

Module I - Socio-political and Literary Background

Colonialism and Macaulay's Minutes - historical context for the rise of Indian Writing in English – Indian Renaissance - socio-cultural movements - social reformers – rise of Indian nationalism - Nehruvian socialism- secularism - crisis in Indian democracy – Emergency – Postcolonialism - Indian feminist thought - dalit consciousness - subaltern voices - advent of globalization – diaspora - popular literature

Poetry: Influence of Romanticism - emergence of epics – lyrics – sonnets - impact of nationalism on Indian English poetry -Michael Madhusudan Dutt, Aurobindo Ghose, Rabindranath Tagore, Toru Dutt, Sarojini Naidu – Modernism –Nissim Ezekiel, A.K. Ramanujan, Jayanta Mahapatra, R. Parthasarathy, Gieve Patel, Keki. N. Daruwalla, Shiv. K. Kumar, Eunice De Souza, Adil Jussawala, Kamala Das, Arun Kolatkar, Vikram Seth, Meena Alexander, Tabish Khair, Vijay Sheshadri, Mamang Dai. Jeet Thayil

Drama: Indian Classical Drama -Bharatamuni, Patanjali, Bhasa, Kalidasa, Bhavabhuti - Loknatya in seventeenth century - modern drama - social drama, historical drama, artistic drama, amateur theatre,Indian Peoples' theatre, street theatre -Bharatendu Harishchandra, Krishna Mohan Banerjee, Michael Madhusudan Dutt, Aurobindo Ghose, Rabindranath

Tagore, Harindranath Chattopadhyay, T.P. Kailasam, B.V. Karanth, J.M. Lobo Prabhu - Asif Currimbhoy, Girish Karnad, Vijay Tendulkar, Badal Sircar - Safdar Hashmi, Pritish Nandi, Alyque Padamsee, Mahesh Dattani, Shanta Gokhale, Manjula Padmanabhan, Mahashweta Devi .

Prose:Impact of modernity in nineteenth century - Impact of Nationalism in twentieth century-Vivekananda, Mahatma Gandhi, Jawaharlal Nehru, S. Radhakrishnan, Nirad. C. Chaudhury- Contemporary Indian prose -Cho Ramaswamy, C.S. Lakshmi, Kancha Illaiyah, P.Sainath, Arundhati Roy, Ramachandra Guha

Fiction: Pre-Independence fiction - Partition fiction – Fiction of the diaspora – women writers -Khushwant Singh, R.K.Narayan, Raja Rao ,Mulk Raj Anand, G.V. Desai, Nayantara Sehgal, Kamala Markandaya, Ruth Prawer Jhabwala, Salman Rushdie, V.S. Naipaul, Shashi Tharoor, Vikram Seth, Rohinton Mistry, Shashi Deshpande, Amitav Ghosh, Arundhati Roy, Anita Desai, Jhumpa Lahiri, Kiran Desai, Chitra Divakaruni, Anita Nair,Manu Joseph, Chetan Bhagat, Amish Tripathi,Amit Chaudhuri, Anees Salim.

Recommended Reading

Iyengar, K.R.S. *Indian Writing in English*. Sterling, 1988.

Mehrotra, Arvind Krishna. *A Concise History of Indian Literature in English*. Permanent Black, 2008.

Naik, M.K. *A History of Indian English Literature.* Sahitya Akademy, 1982.

Seturaman, V.S. *Indian Aesthetics.* Macmillan, 2000.

Module II –Poetry and Drama

Prescribed Texts

Detailed Study

Poetry

Sarojini Naidu	"Coromandel Fishers"
Kamala Das	"The Freaks"
Jayanta Mahapatra	"Grandfather"
Nissim Ezekiel	"Background Casually"
Mamang Dai	"This Summer – The Cicada's Song"
Jeet Thayil	"Life Sentence"
Eunice De Souza	"The Road"

Drama

Mahesh Dattani	*Dance Like a Man*

Non Detailed Study

Poetry

Toru Dutt	"Our Casuarina Tree"
Rabindranath Tagore	Songs 1, 6, 50 & 103
Parthasarathy	"As a man approaches thirty he may"
Arun Kolatkar	"An Old Woman"

Gieve Patel	On Killing a Tree"
Mamta Kalia	"After Eight Years of Marriage"

Drama

Vijay Tendulkar	*Silence! The Court is in Session*
Girish Karnad	*The Fire and the Rain*

Module III- Prose and Fiction

Prescribed Texts

Detailed Study

Prose

A.K. Ramanujan: "Is There an Indian Way of Thinking: An Informal Essay."

Non-detailed Study

Fiction

R.K Narayan	*The Guide*
Salman Rushdie	*Shame*
Amitav Ghosh	*Sea of Poppies*
Bharati Mukerjee	*Jasmine*
Anita Nair	*The Mistress*

Short Story

Ruskin Bond	"The Kite Maker"
Arjun Dangle	"Promotion"
Jhumpa Lahiri	"A Temporary Matter"

Module IV – Critical Responses

This is a set of critical reading related to modules 2 and 3.They are to be used as critical tools for the analysis of primary texts. No annotations are to be asked from the following texts.

Recommended Reading

Chaudhuri, Amit. "Poles of Recovery" (pages 39-56) from *Clearing a Space: Reflections on India, Literature and Culture.*

Ayyappa Panicker: "Indian Poetry in English and the Indian Aesthetic Tradition" from *The Indian Journal of English Studies*.

Meenakshi Mukherjee: "From Purana to Nutana" from *The Twice Born Fiction*

Reading List

Bruce, King. *Modern Indian English Poetry*. New Delhi: Oxford University Press,1989. *Print.*

Chaudhuri, Amit. *Clearing a Space: Reflections on India, Literature and Culture.* Oxfordshire: Peter Lang, 2008. Print.

Chaudhuri,Asha Kuthari. *Contemporary Indian Writers in English: Mahesh Dattani, An Introduction* . Delhi: Foundation. 2005. Print

Dharwadker Vinay: *The Collected Esays of A.K. Ramanujan.* London: OUP 199/2004, Print

Dangle, Arjun. *Poisoned Bread: Translations from Modern Marathi Dalit Literature*. New Delhi: Orient Blackswan, 2009. p. 191-196. Print.

Gosh, Amitav. "Opium Financed British Rule in India." Interview by Soutik Biswas. *BBC.com*. 23 June 2008. Web. 30 June 2010.

Ghosh, Amitav. *Sea of Poppies*. London: Penguin, 2008.

Lin, Lidan. "The Rhetoric of Posthumanism in Four Twentieth Century International Novels." Diss., U of North Texas, 1998. Ann Arbor: UMI, 1998.

Iyengar, K.R.S. *Indian Writing in English*. New Delhi: Sterling,1985. Print

Lakshmi, Vijay. *In Search of Sita: Revisiting Mythology.* Ed. Malashri Lal & Namita Gokhale. p. 209-217. Print.

Mehrotra, Arvind Krishna, Ed. *A Concise History of Indian Literature in English*. New Delhi: Permanent Black, 2008.Print.

Mukherjee, Meenakshi. *The Twice Born Fiction*. New Delhi:Arnold Heinemann,1971.Print.

Naik, M.K. *A History of Indian English Literature.* New Delhi 1982.Print.

---.*Twentieth Century Indian English Fiction*. New Delhi: Pencraft International,2004.Print

--- *Indian English Poetry*: from the Beginnings up to 2000.New Delhi: Pencraft International, 2006.Print.

Parthasarathy, R. *Ten Twentieth Century Indian Poets*, New Delhi: Oxford University Press, 1976.Print.

--- , Tandon, Neeru, Ed. *Perspectives and Challenges in Indian English Drama*. New Delhi: Atlantic, 2006.Print.

Thampi, G.B. Mohan: "Rasa as Aesthetic Experience".

Panicker , Ayappa. " Indian Poetry in English and the Indian Aesthetic Tradiiton*", The Indian Journal of English Studies. Vol 23 1983 pages 137-151*

Sethuraman, V.S. *Indian Aesthetics*. New Delhi: Macmillan Ltd, 2000. Print.

Thieme, John. *Literary Review*. http://www.penguinbooksindia.com/amitavghosh/sea_of_poppies.html. Web. 29 June 2010.

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SEMESTER II

Paper VII – EL223: American Literature (6 hours/ week)

Objectives

The objectives of the course are to:

- understand the socio-political factors that shaped American literary scene
- analytically explore works of prose, poetry, drama and fiction in relation to their historical and cultural contexts
- examine the Afro-American experience as articulated in African American literature
- develop an awareness of the evolving American experience and character

Learning Outcomes

At the end of this course, the students will be able to:

- demonstrate an awareness of the socio-political and cultural history of America
- identify key ideas and characteristic perspectives or attitudes as expressed in American literature
- demonstrate knowledge of the contributions of major literary periods, works and persons in American literature and recognize their continuing significance
- evaluate the thoughts, beliefs, customs, struggles, and visions of African American writers
- compare/contrast literary works through an analysis of genre, theme, character, and other literary devices

Course Description

Module I - Socio-political and Literary Background

Historical background – Colonization – European heritage - Puritanism – American Revolution - American Dream - Expansion of the Western Frontier and closing of the Western Frontier - 'Americanness' of American literature – 19th century – American Romanticism - Transcendentalism – the period of the world wars – segregation - American Civil War - Harlem Renaissance -Transnationalism and 20th Century American Literature

Poetry: Poetry of the colonial period – Edward Taylor – postcolonial poetry – William Bryant – H. W. Longfellow – poetry of the 19th century – Ralph Waldo Emerson, Edgar Allan Poe, Henry David Thoreau, Walt Whitman, Emily Dickinson — Carl Sandberg –20th century Robert Frost – Ezra Pound – T. S. Eliot – Gertrude Stein - Wallace Stevens - Williams Carlos Williams - E. E. cummings – Langston Hughes – Robert Lowell – Confessional Movement – Sylvia Plath - Anne Sexton – Beat Poets – Allen Ginsberg – Jack Kerouac

Drama: The beginnings – Lewis Hallam, Jr., Thomas Godfrey - Post independence – Royall Tyler - William Dunlap – 19th century – "The Walnut" – William Henry Brown – Minstrel Show – Post war theatre – Theatrical Syndicate – Realism in Drama – David Belasco – 20th century – modern American Theatre – Provincetown Players – Eugene O'Neill, Arthur Miller, Tennessee Williams, Sam Shepard, August Wilson and Lorraine Hansberry.

Prose: Writings of pre-colonial times – Exploration narratives – Sir Walter Raleigh – Historical writings – Captain John Smith – William Bradford – Religious Writings – John

Winthrop – Political prose – Jefferson, Franklin – Slave Narratives – Frederick Douglass – American Romanticism – Transcendentalism – Ralph Waldo Emerson, Henry David Thoreau – 20th century – Margaret Fuller – Amiri Baraka - Kate Millet - Elaine Showalter - Lionel Trilling

Fiction: First American fiction- 1900s – Washington Irving – Historical novels – Fenimore Cooper – Puritanism – Nathaniel Hawthorne – Herman Melville, Edgar Allan Poe – Realism and Naturalism – Mark Twain, Stephen Crane – Modernism – Henry James – The Lost Generation – Ernest Hemingway, F. Scott Fitzgerald – Harlem Renaissance – W. E. B. DuBois – Ralph Ellison - Richard Wright – William Faulkner – Experimental Novels – Thomas Pynchon, Vladimir Nabokov, J. D. Salinger, Saul Bellow, John Updike , Thomas Berger, Philip Roth, Joseph Heller - Women's writing – Toni Morrison, Alice Walker

Recommended Reading

Rod William Horton: *Backgrounds of American Literary Thought* . Prentice Hall. 1974.

Richard Gray: *A Brief History of American Literature.* Blackwell 2011.

Richard Ruland: *From Puritanism to Postmodernism: A History of American Literature*. Penguin, 1992

Charles B. Harris: *Contemporary American Novelists of the Absurd*. New Heaven, College & Uni. Press.

Module II - Poetry and Drama

Prescribed Texts

Detailed Study

Poetry

Walt Whitman	"Out of the Cradle Endlessly Rocking"
Longfellow	"A Psalm of Life"
Emily Dickinson	"There is Something Quieter than Sleep", "I am Afraid to Own a Body"
Robert Frost	"Birches"
Maya Angelou	"Phenomenal Woman"
Wallace Stevens	"Sunday Morning"
Jorie Graham	"Prayer"

Drama

Eugene O'Neill	*Long Day's Journey into Night*

Non-detailed Study

Poetry

E. E. Cummings	"Buffalo Bill"
Allen Ginsberg	"Sunflower Sutra"
William Carlos Williams:	"The Red Wheel Barrow"
Gertrude Stein	"Daughter"
John Ashbery	"Self Portrait in a Convex Mirror"

Drama

Tennessee Williams	*The Glass Menagerie*
Sam Shepherd	*The Buried Child*

Module 3 - Prose and Fiction

Prescribed Texts

Detailed Study

Prose

Ralph Waldo Emerson	*Self-Reliance*

Non-detailed Study

Prose

Adrienne Rich	"The Domestication of Motherhood," from *Of Woman Born: Motherhood as Experience and Institution*

Fiction

Novel

Hawthorne	*The Scarlet Letter*
Joseph Heller	*Catch-22*
Toni Morrison	*The Bluest Eye*
Philip Roth	*The Ghost Writer*

Short Stories:

Edgar Allan Poe	"The Cask of Amontillado"
Stephen Crane	"Blue Hotel"
Ernest Hemingway	"The Short Happy Life of Francis Macomber."
George Saunders	"Victory Lap"

Module IV - Critical Responses

This is a set of critical responses to texts in modules 2 and 3.These are to be used as critical tools for the analysis of primary texts. No annotations are to be asked from the following texts.

Recommended Reading

Paul Elmer More	'The Origins of Hawthorne and Poe" in Shelburne Essays: First Series, p51-71
Henry James	*The Art of Fiction*
Amiri Baraka	"Black is a Country," *Home - Social Essays*, pp. 101-106

Reading List

Bell, Bernard W. *The Afro-American Novel, and its Tradition*. Amherst: University of Massachusetts Press, 1987. Print.

Bercovitch, Sacvan Ed. *The Cambridge History of American literature*. Cambridge: Cambridge University Press, 1994-. 8 vols. Print

Bradbury, Malcolm.. & Richard Ruland*: From Puritanism to Postmodernism: A History of American Literature.* New York: Penguin, 1992. Print

Bordman, Gerald Martin. *The Oxford Companion to American Theatre. 2nd ed.* New York: Oxford University Press, 1992. Print.

Elliot, Emory. Ed *The Columbia History of the American Novel*. New York: Columbia University Press, 1991. Print.

Gardner, Thomas. *Jorie Graham: Essays on the Poetry* .Wisconsin: The U of Wisconsin P, 2005. Print.

Kolin, Philip C Ed. *American Playwrights Since 1945*: *A Guide to Scholarship, Criticism, and Performance*. New York: Greenwood Press, 1989. Print.

Leary, Lewis Gaston. *Articles on American Literature* 1900-1950. Durham, NC: Duke University Press, 1954. Print.

Leary, Lewis Gaston. *Articles on American Literature*, 1950-1967. Durham, NC: Duke University Press, 1970. Print.

Malkoff, Karl. Crowell's *Handbook of Contemporary American Poetry*. New York: Crowell, 1973. Print.

Matthiessen, F.O. *American Renaissance*: Art and Expression in the Age of Emerson and Whitman. Oxford:OUP, 1968. Print.

Mish, Charles Carroll. *English Prose Fiction.* Charlottesville, VA: Bibliographical Society of the University of Virginia, 1952. Print.

Perkins, David. *A History of Modern Poetry*. Cambridge, MA: Belknap Press of Harvard University Press, 1976-1987. 2 v. Print.

Saunders, John,. *The Tenth of December.* New York: Random House. 2013, Print.

Spiller, Robert E.. *Literary History of the United States.* London: Mcmillan, 1948. Print

White, Barbara Anne. American *Women Writers: an Annotated Bibliography of Criticism.* New York: Garland Pub. Co., 1977.

SEMESTER II

Paper VIII – Critical Studies I[2] [7 hours/week]

Objectives[3]

The objectives of this paper are to:

- represent the important theoretical schools that have radically changed the perception of literature as a cultural phenomena.
- familiarize the students with the basic premises of the foundational schools of modern thought, particularly on the construction of the subject, language, and socio-cultural formations.
- discuss the intellectual milieu in Europe that led to the emergence of theories of structuralism, post structuralism, psychoanalysis, Marxism and feminism
- familiarize the students with the primary conceptual apparatus of these systems of thought
- enable the students to analyze literary phenomena using the theoretical tools provided by the above schools.

Learning Outcomes

At the end of the course it is expected that the students

- would sharpen their analytical and critical faculties drawing inspiration from the readings provided.
- gain an idea of the evolution of critical thinking in Europe and India in the 20th and 21st century.
- understand the function of language in the construction and analysis of literary and cultural phenomena.
- gain an insight into the interconnected nature of these major schools of thought leading to a shift from the paradigmatic to the syntagmatic.

Course Description

Module 1: Structuralism and Semiotics

Saussure's concept of the synchronic study of language has radically changed the basic assumptions in the analysis and interpretation of language and literature. As a form of human science, structuralism can be perceived as a method of systematizing human experience in the study of linguistics, anthropology, sociology, psychology and literary studies. Structuralism views language as a system of signs that structures our perception of the world around us. For the structuralists the visible world consists of surface phenomena whereas the world that is not visible consists of structures that underlie and organize the

[2] It is proposed to offer the works of the major thinkers of the last and the present century in Europe and in our own country in a set of three papers (Critical Studies I in Semester II, Critical Studies II in Semester III, and Cultural Studies in Semester IV). The texts prescribed for detailed study are those texts that led to an epistemic shift in our thinking with reference to subject, language and knowledge.

[3] The Objectives of these three papers are the same.

surface phenomena. The structuralist insights are useful especially in analysing literary conventions and popular culture.

Language as a system of signs - Ferdinand de Saussure- Noam Chomsky - Claude Levi-Strauss – Raman Jakobson – Vladimir Propp – Julien Greimas- Roland Barthe – Mikhail Bakhtin -Structuralist linguistics –Russian Formalism - Prague, Moscow and Copenhagen schools of linguistics – Structuralism in Anthropology – binary opposites – diachronic and synchronic reading - semiotics - sign-code-confabulation - connotation / denotation - encoding / decoding- lexical modality -representation – semiosis - semiosphere – semiotics of culture - metalanguage

Required Reading

Saussure, Ferdinand de. "The Object of Study." *Course in General Linguistics*. Trans. Roy Harris. *Literary Theory: An Anthology*. Ed. Julie Rivkin & Michael Ryan. USA: Blackwell, 1998. 59-63. Print.

Supplementary Reading

Barthes, Roland. "Myth Today". *Mythologies*. Trans. Annette Lavers. New York: The Noonday, 1991. 109 - 145. Web.

Module II: Post structuralism

Post structuralism emerged as a reaction against the structuralist's orderly vision of language and human experience. Post structuralist theory has become instrumental in decentring the Western philosophical canon by viewing language as the conceptual framework that encases our experience. Derrida's theory of deconstruction asserts that language is dynamic, ambiguous, and unstable, disseminating possible meanings. For post structuralism, language is the ground of being and the world is an infinite text, that is, an infinite chain of signifiers always in play.

Frederich Nietzsche – Martin Heidegger – Jacques Derrida – Jean Baudrillard – Jean-Francois Lyotard – Gilles Deleuze - Felix Guattari – Julia Kristeva – Hermeneutics - speech - phenomena - metaphysics of presence' - logos – logocentrism- bricolage – alterity - difference/differance – arche writing - play- closure - theory of hierarchy - aporia – phenomenology

Required Reading

Nietzsche, Friedrich. "On Truth and Lie in an Extra-Moral Sense*". Rhetoric and Language*. New York: Oxford University Press, 1989. (section I).

http://oregonstate.edu/instruct/phl201/modules/Philosophers/Nietzsche/Truth_and_Lie_in_an_Extra-Moral_Sense.htm

Supplementary Reading

Derrida, Jacques. "The Written Being/The Being Written" (seven paragraphs from 'The reassuring evidence... this last writing is also the first writing' in Chapter 1 "The End of the Book and the Beginning of Writing") *Of Grammatology*. Trans. Gayatri Chakravorty Spivak. Baltimore: Johns Hopkins UP, 2016. 19-24. Print.

Module III: Marxism

Marxism focuses on the specific historical and material causes that affect all human events and productions. According to the Marxist theory, the key to understanding a society at any point in history is to focus primarily on the modes of production because all the ideologies and norms of society are constructed with the interests of one who controls the

modes of production. Marxism views literature, like all cultural manifestations, as a product of the socio-economic and ideological conditions of the time and place in which it was written. For Marxism, attentions to the material conditions of life and a critical engagement with our attitude to those conditions are paramount.

Karl Marx – Antonio Gramsci – Walter Benjamin – Georg Lukacs – Louis Althusser – Slavoj Zizek – Terry Eagleton- *The Communist Manifesto* - class – base and superstructure - commodity fetishism - dialectical materialism – hegemony – ideology – interpellation – commodification - theory of production - bourgeois nationalism - bourgeois socialism - capitalist state - dictatorship of the proletariat - means of labor - means of production - mode of production - super-imperialism -surplus product- two-stage theory- wage slavery - conspicuous consumption – false consciousness – reflectionism – sign value – historical situation

Required Reading

Marx, Karl. "The Fetishism of Commodities and the Secret Thereof', *Classical Sociology Theory*, Ed. I. McIntosh. New York: New York UP. 68-71. Print.

Marx, Karl. "The German Ideology" *Classical Sociology Theory*, Ed. I. McIntosh. New York: New York UP. 26-38. Print.

Supplementary Reading

Benjamin, Walter, "The Work of Art in the Age of Mechanical Reproduction" *Illuminations*. Ed. Hannah Arendt. Trans. Harry Zohn. London: Fontana, 1973. 219-53. Print.

Module IV: Psychoanalysis

One of the most significant insights of Freud which still governs classical psychoanalysis is the notion that human beings are motivated or driven by unconscious fears, desires, needs and conflicts. The existence of unconscious is central to all psychoanalytic theories and is conceived as a dynamic entity that engages humans at the deepest level of their being. Unconscious is ambiguous, seen as both the cause and effect of repression and can be accessed through dreams as well as the dynamics of language. For the psychoanalysts sexual behaviour is a product of our culture and the origin of our sexual being lies in the nature of the affirmation or disruption of our sense of self that occurs in childhood.

Sigmund Freud – C.G. Jung- Jacques Lacan – Rene Girard - id, ego and superego - repression - condensation - displacement - fetishism - fixation - regression- archetypes - oral phase - phallic phase - the gaze - symbolic order - imaginary order - mirror stage - the real - name of the father – imago – reality principle – instinctual pleasure – jouissance - hysteria – neurosis - Oedipus complex - penis envy - Freudian slips

Required Reading

Freud. Sigmund. "The Conscious and the Unconscious", "The Ego and the Id", "The Ego and the Super-Ego". *Beyond the Pleasure Principle and other Writings*. Harmondworth: Penguin, 2003. 105-129. Print.

Supplementary Reading

Lacan, Jacques. "Insistence of Letter in the Unconscious". *Modern Criticism and Theory A Reader* 2nd Edition. Ed. David Lodge with Nigel Wood. UK: Longman, 1988.62-87- Print.

Module V: Feminism

As a political and literary movement, Feminism poses new ways of asking and answering questions, challenging the conventional forms of discourse that exist within the mainstream of philosophy, culture and politics. The primary goal of Feminism is to liberate women from patriarchal oppression and attain the social, economic and political equality of the sexes. Feminist literary theory analyses how language, social power structures and institutions reflect patriarchal interests and the ways in which the thoughts marking the above have influenced women's perception of themselves, The writings of feminists try to reveal the basic asymmetry between the terms "masculine" and "feminine" and argue against biological determination and socialization used by patriarchal forces in the construction of gender and sexuality.

Mary Wollstonecraft - Simone de Beauvoir - Betty Friedan - Helene Cixous - Shulamith Firestone - Germaine Greer - Judith Butler - Julia Kristeva- Luce Irigaray – Sandra Gilbert – Sandra Gubar – Adrienne Rich - women's suffrage – aphasia – transcendence – psychosomatic - frigidity - liberal feminism- radical feminism- marxist feminism - - new feminism – post feminism – Indian feminism -écriture féminine – gynocriticism - male gaze - objectification - phallocentrism - phallogocentrism

Required Reading

Rubin, Gayle. "The Traffic in Women: Notes on the 'Political Economy' of Sex". *The Gender/Sexuality Reader: Culture, History, Political Economy*. Ed. Roger N. Lancaster, Micaela Di Leonardo. New York: Routledge, 1997. Print.

Supplementary Reading

Chakravarty, Uma. "Conceptualizing Brahminical Patriarchy in Early India: Gender, Class and State". *Class, Caste, Gender- Readings in Indian Government and Politics-5*, Ed. Manoranjan Mohanty, New Delhi: Sage, 2004.271-295.Print.

Reading List

Atkins, C. Douglas. *Reading Deconstruction/Deconstructive Reading.* Lexington: U of Kentucky P, 1983.

Barthes, Roland. *Elements of Semiology*. Trans. R. Howard. Evanston: Northwestern UP, 1972

---. *Mythologies*. Trans. Annette Lavers. New York: Hill and Wang, 1972.

Barthes, Roland. *S/Z*. 1970. Trans. Richard Miller. New York: Hill and Wang, 1975.

Baudrillard, Jean. *America*. Trans. Chris Turner. London:Verso, 1988.

Belsey, Catherine and Moore, Jane (eds), *The Feminist Reader: Essays in Gender and the Politics of Literary Criticism*. 2nd edn. Basingstoke: Palgrave Macmillan, 1997.

Bloom, Harold, Geoffrey Hartman, Paul de Man, Jacques Derrida, and J. Hillis Miller. *Deconstruction and Criticism*. New York: Seabury, 1979.

Brooks, Ann. *Postfeminisms: Feminism, Cultural Theory, and Cultural Forms*, 1997.

Cavallaro, Dani, 'The Abject', in *The Gothic Vision: Three Centuries of Horror, Terror and Fear*. London: Continuum, 2002). 199–206.

Cixous, Hélène, 'The Laugh of the Medusa' [1975; revd 1976 version trans. by Keith and Paula Cohen], reprinted in Elaine Marks and Isabelle de Courtivron (eds), below

Creed, Barbara, *The Monstrous Feminine: Film, Feminism and Psychoanalysis*. London: Routledge, 1993.

Culler, Jonathan. Structuralist *Poetics: Structuralism, Linguistics, and the Study of Literature*. New York: Cornell UP, 1973.

de Beauvoir, Simone, *The Second Sex* [1949], trans. by H. M. Parshley (Bantam, New York, 1961; Penguin, Harmondsworth, 1974).

Derrida, Jacques. *Of Grammatology and Writing and Difference*. Trans. Gayatri Chakravorty Spivak. Baltimore: Johns Hopkins UP, 1976.

Eagleton, Mary (ed*.), Feminist Literary Theory: A Reader*. 2nd edn. Oxford: Blackwell, 1995.

Eagleton, Terry. *Criticism and Ideology*. New York: Schocken, 1978.

Eagleton, Terry (ed.), *Raymond Williams: Critical Perspectives* (Polity Press, Oxford, 1989).

Eagleton, Terry, *Heathcliff and the Great Hunger* (Verso, London, 1995).

Elliott, Anthony. *Psychoanalytic Theory: An Introduction*. Oxford: Blackwell, 1994.

Ellmann, Maud, ed*. Psychoanalytic Literary Criticism*. London: Longman, 1994.

Faflak, Joe. *Romantic Psychoanalysis: The Burden of the Mystery*. Albany: New York Press, 2008.

Felman, Shoshana (ed*.), Literature and Psychoanalysis* Johns Hopkins University Press, Baltimore, 1977.

Foucault, Michel. *The Foucault Reader*. Ed. Paul Rabinow. New York: Pantheon, 1984.

Friedan, Betty, *The Feminine Mystique*. New York: Dell, 1963.

Gay, Peter, ed.*The Freud Reader*. London: Vintage, 1995.

Genette, Gérard. *Narrative Discourse*. Trans. Jane Lewin. Ithaca: Cornell UP, 1980.

Gilbert, Sandra M., and Susan Gubar. *The Madwoman in the Attic: The Woman Writer and the Nineteenth-Century Literary Imagination*. New Haven, CT: Yale UP, 1979.

Hawkes, Terence. *Structuralism and Semiotics*. Berkeley: U of California P, 1977.

Humm, Maggie, *The Dictionary of Feminist Theory*. Hemel Hempstead: Harvester Wheatsheaf,,1989.

Irigaray, Luce. *Speculum of the Other Woman*. Ithaca, N.Y : Cornell University Press, 1985. HQ1154 .I7413 1985.

Millett, Kate, *Sexual Politics* (Doubleday, New York, 1970).

Kristeva, Julia. *Revolution in Poetic Language and Desire in Language: A Semiotic Approach to Literature and Art*. New York: Columbia University Press, 1980.

Lentricchia, Frank. *After the New Criticism*. See chapter 4.

Kristeva, Julia, *The Kristeva Reader*, ed. by Toril Moi. Oxford: Basil Blackwell, 1986.

Jameson, Fredric. *Marxism and Form: Twentieth-Century Dialectical Theories of Literature*. Princeton: PUP, 1971.

Jefferson, Anne and David Robey. *Modern Literary Theory: A Comparative Introduction*. See chapter 6.

Leitch, Vincent B. *Deconstructive Criticism: An Advanced Introduction*. New York: Columbia UP, 1983.

Lévi-Strauss, Claude. *Structural Anthropology*. Trans. C. Jacobson and B. G. Schoepf. London: Allen Lane, 1968.

Lukács, Georg, *The Historical Novel* [1937], trans. by Hannah and Stanley Mitchell. London: Merlin Press, 1962.

Moi, Toril. *Sexual/textual Politics: Feminist Literary Theory*. London ; New York : Methuen, 1985.PN98.W64 M65 1985.

Moreno, Marta Cerenzo. *Critical Approaches to Shakespeare: Shakespeare for all Time*. UNED, 2014.

Propp, Vladimir.*The Morphology of the Folktale*. 1928. Trans. Laurence Scott. Austin: U of Texas P, 1968.

Scholes, Robert. *Structuralism in Literature: An Introduction*. New Haven: Yale UP, 1974.

Snodgrass, Ellen Mary. *Encyclopedia of Feminist Literature*. New York: Facts on File, 2006.

Showalter, Elaine. "Feminist Criticism in the Wilderness." 1985.

---. *A Literature of Their Own: British Women Novelist from Brontë to Lessin*. Princeton: PUP, 1977.

Todorov, Tzvetan. *The Fantastic: A Structural Approach to a Literary Genre*. Trans. Richard Howard. Ithaca: Cornell UP, 1977.

Williams, Raymond. *Marxism and Literature*. Oxford: OUP, 1977.

Williams, Raymond, *Culture and Society 1780–1950*. London: Chatto & Windus, 1958.

Woolf, Virginia, *A Room of One's Own*. London: Hogarth Press, 1929.

---. *Three Guineas*. London: Hogarth Press, 1938.

---. *On Women and Writing* [1979], selected and intro. by Michèle Barrett. London: The Women's Press, 2001.

SEMESTER III

Paper IX – EL 231: Linguistics and Structure of the English Language

(6 hours per week)

Objectives

The objectives of this course are:

- To enable students to get a fundamental understanding of the basic nature, branches, and history of linguistics
- To attempt a comparison of RP, GIE and Malayalam sounds based on contrastive linguistics
- To examine the features of language units at the phonological, morphological and syntactical levels
- To familiarize the students with history and developments of Modern Grammar

Learning Outcomes

At the end of this course, students will:

- have developed an awareness of the basic nature, branches, and history of linguistics
- have become familiar with contrastive linguistics
- be able to analyse language units based on their phonological, morphological and syntactical features
- have developed an awareness of the principles and limitations of ICA and PSG
- be able to explain the transformation of sentences based on TG grammar

Course Description

Module I - Language and Linguistics

Animals and human language, properties of human language - regional variation in language - dialect, dialectology, bilingualism, pidgin, creole - social variation in language - speech style, register, slang - Speech and writing - Linguistics as a scientific study of language - Scope of linguistics – Branches: Sociolinguistics, Psycholinguistics - Saussurean concepts - langue and parole, competence and performance, language as a system of signs, syntagmatic and paradigmatic, synchronic and diachronic - American Structuralism and Bloomfield - The Prague School - Noam Chomsky and his theories.

Module II - Phonology, Morphology, Semantics and Pragmatics

Suprasegmental features - word stress, stress shift - primary and secondary, compound word stress, speech rhythm, intonation – phonemes and allophones - comparison of RP, GIE and Malayalam sounds – Transcription - Morphology: morph, classification of morphemes - analysis of affixes – allomorph – morpho-phonemics - Semantics: meaning, conceptual meaning, associative meaning – Lexical semantics - antonymy, synonymy, hyponymy, homonymy and polysemy - Pragmatics: content and meaning, invisible meaning, discourse analysis, Speech Act Theory.

Module III - Modern Grammar

Grammar - Traditional Grammar - fallacies - Structural Descriptive Grammar – prescriptive vs descriptive – grammar and usage – grammaticality and acceptability - word classes: form

class and function class words – phrases and their functions – clauses – co-ordination and subordination – noun, adverb and relative clauses - basic sentence patterns – cleft sentences – kinds of sentences: affirmative, interrogative, exclamatory, imperative – simple, compound, complex - Elements of a sentence - subject, verb, object, complement, adverbial.

Module IV - Syntactic Theories

IC Analysis – ambiguity and limitations - PS Grammar - PS rules-limitations - TG Grammar – transformational and generative - deep and surface structure - optional and obligatory rules - Aspect model of Chomsky. -Transformations: a) Singularly: Interrogation, Negation, Passivisation, Tag Questions, b) Double based- relativisation, complementation, adverbalisation, co-ordination - Tagmemics, Chomsky's Trace Theory (1980) model - Case, government and binding.

Recommended Reading

Akmajian, Adrian Richard, A Demers, Ann K Farmer and Robert M Harnish: *Linguistics: An Introduction to Language and Communication (6th edition)*

Balasubramaniam, T. *A Textbook on Phonetics for Indian Students.* New Delhi:Macmillan, 1981.

Bansal, R.K and J.B Harrison: *Spoken English: A Manual of Speech and Phonetics* (Hyderabad: Orient Blackswan, 1972.

Crystal, David. *Linguistics.* Penguin English, 1992.

Fries, C.C. *The Structure of English.* Longman, 1977.

Leach, Geoffrey. *Semantics*

Lyons. *An Introduction to Theoretical Linguistics*. Cambridge University Press, 1995.

Malden, M.A: Linguistics: *An Introduction to Linguistic Theory*

Chomsky, Noam. *Aspects of the Theory of Syntax.* Massachusetts: MIT Press, 1967.

Quirk, Randolph, and Sidney Greenbaum. *A University Grammar of English*. New Delhi: Pearson, 2002.

Roach, Peter *English Phonetics & Phonology*

Robins, R.H.. *General Linguistics: An Introductory Survey.* Longman, 1996.

Saussure, Ferdinand de. *Course in General Linguistics.* Pennsylvania: McGraw Hill Book Co. 1966.

Yule, George. *The Study of Language.* Cambridge: Cambridge University Press, 1996.

Sethi, J and P.V Dhamija: *A Course in Phonetics and Spoken English*. New Delhi: PHI, 1999.

Syal, Pushpinder & D.V. Jindal : *An Introduction to Linguistics- Language, Grammar and Semantics.* Prentice Hall of India, 2007.

Verma, S.K. & N. Krishnaswamy: *Modern Linguistics.* Delhi: OUP, 1989.

Widdowson, H.G. *Linguistics*. London: OUP, 1996.

Yule, George . *Pragmatics*. London: OUP, 2012.

SEMESTER III

Paper X – Critical Studies II [7 hours/week]

Course Description

Module I: Postmodernism

Postmodernism has derived its key ideas from post structuralist assumptions like multiple meanings and deconstructed centres. As a theory of history, society, culture, art, and literature, postmodernism questions the superiority of order and the unity of experience. Postmodernism rejects elitism, sophisticated formal experimentation and tragic sense of alienation predominant in the modernist writers. Theories of postmodernism critique grand narratives and promote the existence of little narratives in literary expressions. It celebrates fragmentation which obliterates the illusion of the text as "real" and provides multiple interpretations and even parody.

Søren Kierkegaard -Friedrich Nietzsche - Jurgen Habermas- Martin Heidegger -Jacques Derrida - Michel Foucault - Jean-François Lyotard-Richard Rorty-Jean Baudrillard- Edmund Husserl - Martin Heidegger - Pierre Bourdieu - Alterity-Bricolage - Constructivism- Cyberpunk – Hyperreality – Pastiche – simulacra - Virtual Reality - black humor - Intertextuality - pastiche- Metafiction - Fabulation- Historiographic metafiction-Temporal distortion- Magic realism- Technoculture - Paranoia- Maximalism - Minimalism - Fragmentation

Required Reading

Habermas, Jurgen."Modernity - An Incomplete Project*". Postmodernism: A Reader*. Ed. Thomas Docherty. New York: Harvester Wheatsheaf, 1993.98-109. Print.

Supplementary Reading

Bauman, Zygmunt. "On being Light and Liquid". *Liquid Modernity*. Cambridge: Polity, 2000. 1-15. Print.

Module II: Cultural Materialism

Theories of Cultural Materialism along with New Historicism have shown new ways of reading and analysing literature, culture and history. As a critical method Cultural Materialism combines an attention to the historical context, theoretical method, political commitment and textual analysis. As an offshoot of Marxist criticism it bridges the gap between Marxism and Postmodernism. In Cultural Materialism, the word 'culture' includes all forms of culture, from the high to the low, and 'materialism' signifies the opposite of idealism. Cultural Materialists argue that the meanings of literary texts are not fixed by a universal criterion: rather they are always in play and often subject to politically radical appropriations.

Raymond Williams - Marvin Harris - Eric Ross - John Cole - Allen W. Johnson: - David H. Price- Stephen Sanderson - Stuart Hall - Angela McRobbie - Debbie Epstein - Chris Griffin – Frankfort school – reductionism -dominant ideology – dissident readings – historical materialism – mode of reproduction – domestic economy – political economy –infrastructural determinism - epistemological principles of cultural materialism – ethnography- containment

Required Reading

Williams, Raymond. "Hegemony" "Tradition, Institution, Formations" "Dominant, Residual, Emergent". *Marxism and Literature*. New York: OUP, 1977. 108-21 Print.

Supplementary Reading

Raghavendra, M. K. 2006. "Structure and Form in Indian Popular Film Narrative." *Fingerprinting Popular Culture: The Mythic and the Iconic in Indian Cinema*. Ed. Vinay Lal and Ashis Nandy, New Delhi: OXFORD University Press. 24-50.

Module III: New Historicism

New Historicism focuses on the historicity of literary texts and the textuality of history by analysing them in the context of power and ideology at a given time. New Historicist theory derives its basic assumptions from Foucauldian discourses on hegemonic institutional practices and individual subjectivities. This has led to an understanding that the production, categorization and analysis of texts are determined by forces of history, which in turn shape the cultural work itself. The New Historicist believes in the impossibility of objective analysis of history. The reading of a literary or cultural text is never definitive; it opens up ever new possibilities of interpretation.

Michael Foucault - Stephen Greenblatt - Fredric Jameson - Stephen Orgel - Clifford Geertz - Partha Chatterjee - Gyan Prakash - non discursive practices – apparatus – archaeology vs geneology - historiography – arts of existence – discontinuity- episteme- non reductionism - circulation – panopticon – regimes of truth- textuality – anecdote- circulation

Required Reading

Foucault. Michael. "The Unities of Discourse", *The Archaeology of Knowledge*, London & New York: Routledge, 2009.23-33. Print.

Foucault. Michael. "Power/Knowledge" (Ist lecture*). Power/Knowledge: Selected Interviews and Other Writings 1972-1977.* Ed. Colin Gordon. New York: Pantheon, 2005. 78-92.

Supplementary Reading

Chakrabarty, Dipesh. "Post Coloniality and the Artifice of History". *Representations37 Special Issue: Fantasies and Postcolonial Histories* (1992): 1-26. JSTOR Web. 16 Aug 2005.

Module IV: Postcolonialism

Edward Said's *Orientalism* explores the culturally constructed distinction between the Orient and the Occident that paved the way for postcolonial theory. Postcolonialism attempts to understand the political, social, cultural and psychological operations of the colonialist and anticolonialist ideologies. Postcolonial theory goes on to analyse the ways in which a text reinforces or resists colonialism's oppressive ideology. Postcolonial theorists try to explore the double consciousness of the colonial subjects, divided between the culture of the colonizer and that of the indigenous community. They insist that the understanding of textual reflections of racism and ethnocentrism demands an attention to the cultural history and belief systems of the social group(s) being portrayed and discussed.

Aimé Césaire - Frantz Fanon - Kwame Nkrumah - Edward Saïd - Gayatri Spivak - Homi K. Bhabha - Dipesh Chakrabarty - Derek Gregory - Amar Acheraiou - Benedict Anderson- Homi K. Bhabha-Partha Chatterjee- Michel DeCerteau - Frantz Fanon - Hubert Harrison - C. L. R. James - Salman Rushdie - Leopold Sedar Senghor – Robert Young - Ngugi wa Thiong'o - B. Ashcroft - G. Griffiths - H. Tiffin. - Ashis Nandy- colony and colonialism- settler - empire - orient and occident - centre/ margin – marginality -decolonisation – nativism -anti

colonialism – neo colonialism- eurocentricism – third world- ambivalence - diaspora - ethnicity – hybridity - mapping - mimicry - nation/nation-state - orientalism - negritude – other – subaltern - contact zone - essentialism – aboriginal – apartheid – black studies – counter discourse – dislocation – post colonial reading – world system theory

Required Reading

Said, W. "Introduction to Orientalism" *Orientalism*. London: Penguin, 1-28. Print.

Supplementary Reading

Nandy, Ashis. "The Psychology of Colonialism: Sex, age and Ideology in British India." Sections, I, II & Ill. *The Intimate Enemy: Loss and Recovery of Self under Colonialism*. New Delhi: OUP, 2010.1-7. Print.

Module V: Nationalism & Post Nationalism

Nation as an imagined collective entity is often assumed as a sacred object. The nation can be conceived as an imagined political community created by the state which propagates certain common ideologies, beliefs and myths. The state creates its own tradition and myths to generate a 'long historical continuity' and a 'common cultural past' for nation. Though most often, the cultural boundaries of nations overlap leading to conflicts and violence, the state's aim is to construct a national unity and the state do this by positioning one group as the constitutive other of the normative group. Thus, a nation cannot exist without the 'other'. It is the contradiction between the desire for homogeneity and diversity that is within the nation that makes the issue of nation and nationalism more problematic.

E. P Thompson - Susie Tharu - Nationalism – post nationalism – patriotism – myths – common cultural past - culture concept - dalit studies - subaltern studies - minority ethnic community - re-emergence of extreme communal violence - gender ethnography

Required Reading

Anderson, Benedict. "Introduction to Imagined Communities" *Imagined Communities*, 2nd ed. London: Verso, 2006. 1-7. Print.

Supplementary Reading

Chatterjee Partha. "Nationalism as a Problem in the History of Political Ideas". *Nationalist Thought and the Colonial World: A Derivative Discourse*. USA: University of Minnesota, 1993. l- 35. Print.

Reading List

Ashcroft, Bill, Griffiths, Gareth and Tiffin, Helen (eds), *The Post-Colonial Studies Reader.* London and New York: Routledge, 1995. Print.

Baudrillard, Jean, *Simulacra and Simulation* [1981], trans. by Sheila Faria Glaser. Ann Arbor: University of Michigan Press, 1994. Print.

Baudrillard, Jean, *Jean Baudrillard: Selected Writings*, ed. by Mark Poster. 2nd enlarged edn, Cambridge: Polity Press, 2001. Print.

Bauman, Zygmunt, *Postmodern Ethics*. Oxford: Blackwell, 1993. Print.

Bhabha, Homi K. (ed.), *Nation and Narration*. London: Routledge, 1990. Print.

Bhabha, Homi K., *The Location of Culture* [1994]. London: Routledge, 2004. Print.

Braziel, Jana Evans and Mannur, Anita (eds), *Theorizing Diaspora: A Reader*. Oxford: Blackwell, 2002. Print.

Brannigan, John. *New Historicism and Cultural Materialism*. New York: St. Martin's P, 1998. Print.

Brooker, Peter (ed.), *Modernism/Postmodernism*. London: Longman, 1992. Print.

Butler, Judith, *Gender Trouble: Feminism and the Subversion of Identity*. London: Routledge, and New York, 1992. Print.

Caesar, Michael, *Umberto Eco: Philosophy, Semiotics and the Work of Fiction* Polity Press, Cambridge: 1999. Print.

Connor, Steven, *Postmodernist Culture: An Introduction to Theories of the Contemporary*. 2nd edn, Oxford: Blackwell, 1996. Print.

Connor, Steven (ed.), *The Cambridge Companion to Postmodernism*. Cambridge: Cambridge University Press, 2004. Print.

Docherty, Thomas (ed.), *Postmodernism: A Reader*. Hemel Hempstead: Harvester Wheatsheaf, 1992. Print.

Eagleton, Terry, *'Capitalism, Modernism and Postmodernism'* [1985], in Against the Grain: *Selected Essays, 1975–85. London: Verso, 1986.* Print.

Eco, Umberto, *Travels in Hyperreality* [1986], trans. by William Weaver. London: Picador, 1987. Print.

Encyclopedia of Postmodernism, ed. by Victor E. Taylor and Charles E. Winquist. London: Routledge, 2000. Print.

Fanon, Frantz, *Black Skin, White Masks* [1952], trans. by C. L. Markmann, with Foreword by Homi Bhabha. London: Pluto, 1986. Print.

Fanon, Frantz, The Wretched of the Earth [1961], trans. by Constance Farrington, with Preface by Jean-Paul Sartre. London: Penguin, 2001. Print.

Darwish, Mahmud. *Victims of a Map*, trans. A. al-Udhari. London: Al Saqi Books, 1984. Print.

Du Bois, W. E. B. *Colour and Democracy: Colonies and Peace*. New York: Harcourt, Brace, 1945. Print.

Gallagher, Catherine and Stephen Greenblatt. *Practicing New Historicism*. Chicago: U of Chicago P, 2000. Print.

Gramsci, Antonio, *'History of the Subaltern Classes: Some Methodological Criteria'*, excerpts in Quintin Hoare and Geoffrey Nowell Smith (eds), Selections from the Prison Notebooks of Antonio Gramsci. London: Lawrence & Wishart, 1971. Print.

Greenblatt, Stephen. *Hamlet in Purgatory*. Princeton: PUP, 2001. Print.

Guha, Ranajit. *A Rule of Property for Bengal: An Essay on the Idea of Permanent Settlement.* Paris: Mouton, 1963. Print.

Hall, Stuart, 'Cultural Identity and Diaspora', in Jonathan Rutherford (ed.), *Identity: Community, Culture, Difference*. London: Lawrence & Wishart, 1990. Print.

Harlow, Barbara. *Resistance Literature*. New York and London: Methuen, 1987. Print.

Harris, M. (1979). *Cultural Materialism: The Struggle for a Science of Culture*. New York: Random House. Print.

Hutcheon, Linda, *A Poetics of Postmodernism: History, Theory, Fiction*. London: Routledge, 1988. Print.

Huyssen, Andreas, *After the Great Divide: Modernism, Mass Culture, Postmodernism*. Basingstoke: Macmillan, 1988. Print.

Hooks, Bell, *Yearning: Race, Gender and Cultural Politics*. Boston: South End Press, Turnaround Press, London, 1991. Print.

Lucy, Niall (ed.), *Postmodern Literary Theory: An Anthology*. Oxford: Blackwell, 1999. Print.

Lyotard, Jean-François, *The Postmodern Condition: A Report on Knowledge* [1979], trans. by Geoff Bennington and Brian Massumi. Manchester: Manchester University Press, 1984. Print.

Mohanty, Chandra Talpade, '*Under Western Eyes: Feminist Scholarship and Colonial Discourses'*, in Mohanty et al. (eds), Third World Women and the Politics of Feminism. Bloomington: Indiana University Press, 1991. Print.

Montrose, Louis. *"New Historicisms." Redrawing the Boundaries: The Transformation of English and American Literary Studies*. Ed. Stephen Greenblatt and Giles Gunn. New York: Modern Language Association, 1992. Print.

Panikkar, K. M. *Asia and Western Dominance: A Survey of the Vasco da Gama epoch of Asian History 1498-1943*. New ed. London: Allen & Unwin, 1965. Print.

Postcolonialism: Critical Concepts in Literary and Cultural Studies, 5 vols, ed. by Diana Brydon. London: Routledge, 2000. Print.

Said, Edward, *Culture and Imperialism. London:* Chatto & Windus, 1993. Print.

Sim, Stuart (ed.), The Routledge Companion to Postmodernism. London: Routledge, 2001. Print.

Smith, Neil. *Uneven Development: Nature, Capital and the Production of Space*. Oxford: Basil Blackwell, 1984. Print.

Spivak, Gayatri Chakravorty, 'Three Women's Texts and a Critique of Imperialism', in Henry Louis Gates, Jr (ed.), 1985. Partly reprinted in Peter Brooker and Peter Widdowson (eds), *A Practical Reader* (1996): see Introduction, 'Selected reading'.

Spivak, Gayatri Chakravorty, *In Other Worlds: Essays in Cultural Politics*. London: Routledge, 1987. Print.

Vesser, H. Aram, ed. *The New Historicism*. New York: Routledge, 1989. Print.

Walker, Alice, *In Search of Our Mothers' Gardens: Womanist Prose*. New York: Harcourt Brace Jovanovich, 1983. Print.

Waugh, Patricia (ed.), *Postmodernism: A Reader*. London: Arnold, 1992. Print.

Williams, Raymond. ― *Base and Superstructure in Marxist Cultural Theory*‖. New Left Review I/82. (Nov-Dec 1973). 3-14. Print

Wolmark, Jenny, *Aliens and Others: Science Fiction, Feminism and Postmodernism*. Hemel Hempstead: Prentice Hall/Harvester Wheatsheaf, 1993. Print.

Young, Robert, *White Mythologies: Writing, History and the West* [1990]. 2nd edn. London: Routledge, 2004. Print.

SEMESTER IV

Paper XIII – EL 241: English Language Teaching (6 hours/ week)

Objectives

The objectives of this course are:

- To examine the historical and current theories of L1 and L2 acquisition
- To create critical awareness of approaches and methodologies and the underlying principles in the ESL context
- To understand learner problems and learner factors in developing proficiency in language skills
- To evaluate critically syllabi, teaching materials, and evaluation procedures.

Learning Outcomes

At the end of this course, students should:

- have acquired knowledge of the historical and current theories in ELT
- be able to assess critically the implications of the various approaches, methods, techniques
- have developed the ability to critically evaluate syllabi, teaching materials, and evaluation procedures.

Course Description

Module I - Theoretical Perspectives on Language Acquisition and Language Teaching

History of English Language Teaching in India - Some important landmarks - a) Critique of Macaulay's Minute; b) Landmarks of English Education in India after Independence - Key concepts in ELT - Acquisition/ Learning; Teaching/ Learning; Bilingualism/ Multilingualism; Teacher-oriented/ Learner-oriented - significance of ESL and EFL – explanation and comparison of L1 and L2 acquisition – Interlanguage - ESP

Module II - Major Approaches, Methods and Syllabi

Traditional methods - Use of the Grammar Translation method, Direct method, Audio-Lingual Method, Suggestopedia, Silent Way - Community Language Learning – comparison of different methodological perspectives and approaches - CLT - linguistic competence and communicative competence - Krashen's Monitor Model (Natural method) - Task based Teaching - Critical Pedagogy

Module III - Learning Theories

Behaviourism, Cognitivism, Chomsky's Contributions - Universal Grammar/ Language Acquisition Device (LAD) – Constructivism - Implications of learning theories in ELT - Learner factors - Teaching Aids - ICT in Language teaching, including multimedia, computer-based and online materials - authentic materials - appropriate and practical uses of traditional materials and e-resources

Module IV - Teaching Strategies to Develop Competence in Language Skills

listening, speaking, reading, writing - Identifying problems experienced by learners with regard to developing specific language skills - Teaching of language through Literature - Teaching of poetry, prose, drama, fiction - Classroom practice teaching

Module V - Curriculum and Evaluation

Purposes of assessment - criteria of good test - concepts of validity, reliability, objectivity and practicality - critical evaluation of types of assessment - continuous assessment and external assessment - types of tests: Diagnostic, Proficiency, Achievement, Aptitude tests - Tools of evaluation - Question paper design, different types of questions and their uses – summative and formative tests – norm-referenced and criterion-referenced tests.

Recommended Reading

Brown, H.D. *Principles of Language Learning and Teaching*. 4th ed. N Y: Longman, 2000. Print.

Brumfit and Johnson. *The Communicative Approach to Language Teaching*. OUP, 1983. Print.

Gleason, J.B. and N.Ratner, eds. *Psycholinguistics*. N Y: Harcourt, 1987. Print.

Krishnamurthy, N. and T. Sriraman. *English Teaching in India*. T.R.Publications Print.

Larsen-Freeman, D. and M. Long. *An Introduction to Second Language Acquisition Research*. N Y: Longman, 1991. Print.

---. *Techniques and Principles in Language Teaching*. 2nd ed.N Y: OUP, 2000. Print.

Mitchell, R. and F. Myles. *Second Language Learning Theories*. London: Arnold, 1998. Print.

Nunan, D. *Second Language Teaching and Learning*. Boston: Heinle & Heinle, 1999. Print.

Prabhu, N.S. *Second Language Pedagogy*. London: OUP, 1987. Print.

Richards, J.C. and T.S. Rogers. *Approaches and Methods in Language Teaching*. 2nd ed. N Y: CUP, 2001. Print.

Sterne, H.H. *Fundamental Concepts of Language Teaching*. London: OUP, 1983. Print.

Tickoo, M.L. *Teaching and Learning English: A Source Book*. New Delhi: Orient Blackswan, 2003. Print.

SEMESTER IV

Paper XIV – Cultural Studies [7 hours/week]

Course Description

Module I: Cultural Studies: Theory

Cultural Studies is a new area of research and teaching that brings in new perspectives to our notions regarding 'texts' and 'meanings' and therefore to the study of literatures, cultures and societies. This course will try to develop theoretical tools and critical perspective to interrogate the advertisement, film, television, newspaper and internet texts that saturate our lives.

Theodor W. Adorno - Mikhail Bakhtin - -Arjun Appadurai- -Homi K. Bhabha- Pierre Bourdieu - Judith Butler - Rey Chow - Michel deCerteau -Gilles Deleuze -Paul Gilroy- Antonio Gramsci - Felix Guattari - Jürgen Habermas - Stuart Hall - Richard Hoggart - Max Horkheimer - Toby Miller - Chandra Talpade Mohanty - Antonio Negri - - Jacques Ranciere - -Slavoj Žižek – –John Berger - Agency and structure - citizenship -counterculture - cultural relativism - cultural reproduction - culture industry - ethnic/ethnicity - ethnocentrism - nationalism- popular culture - visual culture

Required Reading

Adorno, T. & Horkheimer, M., 1944. "The Culture Industry: Enlightenment as Mass Deception". In T. Adorno and M. Horkheimer. *Dialectics of Enlightenment*. Translated by John Cumming. New York: Herder and Herder, 1972.

http://www.scribd.com/doc/3998279/The-Culture-Industry-Enlightenment-as-Mass-Deception-Adorno-Horkheimer

Supplementary Reading

Prasad, M. Madhava, "The Absolutist Gaze: Political Structure and Cultural Form". *Ideology of Hindi Film: A Historical Construction*. New Delhi: OUP, 2006. 53-87. Print.

Module II: Cultural Studies: Methodology

The primary focus of cultural studies is a revisionary reading of the concept of culture, viewing culture as a discourse that openly critiques the concept of high culture and low culture. In doing so culture studies teases out the interections of power and culture particularly in modes of representation. Of particular interests to theorists of culture are figurations of the popular and the interplay between the dominant and the subordinated.

Martin Lister - Giorgio Agamben - Zygmunt Bauman - James Clifford -John Fiske -Michael Hardt - Henry Jenkins - Janice Radway -Edward Soja - Paul du Guy - audience research - agency - collaboration- content analysis- cultural consumption-cultural democratisation - ethnography - experience - focus groups - observation - qualitative and quantitative analysis - race/racialisation -reflexivity -relativism- self-help culture – stereotyping

Required Reading

Hall, Stuart ([1973] 1980): 'Encoding/decoding'. In Centre for Contemporary Cultural Studies (Ed.): *Culture, Media, Language: Working Papers in Cultural Studies*, 1972-79 London: Hutchinson, pp. 128-38. Print. http://www9.georgetown.edu/faculty/irvinem/theory/SH-Coding.pdf

Supplementary Reading

Paul du Guy. *What is Culture*? [1.2]"Doing Cultural Studies: The Story of the Sony Walkman" (Introduction). *British Journal of Sociology* 48(4) · December 1997. 11-26. Web.

Module III: Media

Media theory examines the reciprocal relationship between media and its audience. Media theory proposes a systematic way of thinking the means of communication. It looks at how media is used to reinforce ideologies in a globalized world, the development of print media and digital, media with the development of consumerism and commercialism. Media theory emphasizes the fact that media cannot exist outside the ideological constraints and, become constitutive of the very ideology it re- presents.

Marshall McLuhan - Andrew L. Shapiro - Andrew Barry – James Boyle - representation – narrative – code – theories of production – gatekeeping – agenda setting – polysemy – audience- branding – censorship construct- marketing – mass media – media education – media literacy – production values –media systems - - public sphere - augmented reality - old media- new media - cyberculture - cybertext - metamedia - virtual communities - technological determinism - soft determinism – interactivity - collective intelligence - digital rhetoric - non-linear media - residual media - social media - free speech

Required Reading

Castells, Manuel. "The Network Society." *The Network Society from Knowledge to Policy, Washington DC: Centre for Transatlantic Relations*, 2005.3-21. Web.

Supplementary Reading

Pinney, Christopher. "The Politics of Popular Images from Cow protection to M. Gandhi 1890- 1950". *The Indian Public Sphere: Readings in Media History*. Ed. Arvind Rajagopal. New York: OUP, 2009.65-87. Print.

Module IV: Visual Culture

The study of visual culture as a serious line of enquiry started with the establishment of cultural studies in the academy in the 1970s. The rise of the internet which enabled the proliferation of visual images without any borders and the rise of a screen culture where seeing is believing gave impetus to the discipline. Colours and shapes took on a new life before our eyes and along with it the possibilities of symbolic signification. A study of visual culture brings within its fold a wide array of cultural artefacts or even simple everyday objects that gain a cultural status when viewed it from the perspective of visual culture studies.

John Berger – Laura Mulvey – Gyorgy Kepes – Wlliam Ivins, Jr. W. J. T. Mitchell, Giuliana Bruno – Stuart Hall – Lisa Cartright- Pal Miklos – Nicholas Mirzoeff - Martin Jay - Johannes Fabian - visualism - mediascape - media influence - visual anthropology - visual ethics - visual rhetoric - visual mediation – visual representation –visual competence - theory of art - institutional theory - social network theory - mediology - complexity theory - high art - implied viewer

Required Reading

Berger, John. *Ways of Seeing*. London, England : British Broadcasting Corporation : Penguin Books, 1973. (Section 1).

Supplementary Reading

Sarkar, Tanika. “Nationalist Iconography: The Image of Women in Nineteenth- Century Bengali Literature." *Hindu Wife, Hindu nation: Community, Religion and Cultural Nationalism*. New Delhi: Permanent Black, 2001.250-267. Print.

Module V: Queer Theory

Queer theory designates a radical rethinking of the relationship between sexuality, subjectivity and representation. Queer theory challenges essentialist notions of homosexuality and heterosexuality that exist in mainstream of discourse. Foucault's conception of sexuality as a discursive pattern rather than an essential human attribute becomes influential in the theoretical world of Queer theory. In Judith Butler's opinion Queer theory emphasizes the constructedness, ambivalence and potential plurality of all gendered and sexual identities. It has become instrumental in deconstructing the hetero/ homo dichotomy in discussions of sexuality. By repoliticizing lesbian and gay theory, queer theory works against the hegemony of patriarchal heterosexuality. Body policing – code switching

Judith Butler - Lee Edelman - Jack Halberstam- David Halperin - José Esteban Muñoz - Eve Kosofsky Sedgwick - Adrienne Rich - Diana Fuss - Annamarie Jagose - Monique Wittig -

Michael Warner - Teresa de Lauretis - David Halperin - Gayle Rubin masculinity/femininity- homosexuality - bisexuality - heterosexuality - gendering – genderqueer - androgyny - homophobia - gay/lesbian - transsexual - transgender – crossgender – hijras -sex workers - people with AIDS - lavender linguistics – heteronormativity – body policing – disability – disidentification

Required Reading

Butler, Judith, "Subject of Sex/Gender/Desire" *Gender Trouble*, New York and London: Routledge, 2007.2-44. Print.

Supplementary Reading

John, Mary E. and Tejaswini Niranjana. “Mirror Politics: Fire, Hindutva and Indian Culture" *Economic and Political Weekly* XXXIV (Mar. 1999). 6-13. Web.

Reading List

Abelove, Henry et al. (eds), *The Lesbian and Gay Studies Reader*. London: Routledge, 1993. Print.

Addison, W. 1953. *English Fairs and Markets*. London: Batsford. Adorno, T. W. 1967. Print.

Antinous, George. *The Arab Awakening*. London: Hamish Hamilton, repr. 1938 ed., 1969. Print.

Ames, M. *Museums, the Public, and Anthropology: A Study of the Anthropology of Anthropology*. Vancouver: University of British Columbia Press. 1986. Print.

Appadurai, A. (ed.) *The Social Life of Things: Commodities in Cultural Perspective*. Cambridge: Cambridge University Press. 1986. Print.

Arlen, M. J. *The Camera Age: Essays on Television*. New York: Penguin. 1981. Print.

Attali, J. *Noise: The Political Economy of Music*, trans. Brian Massumi. Minneapolis: University of Minnesota Press. 1985. Print.

Bakhtin, M. *The Dialogic Imagination*. Austin: University of Texas Press. 1981. Print.

Barber, E. L. *Shakespeare's Festive Comedies: A Study of Dramatic Form and its Relation to Social Custom*. Princeton: Princeton University Press. 1959. Print.

Belsey, C. 1980. *Critical Practice*. London and New York: Methuen, 1982. Print.

---. 'Re-reading the Great Tradition. *Rereading English*, ed. P. Widdowson. London: Methuen. 1982. Print.

Berman, R. A. *Modern Culture and Critical Theory*: Art, Politics and the Legacy of the Frankfurt School. Madison: University of Wisconsin Press. 1989. Print.

Bhabha, H. K. *The Location of Culture*. New York: Routledge. 1994. Print.

Boddy, W. *'"*The shining centre of the home": ontologies of television in the "golden age*"', in Television in Transition*, ed. P. Drummond and R. Paterson. London: BFI. 1985. Print.

Boyd-Barrett, O. 1977. '*Mass communication in cross-cultural contexts: the case of the Third World', in Mass Communication and Society*, ed. J. Curran, M. Gurevitch and J. Woollacott. Milton Keynes: Open University Press. 1982. Print.

---'Cultural dependency and the mass media'*, in Culture, Society and the Media*, ed. M. Gurevitch, T. Bennett, J. Curran and J. Woollacott. London: Methuen. 1980. Print.

Brake, M.. *The Sociology of Youth Culture and Youth Subcultures.* London: Routledge & Kegan Paul. 1980. Print.

Bristow, Joseph, *Effeminate England: Homoerotic Writing after 1885*. Milton Keynes: Open University Press, 1995. Print.

Bristow, Joseph, *Sexuality*. London: Routledge, 1997. Print.

Bristow, Joseph and Wilson, Angela *R. (eds), Activating Theory: Lesbian, Gay and Bisexual Politics.* London: *Lawrence & Wishart,* 1996. Print.

Butler, Judith, *Gender Trouble: Feminism and the Subversion of Identity*. London and New York: Routledge, 1992. Print.

Calhoun, C. (ed.) *Habermas and the Public Sphere*. Cambridge, Ma: The MIT Press, 1992. Print.

Campbell, C. *The Romantic Ethic and the Spirit of Modern Consumerism*. Oxford: Basil Blackwell. 1987. Print.

Chambers, I. *Urban Rhythms: Pop Music and Popular Culture*. London: Macmillan, 1985. Print.

Chatterjee, P. *The Nation and its Fragments: Colonial and Postcolonial Histories*. Princeton: Princeton University Press, 1993. Print.

Collins, J. *Uncommon Cultures: Popular Culture and Post-modernism*. New York: Routledge, 1989. Print.

Connor, S. *Postmodern Culture: An Introduction to Theories of the Contemporary*. Oxford: Blackwell, 1989. Print.

Cruikshank, Margaret (ed.), *Lesbian Studies: Present and Future*. The Feminist Press, New York, 1982. Print.

Curran, J. and Gurevitch, M. (eds) *Mass Media and Society*. London: Edward Arnold. 1991. Print.

Davies, I. *Cultural Studies and Beyond: Fragments of Empire*. London: Routledge. 1995. Print.

De Jean, Joan, *Fictions of Sappho 1565–1937*. Chicago and London: University of Chicago Press, 1989. Print.

de Lauretis, Teresa, *'Sexual Indifference and Lesbian Representation'*, in Henry Abelove et al. (eds), above. The lesbian and Gay Studies Reader. London: Psychology Press, 1993. Print.

Doan, Laura (ed.), *The Lesbian Postmodern*. New York: Columbia University Press, 1994. Print.

Dollimore, Jonathan, *Sexual Dissidence: Augustine to Wilde, Freud to Foucault*. Oxford: Clarendon Press, 1991. Print.

Dollimore, Jonathan. *Radical Tragedy: Religion, Ideology, and Power in the Drama of Shakespeare and his Contemporaries*. Chicago: U of Chicago, 1984. Print.

Du Gay, P. *Consumption and Identity at Work*. London: Sage, 1996. Print.

During, Simon. The Cultural Studies Reader. New York: Routledge, 1999. Print.

Edelman, Lee, *Homographesis: Essays in Gay Literary and Cultural Theory*. London: Routledge, 1994. Print.

Ellis, J. *Visible Fictions: Cinema, Television, Video*. London: Routledge, 1982. Print.

Friedman, J. *Cultural Identity and Global Process*. London: Sage. 1994. Print.

Foucault, Michel, *The History of Sexuality: Volume 1. An Introduction* [1976], trans. by Robert Hurley. Harmondsworth: Penguin, 1990. Print.

Fuss, Diana (ed.), *Inside/Outside: Lesbian Theories, Gay Theories*. London: Routledge, 1991. Print.

Garber, M., Matlock, J. and Walkowitz, R. (eds) *Media Spectacles*. New York: Routledge, 1993. Print.

Gibian, P. (ed,) *Mass Culture and Everyday Life*. London: Routledge. 1997. Print.

Goldberg, D. T. (ed.) *Multiculturalism: A Critical Reader*. Oxford: Blackwell. 1994. Print.

Gray, C. H. (ed.) *The Cyborg Handbook*. New York: Routledge. 1997. Print.

Greenberg, David F., *The Construction of Homosexuality*. Chicago: University of Chicago Press, 1988. Print.

Hall, Donald E., *Queer Theories*. Basingstoke: Palgrave Macmillan, 2002. Print.

Hall, S. '*Culture, the media and the "ideological effect"', in Mass Communication and Society*, ed. J. Curran, M. Gurevitch and J. Woollacott. London: Edward Arnold. 1977. Print.

Halperin, D. *One Hundred Years of Homosexuality*. London and New York: Routledge. 1989. Print.

Kellner, D. *Media Culture: Cultural Studies, Identity and Politics between the Modern and the Post-modern*. New York: Routledge, 1995. Print.

Lloyd, D. and Thomas, P. (eds) *Culture and the State*, New York: Routledge, 1998. Print.

Munt, Sally (ed.), *New Lesbian Criticism*. Hemel Hempstead: Harvester Wheatsheaf, 1992. Print.

Parker, Andrew, et al. (eds), *Nationalisms and Sexualities*. London and New York: Routledge, 1992. Print.

Rai, A. 'An American Raj in Filmistan: images of Elvis in Indian films', *Screen 35/ 1*. 1994. Print.

Rich, Adrienne, '*Compulsory Heterosexuality and Lesbian Existence'*, Signs, 5, 4. Summer, 1980, 631–60. Print.

Rose, N. *Governing the Soul: The Shaping of the Private Self*. London: Routledge. 1990. Print.

Sedgwick, Eve Kosofsky, *Epistemology of the Closet*. Berkeley and Los Angeles: University of California Press, 1990. Print.

Sinfield, Alan, *The Wilde Century*. London: Cassell, 1994. Print.

Storey, J. (ed). *Cultural Theory and Popular Culture: A Reader*, 2nd edn. London: Prentice Hall. 1998. Print.

Sussman, G. and Lent, J. A. (eds) *Transnational Communications: Wiring the Third World*. Newbury Park: Sage. 1991. Print.

The Culture Industry: Selected Essays on Mass Culture, ed. with intro. J. M. Bernstein. London: Routledge. 1993. Print.

Viswanathan, G. '*Raymond Williams and British colonialism'*, Yale Journal of Criticism 4/2 Williamson, J. 1978. Decoding Advertisements: Ideology and Meaning in Advertising. London: Marion Boyars. 1991. Print.

Wittig, Monique, 'The Straight Mind' [1980], reprinted in *The Straight Mind and Other Essays*. Hemel Hempstead: Harvester Wheatsheaf, 1992. Print.

Young, R. *Colonial Desire: Hybridity in Theory, Culture, and Race*. London: Routledge, 1995. Print.

ELECTIVES: SELECTION OPTIONS[4]

Any ONE from each group

SEMESTERS III & IV

Semester III

Paper XI: EL233 (6 hours / week)

Electives

20. **European Drama**	**EL233.1**
21. **Canadian and Australian Literature**	**EL233.2**
22. **Film Studies**	**EL233.3**
23. **Kerala Studies**	**EL233.4**
24. **Women's Writing**	**EL233.5**

Paper XII: EL234 (6 hours / week)

Electives

25. **European Fiction**	**EL234.1**
26. **African and Caribbean Literature**	**EL234.2**
27. **Fiction and Film**	**EL234.3**
28. **Folklore Studies**	**EL234.4**
29. **Writing Lives, Performing Gender**	**EL234.5**

Semester IV

Paper XV: EL243 (6 hours / week)

Electives

30. **Comparative Literature**	**EL243.1**
31. **South Asian Literature**	**EL243.2**
32. **Screenwriting**	**EL243.3**
33. **Theatre Studies**	**EL243.4**
34. **Travel Writing**	**EL243.5**

Paper XVI: EL244 (6 hours / week)

Electives

35. **Translation Studies**	**EL244.1**
36. **Regional Literatures in English Translation**	**EL244.2**
37. **Media Studies**	**EL244.3**
38. **Dalit Writing**	**EL244.4**
39. **Theorising Sexualities**	**EL244.5**

[4] The Selection Options have been categorized to enable Colleges to select specialities across the two semesters. For example, a College can specialize in World Literatures by choosing Canadian and Australian Literature and African and Caribbean Literature in Semester III and South Asian Literature and Regional Literatures in English Translation in Semester IV. Similarly, another specialization could be Film and Media Studies.

SEMESTER III

PAPER XI: Choice 1

E L 233.1 – Elective Course: European Drama [6 hours/week]

OBJECTIVES

The objectives of this course are to:

- introduce the students to the civilizational factors that led to the emergence of drama as a genre in ancient Europe.
- enable the students to correlate between the theory and practice of drama in terms of elements like plot, character, diction, spectacle, thought etc
- give the students a historical awareness about how the European theatrical movements reflected the social, intellectual and political realities of their times
- create in the students an aesthetic appreciation of the formal and thematic innovations made by key figures in the field of dramaturgy.

Learning outcomes:

At the end of this course students should be able to:

- trace the conditions that facilitated the origin and evolution of drama as a literary genre in Europe
- display a comprehensive awareness of the aesthetic and socio-moral principles that governed the art of dramaturgy in Europe down the ages
- claim acquaintance with the defining aspects of the major theatrical movements that came into being in the post-World War era in Europe, and connect them to their respective sociological backgrounds
- critically analyse a play with reference to the component elements of drama, as well as to identify the themes reflected in the plot
- attempt dramatic compositions.

Course Description

Module I – Socio-cultural Background of Drama in Europe.

Origin and evolution of the Greek theatre – Dithyramb- Chorus- Foundation of the Greek plays in popular legends and Myths- Thematic emphasis on the relation between God and man, and on the relation between the ruler and the ruled- Contributions of Aeschylus, Sophocles and Euripides- Old Comedy and New Comedy – Aristophanes and Menander

Senecan tragedies and their influence - French Theatre – Racine -Moliere

Major Theatrical movements in the twentieth century: From Romantic faire to Realism- Arthur Wing Pinero's plays- Theatre of Anger,-Theatre of the Absurd- Epic Theatre- Theatre of Cruelty- Poor Theatre- Moscow Art Theatre- Feminist Theatre Groups- Postmodernism in drama

Required Reading

Aristotle: *Poetics*
Ch.1. "The Preliminaries to the Definition of Tragedy." (51-57)
Ch.2. "The Nature of Tragedy" (57-65)
Ch.3. "Excellence in Tragedy" (66-80), from
Russell, D. A. and Michael Winterbottom, Eds. *Classical Literary Criticism*. Oxford: OUP, 1989, 2007.

Module II – Classical Drama

Sophocles: *Oedipus Rex* (Three Theban Plays. Trans. Jamey Hecht. Wordsworth Classics)
Aristophanes: *Frogs*
Moliere: *The Miser* (Free Download from- https://archive.org/themiser06923gut/7misr10.txt)
Racine: *Phaedra*

Module III – Continental Drama

Henrik Ibsen: *A Doll's House*
Anton Chekhov: *The Cherry Orchard*
Bertolt Brecht: *Mother Courage and Her Children*
Luigi Pirandello: *Six Characters in Search of an Author*
Jean Anouilh: *Antigone* Trans. Lewis Galantiere.

Dario Fo: *Accidental Death of an Anarchist*. (A new version by Allan Cumming and - -Tim Supple. Methuen Classics)

Module IV – Critical Responses

Nietzsche: *The Birth of Tragedy*. Sections 1—5 (Trans. Shaun Whiteside. Penguin Classics. pages 14 to 32**)**
Martin Esslin: "Introduction" to *The Theatre of the Absurd*

Recommended reading.

Banham E. Martin. *The Cambridge Guide to the Theatre.* Cambridge: Cambridge UP,1993. Print.
Gascoigne, Bamber. *Twentieth-Century Drama*. London: Hutchinson, 1974. Print.
Lyman, Jane. Ed. *Perspectives on Plays. London:* Routledge & Kegan Paul, 1976. Print.
McGuire, Susan Bassnett. *Luigi Pirandello*. London, Macmillan, 1983. Print.
Nicoll, Allardyce. *World Drama: From Aeschylus to Anouilh*. London, Harrap, 1949, 1976. Print.
Trussler, Simon. *20th Century Drama*. London: Macmillan,1983. Print.
Williams Raymond. *Drama from Ibsen to Brecht: A Critical Account and Revaluation.* London: Penguin, 1983. Print.
Howatson M.C. *The Oxford Companion to Classical Literature*. New Delhi: Oxford UP 2011. Print.

Bloom, Harold., Ed. *Greek Drama*. Philadelphia: Chelsea House, 2009. Print.
Barr, Allan P. Ed. *Modern Women Playwrights of Europe*. Oxford: Oxford UP, 2001. Print.
Orr, John. *Tragic Drama and Modern Society*. London: Macmillan, 1981. Print.
Donaldson, Ian. *Transformations in Modern European Drama*. London:Macmillan, 1983. Print.

SEMESTER III

PAPER XI: Choice 2

EL 233.2 - Elective Course: Canadian and Australian Literatures (6 hours/week)

Objectives

The objectives of this course are to:

- introduce the students to Canadian and Australian Literature
- familiarize the students with major literary figures in Canada and Australia
- help students understand the socio-cultural contexts that nourish the emergence of these literatures
- make them understand the ethnic and cultural diversity of Canada and Australia
- interrogate the idea of multiculturalism and national culture
- contextualise the emergence of 'Englishes'

Learning Outcome

At the end of the course students will be able to:

- demonstrate an awareness of the spread and reach of literatures from Canada and Australia
- explain the politics and ideology in canon formation
- display an awareness of how socio-cultural contexts shape literary experiences
- conceptualize concepts like ethnicity, diversity, national culture, and multiculturalism
- engage critically with decolonization

Course Description

Module I - Socio-political and Literary Background

The founding of the colonies of Canada and Australia – compulsions - the ties with Europe - native cultures during contact with Europeans - the effects of European contact – colonization – effects – revolts - Canadian and Australian allegiance to the British crown - political fallout – confederation - social and cultural issues like alcoholism - genocide – immigration – settlement – diaspora - transnationalism – multiculturalism – melting pot – migration studies – first natives – aboriginals – life in the reserves in Canada – French and English sides of Canada

Required Reading

Elizabeth Webby, "The beginings of literature in colonial Australia." Pierce, Peter. Ed *The Cambridge History of Australian Literature*. Melbourne: Cambridge UP, 2009 (p. 34-51)

Howells, Coral Ann and Eva Marie Kroeller, eds. "Introduction". *Cambridge History of Canadian Literature*. London: Cambridge UP, 2009. 1 – 24.

Module II – Poetry

Required Reading

First Nations Blackfoot "Song of the Great Spirit"

Margaret Atwood	"Notes Towards a Poem that Can Never be Written"
Claire Harris	"Framed"
A.D. Hope	"Moschus Moschiferous: A Song for St. Cecilia's Day"
Himani Bannerji	"Wife"
Kenneth Slessor	"Country Towns"
Judith Hope	"Woman to Man"
David Malouf	"The Year of the Foxes"

Module III - Drama and Fiction

Required Reading

Drama

George Ryga	*The Ecstasy of Rita Joe*
Sharon Pollock	*Komagata Maru Incident*
Ray Lawler Summer	*Summer of the Seventeenth Doll*
Jack Davis	*No Sugar*

Fiction

Sinclair Ross	*As for Me and My House*
Gabrielle Roy	*Enchantment and Sorrow*
Patrick White	*Voss*
Sally Morgan	*My Place*

Module IV - Critical Responses

Required Reading

Buckridge, Patrick. "Allusive Rhetoric of Nationality: Development of Australian Literature from 1890s to 1980s" *Reading Down Under: Australian Literary Studies Reader*. Ed. Amit Sarwal and Reema Sarwal. New Delhi: SSS, 2009. 1-6.

Kortenaar, Neil Ten. "Multiculturalism and Globalization". *Cambridge History of Canadian Literature*. Ed.Carol Ann Howells & Eve Marie Kroeller. London: Cambridge UP, 2003. 556-579.

Reading List:

Brown, Russell M and Donna Bennett. Ed. *An Anthology of Canadian Literature in English*. 2 Vols. Toronto: Oxford UP, 1982. Print.

Carl F. Klinck et al. Ed. *A Literary History of Canada*. Toronto: U of Toronto P, 1977. Print.

Edelson, Phyllis F. Ed. *An Anthology of Writing from the Land Down Under*. New York: Random House, 1993. Print.

Eliot Clarke, George. *Directions Home: Approaches to African-Canadian Literature.* University of Toronto Press, 2012. Print.

Howells, Coral Ann and Eva Marie Kroeller.Ed.*Cambridge History of Canadian Literature*. London: Cambridge UP, 2009. Print.

Kinsella, John. *The Penguin Anthology of Australian Poetry.* 2008. Print.

Kramer, Leonie and AdrainMitchell.*The Oxford Anthology of Australian Literature.* Melbourne & Sydney: Oxford UP, 1985. Print.

New, W.H.1989.*A History of Canadian Literature.*2nd Ed. Montreal: McGill UP, 2003. Print.

Pierce, Peter. *The Cambridge History of Australian Literature*. Melbourne: Cambridge UP, 2009. Print.

Sarwal, Amit and ReemaSarwal, eds. *Reading Down Under: Australian Literary Studies Reader*. New Delhi: SSS. 2009. Print.

Webby, Elizabeth.*The Cambridge Companion to Australian Literature.*Cambridge University Press, 2000. Print.

SEMESTER III

PAPER XI: Choice 3

EL 233.3 – Elective Course: Film Studies (6 Hrs/week)

Objectives

The objectives of this paper are to:

- introduce students to the language of cinema
- teach them how to 'read' and analyse a film
- familiarise students with various aspects of film studies including film analysis, film history and film theory
- evaluate the contributions of the director, actors, writers, and other technical crew
- understand the function of narrative in film and the social, cultural, and political implications of the film text
- look at the dynamics of adaptation

Learning outcomes

At the end of this Course, the students will be able to:

- appreciate films from the angles of both a critic and a spectator
- interpret various cinematic as well as socio cultural aspects of films
- analyse movies as major ideological tools
- explicate and do research on the filmography of the master directors
- critically analyse the dynamics of adaptation of texts selected for study

Course Description

Module I - History and Technology of Cinema

What is Cinema? - film language, grammar, composition and narrative logic in Cinema - a general overview of the history of cinema especially American, French, Soviet Union/ Russian, Italian, German, Indian, and Japanese – a brief introduction to Malayalam cinema - Approaches — feminism and film — psychoanalysis — ideology and cinema - representation and cinema

Required Reading

Baudry, Jean Louis. "Ideological Effects of Basic Cinematographic Apparatus." *Film Quarterly* 28.2 (1974-75): 39-47.

Bazin, André. "The Evolution of the Language of Cinema."*What is Cinema Volume 1.*Tr. Hugh Gray. Berkley: U of California P, 1967. 23-40.

Laura Mulvey. "Afterthoughts on Visual Pleasure and Narrative Cinema." *Visual and Other Pleasures.* London: Palgrave, 1989. 29-38.

Module II - Film Movements

Soviet Cinema — montage — Kuleshov, Eisenstein, Pudovkin, Vertov—*Mother, Man With a Movie Camera*—Parajanov and *Shadows of Forgotten Ancestors* — Tarkovsky *Andrei Rublev, The Sacrifice*- Italian neo-realism — Rosellini — *Rome-Open City* — De Sica-

Bicycle Thieves — Antonioni *Le Avventura* and *Blow Up* - Poetic Realism — Jean Renoir - French new wave—the long take—auteur theory—*Cahiers du Cinema* — François Truffaut, Jean-Luc Godard, Éric Rohmer, Claude Chabrol, and Jacques Rivette — the left bank group—Chris Marker, Alain Resnais, and AgnèsVarda - Indian new wave — Satyajit Ray, Ritwik Ghatak, Mrinal Sen, G. Aravindan, Adoor Gopalakrishnan - Iranian cinema — post revolutionary cinema — the new wave —Abbas Kiarostami, Jafar Panahi, Mohsen Makhmalbaf, Majid Majidi

Films for Study

Sergei Eisenstein	*Battleship Potemkin*
Majid Majidi	*Baran*
Adoor Gopalakrishnan	*Elippathayam*
Octavio Getino &	
Fernando Solanas	*The Hour of the Furnaces*

Module III - Film Genres

Westerns — classical, acid, spaghetti - Sci-fi — utopian, dystopian, space westerns — musicals — comedy — sight gag, screwball, slapstick, sentimental, romantic, and black/dark comedy - film noir — horror films — slasher films, ghost stories, mad scientist films animations — epics — documentaries — adaptations

Films for Study

Robert Weiss	*The Sound of Music*
Andrew Stanton	*WALL - E*
John Ford	*Stagecoach*
Anand Patwardhan	*War and Peace*

Module IV - Critical Response

These are critical texts that respond to general issues or particular film texts; they are to be included for discussion along with the prescribed films.

Required Reading

Budd, Michael. “A Home in the Wilderness: Visual Imagery in John Ford's Westerns.” *Cinema Journal* 16.1 (1976): 62-75.

Burton, Julianne. “The Camera as "Gun": Two Decades of Culture and Resistance in Latin America.” *Latin American Perspectives* 5.1 (1978): 49-76.

Dassanowsky, Robert von. “An Unclaimed Country: The Austrian Image in American Film and the Sociopolitics of *The Sound of Music*.” *Bright Lights.* 31 July 2003.

Eisenstein, Sergei. “Word and Image.” *Film Sense.* Tr. Jay Leyda. New York: Meridian, 1955. 3-65.

Tofighian, Omid. “Contemporary Liminal Encounters: Moving Beyond Traditional Plots in Majidi’s Bârân.” *Conflict and Development in Iranian Film.* Eds. A.A. Seyed-Gohrab and K. Talattof. Leiden: Leiden UP, 2013. 103-116.

Films Recommended for Further Viewing

Robert Wiene	*The Cabinet of Dr. Caligari*
Jean Renoir	*The Rules of the Game*
Carl Theodore Dreyer	*The Passion of Joan of Arc*
Charlie Chaplin	*Modern Times*
Alfred Hitchcock	*Rear Window*
Gene Kelly & Stanley Donnen	*Singing in the Rain*
Jean-Luc Godard	*Breathless*
Alain Resnais	*Hiroshima Mon Amour*
Ingmar Bergman	*Wild Strawberries*
Yasujiro Ozu	*Tokyo Story*
Robert J. Flaherty	*Nanook of the North*
Guru Dutt	*Pyaasa*
Satyajit Ray	*Charulata*
Ritwik Ghatak	*Meghe Dhaka Tara*
K. G. George	*Yavanika*

Reading list

Barnow, Eric and S. Krishnaswamy. *Indian Film*. Delhi: OUP, 1980. Print.

Braudy, Leo and Marshall Cohen, eds. *Film Theory and Criticism.* New York and Oxford: Oxford UP, 1999. Print.

Butler, Andrew M. *Film Studies: Pocket Essential Series*. Harpenden: Pocket Essentials, 2005. Print.

Dix, Andrew. *Beginning Film Studies*. Manchester: Manchester University Press, 2008. Print.

Geiger, Jeffrey & R. L. Rutsky, eds. *Film Analysis: A Norton Reader*. New York: Norton, 2005. Print.

Hill, John, and Gibson Pamela Church. *The Oxford Guide to Film Studies*. Oxford: Oxford UP, 1998. Print.

Kuhn, Annette, and Guy Westwell. *A Dictionary of Film Studies*. Oxford: Oxford UP, 2012. Print. Oxford Quick Reference Series.

Monaco, James. *How to Read a Film: Movies, Media and Beyond*. Oxford: OUP, 2009. Print.

Mulvey, Laura. *Visual and Other Pleasures.* London: Palgrave, 1989.

Nelmes, Jill. *Introduction to Film Studies*. London: Routledge, 2012. Print.

Nowell-Smith, Geoffrey. *The Oxford History of World Cinema.* Oxford: Oxford UP, 1996. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.474.5157&rep=rep1&type=pdf

Rajadhyaksha, Ashish and Paul Willemen, Eds. *Encyclopedia of Indian Cinema*. London & New Delhi, BFI and Oxford, 1994.

Stempleski, Susan and Barry Tomalin. *Film (Resource Books for Teachers)*. Oxford: OUP, 2010. Print.

Villarejo, Amy. *Film Studies: The Basics*. London: Routledge, 2007. Print.

SEMESTER III

PAPER XI: Choice 4

EL 233.4 – Elective Course: Kerala Studies [6 hours/week]

Objectives:

The objectives of this paper are to:

- bring an awareness of the local histories and the politics of socio-cultural formation
- make the students realize the essential plurality that underline any given society and the varied resistances Keralam put forth to constantly emerge at different points of time
- shift the focus of academic exercises to a broader arena of lived experiences and to read it as a critique of the formations of histories and knowledge.

Learning Outcomes:

At the end of this course, students will be able to:

- understand the specificities of the space called Keralam
- display a sense of one's own history
- display their awareness of the inherent link between history, polity, society, economy, art and formations of culture and knowledge

Course Description

Module I – History and Polity

Megalithic remains and Sangam Period - Political history – Pathittupattu - Early Dynasties- Religious and Ethnic groups – Kingdoms - Perumals of Kerala - Vazhappally inscriptions, Tharisappally copper plates, Jewish copper plates- Medieval Period - Nadu and Swaroopams- Administration- Matrilineal System- Colonization and decline of Swaroopams - European Interventions- Portuguese, French, Dutch, English - National Movement- Development of Leftist Ideology- Formation of Kerala State- Land Reforms- The Naxal Movement-Emergency- Governments- Participatory Democracy - Democratic De-centralization

Required Reading

Veluthat, Kesavan. "The Keralolpatthi as History." *The Early Medieval in South India.* New Delhi: Oxford UP, 2009. Pages 129-146 Print.

Ganesh, K.N. "From Naadu to Swaroopam: Political Authority in Southern Kerala from the Tenth to the Thirteenth Centuries" *Irreverent History, Essays for M.G.S Narayanan.* KesavanVeluthat and Donald. R. Davis. Jr. Ed. New Delhi: Primus Books, 2015. Pages 33-52, Print.

Module II - Economy and Social Movements

Concept of Thina - Spread of Agriculture and Trade- Social and Cultural life - Formation of AgrarianSociety in Kerala - history-political form - socio-economic structure - Brahmin settlements- Janmi system - Arab and Chinese traders - Advent of western monopolistic

mercantile group – Hegemony - Relations of production during various periods - Economy, State and Society - Kerala Model Development - Migrant Labourers in Kerala

Resistance Movements, Revolts and Agitations: Pazhassi revolt- VeluthampiDalawa and Paliath Achan - Kurichiya revolt - Channar revolt - KachiPudavasamaram - Mukkuthisamaram- PandaraPattam Proclamation - Malayali Memorial - Ezhava Memorial - Kallumaala Agitation - Malabar Rebellion - Wagon tragedy - Peasant movements in Travancore and Malabar - Kayyur riot- Vaikkom satyagraha - Guruvayoor satyagraha - Temple entry proclamation –YachanaYathra- Nivarthana agitation - PattiniJatha -- Kuttamkulam struggle - Punnapra-Vayalar upheaval -PaliyumSathyagraham - Working Class Movements - Liberation Struggle - Environmental struggles - Chengara struggle - Muthanga incident - Break the Curfew - Kiss of Love Protests - Queer Pride- PenpillaiOrumai

Social Reform Movements - Kerala Renaissance - Reformers: Nangeli - VaikundaSwamikal - ThaycadAyya Guru - MaktiThangal- ChattampiSwamikal - Sree Narayana Guru – Ayyankali -Mithavadi Krishnan - Vaikom Abdul Khadar Moulavi - Mannath Padmanabhan - PoykayilYohannan – Vagbhatananda - PanditKaruppan - Sahodaran Ayyappan - V. T. Bhattathirippad -Parvathy Nenmanimangalam - Koothattukulam Mary - KesariBalkrishna Pillai - K. Devayani - DakshayaniVelayudhan - KallenPokkoodan - Mayillamma-Daya Bai - Nilamboor Aisha –Ajitha - C. K.Janu - SaleenaPrakanam– Vijayaraja Mallika

Organizations: Sree Narayana Dharma ParipalanaYogam (SNDP), Nair Service Society (NSS), Sadhu Jana ParipalanaYogam (SJPY), Yogakshema Sabha, SahodaraSangam, PrathyakshaRakshaDaiva Sabha (PRDS), Adivasi GothraMaha Sabha (AGMS)- Kerala YukthivaadiSangam (KYS) - Trade Unions, AsankhadithaThozhilaliPrasthanam – Anweshi - Self Employed Women's Association (SEWA) – Kudumbasree – Sahayathrika–Queerala-

Required Reading

Gurukkal, Rajan. "The Formation of Caste Society in Kerala: Historical Antecedents" *Social Formation of Early South India*. New Delhi: Oxford UP, 2010. Pages 306-319 Print.

Bose, Satheesh Chandra. "(Re) Construction of 'the social' for making a Modern Kerala: Reflections on Narayana Guru's Social Philosophy" *Kerala Modernity: Ideas, Spaces and Practices in Transition.* New Delhi:Orient Black Swan. Pvt Ltd, 2015. Pages 59-73 Print.

Module III – Art and Culture

Thamizhakam – Muziris - Aryanization and its impact - Sankaracharya and Advaitha philosophy –Srimulavasa - KantalurSalai - Bhakthi Movement - Synod of Diamper-Missionary Activities

Language: Pattu – Manipravalam- Early Prose Writings - Cherusseri, Niranam poets, Ezhuthachan, KunchanNambiar - Keralolpathi – Ballads - Folk songs

Temple Arts - Koodiyattam, Ashtapadiyattam, Krishnanattam, Mohiniyattam, Thullal, Chendamelam, Panchavadyam, Thayampaka

Folk Arts - Theyyam, Patayani, Mudiyettu, Vilpaattu, Margamkali, Dufmuttu, Mudiyattam - Music- SopanaSamgeetham -Architecture- Painting- Murals

Theatre (KPAC): Kerala Kalamandalam - Cinema - Kerala Chalachithra Academy

Legal Practices – SmarthaVicharam - Caste Practices - Pulapedi, Mannapedi, Parayapedi-Breast Tax

Required Reading

Rajeevan, B. "Cultural Formation of Kerala" *Essays on the Cultural Formation of Kerala*. Ed. P.J Cherian. Kerala State Gazetteers Department, 1999. Pages 1-34 Print.

Caldwell, Sarah. "Landscapes of Feminine Power." *Oh Terrifying Mother: Sexuality, Violence and Worship of the Goddess Kali.* Oxford UP: New Delhi, 1999. Pages 104-154 Print.

Module IV- 20th Century Progressive Movements & Literature

Kerala JeevatsahityaSangham (1937), Deshabhimani Study Circle (1970s), Purogamana Kala SahityaSangham (Pukasa-Progressive Arts & Literary Organisation,) (1981) Kerala Sastra SahityaParishad, 1962 (KSSP**,** *Kerala Science Literature Movement*)) - Muslim Education Society (MES 1964) - Transgender Policy 2015.

Library Movements and Literacy Mission - Puthuvayil Narayana Panicker - *ThiruvithaamkoorGranthasalaSangham* (Travancore Library Association, 1945), Kerala GranthasalaSangham. 1956 (KGS), Kerala State Library Council (1977), Kerala Association for Non-formal Education and Development (KANFED), Kerala State Literacy Mission

Modern literary Genres: fiction, short poems - historical writings - manuals - William Logan - Gazetteers

Media and Modernity: Newspaper- Akashavani- Doordarshan- New Media

Sunil P. Elayidom. "Cross-Currents Within: A Cultural Critique of Kerala Renaissance" (http://janasamskriti.org/emssem.html)

Reading List

Antharjanam, Lalithambika. *Agnisakhi*. VasanthiSankaranarayanan (Trans) Delhi: OUP, 2015. Print.

Bahuaddin, K.M. *Kerala Muslim History: A Revisit.* Calicut: Other Books, 2012. Print.

Bhattathirippad, V.T. *My Tears, My Dreams*. Sindu V. Nair (Trans) Delhi: OUP, 2013. Print.

Bose, Satheesh Chandra and Siju Sam Varughese. *Kerala Modernity: Ideas, Spaces and Practices in Transition.* New Delhi:Orient Black Swan. Pvt Ltd. 2015. Print.

Brown, Lesley W. "The Christian of St' Thomas in the sixteenth Century", *The Indian Christians of St' Thomas*, St Thomas Service and Community Center OUP.1982. Print.

Devika, J. *KulasthreeyumChandapennumUndaayathengane*, CDS, Thiruvananthapuram, 2010 Print.

Ganesh, K N. *KeralathinteInnalekal*, Trivandrum: The State Institute of Languages: 1990. Print.

Ganesh, K.N *Exercises in Modern Kerala History,* Kottayam: SahithyaPravarthaka Co-operative Society, 2012 Print.

Guru, Nataraja. *The Word of the Guru: Life and Times of Guru Narayana*, New Delhi: D.K. Print world, 2008. Print.

Gurukkal, Rajan. *Social Formation of Early South India*, OUP, 2010. Print.

Jeffrey, Robin. *The Decline of Nair Dominance Society and Politics in Travancore 1847-1908,* Manohar Publishers and Distributors New Delhi, 1976. Print.

Veluthatt, Kesavan. *Brahman Settlement in Kerala*. Historical Studies, Cosmo Books, 2013

Kumari, A. Krishna *Samarapadhangalile Pen Peruma*, Thrissur: Samatha: A Collective of Gender Justice, 2012 Print.

Kuroor, Manoj. *NilamPoothuMalarnnaNaal*, Kottayam: DC Books, 2015. Print.

Kurup, K.K.N. *Aspects of Kerala History and Culture*, College Book House: Vadakara, 1977.

Menon, O. Chandu. *Indulekha*. Delhi: OUP, 2005. Print.

Mohan, Sanal. "Searching for Old Histories: Social Movements and the Project of Writing History in Twentieth Century Kerala" *History in the Vernacular* Ed. RaziuddinAquil and Partha Chatterjee. New Delhi: Permanent Black, 2008: 357-390. Print.

Nair, Vasudevan M.T. Naalukettu, Delhi: OUP, 2007. Print.

Narayanan, M.G.S. *Perumals of Kerala*, Cosmo Books, 1996. Print.

Nisar M. and Meena Kandasamy, "Ayyankali and his Movement" *Ayyankali Dalit Leader of Organic Protest*, Other Books: Calicut, 2007 Print.

Padmanabhan K.P. *History of Kerala (4 Volumes)* New Delhi: Asian Educational Services, 1924. Print.

Panikkar, K. N. *Essays on the History and Society of Kerala*. Trivandrum: Kerala Council for Historical Research, 2015.Print.

Ramanujan A.K. *Poems of Love and War*. New York: Columbia University Press, 1985. Print.

Usha Kumari, T.A. Ed. *ThozhilKendrathilekku,*Thrissur: Samatha: A Collective of Gender Justice, 2014. Print.

Variyar, M.R. Raghava and RajanGurukkal.Ed. *Cultural History of Kerala* Vol 1&2, Department of Cultural Publications, Government of Kerala 1999. Print.

Vielle, Christophe. "How did Parasurama come to rise Kerala"? *Irreverent History, Essays for M.G.S Narayanan.* KesavanVeluthatans Donald. R. Davis. Jr. Ed. New Delhi: Primus Books, 2015. Print.

SEMESTER III

PAPER XI: Choice 5

EL 233.5 – Elective Course: Women's Writing [6 hours/week]

Objectives:

The objectives of this paper are to:

- introduce students to the different genres and literary themes presented by women writers especially Indian women writers
- help students to understand the historical and social context in which literary expression by Indian women have developed
- help students appreciate the richness and variety of literary production by women

Learning Outcomes

At the end of this course, students will be able to:

- describe and evaluate the roles of such categories as race, gender and sexuality, disability, class, ethnicity, and religion
- demonstrate an advanced critical understanding of the cultural history of women's writing
- demonstrate the ability to use and respond to historicist, feminist and other critical approaches to women writers

Course Description

Module I- Introduction to Women's Writing.

Introduction- definition of women's writing-emergence as a genre-major women writers-aesthetics of women's writing-politics of women's writing-black feminism-Indian feminism-multiracial feminism- post colonial feminism- eco feminism – misogynist writings-MaryWollstonecraft and her circle- first wave of feminism-second wave- third wave – pro-feminism- new feminism – scripture feminine

Required Reading

Eagleton, Mary. "Introduction". *Feminist Literary Theory: A Reader.* Oxford: Blackwell Publisher, 1999.

Irigaray, Luce, Catherine Porter and Carolyne Burke. "Introduction." *This Sex which is Not One*. New York: Cornell University Press, 1985.

Module II: Poetry

Required Reading

Kamala Das	"Too Late for Making Up"
Shanta Acharya	"Delayed Reaction"
Vijila	"A Place for Me"
Imtiaz Dharkar	"Minority"
Judith Wright	"Naked Girl and Mirror"

Sylvia Plath	"Balloons"
Alice Walker	"Before I leave the Stage"
Pratibha Nandakumar	"Poem"
Sugatha Kumari	"Devadasi"
Carol Ann Duffy	"Eurydice"
Vijayalekshmi	"Thachante Makal"
Temsula Ao	"Heritage"

Module III - Prose and Fiction

Prose

Required Reading

Sen, Nabaneeta Dev. "Women Writing in India at the Turn of the Century

Jain, Jasbir. "From Experience to Aesthetics: The Dialectics of Language and Representation: Growing Up as a Woman Writer"

Adichi, Chimamanda Ngozi. "We should All Be Feminists"

Parker, Dorothy. "Good Souls"

Fiction

Required Reading

Lalithambika Antarjanam	"Goddess of Revenge"
Mahaswetha Devi	"The Divorce"
P.Vatsala	"The Nectar of Panguru Flower"
Shashi Deshpande	"Independence Day"
Doris Lessing	"No Witchcraft for Sale"
Katherine Mansfield	"A Doll's House"
M Saraswati Bai	"Brainless Women"
Kumudini	"Letters from the Palace"
Penelope Fitzgerald	"The Axe"
Mrinal Pande	"A Woman's Farewell Song"
Sarah Orne Jewett	"A White Heron"

Module IV- Drama and Short Fiction

Drama

Required Reading

Caryl Churchill	*Top Girls*
Vinodini	*Thirst*

Short Fiction

Required Reading

Mahasweta Devi "Draupadi"

Reading List:

Eagleton, Mary. *Feminist Literary Theory: A Reader.* Oxford: Blackwell Publisher, 1999. Print.

Irigaray, Luce, Catherine Porter and Carolyne Burke. *This Sex which is Not One*. New York: Cornell University Press, 1985. Print.

Kristeva, Julia. *Desire in Language: A Semiotic Approach to Literature and Art.* Oxford: Blackwell Publisher, 1980. Print.

Mitchell, Juliet. *Psychoanalysis and Feminism: Freud, Reich, Laing and Women.* USA: Penguin, 2000. Print.

Moi, Toril. *Sexual/Textual Politics: Feminist Literary Theory*. New York: Routledge, 2002. Print.

Showalter, Elaine. *A Literature of Their Own: British Women Novelists from Bronte to Lessing*. Princeton, NJ: Princeton University Press, 1977. Print.

Swindells, Julia. *The Uses of Autobiography (Feminist Perspectives on the Past and Present)*. UK: Taylor and Francis, 1995. Print.

Tharu, Susie and K. Lalita, eds. *Women Writing in India: 600 BC to the Present*. Vols. I & II. Delhi: OUP, 1993. Print.

Weeden, Chris, J. Batsleer, T. Davies and R. O'Rourke. *Rewriting English: Cultural Politics of Gender and Class*. London: Routledge, 2003. Print.

SEMESTER III

PAPER XII: Choice 1

EL 234.1 - Elective Course: European Fiction (6 Hrs/week)

Objectives

The objectives of this paper are to:

- introduce the students to European fiction
- broaden and deepen the understanding of European fiction and its various trends
- introduce the students to some of the classical and modern fictions

Learning Outcomes

At the end of the course students will be able to:

- identify the main themes of the texts and examine them from a different perspective
- display their understanding of the historical, cultural, political, religious, stylistic, structural outlooks that shaped European fiction
- demonstrate the ability to read, enjoy, think about, and respond to European fiction in critical and meaningful ways

Module I – Socio-political and Literary Background

Renaissance : Cervantes, Niccolo Machiavelli, Giovanni Boccaccio, Petrarch - Age of Enlightenment: Voltaire, Jean-Jacques Rousseau, Voltaire, Denis Diderot – Romanticism: Victor Hugo, Goethe, Faust, Hegel – Realism: Gustave Flaubert, Claude Bernard, Emile Zola, Fyodor Dostoyevsky, Leo Tolstoy – Modernism: Immanuel Kant, Clement Greenberg, Baudelaire, Manet, Flaubert, Nietzsche, Wassily Kandinsky —Stream of Consciousness, Dadaism, Cubism, German Expressionism, Futurism, Surrealism, Pop, Minimalism – Postmodernism – Metafiction, Black Humour, Subversion.

Required Reading

Cohen, Walter. *A History of European Literature. L*ondon: OUP. 1999 Print. (Relevant sections)

*The Cambridge Companion to European Novelist*s. London: Cambridge University Press, 2012. Web. (Relevant sections)

Childs, Petre. *Modernism.* Critical Idiom Series**.** London: Routledge. 2008. Print.

Woods, Tim. *Beginning Postmodernism*. Manchester: Manchester University Press. 1999

Module 2: Realism and Naturalism

Novel

Cervantes	*Don Quixote*
Gustave Flaubert	*Madame Bovary*
Fyodor Dostoyevsky	*Crime and Punishment*

Short Story

Honore de Balzac	"A Passion in the Desert"

Guy de Maupassant "A Dead Woman's Secret"

Module 3: Modernism and Postmodernism

Novel

Gunter Grass *Tin Drum*

Italo Calvino *If On A Winter's Night A Traveller*

Elfriede Jelinek *The Piano Teacher*

Short story

Orhan Pamuk "Distant Relations"

Jose Saramago "The Chair"

Module 4: Critical Responses

Hutcheon, Linda. "Discourse, Power, Ideology: Humanism and Postmodernism". *A Poetics of Postmodernism.* London: Routledge, 1988. 178-200. Print. (178-200)

Lehan, Richard. "Realism and Naturalism as the Expression of an Era". *Realism and Naturalism: Love in an Age of Transition* London: The U of Wisconsin P. 2005. Print.

Gay, Peter. "A Climate for Modernism". *Modernism: the Lure of Heresy* London: Norton& Company. 2008. Print

Reading List

Anthony J Cascardi. *The Cambridge Companion to Cervantes.* London: CUP, 2002. Print.

Ferber, Michael. *A Companion to European Romanticism.* Victoria: Blackwell, 2005. Print

Konzett, Matthias Piccolruaz & Margarete Lamb-Faffelberger Ed. *Elfriede Jelinek: Writing Woman, Nation, and Identity: a Critical Anthology*. NJ: A U Press. 2007. Print

Polhemus, Robert M.&Roger B. Henkle: *Critical Reconstructions: The Relationship of Fiction and Life. I* Stanford*:* Stanford University Press, 1994. Print.

Unwin, Timothy. *The Cambridge Companion to Flaubert*. London: CUP 1998. Print

Samarago, Jose. *The Lives of Things*. London: Verso. 1978. Print

Taberner, Stuart. *The Cambridge Companion to Gunter Grass.* Tonbridge: CUP. 2009. Print.

SEMESTER III

PAPER XII: Choice 2

EL 234.2 African and Caribbean Literatures (6 Hours/Week)

Objectives:

The objectives of this paper are to:

- introduce the students to different literary genres from African and Caribbean literature
- familiarize them with the historical and cultural context of literary works
- help students understand the impact of colonialism, race, class, ethnicity and gender
- enable them to gain a broad knowledge of the major texts and major concerns of African and Caribbean literatures

Learning outcomes:

At the end of this course, students will be able to:

- appreciate the diversity of literary voices from Africa and the Caribbean and to enable them to read texts in relation to the historical and cultural contexts
- understand the debates and concepts emerging from the field of African-Caribbean Studies
- develop the ability to think critically about African Caribbean Diaspora

Course Description

Module I – Socio-political and Literary Background

Impact of colonialism/colonial encounters - race and ethnicity – oral literature- negritude movement - themes of colonialism, liberation- nationalism - tradition - displacement and rootlessness in African and Caribbean literature - creolization – post-colonial literature in Africa – decolonization - African mythology and worldview - humour and satire in African & Caribbean literature - African diaspora - post-apartheid literature - recent trends in African and Caribbean literatures - Anglo-Caribbean & West Indian literature - Indentureship and migration

Required Reading

William, Patrick. "Colonial Discourse and Post Colonial Theory: An Introduction "*Colonial Discourse and Post-Colonial Theory, A Reader.* London: Routledge 2015. Print.

Spivak, Gathri. "Can the Subaltern Speak?" *Colonial Discourse and Post-Colonial Theory, A Reader.* Part One Section Four.

Module II - Poetry and Drama

Required Reading

Poetry

Louise Bennett	"Colonization in Reverse"
Leopold Sedar Senghor	"Black Woman""
David Diop	"Africa/ The Vultures"
Chinua Achebe	"Refugee Mother and Child"

Derek Walcott	"A Far Cry from Africa"'
Edward Kamau Braithwaite	"South"
Wole Soyinka	"Hamlet"
John Pepper Clark	"Night Rain"
Kofi Awoonor	"Songs of Sorrow"

Drama

Wole Soyinka	*Death and the King's Horseman*

Module III - Prose and Fiction

Required Reading

Prose

Nelson Mandela	"Birth of a Freedom Fighter"
George Lamming	"The Occasion for Speaking"

Fiction

Chinua Achebe	*Things Fall Apart*
J. M. Coetzee	*Disgrace*
Chimamanda Ngozi Adichie	*Half of a Yellow Sun*
V. S. Naipaul	*The Enigma of Arrival*

Module IV – Critical Responses

Required Reading

Frantz Fanon	"The Fact of Blackness"
Frantz Fanon	"The Negro and Language"
Ngugi wa Thiong'o.	"Decolonising the Mind"

Reading List

Cesaire, Aime. *Discourse on Colonialism*. Tr. Joan Pinkham. New York: Monthly Review Press, 2000. Print.

Falola, Toyin. African World Series. *Contemporary African Literature: New Approaches.* N.C.2012. *http://www.cap-press.com/pdf/2296.pdf*

Fanon, Frantz. *Wretched of the Earth.* Grove Press, 1968. Print.

Fanon, Frantz. *Black Skin, White Masks.* Pluto Press, 2017. Print.

Kelley, Robin D.G. . "A Poetics of Anticolonialism". Monthly Review Press, 2000. Print.

Olaniyan, Tejumola and Ato Quayson. *African Literature: An Anthology of Criticism and Theory.* Blackwell, 2010. Print.

Ricard, Alain. *The Languages and Literatures of Africa.* James Currey, 2004. Print.

Soyinka, Wole. *Myth, Literature, and the African World.* Cambridge University Press, 2005. Print.

The Cambridge History of African and Caribbean Literature Vol.1 & 2. Cambridge University Press, 2004.

"Birth of a Freedom Fighter" (Part-3, Section 11, pp.64-65). *Long Walk to Freedom: The Autobiography of Nelson Mandela.* London: Black Bay Books, 1995.

"The Occasion for Speaking" *The Post-Colonial Studies Reader.* Ed. Ashcroft, Griffith and Tiffin. London: Routledge, 1995: 12.

"The Fact of Blackness". *The Post-Colonial Studies Reader.* Ed. Ashcroft, Griffith and Tiffin. London: Routledge, 1995: 323

"The Negro and Language". *Black Skin White Masks*. England: Pluto Press,1986. Pg-8

"Decolonising the Mind". *The Post-Colonial Studies Reader.* Ed. Ashcroft, Griffith and Tiffin. London: Routledge, 1995.

Williams, Patrick. *Colonial Discourse and Post-Colonial Theory: A Reader.* London: Routledge 2015. Print.

SEMESTER III

PAPER XII: Choice 3

EL 234.3 - Elective Course: Fiction and Film (6 Hrs/week)

Objectives

The objectives of this paper are to:

- examine the relationship between fiction and cinema by focusing on film adaptations of literary genres such as the novel, short story, novella and graphic novels
- broaden and deepen the understanding of film adaptations and its various trends
- consider classic and contemporary theories of film adaptation

Learning Outcomes

At the end of the course students will be able to:

- demonstrate an understanding of the evolving relation between literature and cinema through adaptations and its history
- apply adaptation theories to read films
- read and critically analyze film adaptations with reference to the medium

Course Description

Module I – Fiction to Film - Theory

'Sisters Arts' - Cinema history - Notion of fidelity - Medium specificity and codes - Mise-en-scene - Characters - Literary language and Film language - Techniques and Narrative Strategies - Modes of Adaptation – Borrowing - Intersecting - Transforming of Sources - Dynamics of Exchange - A Dialogue – Intertextuality - Authorship and Auteurism - Ideological and Political Implications - Assessing Adaptations- Transposition-Commentary - Analogy Aesthetics of Adaptation Fiction - Films, Television Series, Fairy Tales, Animations, Graphic novels

Required Reading

Andrew Dudley. "Adaptation" from *Concepts in Film Theory*. London: OUP, 1984. 96-106

Wald, Jerry. "Foreword: Fiction versus Film". *Fiction, Film and Faulkner*: *The Art of Adaptation.* Gene D. Philips Ed. Knoxville: The University of Tennessee Press. 1988. Print

Module II- Novels to Films

Author	**Novel**	**Director**	**Film**
Emily Bronte	*Wuthering Heights*	Peter Kosminsky	*Emily Bronte's Wuthering Heights*
Bram Stoker	*Dracula*	Francis Ford Coppola	*Dracula*
Ken Kesey	*One Flew Over the Cuckoo's Nest*	Miloš Forman	*One Flew Over the Cuckoo's Nest*
Malayattoor Ramakrishnan	*Yakshi*	K. S. Sethumadhavan	*Yakshi*

Module III- Short fiction to Films

Author	Novel	Director	Film
Paul Zacharia	"Bhaskara Pattelarum Ente Jeevithavum"	Adoor Gopalakrishnan	*Vidheyan*
Rabindranath Tagore	The Broken Nest	Satyajit Ray	*Charulatha*

Module IV – Graphic Novels and Fairy Tales to Films

Author	Novel	Director	Film
Alan Moore	*From Hell*	Allen Hughes, Albert Hughes	*From Hell*
Author	**Novel**	**Director**	**Film**
Brothers Grimm	*The Frog Prince*	Ron Clements John Musker	*The Princess and the Frog*

Recommended Reading

Cohan, Keith. *Film and Fiction: The Dynamics of Exchange.* London: Yale University Press, 1979.

Hutcheon, Linda, and Siobhan O'Flynn. *A Theory of Adaptation.* New York: Routledge, 2013.

McFarlane, Brian. *Novel to Film: An Introduction to the Theory of Adaptation*. Oxford: OUP, 1996.

Roberge, Gaston. *The Subject of Cinema*. Calcutta: Seagull, 1990.

Stam, Robert and Alessandra Raengo, eds. *Literature and Film: A Guide to theory and Practice of Film Adaptation*. UK: Blackwell Publishing, 2005.

SEMESTER III

PAPER XII: Choice 4

EL 234.4 - Elective Course: Folklore Studies (6 Hrs/week)

Objectives

The objectives of this paper are to:

- look at folklore and its different forms with specific reference to the cultures in which they are determined
- arrive at methods of analysing folklore with a view to understanding their function within their cultures
- give an idea of early cultural formations including oral culture in founding and sustaining modern societies
- develop an understanding of early cultures and their expressions.

Learning outcomes

At the end of this course, the students will be able to:

- display an awareness of the nature and form of folklore and its significance in the cultural formations of a people
- gather and identify different types of folklore and discuss them in the context of the cultures that inform them and are informed by them in turn
- critically analyse and understand folklore using different methodologies available
- think about folklore as a living tradition with contemporary relevance
- conduct fieldwork to collect and analyse folklore and study them in connection with the past and present culture

Course Description

Module I—Fundamentals of Folklore Studies

Definitions of folklore - folklore studies — a historical overview - folk groups and folk culture - the question of what constitutes a folk group - folklore and tradition - Folklore as history of the oppressed classes

Required Reading

Sim, Martha C. and Martine Stephens. "Chapters 1-6." *Living Folklore: An Introduction to the Study of People and Their Tradition*. 2nd edn. Logan, Utah: Utah State UP, 2011. Print.

Bendix, Regina F, and Galit Hasan-Rokem."Introduction and Part 1." *Wiley-Blackwell Companion to Anthropology: Companion to Folklore 1.* Hoboken: Wiley-Blackwell, 2012. Print.

Module II —Forms of Folklore

Folktales — folk narratives - folk songs, peasants and their imagination - folk performances — theatre, rituals - folklore in everyday life — food, clothing, superstitions

Required Reading

Propp, Vladimir. "The Nature of Folklore." *Theory and History of Folklore.* Tr. Ariadna Y. Martin and Richard P. Martin. Minneapolis: U of Minnesota P, 1997. 1-63. Print.

Dundes, Alan. "Projection in Folklore: A Plea for Psychoanalytic Semiotics." *MLN* 91.6 (1976): 1500-1533. Print.

Module III —Methodologies for Analysis

Comparative theory — Finnish historical-geographic method - national folklore theories – Russian — Hungarian — American - anthropological theory — Franz Boas - psychoanalytic theory — Freud —*Dreams and Myth* - structural theory — Propp - Levi-Strauss - the contextual theory — Milman Parry and Albert B. Lord - field work and methodology of folklore research.

Required Reading

Dorson, Richard M. "Current Folklore Theories." *Current Anthropology* 4.1 (1963): 93-112. Print.

Burns, Thomas A. "Folkloristics: A Conception of Theory." *Western Folklore* 36.2 (1977):109-134. Print.

Martha C. Sims, Martine Stephens. "Chapter 7." *Living Folklore: An Introduction to the Study of People and Their Tradition*. 2nd edn. Logan, Utah: Utah State UP, 2011. Print.

Module IV —Folklore of Kerala

Description of different forms of Kerala folk art performances — theyyam, mudiyettu, padayani, thira, thottam, chavittunatakam, pavakkoothu, kakkarassinatakam, vellarinatakam- Songs and oral performances — vadakkan and thekkanpattu, brahmanipattu, koythupattu, kuthiyottapattu, vallappattu - Folktales of Kerala, *Aithihyamala*

Required Reading

A.K. Ramanujan

"A Drum" (Hindi)

"Raja Vikram and Princess of China"

"Sukhu and Dukhu" (Bengali)

"A Heron in the Mouth"

"Teja and Teji" (Assamese)

"The Priest Who Could See as Far as Mecca"

"The Lord of Death" (Punjabi)

"In Another Country"

"A Tall Tale in Urdu" (Urdu)

"How the Weaver Went to Heaven"

"A Story in Search of an Audience" (Telugu)

"Tenali Rama's Dream"

"A Flowering Tree" (Kannada)

"In the Kingdom of Fools"

	"The Clay Mother-in-Law" (Tamil)
	"Crossing a River, Losing a Self"
Kottarathil Sankunni	"The Market Place of Kozhikode"
	"The Martial Arts Master of Kallanthattil"
	"The Panikkar of the House of Avanangattu and the Evil Spirits"

Namboodiri, Vishnu M.V. *Folklore: Identity of Culture*. Thiruvananthapuram: Department of Information and Public Relations, Government of Kerala, 2012. Print.

Reading List

Bendix, Regina F, and Galit Hasan-Rokem.*Wiley-Blackwell Companion to Anthropology: Companion to Folklore 1.* Hoboken: Wiley-Blackwell, 2012. Print.

Dorson, Richard M. (ed.). : *Folklore and Folk Life : An Introduction.*Chicago and London: The Universityof ChicagoPress, 1972. Print.

Dundes, A. (ed.). *The Study of Folklore*. London: Prentice Hall, 1965. Print.

Handoo, Jawaharlal. *Folklore : An Introduction.* Hyderabad: CIEFL Press, 1989. Print.

-----. *Theoretical Essays in Folklore.* New Delhi: Zooni Publications, 2000. Print.

Leach, Maria (ed.). *The Standard Dictionary of Folklore, Mythology and Legend*. New York: Funk & Wagnalls, 1972. Print.

Martha C. Sims, and Martine Stephens. *Living Folklore: An Introduction to the Study of People and Their Tradition*. 2nd edn. Logan, Utah: Utah State UP, 2011. Print.

Ramanujan, A.K . Selection from *Folktales from India*. Gurgaon: Penguin, 2009. Print.

Sankunni, Kottarathil. Selections from *Aithihyamala*.Tr. Leela James. Gurgaon: Hachette, 2015. Print.

SEMESTER III

PAPER XII: Choice 5

EL 234.5 – Elective Course: Writing Lives, Performing Gender [6 hours/week]

Objectives:

The objectives of this paper are to:

- focus on dancing bodies in performance which may open up enquiries into the behaviours of gendered, raced and sexed bodies within the cultural space.
- open up multiple ways of thinking about bodies in performance, beyond the normalized ways of embodying selves.
- guide the students towards a concrete understanding of how the performers have dealt with gendered roles

Learning outcomes:

At the end of this course, students will be able to:

- display informed ways of understanding lives and bodies in performance.
- describe and explain the agonies of lives that were devoted to experimenting with the self, body and the other
- evaluate critically the relationship between performance and gender

Course Description

Module I - Isadora Duncan

The extract from the life of Isadora Duncan shall acquaint the students with the persistent struggle of an iconoclastic performer, considered the creator of modern dance in the west, to extend the grammar of female dancing body beyond the codified rigidities of classical ballet. Duncan wanted to restore dance to a high art form instead of entertainment and for this she continually sought to redefine the connection between emotions and movement. Her autobiography tries to capture the agonies of a life that was devoted to experimenting with the self, body and the other.

Required Reading

Isadora Duncan *My Life*

Module II - Chandralekha

Chandralekha is in many ways an epochal eastern counterpart of Isadora Duncan and hence elaborates the enquiries of the students begun in the first extract to a more familiar cultural scenario. Chandralekha's incessant experiments to widen the idiom of bharatanatyam to encompass the powerfully fluid movements of limbs in kalaripayattu and yoga, to tap multiple ways of erotic expression, her quests to bring out the feminine within the male, and her own postulations of the seamless body shall incite further critical thinking in these directions.

Required Reading

Rustom Barucha *Chandralekha: Woman, Dance, Resistance*

Module III – Vaslav Nijinsky

A dancer-choreographer who shocked the classical ballet audience used to stipulated kinesthetics of the moving male body, Vaslav Nijinsky's modes of expression were futuristic in many ways. From dancing *en pointe* which was not expected of men, to extreme sparseness employed in the rendering, his two dimensional movement vocabulary set against lush music and open expression of physicality on the stage - Nijinsky's life both on and off the stage was riveting. This extract brings in myriad questions into norms of masculinity that popular art and literature promote.

Required Reading

Vaslav Nijinsky *The Diary of Vaslav Nijinsky*

Module IV - Sarah Caldwell's Study of *mudiyettu*

The extract from Sarah Caldwell's study of *mudiyettu* in many ways consolidates the explorations incited by the other selections in this paper. The remarkable power of this book's analysis of sexualities in performances in a ritual space in Kerala comes from the position of an involved participant that Caldwell takes, as against any supposed objective scholarship on the same. The mix of insight in the form of entries in her journal and letters that generously peppers her academic analysis enables her to pour forth the frustrations within her person as she encounters conventions of female behaviour and gender performance in Kerala. The vividly examined psychological dynamics working behind ritual structures, the conflicts between genders it reflects and the way the same are negotiated through ritual, all narrated with empathy shall encourage students further in their own experiential assessments.

Required Reading

Sarah Caldwell *Oh Terrifying Mother: Sexuality, Violence and Worship of the Goddess Kali*

Reading List

Bahrani, Zainab. "Metaphorics of the Body: Nudity, the Goddess and the Gaze." *Women of Babylon: Gender and Representation in Mesopotamia*. London: Routledge, 2001. Print.

Brewer, Carolyn. "'Good' and 'Bad' Women: The Virgin and the Whore." *Shamanism, Catholicism and Gender Relations in Colonial Philippines, 1521-1685.* London: Ashgate, 2004. Print.

Burt, Ramsay. "Dissolving in Pleasure: The Threat of the Queer Male Dancing Body." *Dancing Desires: Choreographing Sexualities on and off the Stage.* Ed. Jane Desmond. Wisconsin: UWP, 2001. Print.

Chatterjee, Ananya. "Chandralekha: Negotiating the Female Body and Movement in Cultural/Political Signification." *Moving History, Dancing Cultures: A Dance History Reader.* Ed. Dils Ann and Ann Cooper Albright. New York: WUP, 2001. Print.

Coorlawala, Uttara. "Ananya and Chandralekha – A Response to Chandralekha: Negotiating the Female Body and Movement in Cultural/Political Signification." *Moving History, Dancing Cultures: A Dance History Reader.* Ed. Dils Ann and Ann Cooper Albright. New York: WUP, 2001. Print.

Franko, Mark. "The Invention of Modern Dance." *Dancing Modernism: Performing Politics.* New York: IUP, 1995. Print.

Foster, Susan Leigh. “The Ballerina’s Phallic Pointe.” *Corporealities: Dancing Knowledge, Culture and Power.* New York: Routledge, 1996. Print.

Hanna, Lynne Judith. “The Sense and Symbol of Sexuality and Gender in Dance Images.” *Dance, Sex and Gender: Signs of Identity, Dominance, Defiance and Desire*. Chicago: UCP, 1998. Print.

Hodson, Millicent. “Searching for Nijinsky’s Sacre” *Moving History, Dancing Cultures: A Dance History Reader.* Ed. Ann Dils and Ann Cooper Albright. New York: WUP, 2001. Print.

Joyce, Rosemary. “Goddesses, Matriarchs and Manly-Hearted Women: Troubling Categorical Approaches to Gender.” *Ancient Bodies, Ancient Lives: Sex, Gender and Archaeology.* New York: Thames and Hudson, 2008. Print.

Kopelson, Kevin. “Nijinsky’s Golden Slave.” *Dancing Desires: Choreographing Sexualities on and off the Stage*. Ed. Jane Desmond. Wisconsin: UWP, 2001. Print.

Phelan, Peggy. “Dance and the History of Hysteria.” *Corporealities:Dancing Knowledge, Culture and Power.* New York:Routledge, 1996. Print.

Perry, E. M., and Rosemary Joyce. “Providing a Past for Bodies that Matter: Judith Butler’s *Impact on the Archaeology of Gender*.” *International Journal of Sexuality and Gender Studies. 6: 63-76.* Print.

Bharucha, Rustom. *Chandralekha: Woman, Dance, Resistance.* New Delhi: Harper Collins, 1999. Print.

Caldwell, Sarah. *Oh Terrifying Mother: Sexuality, Violence and Worship of the Goddess Kali.* New Delhi: Oxford UP, 1999. Print.

Duncan, Isadora. *My Life*. New York: Liveright, 1995. Print.

Nijinsky, Vaslav. *The Diary of Vaslav Nijinsky*. Ed. Romola Nijinsky. London: UCP, 1971. Print.

SEMESTER IV

PAPER XV: Choice 1

EL 243.1 – Elective Course: Comparative Literature [6 hours/week]

Objectives:

The objectives of this paper are to:

- give a historical overview of the development of the theory of comparative literature
- familiarize students with the theory of comparative literature
- enable students to assess cross-cultural currents in literature and other arts
- train students in the methodologies of comparative analysis

Learning Outcomes

At the end of the course, the students will be able to:

- display an awareness of the major transformations in the concept of comparative literature
- assess the cultural similarities and dissimilarities represented in the literature of different languages
- demonstrate the ability to analyze texts across languages and cultures
- assess the flow of forms and concepts across language and national boundaries
- appreciate the universal character of literature and arts

Course Description

Module I— Socio-political and Literary Background

The origin and growth of the comparative approach - comparative Indian literature Malayalam literature - inter-semiotic comparison—the question of adaptations - the translations of the epics—Ezhuthacchan—the lyric impulse and *Krishnagatha*—hymns—Poonthanam and—Kunjan Nambiar - romanticism—Kumaran Asan -Vallathol Narayana Menon - modernism—Ayyappa Panicker—M. Govindan - postmodernism—P. P. Ramachandran - S. Joseph - Mohanakrishnan Kalady, etc.

Required Reading

Ali, Behdad**. "**Method and Congruity: The Odious Business of Comparative Literature.**"**

Hogan, Patrick Colm. "India and the Study of Comparative Literature."

Module II — Poetry and Drama

Required Reading

Poetry

Kumaran Assan	"The Fallen Flower"
Ayyappa Panicker	"Kurukshetra"

Drama

Krishna Pillai, N.	*Investment*
Thomas C. J.	*Crime 27 of 1128*

Module III —Prose and Fiction

Required Reading

O Chandumenon *Indulekha*

M.T. Vasudevan Nair *The Second Turn*

K.P. Ramanunni *What the Sufi Said*

Ponkunnam Varkey *The Key of the Store*

Module IV —Literature and Other Arts

Required Reading

K.S. Sethumadhavan *Bhargavee Nilayam*

G. Aravindan *Kanchana Sita*

Reading List

Bassnett, Susan. *Comparative Literature: A Critical Introduction*. Oxford: Blackwell,1993.

Behdad, Ali. *A Companion to Comparative Literature.*London: Willey- Blackwell. 2011. Print.

Chandramohan. *Aspects of Comparative Literature: Current Approaches.* Delhi: India Publishers, 1989.

Clüver, Claus and Burton Watson. "On Intersemiotic Transposition." *Poetics Today* 10.1 (1989): 55-90. http://www.jstor.org/stable/1772555

Derrida, Jacques and Eric Prenowitz. "Who or What Is Compared? The Concept of Comparative Literature and the TheoreticalProblems of Translation." *Discourse* 30.1/2 (2008): 22-53. http://www.jstor.org/stable/41389791

During, Simon. "Comparative Literature." *ELH* 71.2 (2004): 313-322. http://www.jstor.org/stable/30030050

Hogan, Patrick Colm and Lalita Pandit. *Literary India: Comparative Studies and Aesthetics, Colonialism, and Culture.* Newyork: State University of New York. 1995. Print

Jantz, Harold S. "The Fathers of Comparative Literature." *Books Abroad* 10.4 (1936): 401-403. http://www.jstor.org/stable/40077574

Lefevere, André. "Introduction: Comparative Literature and Translation." *Comparative Literature* 47.1 (1995): 1-10. http://www.jstor.org/stable/1771359

Prawer, S. *Comparative Literary Studies: An Introduction.* London: Duckworth, 1973.

Routh, H. V. "The Future of Comparative Literature." *The Modern Language Review* 100 (2005): 5-18. http://www.jstor.org/stable/3738148

Wellek, René. "Comparative Literature Today." *Comparative Literature* 17.4 (1965): 325-337. http://www.jstor.org/stable/1770091

Yu, Pauline. "Comparative Literature in Question." *Daedalus* 135.2 (2006): 38-53. http://www.jstor.org/stable/20028031

Asan, Kumaran. "The Fallen Flower". *Selected Poems.* Trivandrum: U of Kerala, 1975. (Intertext: English Romantics)

Panicker , Ayappa. “Kurukshetra”. Kottayam: D.C.Books, 1999. (Intertext: Modernism, T.S. Eliot, *The Waste Land)*

Pillai, Krishnan. N.*Investment.* Thrissur: Kerala Sahitya Academy, (Intertext: Henrik Ibsen)

Thomas, C.J. *Crime 27 of 1128. Journal of South Asian Literature 1980.* (Intertext: Luigi Pirandello)

Chandumenon , O. *Indulekha.* Tr. Anitha Devasia. New York: Oxford UP, 2005.

Nair, Vasudevan. M.T. *The Second Turn*. Madras: Macmillan, 1996.

Ramanunni, K.P.*What the Sufi Said*. Tr. N. Gopalakrishnan. New Delhi: Rupa, 2002.

Sethumadavan, K.S, *Bhargavee Nilayam.* (Intertext: “Neela Velicham” by Vaikom Muhammed Bashir)

Aravindan , K. *Kanchana Sita.* Dir. (Intertext: *Kanchana Sita* by C.N. Sreekantan Nair)

SEMESTER IV

PAPER XV: Choice 2

EL 243.2 – Elective Course: South Asian Literatures (6 hours/ week)

Objectives

The objectives of this paper are to:

- introduce South Asian Literatures as a discipline
- introduce the history, culture and literature of South Asia
- explore the writings of the national literatures of India, Pakistan, Bangladesh etc.

Learning Outcomes

At the end of the course, the students will be able to:

- demonstrate an analytical awareness of the experiences of immigration and diaspora, and the history of European imperialism as reflected in South Asian literatures
- identify and differentiate between the distinguishing factors such as culture, class, religion, and other differences amongst South Asians
- explain critically themes of identity, memory, alienation, assimilation, solidarity, and resistance

Course Description

Module I – Socio-political and Literary Background

Socio- political background and growth of national literatures in South Asian countries- impact of national cultures- classical literatures- regional writings – decolonization - nationalistic fervour in literature - freedom struggle - colonial rule - partition literature - features and characterization (India, Pakistan, Bangladesh) - trauma in partition literature - Sri Lankan diasporic literatures - conflict literature

Required Reading

Baba, Homi.K. "The Other Question: Stereotype, discrimination and the discourse of colonialism". *The Location of Culture*. London: Routledge, 1994. 94-120. Print.

Chatterjee, Partha. *The Nation and its Fragments: Colonial and Postcolonial Histories*. New Jersey: Princeton University Press. 1993. Print. Chapters 1 and 2 only; pp. 3-34

Course Description

Module II – Poetry and Drama

Required Reading

Poetry

Alamgir Hashmi	"Sun and Moon"
Kaiser Haq	"Ode on a Lungi"
Anne Ranesinghe	"July 1983"
Yasmine Gooneratne	"The Big Match"

Suman Pokhrel	"You are as You are"
Maki Khureishi	"Curfew Summer"

Drama

Ayed Akhtar	*Disgraced*

Module III – Prose and Fiction

Required Reading

Prose

D.C.R.A. Goonetilleke	"Sri Lankan Poetry in English: Getting Beyond the Colonial Heritage"
Mohsin Hamid	*"*Why Migration is a fundamental human right"
Aung San- Suu- Kyi	"Freedom from Fear"

Fiction

Romesh Gunashekhara	*Reef*
Taslima Nasreen	*The Homecoming*
Bapsi Sidhwa	*Cracking India*
Hanif Kureishi	*The Buddha of Suburbia*
Kunzang Choden	*The Circle of Karma*

Module IV – Critical Responses

Required Reading

Sheldon Pollock. "Introduction" in *Literary Cultures in History: Reconstructions from South Asia*. Berkeley: U of California P, 2003. 1-38. Print.

Lal, Malashri and Sukrita Paul Kumar. "Part I: Partition: Questioning Borders". *Interpreting Homes in South Asian Literature*. New Delhi: Pearson, 2007. 3 – 44. Print.

Reading List

Appadurai, Arjun. *Modernity at Large: Cultural Dimensions of Globalization*. London: University of Minenesota Press, 1996. Print.

Bhabha, Homi. K. *The Location of Culture*. London: Routledge, 1994. Print.

Chatterjie, Partha. *The Nation and its Fragments: Colonial and Postcolonial Histories*. New Jersey: Princeton University Press. 1993. Print.

Didur, Jill. *Unsettling Partition: Literature, Gender, Memory*. New Delhi: Pearson, 2007. Print.

Lal, Malashri and Sukrita Paul Kumar, eds. *Interpreting Homes in South Asian Literature*. New Delhi: Pearson, 2007. Print.

Hall, Stuart, Paul du Gay. *Questions of Cultural Identity*. Sage Publications, 1996. Print.

Goonetilleke, D.C.R.A. "Sri Lankan Poetry in English: Getting Beyond the Colonial Heritage". *ARIEL: A Review of International English Literature*, 21.3: (1990). 39-53. Print.

Hamid, Mohsin. "Why Migration is a fundamental human right" *Discontent and Its Civilizations*. London: Hamish Hamilton, 2014. Print.

Pollock, Sheldon. "Introduction". *Literary Cultures in History: Reconstructions from South Asia*. Sheldon Pollock. Los Angles: University of California Press, 2003: 1-37. Print

SEMESTER IV

PAPER XV: Choice 3

EL 243.3 - Elective Course: Screenwriting (6 Hrs/week)

Objectives

The objectives of this paper are to:

- examine screenplays as literary texts
- understand how a narrative is transformed into a screenplay
- become familiar with ways of "reading" screenplays as texts
- broaden and deepen the understanding of film adaptations and its emerging trends

Learning Outcomes

At the end of the course students will be able to:

- demonstrate an understanding of the elements involved in the construction of screenplays
- understand the elements involved in the creation of adapted screenplays and original screenplays
- review film history and the various theoretical and technical notions associated with screenwriting

Course Description

Module I – Screenplay as Literature – Theory

Screenplays, Screenwriting and Screenwriter - Adapted screenplay and Original screenplay - Spec scriptwriting, Commissioned scriptwriting and Script doctoring- Structure of Screenplays - Three-act structure in Screenwriting- Syd Field and his theory of paradigm - Non-linear narrative and Plot points- Inciting incident in plot -Pinch points -The Sequence Approach -Storyboard -Beat Sheet- Logline- Treatment - Prelap – Tweak - Freeze frame- Voiceover – Flash forward- Flash back- Background - Slugline – Intercut – Montage -Issues of authorship – Copyright law-Auteurism - Auteur-Structuralism – Reconstructed auteurism- Continuity script – Silent film script- Master scene screenplays – Screenwriting manuals - George Polti's 36 dramatic situations

Required Reading

Price, Steven. "Introduction". *A History of Screenplay*. London: Palgrave Macmillan, 2013. 1-10 (up to 'An Industrial History of the Screenplay'). Print.

Monaco, James. "The Language of Film: Signs and Syntax." *How to Read a Film*. London: OUP, 2009. 170-251. Print.

Module II- Adapted Screenplays

William Peter Blatty	*The Exorcist*
Mario Puzo & Francis Ford Coppola	*The Godfather*
Ted Tally	*The Silence of the Lambs*
Joel Coen & Ethan Coen	*No Country for Old Men*

Module III- Original Screenplays

Quentin Tarantino	*Pulp Fiction*
Shyam Benegal	*Netaji Subhash Chandra Bose: The Forgotten Hero*
Andrew Nicol	*The Truman Show*
Michel Hazanavicius	*The Artist*
Bob Peterson, Pete Docter & Tom Mccarty	*Up*

Module IV Critical Responses

Tropp, Martin. "Recreating the Monster: Frankenstein and Film" *Mary Shelley's Monster: The story of Frankenstein*. London: Houghton Mifflin. 1976. Print.

Jenkins, Greg. "Lolita". *Stanly Kubrick and the Art of Adaptation* London: McFarland & Company, 1952 . Print. 31-63. Print.

Recommended Reading

Field, Syd. *Screenplay: The Foundations of Screenwriting*. New York: Bantam Dell, 2005. Print.

Lupus, Barbara Tepa. *Nineteenth-Century Women at the Movies: Adapting Classic Women's Fiction to Film.* Ohio: Univ. of Popular Press. 1981. Print.

Maras, Stephen. *Screenwriting: History, Theory and Practice.* Wallflower Press, 2009. Print.

Wollen, Peter. "The Auteur Theory".
http://artsites.ucsc.edu/faculty/Gustafson/FILM%20162.W10/readings/wollen.auteur.pdf

SEMESTER IV

PAPER XV: Choice 4

EL 243.4 – Elective Course: Introduction to Theatre Studies (6 hrs/week)

OBJECTIVES

The objectives of this paper are to:

- introduce students to the concepts and practices of theatre.
- familiarise various aspects of theatre studies including the basics, history, genres, and aesthetic theories.
- understand the social, cultural, andpolitical functions of theatre.
- enhance their aptitude and skills in the field of theatre and performance studies
- ensure their theoretical and practical expertise to be good practitioners of theatre arts.

LEARNING OUTCOMES

At the end of the course the students will be able to:

- Appreciate theatre as an art and a 'socio-cultural institution'
- Internalise the functions and aesthetic values of each theatre and performance
- Differentiate each genre, movement, and its historical significance
- Participate creatively in theatrical activities as part one's social commitment and as means of self- realisation
- Probe into the potential of theatre, performance and related fields
- Be able to involve in critical discourses of an interdisciplinary nature

COURSE DESCRIPTION

Module I

Theatre - nature and elements –theatre as a complete art – Act- playwright- director- actor- character- audience –dialogue – Monologue – soliloquy – Aside - text for reading and staging – performance - space, time and action – subplot – subtext – unities - production – chorus- scenography – dramaturgy – improvisation - climax- denouement - katharsis - alienation – carnival – mis-en-scene – play within a play -

Module II

Socio-historical context – Classical drama - Greek& Roman- Medieval liturgical plays – Renaissance Italy and England - Jacobean drama - 17th century French and Spanish influence on Restoration drama - Melodrama – Realism and Naturalism (Ibsen and Shaw) – Symbolism – Existentialism – American Drama.

Indian theatre – Classical Theatre – Folk theatre – Regional theatres – Indian English Theatres - recent trends - Major dramatists – Girish Karnad, Vijay Tendulkar, Badal Sarkar, Mahesh Dattani - Manjula Padmanabhan, Poile Sengupta, Dina Mehta.

Module III

Comedy – Tragedy – Commedia dell' arte – Farce -Aginprop - Well-made play - Problem play – Poetic drama – Radio play - Theatre of Cruelty- Theatre of the Absurd – Epic theatre - Meta theatre – Off-Broadway and Off-Off-Broadway –Postcolonial theatre – Theatre of the Roots - Poor and Environmental theatre - Community theatre - street theatre – holy theatre – pantomime – solo performance – Japanese: nohand kabuki theatre – Chinese: Beijing opera – Indonesian: wayang kulit.

Module IV

Natyasastra: Rasa theory – nava rasas - rituals and myths from the region of India - poetics: Tragedy - Performance theory: ritual, culture, ideology and politics – folk theatre -kathakali – koodiyattam – jatra –tamasha – swang –nautangi – bhand panter – nagal of punjab – the ustad and jamoora format – bhavai- dashavatar – khayal – ramlila – raslila- therukoothu – yakshagaana – chhau –turra kalgi- veedhi natakam – burrakatha- kuravanji – ankia nat – palas and daskathias – puppet drama – roleof theatre in the Indian freedom struggle- parsi theatre

Recommended Reading

1. Brockett, Oscar G. and Robert J. Ball. *The Essential Theatre*. 8th ed. Belmount: Thomson-Wardsworth, 2004. Print.
2. Leech, Robert. Theatre Studies: The Basics. London: Routledge, 2008. Print.
3. Pickering, Kenneth. *Key Concepts in Drama and Performance*. London: Palgrave, 2010. Print.
4. Kennedy, Dennis. Ed. *Oxford Companion to Theatre and Performance*. Oxford: OUP, 2010. Print.
5. Vatsyayan, Kapila. *Bharata, the Nāṭyaśāstra*. 1996. Reprint. New Delhi: SahityaAkademi, 2007. Print.
6. Iyengar, K.R Srinivasa. *Indian Writing in English*. 1962. 18th Reprint. New Delhi: Sterling, 2007-2008. Print.
7. Millett, Fred B., and Gerald Eades Bentley. *The Art of Drama*. 1935. New York: Appleton Century Crofts, 1963. Print.
8. *The Poetics of Aristotle*. Trans. S.H.Butcher. London: Macmillan, 1895. Print.
9. Awasthi, Suresh. *Performance Tradition in India*. New Delhi: National Book Trust, 2001. Print.
10. Schechner, Richard and Sara Brady (Media Editor). *Performance Studies: An Introduction*. 3rd ed. London:Routledge, 2013. Print.
11. Crow, Brian, and Chris Banfield. *An Introduction to Post-Colonial Theatre*. Cambridge: CUP, 1996. Print.

12. Schechner, Richard. *Performance Theory*. Rev and expanded ed. London:Routledge, 2005. Print.
13. Esslin, Martin. *Theatre of the Absurd*. 3rd ed. New York: Vintage, 2009. Ebook.
14. Fischer-Lichte, Erica. *History of European Drama and Theatre*.Jo Riley. Trans. London: Routledge, 2002. Ebook.
15. Bentley, Eric. *The Theory of the Modern Stage: An Introduction to Modern Theatre and Drama*.Harmondsworth: Penguin, 1968. Print.

REFERENCE

1. Lal, Ananda. ed. *The Oxford companion to Indian Theatre*. New Delhi: OUP, 2004. Print.
2. Rai, Ramanand. *Theory of Drama: A Comparative Study of Aristotle and Bharata*. New Delhi: Classical Pub. Co., 1992. Print.
3. Schechner, Richared. *Over Under and Around: Essays in Performance and Culture*. Calcutta: Seagull Books, 2004. Print.
4. Behera, Guru Charan. *Appropriating Folk Culture: A Study of the Post-Independence Indian Drama*. Delhi: Authorspress, 2008. Print.
5. Richmond, Farley P., Darius L Swann, and Phillp. B Zarrilli. eds. *Indian Theatre: Traditions of Performance.* 1990. Honolulu: University of Hawaii; Delhi: MotilalBanarsidass Publishers, 2007. Print.
6. Culpeper, Jonathan, Mick Short, and Peter Verdonk, eds. *Exploring the Language of Drama: From Text to Context*. London: Routledge, 1998. Print.

[Note: This syllabusis expected to make students proficient in the all aspects of theatre. Students are advised to watch all types of plays in their original space/stage to complement this study.]

SEMESTER IV

PAPER XV: Choice 5

EL 243.5: Elective Course - Travel Writing (6 hrs/week)

Objectives

The objectives of this paper are to help:

- understand that travel writing has a chequered history of evolution
- analyse travel texts through critical reading
- acquire familiarity with samples of travel writing from across the world
- place Indian travel writing in a global context
- examine the blend of fact and fiction in travel narratives

Learning Outcomes

At the end of this course student will be able to:

- display an awareness of the evolution of travel writing, its distinctive features, and to distinguish between its various forms
- identify the cross-links between travel writing and other genres such as memoirs, history, ethnography, anthropology and so on
- develop a conscious understanding of the various nuances of the author's subjectivity and perceptions that colour the narrative on place
- undertake a critical reading of travel texts to unearth probable subtexts
- display an awareness regarding the many cultural connotations and prejudices that are embedded in many travel narratives

Course Description

Module I - Departures

Tools: maps and atlas: Mappa Mundi – Mercator's Projection – world atlas; **Guides**: Karl Baedeker – Lonely Planet – Google maps – travelogues, travel stories, travel guides -GPS

Evolution: Ptolemy's *Geographia* – Pausanias' *Description of Greece* – Marco Polo – Ibn Batuta – Fa Hien – Huan Sang – Ki no Teriyaki – Su Shi – Gerald of Wales – Petrarch's *Ascent of Mount Ventoux* - Elizabethan voyages of discovery and English explorers – Richard Hakluyt – Purchas' *Pilgrimage* – Captain James Cook -- Charles Darwin's voyage on HMS Beagle – Colonial travelers: David Livingston – Richard Burton – Pandita Ramabai – Sleeman – Fisher – Frances Parker Bowles – Thoma Paremmakkal – S. K. Pottekkatt – contemporary travelers: Jan Morris – Bill Bryson – Michael Palin

Types of Travels: explorations – colonialism – the grand tour -- pilgrimages – piracy – war and immigration – exile – tourism

Required Reading

Thompson, Carl. "Introduction, Chapters 1, 2 & 3". *Travel Writing*. London: Routledge, 2011.

Module II - The World and Beyond

Multiple purposes in journeys - a plethora of experiences beyond simple sight-seeing - record of personal realization and transformations - attempts to know new people and places - the prejudices of the author - Travel as a means of self-realisation - Road Movies.

Required Reading

Che Guevera	*The Motor Cycle Diaries*
Cheryl Strayed	*Wild*
Paul Theroux	*The Great Railway Bazaar: By Train through Asia*
Pico Iyer	*Falling off the Map*
Robert Pirsig	*Zen and the Art of Motorcycle Maintenance*

Module III – Home and Away

Travel narratives - instrumental in defining or branding national cultures - the Briton's view of India as heavily colonial and condescending - branded the nation as "the land of snake charmers and sanyasis" - postcolonial travel narratives from India - complete make-over of the nation's profile - unique cultural variety and richness - attempts to redefine itself as one of the emerging economies - Indians abroad - attempts to narrate places without colonial burden.

Required Reading

Amitav Ghosh	*Dancing in Cambodia*
Pankaj Mishra	*Butter Chicken in Ludhiana: Travels in Small Town India*
William Dalrymple's	*City of Djinns*
Elizabeth Gilbert	*Eat Pray Love*
Samanth Subramanian	*Following Fish*

Module V – Critical Responses

Required Reading

Bartkowski, Frances. "Travel As/Is." *Travelers, Immigrants, Inmates: Essays in Estrangement*. U of Minnesota Press, 1995. xv – xviii. Print.

Mary Baine Campbell. "Travel Writing and its Theory"Cambridge: Cambridge University Press, 2002. Print.

Hulme, Peter and Tim Youngs, eds. "Introduction." *Cambridge Companion to Travel Writing. Cambridge:* Cambridge U.P., 2002. Print.

Iyer, Pico. "Why we Travel." *Salon.com*. 18 March 2000. Print.

Reading List

Peter Hulme and Tim Youngs, eds. "Travel Writing and its Theory."*Cambridge Companion to Travel Writing.* Cambridge U.P., 2002. Print.

Hulme, Peter and Tim Youngs, eds. *Cambridge Companion to Travel Writing.*Cambridge U.P., 2002. Print.

Miller, Sam. *A Strange Kind of Paradise: India through Foreign Eyes*. London: Vintage Books, 2014. Print.

Thompson, Carl. *Travel Writing*. London: Routledge, 2011. Print.

SEMESTER IV

PAPER XVI: Choice 1

EL 244.1- Elective Course: Translation Studies (6 Hours/week)

Objectives

The objectives of this paper are to:

- provide the students a systematic understanding of the process of translation; and, of different translation types
- familiarize the students with the histories of translation in the East and the West
- provide the students a critical understanding of the concerns, concepts and issues in translation theory
- help the students evaluate translations
- enable the students to develop practical translation skills

Learning Outcomes

At the end of the course, the students will be able to:

- demonstrate an understanding of the nature of translation studies as an independent academic discipline
- reflect critically on the process of translation, and on various translation types
- demonstrate a systematic and critical understanding of the concerns, concepts and issues in translation theory, both modern and traditional
- make critical judgments on the quality of translation
- apply translation techniques and strategies from theoretical essays, and analyses of existing translations

Course Description

Module I – History of Translation

History of translation in India: Translations from Sanskrit – translations in regional languages – translations from and through English translations during the colonial period - History of translation in the West: Translations from the classical languages of Latin and Greek – the Bible translation

Required Reading

Debendra K Dash & Dipti R Pattanaik. "Translation and Social Praxis in Ancient and Medieval India." *Translation – Reflections, Refractions, Transformations*. Ed. Paul St-Pierre and Prafulla C. Kar. Philadelphia: Benjamins Translation Library, 2007. 153-73. Print.

Shantha Ramakrishna. ″Translation & the Quest for Identity: Democratization of Knowledge in 19th Century India. *Translation and Culture: Indian Perspectives*. Ed. G. J. V. Prasad. New Delhi: Pencraft, 2010.19-35. Print.

Andre Lefevere. "Translation: Its Genealogy in the West." *Translation, History and Culture*. Ed. Susan Bassnett and Andre Lefevere. London: Pinter, 1990. 14 - 28. Print.

Module II – Translation: Theoretical Issues

Translatability - the concept of equivalence – translation of culture - translation theories – Indian perspectives - translation theories – Western tradition

Required Reading

G. N. Devy. "Translation Theory: An Indian Perspective". *In Another Tongue: Essays on Indian English Literature*. Ed. G. N. Devy. Chennai: Macmillan, 1995. 162- 7. Print.

Gopinathan, G. "Translation, Transcreation and Culture: The Evolving Theories of Translation in Hindi and other Modern Indian Languages." Centre for Asian and African Literatures, *SOAS*. UCL, 2005. 1-23.

Nida, Eugene A. "Principles of Translation as Exemplified by Bible Translating". In *Language Structure and Translation: Essays by Eugene A. Nida*. Ed. Anwar S. Dil. Stanford, California: Stanford University Press, 1975. 24-46. Print.

Simon, Sherry. "Enter the Translatress & Aphra Behn: The Translatress in Her Person Speaks." *Gender in Translation: Cultural Identity and The Politics of Transmission*. Ed. Sherry Simon. London ; New York : Routledge, 1996. 43-55. Print.

Module III – Translation Types

Retellings – adaptations - translation of knowledge texts – feminist translation - interpretation

Required Reading

Sen, Nabaneeta Dev. "When Women Retell The Ramayana" *Manushi*, Vol. 108, September-October 1998. 18-27. Print. (Available online at <http://www.manushi.in/>)

Thapar, Romila. "Adaptations: Another Popular Tradition and its Role in Another Court." *Sakuntala: Texts, Readings, Histories.* Ed. RomilaThapar. New Delhi: Kali for Women, 1999. 189-196. Print.

Kapoor, Kapil. "Philosophy of Translation: Subordination or Subordinating : Translating Technical Texts from Sanskrit - Now and Then." *Translation and Multilingualism: Post-colonial Contexts. Ed.* Shantha Ramakrishna. New Delhi: Pencraft International, 1997. 146- 166. Print.

Pochhackes, Franz. "Issues in Interpreting Studies." *The Routledge Companion to Translation Studies.* Ed. Jeremy Munday. New York: Routledge, 2009. 128-140. Print.

Module IV – Processes of Translation

Practice of translation – strategies and techniques - translation of poetry – translating prose – translation of drama

Required Reading

Paniker, Ayyappa K. "On Translating T.S.Eliot's Poetry into Malayalam." *International Journal of Translation*, Vol. 3, Nos 1 & 2, Jan-Dec 1991. 73-81. Print.

Suhrud, Tridip. "Reading Gandhi in Two Tongues." *Reading Gandhi in Two Tongues and Other Essays*. Ed. Tridip Suhrud. Shimla: Indian Institute of Advanced Study, 2012. 1-19. Print.

Aurobindo. "On Translating Kalidasa". *The Complete Works of Sri Aurobindo Set in 37 volumes. (Volume 1) Early Cultural Writings (1890 — 1910).* Pondicherry: Sri Aurobindo Ashram, 2003. 239-263. Print.

Reading List

Bassnett, Susan. *Translation Studies*. 4th edn. London: Routledge, 2014. Print. New Accents Series.

Bassnett, Susan. *Translation*. London: Routledge, 2014. Print. New Critical Idiom Series.

Boratti, Vijayakumar M. *"*Rethinking Orientalism: Administrators, Missionaries and the Lingayaths*." Translation in Asia: Theories, Practices, Histories*. Ed. Ronith Ricci and Jan Van Der Putten. Manchester: St. Jerome Publishing, 2011. *88-103.* Print.

Das, Sunil. "Drama in Translation: Dramatic Collage." *Making of Indian Literature: A Consolidated Report of Workshops on Literary Translation, 1986-1988.* Ed. K. AyyappaPaniker. New Delhi: Sahitya Akademi, 1991. 229-233. Print.

Dryden, John. "On Translation." *Theories of Translation: An Anthology of Essays from Dryden to Derrida*. Ed. Rainer Schulte and John Biguenet. Chicago: University of Chicago Press, 1992. 17-31. Print.

Grossman, Edith. "Translating Poetry." *Why Translation Matters*. Ed. Edith Grossman. New Haven: Yale UP, 2010. 89-120. Print.

Nair, Sreedevi K. "One Story, Many Texts: Conceptualising Seed Text in Epics Retold." *Reflections and Variations on The Mahabharata*. Ed. T.R.S. Sharma. New Delhi: Sahitya Akademi. 2009. 301-315. Print.

Pound, Ezra. "Guido's Relations." *Theories of Translation: An Anthology of Essays from Dryden to Derrida*. Ed. Rainer Schulte and John Biguenet. Chicago: University of Chicago Press, 1992. 83-92. Print.

Reynolds, Mathew. *Translation: A Very Short Introduction*. London: OUP, 2016. Print. Very Short Introduction Series.

Trivedi, Harish. "Translating Culture vs. Cultural Translation." *Translation – Reflections, Refractions, Transformations*. Ed. Paul St-Pierre and Prafulla C. Kar. Philadelphia: Benjamins Translation Library, 2007. 251 – 260. Print.

VPC, Ubaid. "Translating the Quran : An Analysis of Discourse on Hijab in Selected English Translations." In *Translation Today* , Vol. 9, No.1, 2015. 157-177. Print.

SEMESTER IV

PAPER XVI: Choice 2

EL 244.2 – Elective Course: Regional Literatures in English Translation [6 hours/week]

Objectives:

The objectives of this paper are to:

- introduce the students to the consciousness of the great linguistic and literary diversity of India
- enable the students to cultivate a political sensitivity not to dismiss these with pejorative labels such as "minor", or "primitive"
- give students a historical awareness of regional literary movements

Learning Outcomes:

At the end of this course, students will be able to:

- demonstrate knowledge of at least a few languages and literatures with a smaller number of native speakers and readers
- demonstrate basic knowledge about the 8th schedule of the Indian Constitution
- show an understanding of the major landmarks and trends in at least a few of India's major literatures from the 19th century to the present day
- analyse critically some of the thematic concerns running through most of the above literatures such as the critical exploration of the idea of nationalism, protest against inequities based on caste, creed, gender and social status, concern for the environment and reworking/ retelling of long established myths and dominant narratives

Course Description

Module I: Socio-political and Literary Background

Major language families in India, their history in brief and their important members – Indo-European – Dravidian - Tibeto-Burman - Khmer-Nancowry – an idea of the oral traditions – myths – fables – ballads - epics – religious myths and legends – bhakti and Sufi devotional traditions – post independence concerns –emergence of marginalized voices –revolutionary voices – ancient Indian poetry, prose –medieval Indian poetry, prose- pre-Independence poetry, prose - post-independence poetry, prose - thematic trends in poetry, prose and drama.

Required Reading

Natarajan , Nalini, Ed. "Introduction: Regional Literature of India: Paradigms and Contexts". *Handbook of Twentieth Century Literature of India*. London: Greenwood Press. 1996

Module II – Poetry

Required Reading

Amrita Pritam	"Street Dog" (Punjabi)
Thanjam Ibopishak Singh	"I Want to be Killed by an Indian Bullet" (Manipuri, Tr: Robin Ngangom)
Namdeo Dhasal	"Tree of Violence" (Marathi, Tr. Dilip Chitre)

Khadar Mohiuddin	"A Certain Fiction Bit Me" (Telugu, Tr. Velcheru Narayan Rao)
S. Joseph	"Identity Card" (Malayalam, Tr. K. Satchidanandan)
Devara Dasimayya:	"Suppose You Cut a Tall Bamboo" (Kannada: Tr. AK Ramanujan)
Gulam Mohammed Sheikh	"Jaisalmer 1" (Gujarati: Tr. author and Saleem Peeradina)
Sitanshu Yashaschandra	"Magan's Insolence" (Gujarati: Tr. Saleem Peeradina)
Navakanta Barua	"Measurements" (Assamese: Tr. DN Bezbaruah)
Kalidasa	*The Cloud Messenger* (*Meghadutam*) [First 10 Stanzas]

Module III - Prose and fiction

Required Reading

AK Ramanujan	"Introduction" to *Folktales from India*
Bama	*Karukku*
Rabindranath Tagore	*The Home and the World* (Bengali novel)
Indira Goswami	*The Man from Chinnamasta* (Assamese novel)
Saadat Hasan Manto	"Toba Tek Singh" (Urdu)
CS Lakshmi "Ambai":	"The Calf that Frolicked in the Hall"
Fakir Mohan Senapati	"Rebati" (Odia short story)
M M Vinodini	"The Parable of the Lost Daughter"

Module IV – Drama

Required Reading

Girish Karnad	*Yayati* (Kannada: Tr. the author)
Vijay Tendulkar	*Sakharam Binder* (Marathi)

Reading List

Chaudhari, Amit. Ed. *The Picador Book of Modern Indian Literature*. Picador, 2001: i-xxxiv

George, K.M. Ed. *Comparative Indian Literatures* (2 Vols). 1984.

--- *Masterpieces of Indian Literature* (3 Vols). New Delhi: National Book Trust, Edn.

Indian Literature. Kendra Sahitya Akademi (relevant issues). 2008.

Gokak, V.K. Ed. *Literatures in Modern Indian Languages*. New Delhi: Publications Division, 1957.

Ramakrishnan, E.V, Harish Trivedi and Chandra Mohan. Eds. *Interdisciplinary Alter-Native in Comparative Literature*. Sage, 2013: 107 -230.

Ambai. 'The Calf that Frolicked in the Hall' (Tamil short story: Tr. Lakshmi Holmström in *Fish in a Dwindling Lake*). Penguin Books, 2012.

Bama. *Karukku.* Oxford University Press, 2015.

Saadat Hasan Manto."Toba Tek Singh" (Urdu short story: Tr. Tahira Naqvi).Education Publication House, 2005.

"The Parable of the Lost Daughter" (Telugu short story: Tr. Uma Bhrugubanda, in *The Exercise of Freedom*)

The Cloud Messenger. http://www.sacred-texts.com/hin/sha/sha17.htm

Venuti, Lawrence. *The Translation Studies Reader.* London: Routledge. 2004 Print.

SEMESTER IV

PAPER XVI: Choice 3

EL 244.3 – Elective Course: Media Studies [6 hours/week]

Objectives:

The objectives of this paper are to:

- introduce the students to the world of mass media and the different fields of journalism.
- develop in students an understanding of the mass communication process
- help students develop life skills which enable them to analyse various forms of modern communication
- develop a critical understanding of the role of media in society
- provide basic skills in reporting and editing in the fields of print, electronic and online communication

Learning Outcomes

At the end of the course, students will be able to:

- demonstrate their understanding of basic components of the world of journalism and mass media
- demonstrate their skills at reporting and editing in print and electronic media
- do a critical appraisal of the role of media in society.

Course Description

Module I – Mass Communication

What is communication? – definitions – elements and process of communication – types of communication – intrapersonal, interpersonal, group and mass communication - types of mass media: print, radio, film, TV, internet – a comparison of the scope and limitations of print and broadcast media, online media and their potentials.

Module II – Print Media – Reporting and Editing

What is news? – news values – the basics of reporting – news gathering techniques – news structure – types of news – hard news & soft news – editorial - news sources- news conference – meet the press – news agencies - the art of interviewing – feature writing - editing for clarity and accuracy – objectivity – fairness – style book – headline writing - banner, skyline, kicker, deck, strap line, feature heads

Module III – Writing for Electronic Media

Writing for radio - radio formats –internet radio – script- radio talk – interview – structure of news bulletins - characteristics of the television medium – writing for television - camera movements – shot composition – visual language - soap opera – reality shows – game shows - shooting script – story board – live broadcasts

Module IV – New Media

The Internet as mass medium - journalism and new media – internet editions of newspapers and TV channels – open source journalism – participatory journalism — its potential and

limitations – hypertextuality – interactivity – convergence – blogs – news portals – social networking sites

Recommended Reading

Baskette, Floyd K. , Jack Zanville Sissors and Brian S. Brooks. *Art of Editing*. 5th edn. New York, McMillan Publishing Company. 1992. Print.

Chantler, Paul. *Basics: Radio Journalism.*UK, Focal Press. 2013.

Delancy and Landow. *Hypermedia and Literary Studies.*MIT, 1995. Print.

Dewdney, Andrew. and Peter Ride, *The New Media Handbook.* Routledge, 2009. Print.

Donald, Ralph. and Thomas Spann, *Fundamentals of Television Production.* Pearson, 2008. Print.

Fiske, John. *Introduction to Mass Communication Studies*, London, Routledge. 1996. Print.

Kawamoto, Kevin. Ed., *Introduction to Digital Journalism: Emerging Media and the Changing Horizons of Journalism*, Rowman and Littlefield Publishers. 2003. Print.

McLeish, Robert. *Radio Production*, London, Focal Press. 2001. Print.

McLuhan, Marshall. *Understanding Media.* Sphere Books, 1973. Print.

Pavarala, Vinod and Kanchan K Malik, *Other Voices.* Sage. 2007. Print.

Ray, Tapas. *Online Journalism*, London, Cambridge University Press. 2006. Print.

Saxena, Sunil. *Headline Writing*, New Delhi, Sage. 2006. Print.

Saxena, Ambrish. *Fundamentals of Editing and Reporting*, New Delhi, Kanishka Publishers. 2007. Print.

Stepp, Carl Sessions. *Writing as Craft and Magic*, New Delhi, OUP. 2007. Print.

Tim, K. Wulfeme, *Radio-TV News Writing. New York:* Wiley, 2003.

Ward, Mike, *Journalism Online*. Focal, 2001. Print.

Wetton, Steve. *Writing TV Scripts.* Aber, 2010. Print.

SEMESTER IV

PAPER XVI: Choice 4

EL 244.4 – Elective Course: Dalit Writing [6 hours/week]

Objectives:

The objectives of this paper are to:

- centre Dalit literature as a significant locus of imaginative and polemical writing
- provide curricular recognition to the experience, art and knowledge of a marginalized community
- expose students to the Dalit renewal of the discussion on democracy, humanism and literature.
- familiarize them with the building up of a counter-canon in the Indian literary context.

Learning Outcomes

At the end of the course, students will be able to:

- come into contact with key modern Dalit writers and thinkers and their varied concepts
- enhance their understanding of the issues at stake in the contemporary Dalit movement
- evolve an in-depth grasp of the field at the levels of experience as well as concept
- extend their awareness of the social and aesthetic questions being raised in the writing.

Course Description

Module I – Key Concepts

Definitions of Dalit - varna and caste hierarchy - opposition to Brahminical hegemony and ideology - bhakti movement - B. R. Ambedkar's contributions to Dalit movement - Dalit Panther movement - Adi Dharm movement - Dalit Buddhist movement - role of Brahmo Samaj and Arya Samaj - Dalit movement in Kerala and contributions of Sri Ayyankali – Early leaders of Dalit movements - language of the Dalit - Dalit women writers - contemporary Dalit movements and issues - annihilation of caste

Required Reading

Satyanarayana K. and Susie Tharu, ed. *The Exercise of Freedom: An Introduction to Dalit Writing.* New Delhi: Navayana, 2013. Print.

Satyanarayana K., and Susie Tharu, ed. "Introduction". *From Those Stubs, Steel Nibs are Sprouting: New Dalit Writing from South India: Kannada and Telugu.* Noida: Harper Collins, 2013. Print.

Module II – Poetry & Drama

Required Reading

Satish Chandar	"Panchama Vedam"
N. D. Rajkumar	"Our Gods do not Hide"
S. Joseph	"Fish Monger"

Poikayil Appachan	"Song"
M. R. Renukumar	"The Poison Fruit"
Prathiba Jeyachandran	"Dream Teller"
N. K. Hanumanthiah	"Untouchable, Yes I am!"
Madduri Nagesh Babu	"A This-Worldly Prayer"/ "What People are You?"
Namdeo Dhasal	"Cruelty"
G. Sasi Madhuraveli	"With Love"
Meena Kandasamy	"Mulligatawny Dreams"

Drama

A. Santhakumar	*Dreamhunt*
K. Gunashekaran	*Touch*

Module III – Prose & Fiction

Required Reading

Prose

B. R. Ambedkar	"Annihilation of Caste"
Gopal Guru	"Dalit Women Talk Differently"
T. M. Yesudasan	"Towards a Prologue to Dalit Studies"

Fiction

Gogu Shyamala	*Father May Be an Elephant and Mother only a Small Basket, But…..*
P. Sivakami	*The Grip of Change*
Paul Chirakkarode	"Nostalgia"
C. Ayyappan	"Madness"
Bandhumadhav	"Poisoned Bread"

Module IV - Autobiography

Required Reading

Sharan Kumar Limbale	*The Outcaste*
Om Prakash Valmiki	*Jhootan*
Balbir Madhopuri	*Changia Rukh*

Reading List

Dhasal, Namdeo. *A Current of Blood*. New Delhi: Navayana, 2011. Print.

Ambedkar, B. R. "Annihilation of Caste". Valerian Rodrigues, ed. *The Essential Writings of B. R. Ambedkar.* New Delhi: Oxford UP, 2002. Pp. 263-305.Print.

Appachan, Poikayil. "Song". M. Dasan, et al, eds. *The Oxford India Anthology of Dalit Literature*. New Delhi: Oxford UP, 2012. Pp. 5-6. Print.

Ayyappan, C. "Madness". Dasan, et al, eds.

Bandhumadhav. “Poisoned Bread”. Dangle, Arjun, ed. Poisoned Bread: Translations from Modern Marathi Dalit Literature. Hyderabad: Orient Black Swan, 2009. Print.

Chandar, Satish. “Panchama Vedam”. K. Satyanarayana and Susie Tharu, eds. *From Those Stubs Steel Nibs are Sprouting: New Dalit Writing from South India: Kannada and Telugu.* Noida: Harper Collins, 2013. 565-69. *Print.*

Chirakkarode, Paul. “Nostalgia”. From Dasan and Karankal eds. ABD Publishers, 2014. *Print.*

D’souza, Eunice de, ed. *Both Sides of the Sky*: *Post-Independence English Poetry,* New Delhi: National Book Trust, 2008. *Print.*

Dangle, Arjun, ed. *Poisoned Bread: Translations from Modern Marathi Dalit Literature*. Hyderabad: Orient Black Swan, 2009. *Print.*

Dasan, M. and Rajesh Karankal eds. *Counter Cultural Discourse and Dalit Literature in India*. New Delhi: ABD Publishers, 2014. *Print.*

Dhasal, Namdeo. “Cruelty”. A Current of Blood. New Delhi: Navayana, 2011. *Print.*

Gunashekaran, K. ‘Touch’. Ravikumar and Azhagarasan, eds. *The Oxford Anthology of Tamil Dalit Writing.* Oxford UP, 2012. Pp 163-168. *Print.*

Guru, Gopal. “Dalit Women Talk Differently.” *EPW,* Vol. XXX. No. 41-42, October 14, 1995. *Print.*

Hanumanthiah, N. K. “Untouchable, Yes I am!” *From Those Stubs Steel Nibs are Sprouting*.

James Massey, “Historical Roots.” *Indigenous People.* Ed. James Massey. Delhi: ISPCK, 1994. *Print.*

Jeyachandran, Prathiba. “Dream Teller”. Ravikumar and Azhagarasan, eds. *The Oxford Anthology of Tamil Dalit Writing.* New Delhi: Oxford UP, 2012. Pp. 5-6. *Print.*

Joseph, S. “Fish Monger.” Sahitya Akademi*, Indian literature*. 239 May-June 2009, Vol.LI no 3. *Print.*

Kandasamy, Meena. “Mulligatawny Dreams”. Kavya Bharati. 18: 2006 (41). *Print.*

Limbale, Sharan Kumar. *The Outcaste*. New Delhi: Oxford UP, 2003. *Print.*

Madhopuri, Balbir. *Changia Rukh*. Trans. Tripti Jain. New Delhi: Oxford UP, 2010. *Print.*

Madhuraveli, G. Sasi. “With Love”. Dasan, et al, eds. *The Oxford India Anthology of Dalit Literature.* New Delhi: Oxford UP, 2012. Pg. 22. *Print.*

Nagesh Babu, Madduri. “A This-Worldly Prayer”; What People are You?” *From Those Stubs Steel Nibs are Sprouting.*

Satyanarayana, K., and Susie Tharu. *No Alphabet in Sight*. New Delhi: Penguin, 2011. *Print.*

Omvedt, Gail. *Dalits and the Democratic Revolution: Dr Ambedkar and the Dalit Movement in Colonial India*. New Delhi: Sage, 2014. *Print.*

Omvedt, Gail. *Dalit Visions: The Anti-Caste Movement and the Construction of an Indian Identity*. Rev. Edn. New Delhi: Orient Blackswan, 2006. *Print.*

Potheri Kunhambu. *Saraswathi Vijayam*. Trans. Dilip Menon. New Delhi: The Book Review Literary Trust, 2002. *Print.*

Rajkumar, N.D. *Give us this Day a Feast of Flesh*. Trans. Anushiya Ramaswamy. New Delhi: Navayana, 2011. *Print.*

Rajkumar, N. D. "Our Gods do not Hide". *Give us this Day a Feast of Flesh*. New Delhi: Navayana, 2011. *Print.*

Rajkumar: *Dalit Personal Narratives: Reading Caste, Nation and Identity*. Hyderabad: Orient Black Swan, 2012. *Print.*

Rawat, Ramnarayan S. and K. Satyanarayana, eds. *Dalit Studies*. Durham: Duke University Press, 2016. *Print.*

Rege, Sharmila. *Writing Caste/ Writing Gender: Reading Dalit Women's Testimonies.* New Delhi: Zubaan, 2006. *Print.*

Renukumar, M. R. "The Poison Fruit". M. Dasan, et al, eds. *The Oxford India Anthology of DalitLiterature.* Pp. 32-33. *Print.*

Santhakumar, A. *Dreamhunt*. M. Dasan, et al, eds. *The Oxford Anthology of Malayalam Dalit Writing.* New Delhi: Oxford UP, 2012. Pp. 168-179. *Print.*

Saran Kumar Limbale: "Towards a Dalit Aesthetics". *Towards an Aesthetic of Dalit Literature: History, Controversies and Considerations.* Trans. A. Mukherjee. New Delhi: Orient Longman, 2004. (pp. 103-121). *Print.*

Satyanarayana K., and Susie Tharu, ed. *From Those Stubs, Steel Nibs are Sprouting: New Dalit Writing from South India: Kannada and Telugu.* Noida: Harper Collins, 2013. *Print.*

Shyamala, Gogu. *Father May Be an Elephant and Mother only a Small Basket, But…..* New Delhi: Navayana, 2012. *Print.*

Sivakami, P.. *The Grip of Change.* Translated by the Author. Hyderabad: Orient Black Swan, 2006. *Print.*

Tapan Basu, A. *et al* eds. *Listen to the Flames: Texts and Readings from the Margins.* New Delhi: Oxford, 2016. *Print.*

The Oxford India Anthology of Dalit Literature. New Delhi: Oxford UP, 2012. *Print.*

Valerian Rodrigues, ed. *The Essential Writings of B. R. Ambedkar.* New Delhi: Oxford UP, 2002. *Print.*

Valmiki, Om Prakash. *Jhootan.*Trans. Arun Prabha Mukherjee. 2003. *Print.*

Yesudasan, T. M. "Towards a Prologue to Dalit Studies." K. Satyanarayana and Susie Tharu, eds. *No Alphabet in Sight*. New Delhi: Penguin, 2011. pp. 611-630. *Print.*

SEMESTER IV

PAPER XVI: Choice 5

EL 244.5: Elective Course – Theorising Sexualities (6 hours/ week)

Objectives

The objectives of this paper are to:

- demonstrate an awareness of biological, social and grammatical gender as being three different categories
- give a basic awareness of struggles and attainments of people with alternative sexualities in civil rights in various parts of the world
- help the students view with scepticism the simplistic conflation of biological sex with socially and culturally conditioned gender

Learning outcomes

At the end of this course the students will be able to:

- appreciate, if not accept the viewing of gender as a continuum
- display an awareness of different sexualities such as lesbian, gay and bisexual rather than seeing heterosexuality as the only 'natural' or 'decent' lifestyle option
- critically analyse different gender self-identification preferences such as transgender and inter-genders rather than seeing the polar genders male and female as the only 'natural' ones
- show sensitivity to the legal and social persecution faced by persons belonging to the LGBTI or simply, Queer, community in societies across the world and view their rights as human rights
- exercise an enhanced openness and honesty when encountering/ generating discourse on matters of sexuality and gender roles

Course Description

Module I – Introducing Sexuality

The norm of heterosexuality in religious texts and traditions – the Bible, Qur'an and Manusmriti – hypermasculine models in classical mythology – Sanskrit, Greek and Roman – the coexistence of characters, models and narratives that can be said to constitute counterpoints to the dominant mythical norm – the androgyny in Christ - the Sufi tradition of viewing God as the lover and the believer as the beloved - the Shiva-Mohini and Ayyappa myths in Hinduism - the tales of Shikhandin and Rishyasringa in the Mahabharata – the colonial encounter and the masculinisation of religion in India

Sexological types: Sexual Classifications, sexual development, sexual orientation, gender identity, sexual relationships, sexual activities, paraphilias, atypical sexual interests

Psychoanalytic drives: Freud and Lacan.

Required Reading:

Bristow, Joseph. *Sexuality: The New Critical Idiom Series*. London: Routledge, 1997. Introduction , Chapters 1 & 2)

de Beauvoir, Simone. "Part II, Chapter 4, 'The Lesbian'". *The Second Sex.* Paris: Knopf Doubleday, 2012.

Butler, Judith. "Preface" *Bodies That Matter: On the Discursive Limits of "Sex"*. London: Routledge, 1993.

Jagose, Annamarie. "Chapter 2: Theorising Same-Sex Desire". *Queer Theory: An Introduction.* New York: Newyork Univ Press. 1996

Module II - Poetry

The song of songs – the Sufi and Bhakti traditions –the concept of Radha Bhaav

Required Reading

Shakespeare	Sonnet 73
	"That time of the year ….in me behold"
Emily Dickinson	"Her Breast is Fit for Pearls"
Adrienne Rich	"Diving into the Wreck"
Walt Whitman	"The Wound Dresser"
Siegfried Sassoon	"The Last Meeting"

Module III – Prose

Required Reading

Manoj Nair	"Rite of Passage"
Chimamanda N. Adichie	"On Monday of Last Week"
Mukul Kesavan	"Nowhere to Call Home"
Shyam Selvadurai	*Cinnamon Gardens* (novel)
Ismat Chugtai	"The Quilt" (Urdu short story)

Module IV – Drama and Films

Required Reading

Drama

Edward Albee	*The Zoo Story*

Films

Moses Tulasi	Walking the Walk (English –Telugu –Urdu documentary film)

Reading List

Nair, Manoj. "Rite of Passage". *Yaraana: Gay Writing from India. Ed.* Hoshang Merchant. New Delhi: Penguin, 1999. 171-179. Print.

Aligarh. Dir. Hansal Mehta. Script. Apurva Asrani. Perf. Manoj Bajpayee and Rajkummar Rao. 2016. DVD

De Lauretis, Teresa. *Technologies of Gender: Essays on Theory, Film and Fiction.* Indiana UP, 1987. Print.

Dollimore, Jonathan. *Sexual Dissidence: Augustine to Wilde, Freud to Foucault*. Clarendon, 1991. Print.

Foucault, Michel. *A History of Sexuality* (3 Vols). Tr. Robert Hurley. New York: Vintage, 1978. Print.

Bandit Queen. Dir. Shekhar Kapoor. Perf. Seema Biswas, Nirmal Pandey, Rakesh Vivek. 1994. DVD

Fire. Dir. Deepa Mehta. Perf. Shabana Azmi, Nandita Das, Karishma Jhalani. 1996. DVD.

Rao, Raj R. and Dibyajyoti Sarma.*Whistling in the Dark: Twenty-One Queer Interviews*. Sage, 2009. Print.

Revathy, A. *The Truth About Me: A Hijra Life Story*. Penguin, 2013. Print.

Sedgwick, Eve Kosofsky. *Between Men: English Literature and Male Homosocial Desire*. New York: Columbia UP, 1985. Print.

Vanita, Ruth and Saleem Kidwai, eds. *Same-Sex Love in India: A Literary History*. Penguin, 2000. Print.

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M.Sc. Home Science

COURSE SYLLABUS

(2018 onwards)

UNIVERSITY OF KERALA

Senate House Campus, Palayam

Thiruvananthapuram-695034

www.keralauniversity.ac.in

UNIVERSITY OF KERALA

SCHEME AND SYLLABUS FOR POST GRADUATE DEGREE

IN HOMESCIENCE

Introduction

Home Science is a unique course that focuses upon every phase of human life. It touches every segment of the population men and women, the young and the old, the enriched and the impoverished, the gifted and the disabled. The different courses encompass every aspect of human life- family and resource management, extension and community work, health and nutrition, diet and diseases. The scope of Home Science is not limited to the activities within the home, but has a wider perspective that forms the basis of challenging professions in varied fields. Home Science course addresses the current challenges confronting the country and looks prospectively at issues that will be required in the near future.

The focus of Masters programme is to develop professionals in different spheres of the community like Interior designers and consultants, Extension workers in government and non-governmental sectors, Social entrepreneurs, Nutritionists and Dieticians, Food Scientists, Researchers and Teachers. The curriculum focuses to foster a firm theoretical background with amalgamation of practical skills and development of research related abilities, so that the postgraduates are capable of critical and analytical thinking. The students would thus be competent to address the various issues of the society.

Objectives

The Post-Graduate programme will focus on developing knowledge and competence for:

(i) Teaching and research in academic and other institutions

(ii) To prepare a cadre of professionals to work with governmental and non-governmental organisations in various capacities.

(iii) To enhance self-employment potential through entrepreneurial skill training.

(iv) To mould consultants and trainers in the health care system.

M.Sc. HOME SCIENCE

BRANCH X-B

FAMILY RESOURCE MANAGEMENT

SEMESTER SYSTEM

2018 ONWARDS

COURSE STRUCTURE & MARK DISTRIBUTION

M.Sc. HOME SCIENCE

Branch XB Annexure Family Resource Management- Course & Mark distribution

Semester	Paper code	Title of the paper	Distribution of hour / semester	Instructional hrs/week		ESE duration	Maximum Marks		
				L	P		CA	ESA	Total
1	HS211B	Advanced Human Resource Management	110	6	-	3	25	75	100
	HS212B	Hospitality Management	110	6	-	3	25	75	100
	HS213B	Food Service Management	110	6	-	3	25	75	100
	HS214B /C/D/E	Research Methodology	120	7	-	3	25	75	100
		Total	**450**	**25**	**-**	**-**	**100**	**300**	**400**
2	HS221B	Hospitality Management (Internship & Viva Voce)	120	-	7		25	75	100
	HS222B	Advanced Landscape Designing	110	6	-	3	25	75	100
	HS223B	Housing &Interior Designing	110	6	-	3	25	75	100
	HS224B	Housing &Interior Designing,(Practicals)	120	-	7	3	25	75	100
		Total	**450**	**12**	**14**	**-**	**100**	**300**	**400**
3	HS231B	Consumerism	110	6	-	3	25	75	100
	HS232B	Ergonomics	110	6	-	3	25	75	100
	HS233B	Entrepreneurship Development	110	6	-	3	25	75	100
	HS234B /C/D/E	Statistics and Computer Application	120	7	-	3	25	75	100
		Total	**450**	**25**	**-**	**-**	**100**	**300**	**400**
4	HS241B	Furniture and Furnishings	110	6	-	3	25	75	100
	HS242B	Energy &Environment	110	6	-	3	25	75	100
	HS 243B	Applied Nutrition & Extension (Theory)	110	6	-	3	25	75	100
	HS 244B	Women's studies	110	6	-	3	25	75	100
		Total	**450**	**24**	**-**	**-**	**100**	**300**	**400**
	HS245B	Dissertation	**-**	**-**	**-**	**-**	**-**	**100**	**100**
	HS246B	Comprehensive Viva	**-**	**-**	**-**	**-**		**100**	**100**
		Tutorial work	**5hrs/week**	**-**	**-**	**-**	**-**	**-**	**-**
		Grand Total		**86**	**14**	**-**	**400**	**1400**	**1800**

L-Lecture, P-Practical, ESE-End semester examination, CA-Continuous assessment ESA-End semester assessment.

UNIVERSITY OF KERALA

MSc –HOME SCIENCE-Semester System

(2018 ADMISSION ONWARDS)

Branch XB FAMILY RESOURCE MANAGEMENT

Semester –I

1.1 Advanced Human Resource Management.

1.2 Hospitality Management.

1.3 Food Service Management.

1.4 Research Methodology.

Semester –II

2.1. Hospitality Management (Internship)

2.2. Advanced Landscape Designing.

2.3. Housing and Interior Designing.(Theory)

2.4. Housing and Interior Designing.(Practicals)

Semester –III

3.1. Consumerism.

3.2. Ergonomics.

3.3. Entrepreneurship Development.

3.4. Statistics and Computer Application.

Semester –IV

4.1. Furniture and Furnishings.

4.2. Energy and Environment.

4.3. Applied Nutrition and Extension. (Theory)

4.4. Woman Studies

4.5. Dissertation

4.6. Viva Voce

Branch X B Family Resource Management

Semester	C.A*	ESA**	Total
Semester I	**100**	**300**	**400**
Semester II	**100**	**300**	**400**
Semester III	**100**	**300**	**400**
Semester IV	**100**	**300**	**400**
Dessertation			**100**
Comprehensive Viva Voce			**100**
Grand Total			**1800**

- *C A Continuous Assessment
- **ESA End Semester Assessment

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER –I
HS211B PAPER-I-ADVANCED HUMAN RESOURCE MANAGEMENT
(Theory) SYLLABUS

Total Hours: 110

Objectives

1. To introduce students to resources, principles and skills of management.
2. To familiarise students with micro and macro level management practices.
3. To enable students to gain knowledge on
   a) Concepts of management.
   b) Managerial abilities
   c) Philosophy and values in life

UNIT I: Introduction to Management process, functions and Value orientation

Introduction to management, significance and scope, The evolving discipline of management- classical, behavioural and system approach, Management as a process, classification of managerial functions, –planning, organizing, staffing, directing and controlling, Levels of management. Importance of goals, standards and values. Management by objectives (MBO), meaning, objectives of MBO, steps in MBO process

UNIT II: Decision Making and Communication

Decision making - Definition, types, steps in decision making process, decision tree Conflicts - methods to resolve conflicts, a study of problem situations and decision making practices of homemakers. Communication – meaning, significance, key elements in communication, means of effective communication, barriers in communication, utility of media for communication effectiveness.

UNIT III: Introduction to Human Resource Management:

Introduction, concept of human resource management, scope of human resource management, functions of human resource management, role of HR executives.

UNIT IV: Human Resource Planning:

Process of human resource planning, need for human resource planning

UNIT V: Recruitment and Selection:

Concept of Recruitment, Factors Affecting Recruitment, Sources of Recruitment, Recruitment Policy, Selection, Selection Process, Application Forms, Selection Test, Interviews, Evaluation , Placement, Induction.

UNIT VI: Job Evaluation, Job Analysis and Design:

Concept of job evaluation, objectives, techniques, advantages and limitations. **Job Analysis and Design:** Concept of job analysis and design, process of job analysis, method of job analysis, Job analysis information, concept of job design.

UNIT- VII: Employee Misconduct and Disciplinary Procedure:

Meaning and objectives of discipline, principles for maintenance of discipline, basic guidelines of a disciplinary policy, Disciplinary action - - penalties, procedure for disciplinary action. **Grievances and Grievances Procedure:** Concept of grievance, causes of grievances, forms and effect of grievance, the grievance handling procedure, need for grievance redressal procedure, **Employee Welfare and Working Condition:** Concept of employee welfare, Welfare measures, types, employee welfare responsibility, the business benefits of employee welfare activities.

UNIT VIII: Human Resource Control and Emerging Horizons In Resource Management

Human resource records, research and audit. Human resource accounting and information system. Human resource management in virtual organisation.

International human resource management. Human resource management in the changing environment.

Related Experience:

1. Visit to government / private organisations to survey management practices.

References:

- An introduction to family resource management . Seetharaman P., Bata.S, Mehra .P. 2005 CBS Publishers and distributors, New Delhi.
- Appraising and developing managerial performance, Academy of Human Resource Development. B.K.Publishers, Delhi.
- Appraising and developing managerial performance , Academy of Human Resource Development . B.K Publishers , Delhi
- Financial management : An approach and conceptual approach . Tata Mc Graw Hill, New Delhi.
- Human resource management . Gupta .S.K and Joshi .R., Kalyani Publishers. New Delhi.
- Managing Human Resources, Cascio Wayne . F (1985) Mc Graw Hill Book Co. . NewYork.
- Personal and Human Resource Management. Decenzo. D.A. and Robins.S.P. 1993. Prentice Hall . New Delhi.
- Human Resource Management , Gupta.C.B (2010) Sultan Chand and Sons , New Delhi

UNIVERSITY OF KERALA
M.Sc HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER-I
HS212B PAPER-II HOSPITALITY MANAGEMENT
(Theory) SYLLABUS

Total hours: 110

Objectives:

To enable students

- Gain insight into aspects of hospitality for guest satisfaction.
- Impart knowledge on the organizational and procedural aspects of front office and housekeeping departments of various hospitality institutions.
- To accomplish effective communication etiquettes and manners in dealing with guests, colleagues and management

UNIT I: Introduction to hospitality institutions and their organizational stucture

Classification of hotels and other hospitality Institutions, importance of tourism for hospitality industry, types of operations, Departmental classifications, room types and rates of rooms and food plans

UNIT II: Front Office – structure and, functions

Importance of the department, Layout and planning, Staffing pattern and duties, Basic Terminology used in the department, Qualities and etiquettes of front office staff , VIP Procedures, Computerized reservation, Arrival and departure, C-Form, procedures of check- in and check-out, Key handling and control, Lobby management, Co-ordination and communication of front office with other departments; Importance of reports in the front office, the front desk log, electronic front office, room status indicator, accounting equipment, Book Keeping and Record Maintenance.

UNIT III: Functions of Housekeeping

Importance and need of Housekeeping Department, Organization and duties, Hierarchy and Job descriptions, Layout, Inter-departmental coordination and communication, Interrelationship with Personnel Department: Importance and functions, Qualities and role of housekeepers

UNIT IV: Linen room and Laundry management

Classification and selection of linen, Par stock determination, storage, Distribution and control of linen and uniforms, Condemnation and reuse, bed making and turning down, Layout and physical attributes of Linen room and linen storage, Laundry: Types, Staff and duties, Equipments, Methods of washing, finishing processes and stain removal .

UNIT V: Upkeep, Sanitation and Safety Aspects

Cleaning Guest rooms and service areas, Rules, procedures and principles, types of room cleaning- daily, weekly, spring cleaning etc, Equipments, cleaning agents and maid's trolley, Sterilization, disinfection, Control of infestation, Room inspection checklist, Integrated Waste Management (IWM), First Aid and safety means and measures, fire preventions and control, accident prevention, major security measures

UNIT VI: Aesthetic Treatments of Interior Environment

Interior decoration in Commercial / hospitality areas, window treatments, Selection and care of Furniture, furnishings, lighting and accessories, Floral decorations and table setting and layout, Indoor gardens and Landscaping**.**

Reference:

- Andrews S., (2000) Hotel Front Office Training Manual, Tata Mc Graw Hill Publications, New Delhi
- Andrews S., (2000) Hotel Housekeeping Training Manual, Tata Mc Graw Hill Publications, New Delhi
- Ball S. et al, (2003) Hospitality Operation-A System Approach, Thomson Learning, U. K.

- Branson J.C. and Lennox M., (1988) Hotel, Hostel and Hospital Housekeeping, Edward Arnold Publishers, London
- Chakravarthy, Hotel Management (Vol. I and II)
- Express Health Care Management

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE-SEMESTER SYSTEM

(2018 ADMISSION ONWARDS)

BRANCH XB-FAMILY RESOURCE MANAGEMANT

SEMESTER -I

HS213B PAPER -III FOOD SERVICE MANAGEMENT

(Theory) SYLLABUS

Total hours: 110

Objectives:

To enable students

- To acquire knowledge on the functions of various areas in a food service institution
- Understand the various aspects of volume food production and service

UNIT I: Introduction To Food Service

History, scope and development of food service institutions, Factors affecting development, recent trends, Types of food service establishments (commercial and non-commercial)and their characteristic features, Departments in food service operations.

UNIT II: Organisation And Management Of Food Service

Definition, Organisation structure, Types of organisation, Tools of organisation, Functions of management, Principles of management, Tools of management -Organisation chart, Job description, Job specification, Work schedule, Job analysis, Total Quality Management (TQM).

UNIT III:Facility Design And Equipment

Design considerations for kitchen, Layout of kitchen, Types of kitchen, Work centres in the kitchen layout, Maintenance of kitchens, Storage area –location, types of storages, planning and layout of storage spaces, Service area – location and planning, Equipment for kitchen and service areas – classification, selection, purchase, care and maintenance.

UNIT IV: Volume In Food Production

Types of foods, Classification of beverages, Purchasing, receiving, storage and issuing of food, Menu – Definition, functions, classes, French classical menu, Factors considered while planning menus, Advantages of menu planning, Menu groupings, Menu balance, Steps in menu construction, Menu display / designing the menu card / cover, Food production process, Large quantity cooking techniques, Standardisation of recipes, Portion control.

Unit V: Table Setting And Arrangement

Table setting, Points to be remembered while laying a cover, Napkin folding techniques, Indian and Western styles of table settings, Table etiquettes, Flower arrangement.

UNIT VI: Food Service

Food service delivery system (centralised and decentralised), Type of food service systems (conventional, commissary, ready prepared, assembly), service styles (table, counter, tray, silver, plated, cafeteria, buffet, self, English, Russian, French, Continental), Specialised forms of service (hospital, airline, rail, home delivery, catering and banquet, room and lounge service).

References

1. Sudhir Andrews (2013), Food and beverage service- Training manual, Tata McGraw – Hill company Ltd.
2. Mohini Sethi and Surjeet Malhan (1995), Catering Management – An Integrated Approach, Wiley Eastern Ltd.
3. R Singaravelavan (2014), Food and Beverage service, Oxford University Press.
4. Parvinder S Bali (2014), Food Production Operations, Oxford University Press.
5. Bobby George and Sandeep Chatterjee (2008), Food and Beverage Srevice and Management,Jaico publishing house, Mumbai.
6. Jagmohan Negi (2013), Food and Beverage Service Operation, S Chand and Company Pvt Ltd, New Delhi.

7. Jagmohan Negi (1997), Professional Hotel Management, S Chand and Company Pvt Ltd, New Delhi.
8. John Cousins, DennisLillicrap, Suzanne Weekes (2014), Food and Beverage Service, 9th ed., Hachette UK.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE – SEMESTER SYSTEM
(2018 ADMISSION ON WARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER – I
HS214B PAPER-IV RESEARCH METHODOLOGY
(Common to all Branches X-B, C, D and E)
(Theory) SYLLABUS

Total hours : 120

Objectives:

1. To have a basic knowledge about research and its methodologies.
2. To identify and define appropriate research problems.
3. To organize and conduct research in a more appropriate manner.
4. To understand various steps in writing a research report, thesis and research proposal.

UNIT I : Research Methodology

Meaning, objectives and significance of research. Types of research, research approaches and scientific methods. Research process and criteria of good research.

UNIT II : Definition and identification of a research problem

Selection of research problem, justification, limitations and delimitations of the problem, Development of hypothesis and its significance, hypothesis testing, Variables – types and characteristics.

UNIT III : Review of Literature

Functions, sources, steps in carrying out a literature review.

UNIT IV : Research Design

Meaning and needs, features of a good design; Important concepts relating to research design; Different research designs – exploratory, descriptive and diagnostic (epidemiology and clinical trials); Pilot studies.

UNIT V: Methods and tools of Data Collection –

Interview, Case study, Survey, Scaling methods, Schedules and questionnaires, Reliability and validity of measuring instruments.

UNIT VI : Sampling Design

Population and sample, Steps in Sample Design, Criteria for selecting a sampling procedure, Different types of sampling techniques – probability sampling and non-probability sampling. Merits and demerits of sampling.

UNIT VII : Organisation, Analysis and interpretation of Data

a. Organisation – editing, coding and classifying – tabulation
b. Analysis – descriptive and statistical.
c. Interpretation
d. Formulation of conclusions and generalisations.

UNIT VIII : Ethics in Research in Home Science

Research strategies in Home Science – Issues in design, conduct, analysis and interpretation – Descriptive studies (correlation, case studies, cross-sectional surveys) – Analytical studies (observational, case-control, cohort studies – prospective and retrospective) – experimental studies (clinical / intervention trials including randomized controlled trials)

UNIT IX : Scientific Writing as a Means of Communication

Principles and steps in report writing - Different forms – research articles / notes, review articles, monographs, dissertations and reports. Components of dissertation / research report / article. Importance of illustrations. Methods of presenting research findings – oral / poster. Formulation of research design / proposal.

References

1. Best J M and Kahn, J.V. Research in education, 10th edition, Prentice Hall of India, New Delhi, 2006.
2. Devadas, R.P. A Handbook on methodology of research. Sri Ramakrishna Vidyalaya, Coimbatore, 1989.
3. Gosh B.N. Scientific methods and social research.4th edition, Sterling Publishers Pvt. Ltd. New Delhi, 2012.

4. Kothari, C.R. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi, 2014.
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6. Sharma, B.A. V, Prasad, R.D. and Styanarayana, P. Research methods in Social Science, Sterling Publishers Pvt. Ltd.
7. Wilkinson, T.S. and Bhandarkar, P.L. Methodology and Techniques of Social Research, Himalaya Publishing House, Bombay.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER-II
HS221B PAPER-V HOSPITALITY MANAGEMENT
(Internship) SYLLABUS

One and a half month internship in front office and housekeeping department in any institution and produce a report on the personal experience in the role play of guest handling, Bed making, Table setting, Flower Arrangement, Curtain styles

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER-II
HS222B PAPER-VI - ADVANCED LANDSCAPE DESIGNING (Theory)
SYLLABUS

Total hours: 110

Objectives:

To enable the students

1. To gain knowledge on landscape gardening.

2. To acquire skills in cultivation of different garden plants.

UNIT I: Landscaping

Meaning and importance of landscaping, elements and principles. Components of landscaping – Hardscaping – definition, elements of hardscaping - walkways, driveways, patios,decks, pergolas, swimming pools, fountains, stone benches, sheds, gazebos, pergolas, arbors , trellises and gates . Material choices for hardscaping - stone, rock and wood. Softscaping – definition, elements of softscaping - soil, trees, hedges, ground covers, flowers, and shrubs. Sustainable gardening – definition and methods - reducing lawn size, conserving & controlling water on site, organic pest control , composting and mulching, using native plants, plant perennials, intersperse fruits and vegetables among ornamentals and lasanga garden .

UNIT II: Styles and Types of Garden

Styles of garden - Formal garden - Italian, French, Mughal and Persian gardens. Informal garden – English and Japanese garden. Small, medium and large gardens. Special types of garden – rock garden, water garden, butterfly garden, vertical garden, terrace garden and terrarium. Indoor garden and kitchen garden.

UNIT-III: Garden Preparation

Soil and its preparation- physical texture and composition, soil types, soil pH, preparation of beds. Organic manures and substrates- farmyard manure, compost, leaf

mould, bone meal, oil cakes, wood ash charcoal, liquid manures, peat moss, shredded bark, saw dust and wood shavings, vermicompost.

Potting, repotting and transplantation – plants suitable for pot culture, potting on different kinds of pots. Transplanting seedlings, corns, bulbs, large trees. Garden tools and implements. Routine duties in a garden.

UNIT IV: Care of the Garden

Watering and fertilizer use – water needs, how and when to water plants, different methods of irrigation. Application of fertilizer, organic fertilizer, biofertilizer.

After care of the plants – weeding, top dressing, staking, disbudding, defoliation, defruiting, pruning and shaping

UNIT V: Plant Propogation

Types – Seed propogation - advantages. Vegetative / asexual propagation – advantages, methods - Cuttings – stem leaf and root. Layering – tip, simple, compound, mound and air layering. Budding – T- budding, chip budding, patch budding. Grafting – cleft graft, bark graft, whip graft,inarch graft, approach graft, side graft and bridge graft. Tissue culture.

UNIT VI: Bonsai and Topiary.

Bonsai- principle, Containers for bonsai – choosing pots, traning pots, potting and repotting and growth media. Basic styles – formal upright, informal upright, slanting, cascade, semicascade. Shaping bonsai – pruning, nipping and wiring and additional training techniques. Care and maintenance, displaying bonsai.

Topiary – definition, plants suitable for topiary, care - watering, feeding, pest control and clipping and creating shapes.

UNIT VII: Lawn Making

Site and soil, drainage, leveling, lawns from seeds, turf and chopping. Mowing, top dressing and weeding.

UNIT VIII: Ornamental Plants

Herbs- annuals and biennials. Shrubs – flowering and foliage. Climbers and creepers. Perennials – bulbs, tubers, ferns, succulents, cacti. Ornamental grass, bamboo and palm. Trees- arboriculture, importance and value of trees, selection , planting, maintenance and care, role of trees in landscaping.

Related Experience

Collection of pictures/photographs of different types of garden, propagation methods, bonsai and topiary.

Prepare the layout of a small/medium/large garden suitable for residential building.

Preparation of a terrarium.

Visit to nurseries.

Visit to a residence and an institution to observe the landscaping and evaluate it on the basis of principles of design.

Record.

Reference

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- Pat Lucke Morris and Sigrun Wolff Saphire, 2011, Growing Bonsai Indoors, Brooklyn Botanic Garden.
- Jenny Hendy , 2015,Topiary: A Practical Guide to the Art of Clipping ,Training and Shaping Plants, Anness Publishing.
- Nina Greene, 2014, Garden Styles: Introduction to 25 Garden Styles, Speedy publishing LLC.
- Marietta Loehrlein, 2014, Sustainable Landscaping: Principles and Practices, Taylor and Francis Group,LLC.
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M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER-II
HS223B PAPER-VII HOUSING AND INTERIOR DESIGNING(Theory)
SYLLABUS

Total hours: 110

Objectives: -

To help students to:

1. Learn aesthetic skills in applying principles of Interior Decoration
2. Apply practical knowledge and skill in treating home decoration and commercial centres.
3. Become a good Interior Designer

UNIT I: Creating a life space

Factors and goals in planning a life space, creating a life space, classification of life space – group space, private space and support spaces. **Planning space and designing interior space-** Objectives, process, schematic diagram, Selection of site, principles of house planning, Types of plans, house plans for different income groups, low cost design materials and techniques. Developing house plan for a new house, selecting and evaluating an existing plan, remodeling plans.

History and Evolution of housing, Residential architectural design for various life styles and Housing typology - independent, twin / row/ pent houses, apartments / flats, studio apartments, villas, condominiums, vernacular and traditional domestic architecture

UNIT II: Design Fundamentals

Importance of good taste**.** Definition and classification of design **Design types** – i) structural (functional) ii) ornamental (decorative) – Naturalistic, stylized, Geometrical, Historical, Traditional, Modern, and Abstract; **Elements of design-** line,form,colour,texture,light,space. **Principles of design-** balance, rhythm, proportion, harmony and emphasis**.**; **Study of colour in** detail: Introduction,

Characteristics of colours, Colour systems 2D and 3D – Prang's, Munsell's and Ostwald – Colour harmonies, psychological effect of colours and its use in interior .Application of design principles in interiors.

UNIT III: Resource Materials

Materials for interior use, properties, care and cost. Wood and wood substitutes, stone, brick, plastic, metals, glass, foam rubber etc, wall finishes, floor finishes, materials for ceiling and false ceiling and furniture finishes.

UNIT IV: Fundamentals of Building construction, Materials

Basic construction Techniques, Building Components / Elements – Foundation, wall, floor, ceiling, roof, structural openings, means of vertical transport, Building materials.

Building finishes External Wall Finishes- painting, pointing, polishing, etc., Building Services- Electrical layout and wiring, Plumbing and sanitation, Construction Techniques for safety- damp proofing, fire proofing, termite Proofing, sound proofing, security features

UNIT V: Environmental factors and home lighting

Environmental factors and their influence on human work. Home lighting - types of lighting, adequacy of lighting in various area, sustainable lighting.

UNIT VI: Accessories in Interior

Definition, classification, selection and placement of accessories; pictures, art, crafts, sculptures, antiques, indoor plants and flower arrangements.

UNIT VII: Space Saving Techniques

Need for saving indoor space, technique such as combination/multipurpose rooms, combination/multipurpose furniture, in-built furniture, techniques of creating illusion with the help of lighting effect, mirror use and colour use.

UNIT VII: History of Housing and Architecture

Fundamentals of architecture and overview of ancient architecture - Egyptian, Greek, Roman, Chinese, Gothic, Renaissance, Modern and Contemporary

Architecture. Indian- Hindu, Jain, Buddhist, Mughal, Colonial, Study of Domestic Architecture –Traditional built environment in Kerala, Introduction to Vaastu.

References

1.Bayer Glenn-A Factual Analysis

2.Agan Tessie-The House- Its Plan and Use

3.Deshpande,R.D.Modern Ideal Homes for India.

4. Current Journal and Magazines

5.National Building Organisation Publication.

6.Cenus Report

7.India Year Book

8.Report of National Sample Surveys.

9.Khanna P.N Indian Practical Civil Engineers Hand Book,Engineers Publications (1985)

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11.Venugopal K Engineering Drawing Made Easy.Wiley Eastern Co.1992.

12.RanwalaS.C Engineering Materials (Material Science) Charotar Publishing House.

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M.Sc. HOME SCIENCE-SEMESTER SYSTEM

(2018 ADMISSION ONWARDS)

BRANCH XB-FAMILY RESOURCE MANAGEMANT

SEMESTER-II

HS224B PAPER -VIII - HOUSING AND INTERIOR DESIGNING (Practicals)

SYLLABUS **Total Hours:120**

1. Types of house plans

a) Low income group b) Middle income group c) High income group d) Apartment (one room)

2. Kitchen Arrangement

a) U-Shaped b)L-shaped c)Two wall or corridor Kitchen d)One wall or Gallery Kitchen

e)Island Kitchen f)Pennisula Kitchen

3. Colour

a) Prang colour system b)Munsell colour system c)Value and intensity
d) Pastel colours

e) Neutral colours f)Warm and cool colours g)Rainbow colours

h) Colour harmonies→ Monochromatic ,Analogous, Direct complementary, Double complementary Split Complementary, Alternate Complementary,triads, tetrads

4. Storage Areas of Various Room

a)Kitchen b)Bed room c)Drawing room d)Dining room

5. Furniture Arrangement of Different Rooms

1.Bed room 2.Dinning room 3.Drawing room 4.Kids room

5. Study cum bedroom for a college girl / boy.

6. Identification and collection of:-

a)Building materials b) Draftsmanship tools c)Plumbing Fixtures

d)Electrical Fixtures e) Latest building materials.

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M.Sc. HOME SCIENCE-SEMESTER SYSTEM
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER -III
HS231B PAPER IX - CONSUMERISM
(Theory)
SYLLABUS

Total hours: 110

Objectives

To enlighten students about the duties and responsibilities of a wise consumer

To provide a firm grounding in consumer behaviour

To impart knowledge on consumer acts and regulations.

UNIT I: Role of consumer in the economy

Consumer- definition, classification.Consumer behavior – meaning, features, model and factors influencing consumer behaviour and steps in buying decision process .Buying motives- definition and types.

UNIT II: Consumer problems

Meaning and definition of consumer behaviour. Nature and characteristics of Indian consumers. Consumer problems and causes. Consumer redressal forum and its functions.

UNIT III: Consumer co-operatives

Structure and functions of consumer co-operatives.

UNIT IV: Adulteration

Definition, types, methods adopted for adulteration, detection methods, health hazards of adulteration, measures to control adulteration.

UNIT V: Consumer Acts

Consumer protection- importance, scope of laws in consumer protection. Consumer Protection Acts1986, Standard institutions - BIS, AGMARK, ISO.

UNIT VI: Advertisement

Definition, objectives and importance.

Classification of advertisement

Product – Related Advertising (a) Pioneering Advertising (b) Competitive Advertising (c) Retentive Advertising.

- Public Service Advertising
- Functional Classificaiton (a). Advertising Based on Demand Influence Level - Primary Demand (Stimulation) - Selective Demand (Stimulation) (b) Institutional Advertising (c) Product Advertising - Informative Product Advertising , Persuasive Product Advertising , Reminder-Oriented Product Advertising
- Advertising based on Product Life Cycle (a) Consumer Advertising (b) Industrial Advertising
- Trade Advertising (a) Retail Advertising (b) Wholesale Advertising
- Advertising Based on Area of operation (a) National advertising (b) Local advertising (c) Regional advertising
- Advertising According to Medium Utilized
- Advertising planning framework.

UNIT VII: Consumer Education

Need and significance, objectives of consumer education, consumer rights. Consumer aids – standardization and labels, trademarks, brand names, patents, warranty, guarantee and after sale service.

UNIT VIII: Public utilities and services

Role and functions.

References

1.Consumer behaviour,Suja Nair, 2002,Sultan Chand and sons, New Delhi.

2.Consumerism a growing concept, , Sethi.M,Seetharaman .P 1994.Phoenix publishers, New Delhi.

3. Consumer behaviour,Sharma.S.S,1992, Arihant Publishing.

4.The Indian Economy : Poverty and development, Chaudhri,P.K, Vikas Publishers,1974.

5.Consumerism strategies and tactics , Sethi.M,Seetharaman .P, 2001, CBS publishers , New Delhi.

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M.Sc. HOME SCIENCE-SEMESTER SYSTEM

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BRANCH XB-FAMILY RESOURCE MANAGEMANT

SEMESTER III

HS232B PAPER X - ERGONOMICS

(Theory) SYLLABUS

Total hours: 110

Objectives

1. To make students aware of the role of ergonomics in improving work efficiency
2. To make them understand the importance of adopting good work postures
3. To understand the ergonomical considerations in the designing of workspaces
4. To understand the relation of work environment and performance of work

UNIT I: Introduction to Ergonomics

Meaning, importance and basic ergonomic principles, Scope of ergonomics in modern society, Man-Machine-Environment system interactions, Proactive ergonomics.

UNIT II: Physiology of Work

Structure and function of muscles, Physiology of muscular work, Energy for muscle action, Efficiency of muscle contraction, Static and dynamic muscular work, Muscular strength and endurance , Assessment of muscular strength and endurance, Benefits of muscular strength and endurance, Workload , Classification of workload, Muscular work in occupational activities– heavy dynamic muscular work, manual materials handling, static muscular work, repetitive work, Acceptable workload in occupational activities, Prevention of muscular overload.

UNIT III: Energy Management

Types of work-light, moderate and heavy ,Energy cost of various household activities, Working heights-normal and maximum reaches, Fatigue – muscular and general, Measurement of fatigue, Factors affecting degree of fatigue , Causes of

fatigue and methods of alleviating fatigue, Work simplification – meaning and techniques, Body mechanics, Mundell's classes of changes, Work curve, Work – rest cycle.

UNIT IV: Body Postures and Musculo Skeletal Disorders (MSDs)

Common postures at work -standing, sitting, reaching, moving, Factors that influence working posture – user characteristics, task requirements and design of the workspace, Effect of wrong postures on cardiovascular and muscular skeletal system, Suggestive techniques of / guidelines for safe body postures at work, Assessment of work postures using Rapid Upper Limb Assessment(RULA) tool and Rapid Entire Body Assessment (REBA) tool, Work-related MSDs – definition, causes, types and their prevention.

UNIT V: Work Space Design

Basic ergonomic principles for workstation design, Ergonomic principles basic to hand tool design, Design considerations for kitchen and office ,Universal Design Considerations -Wheelchairs, Crutches, canes and walkers, Knobs, handles and controls, Access ramps and stairs, Work triangle , Physical space arrangements, Hazards of ill designed work station.

UNIT VI: Anthropometry and its Applications

Definition of anthropometry and anthropometric variables /measurements, Percentile humans, Types of anthropometric data used in ergonomics - Structural, Functional and Newtonian, Anthropometric database, Techniques for measuring body dimensions –Direct method and indirect method, Standing measurements and sitting measurements, Applications of anthropometry.

UNITVII: Work Environment

Effect of hot and cold environments on work performance. Control of exposure to / protection against heat and cold, Effect of noise on work performance, Methods to reduce noise, Effect of light on work performance, Effect of colour on work performance, Effect of furniture on work performance.

UNIT VIII: Motion and Time Study

Definition and Principles of motion economy.

Reference

1. Stephen Pheasant (2003),Bodyspace,Anthropometry, Ergonomics and the Design of Work,Taylor& Francis Ltd, London.
2. Grandjean E(1985), Fitting the task to man – An ergonomic Approach, Taylor and Francis, London.
3. www.ilocis.org
4. Barnes R M, Motion and time study, John Wiley & Sons.
5. Nag P K, Ergonomics and work design, New Age International Pvt Ltd, New Delhi
6. Varghese M A, Saha P N and Atreya N (2000), Ergonomics of women at work, Allied Publishers Ltd, Mumbai.
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M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 Admission Onwards)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER III
HS233B PAPER-XI -ENTERPRENEURSHIP DEVELOPMENT
(Theory)
SYLLABUS

Total hours: 110

Objectives: - To enable the students to:

1. Understand the nature of entrepreneurial activities
2. Seek self employment ventures
3. To impart information on the various sources of finance and also on the process of setting up small enterprise.
4. Acquire skills in planning project proposals.

UNIT I : Entrepreneurship

Entrepreneurship –Definition, Types, Characteristics and Importance .Factors stimulating Entrepreneurship. Factors affecting entrepreneurial growth-economic, social, cultural and personal. Theories of Entrepreneurial origin. Qualities of Entrepreneurs. Importance of self employment.

UNIT II: Training for Development and Methods of building Entrepreneurship.

Need for training. Phases of EDP. Development of achievement motivation, projective techniques. Self rating exercises.

UNIT III : Women Entrepreneur

Concept, Functions and Challenges of women entrepreneurs. Policies and schemes for women entrepreneurs in India. Suggestions for development of women entrepreneurs.

UNIT IV: Entrepreneurship and Institutional Support

Objectives, functions and assistance given by-SIDCO, SIDO ,IDBI ,SIDBI ,SGSY ,JGSY Agencies promoting Entrepreneurship and role of NSIC, SIETI, CSIO ,DIC, DRDA and other voluntary agencies.

UNIT V: Organisations

Meaning and Definition of organisations. Types of organisation-Sole proprietorship, partnership, joint stock company ,State enterprises and Co-operative societies – meaning, merits and demerits of each. Factors influencing the choice of organisation.

UNIT VI: Small Scale Industry

Definition ,type, procedure for setting a small scale unit. Training facilities for small scale units. Problem faced by emerging SSU and their remedies.

UNIT VIII: Project Formuation

Meaning, Concept , Needs, ,Significance ,Objective , Elements, Classification, Identification, Constraints-Internal and External, and Feasibility Analysis. 6M's of an industry .

UNIT VIII: Book Keeping and Accounting

Concepts and basics of accounting methods-Journal and ledger, balancing, trial balance, cash book. How to calculate and procedures for payment. Sales tax.Meaning and types. Calculation of profit and losses.

References:

- Akhouri, M.M.P. Entrepreneurship for women in India, New Delhi, NIESBUD, 1990.
- Jain, D. Women's Employment, Possibilities of Relevant Research Institute of Social Studies, 1980.
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  New Delhi, 1998.

- Arora, S. P., Business Organization, Vikas Publishing House Pvt. Ltd. New Delhi, (1980)

- Bhattacharyya, S.K Accounting for Management, Vikas Publishing House Pvt. Ltd., New Delhi

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- Desai, V. (1997). Dynamics of Entrepreneurial Development and Management, Mumbai, Himalaya Publishing House.
- Devi, I. (1987). Changing Status of Women, New Delhi, Sterling Publisher.
- Ghadially, R. (1998). Women in Indian Society, Bombay, Saga Publishers.
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- Shukla M.C., Business Organisation, S. Chand & Co. New Delhi, (1970)
- Winze, M.D. (1987). Women Entrepreneurs in India, New Delhi, Mital Publications.

Periodicals:

- Yojana, Publication Division, New Delhi
- Kurukshetra Publication Division, New Delhi

UNIVERSITY OF KERALA

MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)

BRANCH XB-FAMILY RESOURCE MANAGEMANT

SEMESTER - III

HS234 B – PAPER XII – STATISTICS AND COMPUTER APPLICATIONS

SYLLABUS

(Theory)

(Common to all Branches X-B, C, D and E)

Total Hrs : 120

Objectives

- To enable the students to develop knowledge in statistical tools and computer applications.

Unit I- Introduction to Statistics

- Definition, understanding of statistical measures
- Popular concepts and misuse of statistics

Unit II – Date Management and Analysis

- Quantitative analysis, descriptive statistics, inferential statistics: Uses and limitations
- Summation sign and its properties
- Proportions, percentages, ratios

Unit III – Measures of central tendency and dispersion

- Mean, median, mode, arithmetic mean and its uses, mid – range, geometric mean, weighted mean.
- Measures of dispersion – range, variance, standard deviation, standard error, co efficient of variation.
- Grouped data-frequency distribution, histogram, frequency polygons, percentiles, quartiles, ogive.

Unit IV – Data Analysis

- Coding of data
- Parametric and non-parametric tests
- Use of statistical tools.

Unit V – Normal Distribution and its Properties

- Normal distribution – importance and properties of normal distribution
- Theory of attributes,
- Probability, use of normal probability tables
- Area under normal distribution curve

Unit VI – Large and Small Sample tests and interpretation

- Z-test for single proportions and difference between proportions
- Large sample test for single mean and difference between means
- Small sample tests- 't' test, paired 't' test, 'F' Test

Unit VII- Chi square test and its interpretation

- Chi square test and its interpretation – general features, goodness of fit
- Independence of Attributes

Unit VIII – Correlation and Regression and its interpretation

- Basic concepts, linear regression and correlation coefficient
- Regression, Rank correlation

Unit IX – Analysis of Variance and its interpretation

- One-factor analysis of variance
- Two-factor analysis of variance

Unit X – Concepts of Hypothesis

- Null and Alternative Hypothesis
- Type I and II errors.

Unit XI – Introduction to SPSS and Excel: its Applications

- Application of excel and SPSS
- Histogram, pie diagram, scatter diagram graphs – presentation using SPSS / excel.

Unit XII – Presentation using Power point

- Creating presentations.

References:

1. Gosh, B.N. Scientific methods and social research, Sterling Publishers Pvt. Ltd. New Delhi.
2. Kothari, C.R. 2014. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi.
3. Sharma, B.A.V. Prasad, R D and Satyanarayana, P. 1990. Research Methods in Social Science, Sterling Publishers Pvt. Ltd.
4. Agarwal, Y.P. 1990. Statistical Methods, Sterling Publishers Pvt. Ltd.
5. Gupta, S. 2001. Research Methodology and Statistical Techniques., Deep and Deep, New Delhi.
6. Gupta, S.P. 1996 Practical Statistics, 37th edn, S. Chand, New Delhi,.
7. Gupta, S.C. 2000 Fundamentals of Statistics, Himalaya Publishers, Mumbai.
8. Gupta, S.P. 2000. Statistical Methods, Sultan Chand & sons, New Delhi.
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M.Sc. HOME SCIENCE-SEMESTER SYSTEM
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BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER -IV
HS 241B PAPER XIII - FURNITURE AND FURNISHINGS
(Theory) SYLLABUS

Total hours: 110

OBJECTIVES:

1.To enable the students to learn about the types and importance of furniture

2. To know about the selection, care and arrangement of furniture.

3. To enable the students to learn about types of windows and window treatments

4.To understand the role of fabric in interior decoration

5. Develop skills in designing and construction of curtains.

FURNITURE IN INTERIORS :

UNIT I: History of furniture and its classification

Brief introduction - Traditional, Contemporary and Modern design. Need for furniture, Factors influencing selection of furniture – climatic condition, family needs and preferences, availability, principles of design and financial limit.

Furniture for different purpose -(Sitting furniture, Table furniture, Bed furniture, Storage furniture (incl. in/built wardrobes and hall furniture), Office furniture and Kitchen furniture.

UNIT II : Guidelines for Selection and arrangement of furniture

Types –dual purpose, built-in, modular furniture, mobile furniture, molded furniture. Furniture requirements for various rooms –Living room, dining room, bedroom, kitchen, study room, office.

UNIT-III: Familiar furniture materials and Finishes

Materials-Wood (teak, rose wood, walnut, cedar, mahogany, pine, birch, sal, ply wood, bamboo, cane,) metals, plastics, leathers. Finishes- coats of oil, wax, lacquer or paint. Construction features of furniture – fittings and other

components, shaping, carving, turning, fluting, reeding, joining and finishes, upholstering – techniques and designs.

UNIT -IV :Care and maintenance

Wooden furniture, wicker and cane, metal furniture, plastic, upholstered furniture, wood finishes and furniture polishes.

UNIT-V :Soft furnishings

Meaning, Importance ,Classification- functional and decorative. Selection criteria in relation to background in walls, floors and ceilings. Factors influencing furnishing of interior space- Climate, family needs and preferences , materials available, design, principles, financial limits.

UNIT-VI: Window Treatments

Types of windows, curtains styles, draperies, hanging curtains, pelmets, swags and valances, accessories, blinds, shades, curtain rods , selection of fabric.

UNIT-VII :Types of furnishings and Designs

Cushion, Cushion Covers, Slip Covers, Bed Linens, Table linens, Bath Linen, And Kitchen Linen. Design and Decorative Finishes.-Floor coverings- Carpets and rugs – types, selection, laying.

UNIT-VIII: Care and maintenance

Soft furnishings – stain removal, mending and darning, laundering, storage of furnishings.

REFERENCES:

1. Philips B, (2000), Hamlyn book of decorating, octopus publishing Ltd, London.
2. Clifton.c. etal (1991), The complete Home decorator conran octopus Ltd, London.
3. Luke. H., (1996), soft furnishings, New Holland publishers Ltd, Singapore.
4. Stepat, D.D, (1971), Introduction to Home furnishings, The Mac Millan Co, NewYork.
5. Wilhide, E and Copestick, I. (2000) contemporary decorating, conron octopus Ltd., London.
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M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 Admission Onwards)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER -IV
HS 242B PAPER -XIV - ENERGY AND ENVIRONMENT
(Theory) SYLLABUS

Total hours: 110

Objectives

To acquaint the students with

1. The physical environment and its components.
2. The need for energy conservation.
3. The action needed for checking environmental threats.

UNIT I: Introduction to Energy and Environment

Meaning and definition of energy and environment. Scope of the subject. Dimensions of environment, land, air and water.

UNIT II: Energy

Sources of energy- renewable and non renewable. Classification. Advantages and disadvantages of fossil fuels, wind energy, tidal energy, geothermal energy, hydel energy and nuclear energy.

UNIT III: Solar Energy

Significance. Solar radiation. Solar collectors. Solar energy applications- Solar cooker, solar water heater ,solar photovolatic cell.. Advantages and limitations of solar energy.

UNIT IV: Biomass Energy

Classification/Types of biomass. Biomass conversion process. Biogas generation. Factors affecting bio digestion. Classification/Types of biogas plants. Advantages and Limitations of biogas plants.

UNIT V: Land Pollution

Land as a resource, Land pollution sources, Major health hazards, Waste management – classification of waste, characteristics, methods of waste disposal.

UNIT VI: Air Pollution

Air pollutants, Sources, Health hazards. Green house effect, acid rain and ozone layer depletion- impact and control measures.

UNIT VII: Water Pollution

Water as a resource. Water pollution- sources and pollutants. Health hazards. Water management- ways of augmenting water resources - rain water harvesting, irrigation- drip and sprinkler methods, Water purification techniques, Water quality and standards.

UNIT VIII: Environmental Protection

Need, Environmental Protection programs, laws and social movements.

References

1.Jadhav .H. V (!977), Energy and Environment ,Himalaya Publishers,Mumbai.

2.Pawar.S.N and Patil, R.B(1998)Sociology of Environment, Rawat Publisher,Jaipur.

3.Karpagam,M(1993),Environmental Economics :A Text book ,Sterling Publishers,New Delhi.

4.Varshney,.C.K.Water Pollution and Management(1983)

5.Pal.CEnvironment Pollution and Developmwent: Environmental Law, Policy and role of Industry ,Mittal Publishers New Delhi(1999)

6.Ghanta R and Rao,B.D :Environmental Education Problems and Prospects,New Delhi,(1998)

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 Admission Onwards)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER-IV
HS243B PAPER- XV APPLIED NUTRITION AND EXTENSION (Theory) SYLLABUS

Total hours:110

Objectives:

1.To understand about the prevalence and extend of malnutrition in India.

2. To know the different ways to assess the nutritional status of the community.

3. To equip with the knowledge of planning and conduction nutrition education programmes.

Unit I: Malnutrition

Types of malnutrition . Factors responsible for malnutrition . Methods of detecting malnutrition and measures to overcome it. Application of basic principles of nutrition to improve the dietary practices of communities. Methods of enhancing nutritive value of foods- Combination, Fermentation and Germination .

Unit II: Nutritional Problem of the Community

Methods for assessing nutritional problems of the community. Techniques of diet and nutrition surveys .Nutrition and health statistics. Food Security.

Unit III: Deficiency Diseases

Causes and prevention of deficiency diseases.

Protein Energy Malnutrition -Marasmus, Kwashiorkor, Marasmic Kwashiorkor. Mineral Deficiencies-Deficiency of Iron,Iodine,Calcium,Flourine.

Vitamin Deficiencies- Deficiencies of Vitamin A, B –complex, C ,D,E and K. Hypervitaminosis.

Planning of low cost diets Diet for a marasmic child, Kwashiorkar child, pregnant women,underweight labourer, calcium deficiency lactating women,Thiamine deficient old man, vitamin A deficient child, vitamin C deficient college girl.

Unit IV: Nutrition Education

Need for Nutrition education. Principles of planning executing and evaluating nutrition education programmes.

Preparation of teaching aids in nutrition

Unit V: National Organisations institutions and Programme concerned with Food and Nutrition

a)Nutrition advisory committee of State Nutrition Council and Bureaus, NNMB.

b) Central and State Health Education Bureaus

c) Voluntary organisations promoting community Nutrition.

d) ICMR, ICAR,CSIR, CFTRI,CTCRI,NIN,CSIR. Measures to overcome malnutrition Measures to overcome malnutrition

e) Community Development and Extension Programmes.

f)Applied Nutrition Programmes-Genesis and Operation.

Unit VI: International Organisations Concerned with Food and Nutrition.

FAO,WHO,UNICEF,AFPRO,UNRRA,IRRI.

Unit VII: Food adulteration

Contributing factors. Food adulterants –Health hazards caused by them, test to detect them. Food laws.

Unit VIII: Food toxins

Toxicants in foods, contaminants, food additives.

References

- Devadas,P.R.Nutrition in TamilNadu,Sangham Publishers,1972.
- Devadas,P.R and Radhakumari A, The School Lunch Programme, Ministry of Education.

- Major,J Human Nutrition,Spring Field 1972.
- FAO,Manual on Food and Nutrition Policy ,1970.
- Avinashilingam P.S,Nutritional feeding in the Fourth Plan,1970.
- National Symposium of Agricultural Research Development sinceIndependence.Indian Council of Agricultural Research,New Delhi,1974.
- Mitchell,R.Crop Growth and Culture.The State University Press.1972
- Food and Agriculture Organisation of the United Nations,Agriculture and industrialization,Basic study No.7,1967

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE-SEMESTER SYSTEM

(2018 Admission Onwards)

BRANCH XB-FAMILY RESOURCE MANAGEMANT

SEMESTER-IV

HS244 B PAPER- XV WOMEN'S STUDIES

(Theory)

SYLLABUS

Total hours:110

Objectives

- To create an awareness among the students about the status of women in India.
- To familiarize with the issues and problems of women
- To motivate students to work for the betterment of women

UNIT 1: Introduction

The Concept and Significance of Women's Studies. Scope of Women's Studies. Women's Studies as an academic discipline. Women's Movements- Pre independant, Post independant and Current women movements. Need for empowerment of women.

UNIT 2: Status of women in India

Demographic profile of women with reference to health, education, employment, social and political aspects. Gender bias. The Indian girl child. The changing role of women.

UNIT 3: Special Issues and Problems

Infanticide, Foeticide, Dowry, Domestic violence, Sexual harassment and abuse, Child Marriage, Portrayal of women in mass media. Women in distress: Single, Widowed, and Divorced women, Unmarried mothers. Maternal and reproductive health issues.

UNIT 4: Women in workforce

Concept of work- productive and non productive work. Use value and market value. Women in organized and unorganized sectors, Special problems and needs. Gender division of work. Micro enterprises and women entrepreneurship development. NGOs

and women development. Globalization and impact on women's employment. Role of SHGs.

UNIT 5: Women and Law

Indian constitution and provisions relating to women. Need for legal literacy, Laws pertaining to Marriage, Divorce, Dowry, Succession/Property rights, Sexual abuse, Immoral Traffic, and Abortion, Indecent Representation of Women Act 1986, Family courts, Enforcement machinery – Police and Judiciary. Human Rights as Womens Rights.

UNIT 6: Developmental Programmes for Women

Services for protection, care and rehabilitation, Poverty alleviation and economic empowerment, Nutrition and health care programmes, Education and legal literacy.National and State Commissions for women.

Related experiences

1. Visit to an institution providing care and support to needy women
2. Debate on the pros and cons of dowry
3. Interact with women in a self-help group and understand its functioning.
4. Visit to any unit for women in a self-help group and understand its functioning
5. Visit to A family court.
6. Discuss the procedure for availing help by women in distress.

References

- Ashok S Kolaskaer and Motilal Dash (2012), Women and Society ;The road to change Oxford University press.
- Charu Gupta (2012),Gendering Colonial India,Reforms,Print, Caste and Communalism,Orient blackswan
- Mary E. John ed.(2008), *Women's Studies in India: A Reader*, New Delhi: Penguin Books India,

M.Sc. HOME SCIENCE

BRANCH X-C

EXTENSION EDUCATION

SEMESTER SYSTEM

2018 ONWARDS

COURSE STRUCTURE & MARK DISTRIBUTION
M.Sc. HOME SCIENCE
Branch XC Annexure EXTENSION EDUCATION
Course & Mark distribution

Semester	Paper code	Title of the paper	Distribution of hour / semester	Instructional hrs/week		ESE duration	Maximum Marks		
				L	P		CA	ESA	Total
1	HS 211C	Extension and Social Development in India	110	6	-	3	25	75	100
	HS212C	Developmental approaches and Panchayat Raj	110	6	-	3	25	75	100
	HS213C	Human Development and Welfare	110	6	-	3	25	75	100
	HS214B/C/D/E	Research Methodology	120	7	-	3	25	75	100
		Total	**450**	**25**	**-**	**-**	**100**	**300**	**400**
2	HS221C	Lifelong learning for development	110	6			25	75	100
	HS222C	Social Entrepreneurship	110	6	-	3	25	75	100
	HS223C	Development Communication	110	6	-	3	25	75	100
	HS224C	Development Communication–(Practical)	120	-	7	3	25	75	100
		Total	**450**	**18**	**7**	**-**	**100**	**300**	**400**
3	HS231C	Science and Technology for Rural Development	110	6	-	3	25	75	100
	HS232C	Programme Design and Evaluation	110	6	-	3	25	75	100
	HS233C	Population Studies	110	6	-	3	25	75	100
	HS234B/C/D/E	Statistics and Computer Applications	120	7	-	3	25	75	100
		Total	**450**	**25**	**-**	**-**	**100**	**300**	**400**
4	HS241C	Women and Gender Studies	110	6	-	3	25	75	100
	HS242C	Community Health, Nutrition and Extension- theory	110	6		3	25	75	100
	HS 243C	Community Health, Nutrition and Extension – Practicals	110		7	3	25	75	100
	HS 244C	Trends and Issues in Home Science Extension- Internship	120	-	6	3	25	75	100
		Total	**450**	**12**	**13**	**-**	**100**	**300**	**400**
	HS245C	Dissertation	**-**	**-**	**-**	**-**	**-**	**100**	**100**
	HS246C	Comprehensive Viva	**-**	**-**	**-**	**-**		**100**	**100**
		Tutorial work	**5hrs/ week**	**-**	**-**	**-**	**-**	**-**	**-**
		Grand Total		**80**	**20**	**-**	**400**	**1400**	**1800**

L-Lecture, P-Practical, ESE-End semester examination, CA-Continuous assessment ESA-End semester assessment.

UNIVERSITY OF KERALA

MSc –HOME SCIENCE-Semester System

(2018 ADMISSION ONWARDS)

Branch XC EXTENSION EDUCATION

Semester –I

1.1Extension and Social Development in India

1.2 Developmental approaches and Panchayat Raj

1.3 Human Development and Welfare

1.4 Research Methodology

Semester –II

2.1 Life long learning for development

2.2 Social Entrepreneurship

2.3 Development Communication

2.4 Development Communication– (Practical)

Semester –III

3.1 Science and Technology for Rural Development

3.2 Programme Design and Evaluation

3.3 Population Studies

3.4 Statistics and Computer Applications

Semester –IV

4.1 Women and Gender Studies

4.2 Community Health, Nutrition and Extension- theory

4.3 Community Health, Nutrition and Extension - Practicals

4.4 Trends and Issues in Home Science Extension- Internship

4.5. Dissertation

4.6. Viva Voce

ranch X C EXTENSION EDUCATION

Semester	**C.A***	**ESA****	**Total**
SemesterI	**100**	**300**	**400**
SemesterII	**100**	**300**	**400**
SemesterIII	**100**	**300**	**400**
SemesterIV	**100**	**300**	**400**
Dessertation			**100**
Comprehensive Viva Voce			**100**
Grand Total			**1800**

- *C A Continuous Assessment
- **ESA End semester assessment

Semester I

1.1 Extension and Social Development in India

1.2 Developmental approaches and Panchayat Raj

1.3 Human Development and Welfare

1.4 Research Methodology

Semester II

2.1 Life long learning for development

2.2 Social Entrepreneurship

2.3 Development Communication

2.4 Development Communication– (Practical)

Semester III

3.1 Science and Technology for Rural Development

3.2 Programme Design and Evaluation

3.3 Population Studies

3.4 Statistics and Computer Applications

Semester IV

4.1 Women and Gender Studies

4.2 Community Health, Nutrition and Extension- theory

4.3 Community Health, Nutrition and Extension - Practicals

4.4 Trends and Issues in Home Science Extension- Internship

Dissertation

UNIVERSITY OF KERALA

MSc HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER 1

HS 211 C PAPER 1 – EXTENSION AND SOCIAL DEVELOPMENT IN INDIA

Total Hrs : 110

Objectives : The course will enable the students to:

1. Become aware of the socio-economic structure, organization and problems of rural, urban and tribal communities.
2. Study the basic concepts in economic structure of India
3. Understand the implications of social changes in the process of development through extension.

Unit I: Extension Education- definition, meaning, objectives, principles, philosophy, interrelation between teaching, research and extension. Home science extension- inputs in national development.

Unit II: Society – Concepts, definition, characteristics of a community (Rural, Urban and Tribal); Society – its classification and characteristics, Structure and organization of rural, urban and tribal communities, Social groups- classification of groups, formation of social groups.

Unit III: Social Institutions- Family, caste, marriage, values, norms, customs, occupation, religion, kinship, and gender roles.

Unit IV: Social Change – Nature, meaning and directions of social change, Impact of industrialization and urbanization on rural community, Planned social change, Role of change agents and role of women in social change.

Unit V: Basic Institutions- Types of institutions in rural, urban and tribal areas- School as an agency of social change; Co-operatives- types, history and functions of Co-operatives; Panchayat- as an institution for social change and their role in village development. The role of rural industries, cottage industries, rural finance, and rural banks in the development of rural, urban and tribal areas.

Unit VI: Inequalities in the Society – Rural, urban and tribal inequalities- social and economic inequalities- Caste, traditionalism, unemployment, health, illiteracy, migration, poverty, overpopulation, housing, slums and pollution.

Unit VII: Basic economic structure – Nature and significance of agriculture in the Indian economy. Indicators of economic development. Poverty- definition, concept of poverty, web of poverty, vicious cycle of poverty, causes and consequences of poverty. Detailed study on the ongoing poverty alleviation programmes in India, with special reference to Kerala.

Unit VIII: Marginalization and Globalization – its impact on various societies.

Field Experiences:

1. Study of the social structure of different communities.
2. Problems of people in various communities.
3. Visit to basic institutions – Schools, cooperatives and Panchayats.

References

1. Bhose, S.G.R. Joel (2003) NGOs and Rural Development, Concept Publishing Company, New Delhi.
2. Desai, Vasant (2015) A Study of Rural Economy, Himalaya Publishing House, Mumbai.
3. Desai, Vasant (2008) Rural Development, Himalaya Publishing House, New Delhi.
4. Dubey, M.K. (2000) Rural and Urban Development in India, Common wealth Publishers, New Delhi.
5. Sharma. O.P. (2012) Development perspectives of Extension education; Agrotech publishing academy, Udaipur.
6. Satya Sundaram, I (1999) Rural Development, Himalaya Publishing House, Mumbai.
7. Supe. S. V. (2012) Text book of Extension education; Agrotech publishing academy, Udaipur.

Journals:

1. International Journal of Home Science
2. Journal of Rural Development
3. Kurukshetra
4. Journal of Sociology and Social Anthropology
5. Indian Journal of Extension Education.

UNIVERSITY OF KERALA

MSc HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER 1

HS 212 C PAPER 1I – DEVELOPMENT APPROACHES AND PANCHAYAT RAJ

(Theory) SYLLABUS

Total Hrs : 110

Objectives: The objective of this course is to orient the students to :

1. Understand the concepts, approaches and programmes for Development.
2. Analyze the role of developmental programmes at National and State level.
3. Study the importance of administration and management in rural development.
4. Evaluate the role of Panchayat raj system in the developmental process.

Unit I: Developmental approaches- Concept, genesis and approaches for development – Welfare, Development, Integrated, Gandhian, Area, Sectoral, Cluster, Target and sustainable development approach.

Unit II: Five year plans of India – Rural development through the five year plans – ongoing development programmes in India, Urban Development Programmes. Planning machineries in India and Kerala.

Unit III: Employment- Types of employment, Income types, Causes and remedies for rural indebtedness. Income inequalities – causes, measures to overcome it. Problems of unemployment, types of unemployment, role of ongoing employment generation programmes, Skilling India Campaign

Unit IV: Principles of Administration and Management in Rural Development – Role of POSDCORB (Planning, Organising, Staffing, Directing, Co-ordinating, Reporting, Budgetting) – and their individual importance and limitations in rural development.

Unit V: Rural Development Administration and Panchayat Raj Institutions- Democratic decentralization and evolution of Panchayat raj system (three tier) its set up, officials and non-officials in Panchayat raj, functions of Panchayat raj, 73rd and 74th amendments in the constitution.

Unit VI: Role of women in Panchayat raj system – Reservation, support structure and training programme by Government and other agencies, Impact of women participation in rural development.

Unit VII : Training – Training of different personnel working in Panchayats, types of training, agencies offering training for rural development and tribal development – need and importance of training in rural development.

Unit VIII: Institutions and Agencies – A detailed study on District Rural Development Agency (DRDA), Central Social Welfare Board (CSWB), State Social Welfare Board (SSWB), National level voluntary agencies like Council for Advancement of Peoples Action and Rural Technology (CAPART), Khadi and Village Industries Corporation (KVIC), Agriculture Technology Management Agency (ATMA), National Bank for Agriculture and Rural Development (NABARD) Local level voluntary agencies; People's organizations at grass roots – Self Help Groups (SHG), Kudumbasree.

Field Experiences:

1. Study of the working of a Voluntary agency/ SHGs/ Youth Club/ Kudumbasree.
2. Visit to SIRD / NIRD

References

1. N. Gregory Mankiw; (2012) Principles of Economics, Cengage Learning India Pvt. Ltd, New Delhi.
2. Datt & Sundaram; (2013) Indian economy; Chand publishers, New Delhi
3. Sanjeev Varma; (2012) The Indian economy; Unique publishers, New Delhi.
4. Meenu Jain (2012) Rural Development programmes in India; Deep & Deep Publications Pvt. Ltd.
5. V.K. Dubey; K.N. Pandey; Ransankar Pandey (2009) Development Communication Applied to Journalism & Mass Communication, Extension Education & Communication, Rural Development and Management Studies.

6. Vasant Desai (2012), A study of Rural Economics – a systems approach, Himalaya Publishing House, New Delhi.
7. Agarwal and Agarwal (2015) Indian Economy, Wiley Eastern Limited, Chennai.

Journals:

1. Kurukshetra
2. Journal of Rural Development
3. Journal of Rural and Industrial Management
4. Indian Journal of Extension Education
5. Indian Farming
6. Indian Journal of Economics and Research
7. Review of Social Sciences
8. Economics and Political Weekly

UNIVERSITY OF KERALA

MSc HOME SCIENCE- SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER I

HS 213 C PAPER III- HUMAN DEVELOPMENT AND WELFARE

(Theory) SYLLABUS

Total hrs: 110

Objectives:

This course is designed to help the students

1. To orient the students towards the integrated development of children, adolescents and aged.
2. To make them aware of the various strategies, programmes and measures adopted for their welfare.

Unit I- Integrated Development of Children (0-6 years)- Milestones of development – gross motor skills and fine motor skills, language and cognitive development; social and emotional development- identification of developmental delay.

Unit II Childhood Education- Need for early childhood education centres. Role of anganwadi in the development of children, Requisites of an ideal anganwadi (physical setup, location), Services delivered through anganwadi, Role of anganwadi worker, Records and registers to be kept in anganwadi.

Unit III- Curriculum for anganwadi children - Methods and materials for anganwadi teaching, preparation of need based curriculum for anganwadi children. Preparation, selection and use of different kinds of teaching/learning materials for the target group.

Unit IV- Development and Challenges of Adolescents – Adolescent development (physical and motor, social, emotional and cognitive development) Issues and Concerns of adolescents, academic pressure, health issues, reproductive health issues, Poly Cystic Ovary Syndrome (PCOS), Mental health issues- anxiety, depression, suicide. Eating disorders- anorexia, bulimia nervosa. Substance abuse, social issues, peer pressure, sexual abuse, anti- social behavior and addiction to cyber space.

Unit V- Social Gerontology- Nature and Scope, Concepts- ageing – old age- senior citizenship, social gerontology. Theoretical perspectives on aging, Ageing in traditional societies- ageing in modern societies –changing role and status of the elderly in India and Kerala. Quality of life of the elderly – an overlook on health issues like Dementia, Alzheimer's and Parkinson.

Unit VI: Extension in Elderly Care- Social Dimensions of elderly care, Types and Agencies of Care and the role of extension support systems for the aged. New paradigms in care-relationship-centered care- Assisted Support Living, Retirement Communities. Pathways to disablement. Contributions of the environment and society in dealing with disability.

Module VII: Welfare programmes- Review on the policies and programmes for the different groups of population- children, adolescents, aged. Rights of the children. Legislations pertaining to children, legal protection, International, National and nongovernmental organisations working with children and aged.

Field experiences

1. Visit to NISH to understand the children in difficulties / Visit to institutions for the aged and critical evaluation.
2. Case study on a child/ adolescent/ elderly with any difficulty
3. Arrange community intervention programmes for children with difficulties / adolescent clubs/ elderly care centres.

References

1. Richardson B &Barusch A. 2005. Gerontological Practice for the 21stCentury. Columbia University Press.
2. Sheets D, Bradley D & Hendricks J. 2005. Enduring Questions inGerontology. Springer.
3. Bhatla, P.C. : Lecture series in Geriatrics- National Institute of Primary Health 2000.
4. Binstock, Robert, H & Shana, Ethel : Hand Book of Ageing and the Social Science.
5. Bord, John &Coleman, Peter : Ageing in Society.
6. Choudhar, S.K : Problems of the Aged and of Old Age Homes.
7. Desai, K G &Naik, R.D: Problems of Retired People in Greater Bombay.

8. De Souza, Alfred, S&Fernandes, Walter: Ageing in South Asia – Theoretical Issues and Policy Implications.
9. Dhillon, P, K. : Psycho-social aspects of Ageing in India.
10. Dwyer, Jeffery, W. : Gender, Families and Elder Care.

Journals:

1. Journal of Social Research
2. Introduction to Gerontology
3. Indian Journal of Gerontology
4. Journal of Ageing and Health
5. Age and Ageing
6. Ageing and Society
7. Teens
8. Journal on Adolescent health

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE – SEMESTER SYSTEM

(2018 ADMISSION ON WARDS)

BRANCH XC- EXTENSION EDUCATION

SEMESTER – I

HS214C PAPER-IV RESEARCH METHODOLOGY

(Common to all Branches X-B, C, D and E)

(Theory) SYLLABUS

Total hours : 120

Objectives:

1. To have a basic knowledge about research and its methodologies.
2. To identify and define appropriate research problems.
3. To organize and conduct research in a more appropriate manner.
4. To understand various steps in writing a research report, thesis and research proposal.

UNIT I : Research Methodology

Meaning, objectives and significance of research. Types of research, research approaches and scientific methods. Research process and criteria of good research.

UNIT II : Definition and identification of a research problem

Selection of research problem, justification, limitations and delimitations of the problem, Development of hypothesis and its significance, hypothesis testing, Variables – types and characteristics.

UNIT III : Review of Literature

Functions, sources, steps in carrying out a literature review.

UNIT IV : Research Design

Meaning and needs, features of a good design; Important concepts relating to research design; Different research designs – exploratory, descriptive and diagnostic (epidemiology and clinical trials); Pilot studies.

UNIT V: Methods and tools of Data Collection –

Interview, Case study, Survey, Scaling methods, Schedules and questionnaires, Reliability and validity of measuring instruments.

UNIT VI : Sampling Design

Population and sample, Steps in Sample Design, Criteria for selecting a sampling procedure, Different types of sampling techniques – probability sampling and non-probability sampling. Merits and demerits of sampling.

UNIT VII : Organisation, Analysis and interpretation of Data

a. Organisation – editing, coding and classifying – tabulation
b. Analysis – descriptive and statistical.
c. Interpretation
d. Formulation of conclusions and generalisations.

UNIT VIII : Ethics in Research in Home Science

Research strategies in Home Science – Issues in design, conduct, analysis and interpretation – Descriptive studies (correlation, case studies, cross-sectional surveys) – Analytical studies (observational, case-control, cohort studies – prospective and retrospective) – experimental studies (clinical / intervention trials including randomized controlled trials)

UNIT IX : Scientific Writing as a Means of Communication

Principles and steps in report writing - Different forms – research articles / notes, review articles, monographs, dissertations and reports. Components of dissertation / research report / article. Importance of illustrations. Methods of presenting research findings – oral / poster. Formulation of research design / proposal.

References

8. Best J M and Kahn, J.V. Research in education, 10th edition, Prentice Hall of India, New Delhi, 2006.
9. Devadas, R.P. A Handbook on methodology of research. Sri Ramakrishna Vidyalaya, Coimbatore, 1989.

10. Gosh B.N. Scientific methods and social research.4th edition, Sterling Publishers Pvt. Ltd. New Delhi, 2012.
11. Kothari, C.R. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi, 2014.
12. Kulbir Singh, Sidhu. Methodology of Research in Education, Sterling Publishers Pvt. Ltd. New Delhi,
13. Sharma, B.A. V, Prasad, R.D. and Styanarayana, P. Research methods in Social Science, Sterling Publishers Pvt. Ltd.
14. Wilkinson, T.S. and Bhandarkar, P.L. Methodology and Techniques of Social Research, Himalaya Publishing House, Bombay.

UNIVERSITY OF KERALA

MSc. HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER 1I

HS 221 C PAPER V – LIFE LONG LEARNING FOR DEVELOPMENT

(Theory) SYLLABUS

Total Hours: 110

Objectives:

1. To develop in the students the national and international perspective of various aspects of theory and practice of lifelong education.
2. To improve their knowledge, understanding, skills and abilities related to organizing and managing an adult learning setup.
3. To equip them with the skills of involving the community in participatory planning, development and transaction of curriculum as well as training, evaluation and research processes related to adult education and development.
4. To enhance their understanding and skills of networking at local, state, national and international levels for their personal, social and professional development.

Unit I: Concept- Concept of education – formal, informal, non-formal, incidental learning – social education, functional literacy, Adult education, Continuing Education, Lifelong learning.

Unit II: Programmes for Adult Education – genesis and growth of adult education in India- National Adult Education Programme (NAEP), National Literacy Mission (NLM), Total Literacy Campaign (TLC), Jan Shikshan Sansthans. Role of adult educators.

Unit III: Motivation in adult education- Types of Motivation – techniques of motivating adult learners.

Unit IV: Curriculum for adult learning – meaning, definition and principles of curriculum. Preparation of need based curriculum and development of learning

materials for different kinds of life long learning programmes. Teaching literacy through Improved Pace and Content of Learning (IPCL).

Unit V: Teaching literacy- Principles and approaches of analytic, synthetic, electic methods, Theories and principles of adult learning –factors influencing the same.

Unit VI: Preparation of teaching materials – Teaching aids and materials, print and electronic media, computer assisted auto instructional materials. Selection, gradation, approaches to material production, presentation and evaluation, materials for self-learning.

Unit VII : Continuing Education – Importance of continuing education, identification, mobilization and organizations of resources for continuing education. Role of Continuing education centers, National Open School, distance education, vocationalisation in life long learning.

Unit VIII: Agencies promoting lifelong learning – Role of IAEA, SRC, Directorate of Adult Education. Role of Universities and colleges in lifelong learning.

Field Experiences:

1. Visit to State Resource Centre to understand the functions, administration and activities.

References :

1. Dimensions of Adult Learning; adult education and training in a global era: Griff Foley, 2004; Open University Press, London.
2. Adult Education in India (2016) B. Krishna Reddy : Crescent Publishing Corporation, Delhi.
3. National Literacy Mission Hand book on Training Methods, MHRD. Government of India, New Delhi, 2001.
4. National Literacy Mission, Continuing Education: Manual for Training of Preraks, MHRD, Government of India, New Delhi, 2001.
5. National Literacy Mission, Continuing Education: Manual for Training of Key Resource persons, MHRD, Government of India, New Delhi, 2001.
6. Adult Education: K Singh (2009) Motilal Banarsidass Publishers Private Limited, New Delhi.
7. Adult Education and extension : Bharat Jethithor (2008) Motilal Banarsidass Publishers Private Limited, New Delhi.

Journals:

1. Indian Journal of Adult Education.
2. Adult Education Quarterly – SAGE.
3. Journal of Adult and Continuing Education.

UNIVERSITY OF KERALA

MSc. HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER 1I

HS 222 C PAPER VI – SOCIAL ENTREPRENEURSHIP

(Theory) SYLLABUS

Total Hours: 110

Objectives: This course aims to:

1. Provide conceptual inputs regarding different types of entrepreneurship.
2. Sensitize and motivate the students towards entrepreneurship management.
3. Orient and impart knowledge towards identifying and implementing entrepreneurship opportunities.
4. Develop management skills for entrepreneurship management.

Unit I: Conceptual Analysis – Meaning, definition, characteristics and types of entrepreneurship, entrepreneur and enterprise. Merits and demerits of entrepreneurship. Role of enterprise in national and global economy.

Unit II: Social Entrepreneurship – Meaning, nature and significance of social entrepreneurship. Developing social entrepreneurial competencies – requirements and understanding the process, interpersonal skills, creativity, assertiveness achievement, factors affecting entrepreneur's role.

Unit III: Launching and organizing an enterprise- Environment scanning – information sources, schemes of assistance, problems. Enterprise selection, market assessment, enterprise feasibility study, SWOT Analysis. Resource mobilization – finance, technology, raw material, site and manpower. Costing, marketing management and quality control.

Unit IV: Identification – Identification of Social Entrepreneurship ventures and challenges of entrepreneurship in Home Science.

Unit V: Gender Issues in Entrepreneurship- Need for women entrepreneurship, problems, measures taken for the development of women entrepreneurship in Kerala and India.

Unit VI: Project Formulation – Project, meaning, types, project identification, generation of project idea, sources of project, screening, project formulation – steps involved.

Unit VII: Project reporting – Writing a business plan through planning, mobilization of resources and market surveys.

Unit VIII: Government policies and schemes for support in enterprise development and management. Agencies for training, infrastructure, financial help, marketing – DIC, SIDO, NSIC, TCO, SISI, STEP, STED, KITCO, CIDCO, KVIC.

Field Experience:

1. Visits to agencies involved in development of entrepreneurship.
2. Visit to one or two enterprises.
3. Interaction with one or two social / women entrepreneurs.

References:

1. Gupta. C.B. & Sreenivasan N.P, Entrepreneurship Development in India, New Delhi, sultan Chand, 2007
2. Desai. V., Dynamics of entrepreneurial development & management, Mumbai, Himalaya Publishing house, 2011.
3. Khanka. S.S., entrepreneurial development, S Chand & Co Ltd., Ram Nagar, New Delhi, 2009.
4. Jain, N.K & V Varshney. R.L, Entrepreneurship Development – RBSA Publications, Jaipur, 2009.

Journals:

1. Indian Journal of Social Entrepreneurship
2. Entrepreneurship Development and Management
3. International Journal of Gender and Entrepreneurship

UNIVERSITY OF KERALA

MSc HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER 1I

HS 223 C PAPER VII – DEVELOPMENT COMMUNICATION

(Theory) SYLLABUS

Total Hours: 110

Objectives:

1. To understand the concept of development communication in the context of social change and India's development initiative.
2. To enable the learners get an appreciation of the role of information, communication and media in development.

Unit I: Communication – Meaning and concept, elements, function, types and models of communication, barriers in communication.

Unit II: Concepts related to Development Communication - Concept of development Development Indicators, Approaches to development, Problems of development, role of mass media in development communication, Communication for social change and nation building, Development communication as feedback for policy framing.

Unit III: Adoption process - Innovation, adoption and diffusion, meaning and importance, process of diffusion of innovations, stages in adoption and diffusion processes, factors responsible for adoption, adopter categories, measurement and rate of adoption.

Unit IV: Extension teaching methods and Audio visual aids - Classification of extension teaching methods according to form and use, Procedure, advantages and limitations of each method, factors guiding the selection and use of each method. Place and role of audio visual aids in Home science and Extension communication, Classification, Cone of experience, merits and limitations of audio visual aids.

Unit V: Traditional media in India – History, regional diversity, content, form, utility in tribal and weaker sections, evaluation. Various forms of traditional media, folk songs, dance and drama in India, role and advantages of folk media over other means of communication for development.

Unit VI: Content Development for Communication methods – Print media- reporting and editing, Electronic media- principles of writing for radio and television, scripts for radio talks, documentaries and dramas.

Unit VII: Information and Communication Technology (ICT) in development – Communication technology-concept and scope, various ICT tools and their uses, role of ICT in development, web page development, research and development in ICT

Field Experiences:

1. Visits to EDUSAT, AIR, Chitranjali studio, Press, Print, Channel institutions, Doordarshan Kendra, Community Radio Station.

References:

1. Srinivas Raj, and Steves L,(2015) communication for Development, Sage Publications, USA.
2. Modi Bella (1991) Designing message for Development communication and audience participation – based approach, Sage Publications, New Delhi.
3. Ila Virginia C, Ongkiko, Alexander G Flor (2003) Introduction to Development communication, Published by University of Philippines.
4. Thomas 1 Mcphail (2009) Development communication : reframing the role of the media. Blackwell publishing Ltd.
5. Dua, M R and Gupta VS. (1994) Media and development, AMIC Singapore and HAr Anand Publications, New Delhi.
6. Dharma O P and Bhatnagar O P (1980) Education and communication for development. Oxford and IBH Publishing.
7. Melcote, S R and Vallath (1992) Communication gap in development, Rawat Publications, Jaipur.

Journals:

1. Journal of Global Communication
2. Journal of Development communication
3. Journal of mass communication and journalism.

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MSc HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER 1I

HS 224 C PAPER VIII – DEVELOPMENT COMMUNICATION – Practicals SYLLABUS

Total Hours: 110

Objectives:

To enable the learners to handle different media for community development activities

I. Preparation of radio scripts – for rural community / Preparation of a script for a television programme based on any rural issue.

II. Analysis of programmes in radio, TV and films.

III. Writing news articles.

IV. Conducting an exhibition using different aids.

V. Audience analysis – readership, viewership, listenership.

VI. Preparation of a multimedia educational kit / a documentary for a rural community development programme.

VII. Preparation of a folk art form and its application in a tribal community.

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MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)

BRANCH XC – EXTENSION EDUCATION

SEMESTER - III

HS231 C – PAPER IX – SCIENCE AND TECHNOOGY FOR RURAL DEVELOPMENT

(Theory) SYLLABUS

Total Hrs : 110

Objectives

- To understand appropriate and affordable technology for rural living.
- To study alternate sources of fuels.
- To understand waste management and recycling techniques.

Unit I - Rural technology- meaning and classification of rural technology- appropriate, affordable, frontier, intermediate technologies. Need for rural technology in empowering rural population.

Unit II - Science and Technology in Agriculture – Scientific methods of cultivation. Post harvest technology –need and importance of post harvest technology; Improved grain storage structures and methods at domestic level, farm level and at large scales.

Unit III – Waste Management – classification of waste, solid waste management with reference to India and Kerala, 5 R's in waste management – Reduce, Recycle , Reuse, Recover, and Repair. Role of voluntary agencies in solid waste management in Kerala.

Unit IV – Food Preservation – Principles and methods of food quality control during preparation and Food Standards and Food Quality control.

Unit V – Rural Housing- meaning, methods and innovations in the technologies adopted for promoting rural housing. Case studies on rural housing at Rural Technology Park, NIRDPR.

Unit VI – Biomass – meaning of biomass, biogas. Scope of biogas fuels; principles of biogas plant – Models promoting the use of biogas- 1)the floating-drum plant with a cylindrical digester (KVIC model), 2. the fixed-dome plant with a brick reinforced, moulded dome (Janata model) 3. the floating-drum plant with a hemisphere digester

(Pragati model) 4. the fixed-dome plant with a hemisphere digester (Deenbandhu model); advantages and disadvantages of biogas.

Unit VII- Renewable energy sources- Use of solar energy – Scope and advantage of the use of solar energy – Wind energy, hydropower, tidal energy, wave energy.

Unit VIII – Agencies involved in promoting Science and Technology for Rural Development – DST, Indian Renewable Energy Development Agency (IREDA) Ministry of New and Renewable Energy, Solar Energy Corporation of India (SECI), Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE, ANERT).

Field Experiences:

1. Visit to ANERT
2. Visit to Biogas plants/ Waste Recycling unit/ Solar unit
3. Visit to Food Preservation unit

References:

1. Gusain P. P. S., Cooking Energy in India, Har Anand Publication.
2. Raiky and Singh, (1990), Energy consumption in India, Deep and Deep Publications.
3. Maheswar Dayal, Renewal Energy, Environment and Development
4. Chauvan D. S. and Srivastava S. K., (2014), Non –conventional Energy Resources, New Age International
5. Hosetti B. B., (2006), Prospects and Perspectives of Solid Waste Management
6. Mital K. M., (2007), Biogas Systems: Policies, Systems, Progress and Prospects
7. Singh S. Kunda and Singh S., (1998), Agriculture Management
8. Anilkumar De and Arnab Kumar De, (2009), Environmental Studies
9. Beena Shah, (1990), Energy Education
10. Nijaguna B. T., (2009), Biogas Technology
11. Mukerjee and Chakrabartby, (2007), Fundamentals of Renewable Energy Systems
12. Jadav and Purohit, (2011), Enviornment and Management

UNIVERSITY OF KERALA

MSc HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER III

HS 232 C PAPER X– Programme Design and Evaluation

(Theory) SYLLABUS

Total Hours: 110

Objectives:

1. To understand the key concepts and skills in effective programme designing and evaluation.
2. To demonstrate the ability to develop, implement and constructively evaluate programme and evaluation plans.
3. To develop tools for monitoring and evaluation of extension programmes

Unit I: Community development and community participation – Meaning of community development, concept of community development, objectives behind community development, guiding principles of community development, area of community development.

Unit II: Programme Design in Extension – Meaning and principles of programme building process, Situation analysis, Needs and Objectives – Types of needs, methods of identifying needs, Objectives- types, levels and characteristics, steps involved in programmes building process, programme development cycle, planning models and framework, planning and developing teaching metods, precautions used in programme building.

Unit III: Participatory planning – Engaging the community and other stake holders, organisations and committees, role of officials, non-officials, groups and agencies in programme building process for extension work. Utilisation of local infrastructure, Resources for Program Planning, Meaning and Types of Resources, Identification and Appraisal of Resources, Resource Mapping.

Unit IV: Plan of work – Meaning, importance, components of a plan of work, developing a plan of work, factors to be considered in preparing the plan of work, pre

requisite for developing plan, guidelines for developing a written annual plan, criteria for judging the plan of work

Unit V: Programme Implementation- Strategies and Approaches, aspects of execution, factors responsible for the successful conduct of a programme, role of officials and non-officials in programme implementation, linkages with other agencies, problems in implementation.

Unit VI: Monitoring and Evaluation- Approaches to monitoring, tools for monitoring, principles, indicators. Evaluation – meaning, purpose, elements, steps, criteria for evaluation, types of evaluation, methods of evaluation, challenges and issues in monitoring and evaluation. Ethical issues in monitoring and evaluation

Unit VII: Documentation and follow up – Need for reporting and recording, procedure for recording- aspects to be covered. Records and registers to be maintained in programme implementing institutions, Meaning and need for follow up, methods- correspondence, spot visit, meetings.

Field Experiences:

1. Planning, implementing and evaluating of a programme for rural children/youth/women/elderly for 1 week.
2. Preparing proposals for funding from internal and external sources.

References:

1. Sharma, FL, Shri Ram, (2013) Extension Teaching Methods, Agrotech Publishing Company, Udaipur.
2. Dangi, KL and Santhosh Devi Samota, (2013) Agrotech Publishing Academy, Udaipur.
3. Mikkelsen, Britha, (2002), Methods of development work and research. New Delhi: Sage Publications.
4. Dale R, (2004) Evaluating Development programmes and projects. New Delhi: Sage Publications.
5. Reddy, A (1998) Extension education, Sree Lakshmi press, Bapatala.
6. Gopal lal Jain, (1997) Rural development, MA Angaldeep publications, Jaipur.
7. Subah Singh Yadav, Ramkumar, Rural Development and poverty alleviation, Pinter Publishers, Jaipur.

8. Misgnaw, Seraw, (2011) Extension programme planning and evaluation. LAP Lambert Academic Publishing.

Journals:

1. Social Welfare
2. Kurukshetra
3. Rural India
4. Kerala Calling
5. Indian Journal of Extension Education
6. Indian Journal of Rural Development

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MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)

BRANCH XC – EXTENSION EDUCATION

SEMESTER - III

HS233 C – PAPER XI – POPULATION STUDIES

(Theory) SYLLABUS

Total Hrs : 110

Objectives: This course is designed

To enable students to understand the population trends in India.

1. To know the problems of population explosion.
2. To understand various solutions to population problems.

Unit I- Introduction to Population Studies – Nature, scope and importance of population education, concepts and definitions, source of population data – census – Population of India as given by the latest census data, vital statistics – importance, uses and limitations. Demographic variables – fertility, mortality, migration.

Unit II – Population Problems – Population problems in general, population education as changing agent, the role of different agencies for finding out solutions.

Unit III – Population and Development Education – Meaning, nature and concept of Development Education, overcoming population problems through development education.

Unit IV – Methods of Demographic / Population Analysis – Rates, Ratios, Proportions, Percentages, Person, Months / Years, incidence, prevalence. Rates of Population Growth: Arithmetic, Geometric and Exponential Rates of Growth. Crude rates and standardized methods. Methods of population projections.

Unit V – Population Theories - Theories of Population Growth – Malthus to modern; limits to population growth. Theory of Demographic Transition. Theories related to fertility. Theories related to migration and urbanization.

Unit VI – Family life and responsible parenthood – Family life cycle, marriage and preparation for marriage, age at marriage, consequences of early marriage and delayed marriage, fertility – factors affecting fertility, small family norm. Responsible sexual behaviour and family planning, Responsible parenthood, Child care, Immunisation schedule, Physical Quality of Life Index (PQLI), Human Development Index (HDI)

Unit VII – Sustainable Development

Population Explosion and sustainable development. Implications of population growth on food supply, water, sanitation, housing, employment, health, education.

Unit VIII – Social Issues

Alcoholism, prostitution and trafficking, Violence -against women and in the community, suicide, drug abuse, sexually transmitted infections STI / HIV / AIDS.

References:

1. Fatima Siddiq and Ranganathan Sarala (2001). Handbook on women and Human Rights part 2. Kaniskka Publishers.
2. Park K. (2009) Park's Textbook of preventive and social medicine 20th edition Banarsidas Bhanot Publishers, Jabalpur.
3. Neeraja K. P. (2008) Essentials of mental health and psychiatric nursing Vol. one Jaypee Brothers, Medical Publishers.
4. Srinivasan K. (1997) India towards population and development goals Oxford University Press, Chennai.
5. Sharma R.D. (1998) Population trends in India, Millan Prakasham, New Delhi.
6. **Journals**

1. Family Planning Association of India.
2. The Journal of Family welfare.

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MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)

BRANCH XC – EXTENSION EDUCATION

SEMESTER - III

HS234 C – PAPER XII – STATISTICS AND COMPUTER APPLICATIONS

(Common to all Branches X-B, C, D and E)

(Theory) SYLLABUS

Total Hrs : 120

Objectives

- To enable the students to develop knowledge in statistical tools and computer applications.

Unit I- Introduction to Statistics

- Definition, understanding of statistical measures
- Popular concepts and misuse of statistics

Unit II – Date Management and Analysis

- Quantitative analysis, descriptive statistics, inferential statistics: Uses and limitations
- Summation sign and its properties
- Proportions, percentages, ratios

Unit III – Measures of central tendency and dispersion

- Mean, median, mode, arithmetic mean and its uses, mid – range, geometric mean, weighted mean.
- Measures of dispersion – range, variance, standard deviation, standard error, co efficient of variation.
- Grouped data-frequency distribution, histogram, frequency polygons, percentiles, quartiles, ogive.

Unit IV – Data Analysis

- Coding of data
- Parametric and non-parametric tests
- Use of statistical tools.

Unit V – Normal Distribution and its Properties

- Normal distribution – importance and properties of normal distribution
- Theory of attributes,
- Probability, use of normal probability tables
- Area under normal distribution curve

Unit VI – Large and Small Sample tests and interpretation

- Z-test for single proportions and difference between proportions
- Large sample test for single mean and difference between means
- Small sample tests- 't' test, paired 't' test, 'F' Test

Unit VII- Chi square test and its interpretation

- Chi square test and its interpretation – general features, goodness of fit
- Independence of Attributes

Unit VIII – Correlation and Regression and its interpretation

- Basic concepts, linear regression and correlation coefficient
- Regression, Rank correlation

Unit IX – Analysis of Variance and its interpretation

- One-factor analysis of variance
- Two-factor analysis of variance

Unit X – Concepts of Hypothesis

- Null and Alternative Hypothesis
- Type I and II errors.

Unit XI – Introduction to SPSS and Excel: its Applications

- Application of excel and SPSS
- Histogram, pie diagram, scatter diagram graphs – presentation using SPSS / excel.

Unit XII – Presentation using Power point

- Creating presentations.

References:

1. Gosh, B.N. Scientific methods and social research, Sterling Publishers Pvt. Ltd. New Delhi.
2. Kothari, C.R. 2014. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi.
3. Sharma, B.A.V. Prasad, R D and Satyanarayana, P. 1990. Research Methods in Social Science, Sterling Publishers Pvt. Ltd.
4. Agarwal, Y.P. 1990. Statistical Methods, Sterling Publishers Pvt. Ltd.
5. Gupta, S. 2001. Research Methodology and Statistical Techniques., Deep and Deep, New Delhi.
6. Gupta, S.P. 1996 Practical Statistics, 37th edn, S. Chand, New Delhi,.
7. Gupta, S.C. 2000 Fundamentals of Statistics, Himalaya Publishers, Mumbai.
8. Gupta, S.P. 2000. Statistical Methods, Sultan Chand & sons, New Delhi.
9. Nagar, A.L. & Das, R.K, 1997. Basic Statistics, 2nd ed., OUP, Delhi.

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MSc HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER 1V

HS 241 C PAPER XIII– WOMEN AND GENDER STUDIES

(Theory) SYLLABUS

Total Hours: 110

Objectives: This course is designed

1. To appreciate gender as a socio cultural constraint.
2. To understand the concept, need, relevance and dimensions of women's empowerment, programmes and policies to empower women.
3. To enable students to identify gender disparities, imbalances and problems of women.
4. To gain an understanding of legal and other support systems aimed at women's empowerment.
5. To develop gender concerns in students and work for creating a gender just society.

Unit I: Gender and Feminism – Gender – definition- gender roles – Feminism – Historical background of feminism – feminist theories – liberal feminism – radical feminism – Marxist feminism – socialist feminism – functions of feminist theory – feminist movement in India – pre and post Independent India. Conceptual analysis – WID, WAD and GAD.

Unit II: Women's studies and gender studies – Women's studies definition – goals – scope – from women's studies to gender studies – a paradigm shift – status of women in pre and post Independent India.

Unit III: Demography (with special emphasis to women)- Population –as per the latest census data – Indicators – health – sex ratio- Age at marriage – life expectancy- infant mortality rate, maternal mortality rate. Literacy – Male and female literacy rates. Employment – male and female work participation rates. Political participation of women – the changing scenario at the National and State levels for all indicators.

Unit IV: Gender equality and empowerment of women – Empowerment of women – meaning and definition-qualitative and quantitative indicators of empowerment – dimensions of empowerment. National policy for empowerment of women 2001 and other policies for empowerment of women in India – Role of UN in the various platforms for action to eliminate discrimination against women beginning with the International Women's Year – culmination of Convention on the Elimination of all forms of Discrimination Against Women (CEDAW), Gender mainstreaming and gender budgeting.

Unit V: Women and Poverty- Providing women with access to savings and credit mechanisms and institutions – Self Help Groups (SHG's) – definition – advantages – Kudumbasree –Harithashree – skill and capacity building through STEP – process of empowerment through them. Micro credit systems – definition- needs- characteristics – eg. RMK, Role of NABARD, Role of NGO's, Indira Mahila Yojana (IMY), Kerala Women Development Corporation. Wage Employment Programmes – Sampoorna Grameen Rozgar Yojana (SGRY), Development of Women and Children in Urban Areas (DWCUA). Using ICT (Information Technology) for poverty alleviation. Food Security Programme.

Unit VI: Gender and Law – Need for legal literacy – Indian Marriage Laws – Hindu, Christian, Muslim marriage acts, Special Marriage Act, legal provisions to safe guard women – family courts – Alimony. The National and State Commission for women – Human Rights Commission.

Unit VII: Women and Health – Factors affecting the nutritional and health status of women in India – women and work related health problems – factors influencing women's access to health services. Policies in Nutrition and Health – National Nutrition Policy – National Health Policy – National Population Policy – Health Programmes for women – Reproductive and Child Health Programme (RCH), National Rural Health Mission (NRHM), Child Survival and Safe Motherhood programme (CSSM).

Unit VIII: Gender and Education – Factors responsible for poor female literacy rates and school drop outs – girls education in ancient, medieval India and during colonial (British) administration. Girls education since independence – The National Policy on Education (NPE), Other educational programmes - The Mahila Samakhya

Programme, National Literacy Mission (NLM), The Total Literacy Campaign (TLC), Non formal education, DPEP, UGC, Sarva Shiksha Abiyan (SSA), RUSA.

Field Experiences:

1. Study of gender issues in the community.
2. Feedback on developmental programmes related to gender issues.
3. Case studies on gender issues.

References:

1. Mandakranta Bose (2000) Faces of the feminine in ancient, medieval and modern India, Oxford University Press.
2. Lourdes Rita and Jebaselvi (2015) Women empowerment, Neel Kamal Publications, Hyderabad.
3. Textbook on Women and Development, Centre for Women's Studies (2005) Avinashlingam Institute for Home science and Higher education for Women, Coimbatore.
4. Kant. Anjana (1997) Women and the law, APH Publishing Corporation, New Delhi.
5. Reshmi Agarwal and BVL N. Rao (2004) Gender Issues: A ROAD MAP to Empowerment, Shipra Publications.
6. Goel. Aruna (2004) Violence and Protective Measures for Women Development and Empowerment, Deep and Deep Publications Pvt. Ltd.
7. Tinku Paul (2009) Women Empowerment through work participation, New Century Publications, New Delhi.

Journals:

1. Indian Journal of Gender Studies
2. Gender and Society.

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MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)

BRANCH XC – EXTENSION EDUCATION

SEMESTER - IV

HS242 C – PAPER XIV COMMUNITY HEALTH, NUTRITION AND EXTENSION

(Theory) SYLLABUS

Total Hrs : 110

Objectives:

1. To understand the concept of health
2. To know the health management system
3. To understand the prevalence and extent of malnutrition in India and remedial measures
4. To know the different ways to assess the nutritional status of the community
5. To equip the students with the knowledge of planning and conducting nutrition education programmes.

Unit I- Health Care of the Community –Concept of health care, Health system – levels of health care – primary, secondary, tertiary, Health for all, Millennium Development Goals, Health Problems of India, Health care services in India, Health Care systems in India in the Public Health Sector and Private Sector, Primary health Centre, Indian Public health standards for Primary Health Centers.

Unit II – Malnutrition in India, prevalence – factors responsible for malnutrition, measure to overcome malnutrition, protein energy malnutrition – etiology, clinical features, tests, prevention.

Unit III – Assessing the food and nutritional problems of the Community – Methods available – Anthropometric, Clinical, Biophysical or radiological, Functional, Biochemical, Dietary Assessment, Vital health Statistics.

Unit IV – Deficiency diseases. Deficiency diseases their causes and prevention – vitamin deficiencies – Deficiencies of Vitamin A, B, C, D, E and K and hypervitaminosis. Mineral deficiencies – deficiencies of Iron, Iodine, Calcium, Fluorine, and Toxicity.

Enhancing the nutritive value of foods through Fermentation, combination, germination, fortification.

Unit V – Nutrition Education

Need for Nutrition education, objectives, Nutrition education methods, channels, training imparted for personnel involved. Principles of planning, executing and evaluating nutrition education programmes.

Unit VI – Role of National and International organizations concerned with Research & Combating Nutritional problems- ICAR, ICMR, NIN, Food and Nutrition Board, NNMB,CFTRI, WHO, FAO, UNICEF, IRRI.

Unit VII- Food adulteration

Definition, types of food adulterants, simple tests to detect adulterants, health hazards, food laws, Nutritional labelling – importance of labelling and food additives.

Unit VIII - Health information system

Components of Health information system – its uses, Sources of health information--- Census, Registration of vital events, Sample Registration system, Notification of diseases, Hospital records , Disease registers, Record linkage, Epidemiological surveillance, Other health service records, Environmental health data, Health manpower statistics, Population surveys, Other routine statistics related to health and Non- quantifiable information.

References:

1. Park.K. (2009); Park's Textbook of Preventive and Social Medicine, 20th edition Banarsidas Bhanot Jabalpur, India.
2. Srilakshmi B (2009); Nutrition Science Third edition, New Age International (p): Limited, New Delhi.
3. Srilakshmi B (1997); Food Science, New Age Internation (P) Limited, New Delhi, Bangalore.
4. Chadha.R & Mathur P.(2015): Nutrition A Life Cycle Approach Orient Blackswan Private Ltd.
5. Swaminathan M (2010) Essentials of Food and Nutrition, Vol.1 & 2 The Bangalore Printing and Publishing Co Ltd.
6. Srilakshmi B (2014) Dietetics 7th edition 'New Age International (p) Limited , New Delhi.

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MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)

BRANCH XC – EXTENSION EDUCATION

SEMESTER - IV

HS 243 C – PAPER XV - COMMUNITY HEALTH, NUTRITION AND EXTENSION PRACTICALS

SYLLABUS

Total Hrs : 120

Objectives:

1. To gain understanding in organizing nutrition education programmes for the community.
2. To understand feeding practices in the community.
3. To understand diet planning for the vulnerable groups.

1. Visit to rural and urban communities to study the food and nutrition patterns.
2. Analysis of Anthropometric measurements of children.
3. One week weighment survey and report.
4. Field visits to observe feeding practices in
    a. Pediatric wards / Orphanage
    b. Welfare Centers
    c. Midday meal programmes
    d. Homes for aged
    e. Report on visit to a PHC (Primary Health Centre) / Hospital to understand Health Management and Information Systems.
5. Imparting Nutrition education through the conduct of an Exhibition in a village / community/ school/ college.
6. Planning and preparation of low cost diets with teaching aids.
    a. Diet for a kwashiorkor child.
    b. Diet for a preschool child suffering from Vitamin A deficiency.
    c. Diet for a pregnant anemic mother.
    d. Diet for an underweight labourer man.
    e. Diet for a lactating mother with deficiencies in calcium and vitamin C.
    f. Diet for an old man suffering from dentition problems and deficient in thiamine.

g. Diet for an adolescent girl with deficiency in iron and vitamin C.

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MSc HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER IV

HS 244 C - PAPER XVI – TRENDS AND ISSUES IN HOME SCIENCE EXTENSION INTERNSHIP

SYLLABUS

Total Hours: 110

Objectives of the Internship are to enable the students

1. Integrate classroom theories and concepts with micro, mezzo and macro extension and community work practice in a variety of community settings that address the effects of poverty, discrimination and oppression; influence changes at the individual, family and group level; and bring about organizational and societal change.
2. Enhance skills across the spectrum of culturally appropriate community work services, including direct practice skills such as engagement, assessment, goal-setting, intervention, evaluation and termination; mezzo practice skills such as case management, resource/referral, family work and support system engagement; and macro practice skills such as community organizing, fund development and grant writing, policy analysis and program development, implementation and evaluation.
3. Develop professional use of self through observation of professional extension and community workers, self-reflection, understanding of community work values and implementation of those values in internship placements.

The Core Competencies that are expected to develop through the internship are: -

Professional Identity, Ethical Practice, Critical Thinking and Diversity in Practice Human Rights & Justice Research Based Practice Human Behavior, Policy Practice Contexts Engage, Assess, Intervene, Evaluate.

Unit I: Identification of individual core areas relevant to extension work.

Unit II: Preparation of proposal- proposal development.

Unit III: Execution of the proposed work- identification of the organization for internship – internship process.

Unit IV: Documentation and Reporting.

Internship in any one of the following (For a period of one month)

1. Community Development Centres
2. Old age Homes
3. Anganwadis
4. Welfare centers for women and children/ Sakhi
5. NGO's
6. Extension Training Centres
7. Kudumbasree

There will be both internal and external evaluation for the report; at the end of the fourth Semester, along with the practical examination of Community Health, Nutrition and Extension.

M.Sc. HOME SCIENCE

BRANCH X-D

FOOD AND NUTRITION

SEMESTER SYSTEM

2018 ONWARDS

COURSE STRUCTURE & MARK DISTRIBUTION

M.Sc. HOME SCIENCE

Branch XD Annexure Food and Nutrition- Course & Mark distribution

Semester	Paper Code	Title of the paper	Distribution of hour / semester	Instructional hrs/week		ESE duration	Maximum Marks		
				L	P		CA	ESA	Total
1	HS 211D	Human Physiology	110	6	-	3	25	75	100
	HS212D	Medical Nutrition Therapy	110	6	-	3	25	75	100
	HS213D	Food Microbiology and Sanitation	110	6	-	3	25	75	100
	HS214B/ C/D/E	Research Methodology	120	7	-	3	25	75	100
		Total	**450**	**25**	**-**	**-**	**100**	**300**	**400**
2	HS221D	Applied Food Science	110	6			25	75	100
	HS222D	Nutrition Through Life Cycle	110	6	-	3	25	75	100
	HS223D	Advanced Food Technology and Engineering	110	6	-	3	25	75	100
	HS224D	Applied Food Science – Practical	120	-	7	3	25	75	100
		Total	**450**	**18**	**7**	**-**	**100**	**300**	**400**
3	HS231D	Food Safety and Quality Assurance	110	6	-	3	25	75	100
	HS232D	Public Health Nutrition	110	6	-	3	25	75	100
	HS233D	Nutrition for Sports, Space Travel and During Disasters	110	6	-	3	25	75	100
	HS234B/ C/D/E	Statistics and Computer Applications	120	7	-	3	25	75	100
		Total	**450**	**25**	-	-	**100**	**300**	**400**
4	HS241D	Biochemistry	110	6	-	3	25	75	100
	HS242D	Advanced Human Nutrition	110	6		3	25	75	100
	HS 243D	Biochemistry Practical	110		6	3	25	75	100
	HS 244D	Advanced Human Nutrition Practical	120	-	7	3	25	75	100
		Total	**450**	**12**	**13**	-	**100**	**300**	**400**
	HS245D	Dissertation	**-**	**-**	**-**	**-**	**-**	**100**	**100**
	HS246D	Comprehensive Viva	**-**	**-**	**-**	**-**		**100**	**100**
		Tutorial work	**5hrs/week**	**-**	**-**	**-**	**-**	**-**	**-**
		Grand Total		**80**	**20**	-	**400**	**1400**	**1800**

L-Lecture, P-Practical, ESE-End semester examination, CA-Continuous assessment ESA-End semester assessment.

UNIVERSITY OF KERALA

MSc –HOME SCIENCE-Semester System

(2018 ADMISSION ONWARDS)

Branch XD FOOD AND NUTRITION

Semester –I

1.1 Human Physiology

1.2 Medical Nutrition Therapy

1.3 Food Microbiology and Sanitation

1.4 Research Methodology

Semester –II

2.1 Applied Food Science

2.2 Nutrition Through Life Cycle

2.3 Advanced Food Technology and Engineering

2.4 Applied Food Science – Practical

Semester –III

3.1 Food Safety and Quality Assurance

3.2 Public Health Nutrition

3.3 Nutrition for Sports, Space Travel and During Disasters

3.4 Statistics and Computer Applications

Semester –IV

4.1 Biochemistry

4.2 Advanced Human Nutrition

4.3 Biochemistry Practical

4.4 Advanced Human Nutrition Practical

4.5. Dissertation

4.6. Viva Voce

Branch X D Food and Nutrition

Semester	C.A*	ESA**	Total
SemesterI	**100**	**300**	**400**
SemesterII	**100**	**300**	**400**
SemesterIII	**100**	**300**	**400**
SemesterIV	**100**	**300**	**400**
Dessertation			**100**
Comprehensive Viva Voce			**100**
Grand Total			**1800**

- *C A Continuous Assessment
- **ESA End semester assessment

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE - SEMESTER SYSTEM

(2018 Admission)

Semester I

BRANCH X D- FOOD AND NUTRITION

HS 211 D PAPER I - HUMAN PHYSIOLOGY

(Common to Branches X D & X E)

Theory (SYLLABUS)

Total hrs: 110

Objectives: To enable the students to

1. Gain knowledge about Human Physiology
2. Understand the metabolic changes in different health and disease conditions

UNIT I - Blood

Composition & Functions of the blood, Cellular Content of Blood- their properties and functions, Blood Groups, Blood transfusion, Bleeding disorders, lymph, Tissue fluids, Reticuloendothelial system, Blood volume, coagulation.

UNIT II - Circulatory System

Structure of heart, Physiology and properties of cardiac muscle, Cardiac cycle, Cardiac output, Heart rate, Heart sound and ECG

UNIT III - Digestive System

Physiology of digestive system-Structure, function, secretion; movement of gastrointestinal tract, Digestion of protein, carbohydrate and fat

UNIT IV - Respiratory System

Structure of Respiratory organ, Mechanism of respiration, Exchange and transport of gases, Respiratory volume, Respiratory adjustments in health and diseases, spirometry.

UNIT V - Excretory System

Physiology of the kidney, urine formation, Micturition-normal and abnormal constituents of urine, elementary principles of dialysis, maintenance of homeostasis.

UNIT VI - Endocrine System

Endocrinology-Hormones- pituitary, thyroid, parathyroid, adrenal, sex hormones, pancreas; Effects of Hypo and Hyper functions of the glands.

UNIT VII - Nervous System

Neurons, Synapse and neurotransmitters, Central and Peripheral nervous system,

Autonomic nervous system; Brain: Parts and functions; Spinal cord, Cerebrospinal Fluid, Reflex action. The physiology of sleep, Circadian rhythm.

UNIT - Sense Organs

Eye: Anatomy of Eye & Physiology of Vision, Ear: Structure of Ear & Physiology of Hearing, Nose: Sense of Smell, Tongue: Sense of Taste, Skin: Structure & Functions of skin.

UNIT IX - Skeletal & Muscular System

Bone: Types, Functions Structure and Development of bone; Vertebral Column, Thoracic System Cage; Joints: Types of joints, Main synovial joints of the limbs, Classification & function of muscles, Anatomy and Physiology of skeletal muscle.

UNIT X - Reproductive System

The female reproductive organs-menstrual cycle, The male reproductive system organs - The process of reproduction

UNIT XI - Immunology

Natural immune system, cell mediated and humoral immunity, components of immune mechanism (cellular and chemical).Role of inflammation/defence (acute and chronic), Immunoglobulins and production of antibodies. Disorders –Immune deficiency, Hypersensitivity.

RELATED EXPERIENCE

1. RBC/WBC Count, Total count Determination of plasma proteins
2. Determination of Blood pressure
3. Qualitative test of urine for normal and pathological conditions

SUGGESTED REFERENCES

BOOKS

1. Elaine N. Marieb, Katja N. Hoehn; Human Anatomy & Physiology, Global Edition, Pearson Education Ltd,2016
2. Thomson, R.H.S. and King, E.O. Biochemical Disorders of Human Diseases A.P., New York.
3. Anne Waugh & Allison Grant, Ross and Wilson Anatomy and Physiology in Health and Illness, 12th Edition, Elsevier, New York, 2014
4. Stuart Fox, Human Physiology, 13th edition, McGraw-Hill Education publishers, 2012.
5. Bruce M. Koeppen, Bruce A. Stanton, Berne & Levy Physiology, 6th Edition, Elsevier, 2010
6. John E. Hall, Guyton & Hall Textbook of Medical Physiology, 13th edition, Elsevier, New York, 2016
7. Chatterjee, C.C; Human Physiology, 11th Edition, CBS Publishers and Distributors Pvt Ltd,

JOURNALS

1. Israel Journal of Medical Sciences, Israel Medical Association, National Council for Research and Development.
2. The Journal of Laboratory and Clinical Medicine, C.V. Mosby Company.
3. The Indian Journal of Medical Research, ICMR. New Delhi.

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE - SEMESTER SYSTEM

(2018 Admission)

BRANCH X D- FOOD AND NUTRITION

Semester I

HS 212 D PAPER II MEDICAL NUTRITION THERAPY

(Common to Branches X D & X E)

(Theory) SYLLABUS

Total hours: 110

Objectives: To enable the students to

1. Understand the role of nutrition for good health.
2. Obtain knowledge of different Therapeutic diets and their preparation.
3. Develop capacity and attitudes for taking up dietetics as a profession

UNIT I - Introduction to Dietetics

Meaning and scope of dietetics Role of dietician in hospital and community, Registered Dietitian, Indian Dietetic Association, Nutrition Society of India

UNIT II - Hospital Diet

The Hospital Diet- Clear fluids. Liquid diet, Soft diet, Balanced normal diet, Feeding methods, Enteral nutrition, Calculation of diet using the Ready Reckoner 1200 cal, 1500cal, 1800 cal, 2000cal. Commercial supplement available in the market, Assessment of patient's needs, SGA, diet counselling using foods models, standardized vessels, food samples; education of the patient and follow up. Common biochemical tests affecting nutritional needs–lipid profile, AC/PC (fasting & post-prandial sugars), Liver Function tests, Homocysteine, Kidney function tests.

UNIT III - Febrile and Surgical Conditions

Fevers of short duration, chronic fevers and infections, Dengue, Chikungunya, Severe Acute Respiratory Syndrome (SARS) pre-operative and post-operative nutrition, tube feeding and parenteral feeding.

UNIT IV - Disease of the Gastrointestinal

Peptic ulcer, Disorders of the gastro intestinal Tract- Diarrhoea, Constipation, Cohn's Disease, Lactose intolerance, Ulcerative colitis, Diverticulitis, Tropical sprue, Irritable Bowel Syndrome, Diseases of the liver, gall bladder

UNIT V - Metabolic disorders

Diabetes Mellitus- Type 1, Type 2, Gestational diabetes, Food exchange lists, My Plate Planner, Insulin carb counting, glycaemic index, Hypo and Hyperthyroidism, Gout.

UNIT VI - Obesity and Underweight.

Causes, Prevention, Dietary modifications, Conservative management-low calorie diets, surgical procedures- Gastrectomy, Post Bariatric surgery diet, popular diets in the modern society: Atkins diet, Paleo diet.

UNIT VII - Cardiovascular Diseases

Atherosclerosis, Myocardial Infarction, Heart Failure, Blood Pressure & Hypertension, causes, prevention and dietary modification.

UNIT VIII - Disease of the Kidney

Nephritis- acute and chronic. Glomerulonephritis, Nephrosclerosis, and Kidney stones, Uraemia, proteinuria, haematuria and haemoglobinuria, azotaemia, End stage renal disease, Dialysis

UNIT IX - Diet in Genetic diseases

Galactosemia, Phenylketonuria and Glycogen storage disease

UNIT X - Cancers

Types of cancers and diet related carcinogens, Anti-cancer agents in foods, cancer cachexia,feeding the cancer patients, nutrient needs, Neutropenic diet

UNIT XI - Diet for Allergy

Allergy and its manifestations, diet

UNIT XII - HIV/AIDS

Dietetic management of HIV/AIDS

RELATED EXPERIENCE

1. Visit to Dietetics Kitchen.
2. Market survey of commercial nutritional supplements
3. Plan diets for various disease conditions using the Ready Reckoner
4. To conduct mock diet clinics and provide nutritional counselling
5. To design research study in clinical settings

JOURNALS

1. Journal of American Dietetic Association. The American Dietetic Association Mount Marries, Illinois, USA.
2. The American Journal of Clinical Nutrition USA
3. The Indian Journal of Medical Research. The Indian Council of Medical Research, New Delhi.
4. British Medical Journal UK
5. The American Journal of Clinical Nutrition, Published by the American Society for Clinical Nutrition, USA
6. Nutrition Abstracts and Reviews, CNB International, UK.
7. The Indian Journal of Nutrition and Dietetics, Sri Avinashilingam Home Science College for Women, Coimbatore. India
8. Clinical Nutrition, Bell and Bain Ltd, Scotland. UK
9. Food and Nutrition Bulletin, United Nations University, Press, Japan.
10. Indian Journal of Endocrinology and Metabolism, India
11. Nutrition Reviews, Nutrition Foundation, Washington. USA

TEXTBOOKS

1. Antia F.P. Clinical Dietetics and Nutrition, Oxford University Press, Mumbai, 1989
2. Corinee et.al. "Nutrition and Diet Therapy Principle and Practice" 2nd Edition, West Publishing Company, St. Paul 1989
3. Clare M Lewis, Nutrition and Nutritional therapy in Nursing, Appleton-Century Crofts, Connecticut, 1986

4. Davidson, S. Passmore, R. Brook, J.F. and Trustwell, Human Nutrition and Dietetics, 9th edition, F. and S Livingstone Ltd., Edinburgh and London 1993

5. B. Srilakshmi, Dietetics, New Age International Private Ltd, New Delhi, 1995

6. Nihal Thomas, K.J. (2012). A Practical Guide to Diabetes Mellitus (New Delhi: Jaypee).

7. Robinson C.H. , Lawler, M.R., Chenoweth, W.L., Garwich, A.E. Normal and Therapeutic Nutrition 7th Edition, Macmillan Publishing Co. New York 1994.

8. Krause M.V. Hunscher, M.A. Food, Nutrition and Diet Therapy, W.S. Saunders Co. Philadelphia, London, 1980

9. Maurice E Shills, James A Oslen, Moshe Shike, Modern Nutrition on Health and Disease" Vol I & II, VIII edition, Lea and Pebiger, Philadelphia 1984

10. World Cancer Research Fund and American Institute for Cancer Research; "Food, Nutrition and Prevention of Cancer. A Global Perspective, "American Institute for Cancer Research, Washington, 1997.

UNIVERSITY OF KERALA
MSc HOME SCIENCE — SEMESTER SYSTEM
(2018 Admission)
BRANCH XD — FOOD AND NUTRITION
SEMESTER I
HS 213D-PAPER III - FOOD MICROBIOLOGY AND SANITATION
(Theory) SYLLABUS

Total: 110 hours

OBJECTIVES:

To Enable Students to

1. Understand the common organisms associated with food borne illnesses.
2. Gain knowledge on the necessity for cleanliness in preparation and service of foods.

Unit I - Fundamentals Of Microbiology

Development of microbiology, Bacteria, Introduction Morphology, reproduction, physiology. Growth curve and. biochemical changes in bacteria, Sterilization: Physical agents — light desiccation electricity and heat. Chemical agents, removal of microorganism and filtration.

Yeasts - Morphology, Methods of multiplication process of Hybridization physiology classification and importance of yeasts. Moulds - Morphology, multiplication, physiology and nutrition. Significance of moulds and common house hold moulds. Viruses - discovery, bacteriophages, morphology, reproduction, human viral diseases, identification and control and viruses in relation of food science.:

Unit II - Development of microbiology

Microorganisms in Food –Bacteria, Moulds, Role and Significance of Microorganisms in Foods. Parameters Affecting Microbial Growth: Intrinsic, Extrinsic factors, hurdle concept. Food born infections and intoxication.

UNIT III - Microbiology of Foods

Kinds of microorganisms in milk. Sources of contamination, pathogens in milk, control of microorganisms, quality and methods of study, Microbiology of dairy

products — Fermented milk, butter and cheese. Fruits and Vegetables, External contamination, preservation and spoilage of fruits, contamination and control of microorganisms in vegetables. Cereals and cereal products: Organism associated with grains, spoilage, classification and control of moulds in bread.

Flesh foods spoilage of flesh foods, bacteria found in meat, microbiology of poultry, fish and meat products. Effect of salt on microorganisms, role of sugars in foods and role of spices in food preservation.

Unit IV - Applications of Food Microbiology

Microorganisms in Intestine- Beneficial role of Bacteria-Concept of Prebiotics and probiotics

Unit V - Quality Control In Food Microbiology

Food Preservation & Principles of Quality Control: Chemicals, antibiotics, Radiation, Low and high temperature, High-Pressure Processing, Pulsed Electric Fields. Aseptic Packaging, Nanothermosonication, Microbiological quality standards of food, FDA, Hazard Analysis Critical Control Point (HACCP).

Unit VI - Microbiology in Food plant

Sanitation, sanitation procedures, chemicals, disinfectants, Good Manufacturing Practices and health of employees Microbiological criteria of foods, Enforcement and control agencies.

RELATED EXPERIENCES

Visit to microbiology labs in Government and Private sectors

Microbial Examination of different microorganisms in food samples

REFERENCES

1. Jay MJ (1986) Modern Food Microbiology, 3rd edition, Van Nostrand Reinhold, New York.
2. Banwart JG (1987) Bsic Food Microbiology, 1st edition, CBS publishers and Distributors.
3. Frazier WC and Westoff DC (1988) Food Microbiology, 3rd edition, Tata McGraw Hill Publishing Company

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE – SEMESTER SYSTEM

(2018 ADMISSION ON WARDS)

BRANCH XD- FOOD AND NUTRITION

SEMESTER – I

HS214D PAPER-IV RESEARCH METHODOLOGY

(Common to all Branches X-B, C, D and E)

(Theory) SYLLABUS

Total hours : 120

Objectives:

1. To have a basic knowledge about research and its methodologies.
2. To identify and define appropriate research problems.
3. To organize and conduct research in a more appropriate manner.
4. To understand various steps in writing a research report, thesis and research proposal.

UNIT I : Research Methodology

Meaning, objectives and significance of research. Types of research, research approaches and scientific methods. Research process and criteria of good research.

UNIT II : Definition and identification of a research problem

Selection of research problem, justification, limitations and delimitations of the problem, Development of hypothesis and its significance, hypothesis testing, Variables – types and characteristics.

UNIT III : Review of Literature

Functions, sources, steps in carrying out a literature review.

UNIT IV : Research Design

Meaning and needs, features of a good design; Important concepts relating to research design; Different research designs – exploratory, descriptive and diagnostic (epidemiology and clinical trials); Pilot studies.

UNIT V: Methods and tools of Data Collection –

Interview, Case study, Survey, Scaling methods, Schedules and questionnaires, Reliability and validity of measuring instruments.

UNIT VI : Sampling Design

Population and sample, Steps in Sample Design, Criteria for selecting a sampling procedure, Different types of sampling techniques – probability sampling and non-probability sampling. Merits and demerits of sampling.

UNIT VII : Organisation, Analysis and interpretation of Data

a. Organisation – editing, coding and classifying – tabulation
b. Analysis – descriptive and statistical.
c. Interpretation
d. Formulation of conclusions and generalisations.

UNIT VIII : Ethics in Research in Home Science

Research strategies in Home Science – Issues in design, conduct, analysis and interpretation – Descriptive studies (correlation, case studies, cross-sectional surveys) – Analytical studies (observational, case-control, cohort studies – prospective and retrospective) – experimental studies (clinical / intervention trials including randomized controlled trials)

UNIT IX : Scientific Writing as a Means of Communication

Principles and steps in report writing - Different forms – research articles / notes, review articles, monographs, dissertations and reports. Components of dissertation / research report / article. Importance of illustrations. Methods of presenting research findings – oral / poster. Formulation of research design / proposal.

References

1. Best J M and Kahn, J.V. Research in education, 10th edition, Prentice Hall of India, New Delhi, 2006.
2. Devadas, R.P. A Handbook on methodology of research. Sri Ramakrishna Vidyalaya, Coimbatore, 1989.
3. Gosh B.N. Scientific methods and social research.4th edition, Sterling Publishers Pvt. Ltd. New Delhi, 2012.

4. Kothari, C.R. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi, 2014.
5. Kulbir Singh, Sidhu. Methodology of Research in Education, Sterling Publishers Pvt. Ltd. New Delhi,
6. Sharma, B.A. V, Prasad, R.D. and Styanarayana, P. Research methods in Social Science, Sterling Publishers Pvt. Ltd.
7. Wilkinson, T.S. and Bhandarkar, P.L. Methodology and Techniques of Social Research, Himalaya Publishing House, Bombay.

UNIVERSITY OF KERALA
MSc HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D - FOODS AND NUTRITION
Semester II
HS 221D - PAPER V - APPLIED FOOD SCIENCE
(Common to Branches X D & X E)
(Theory) SYLLABUS

Total hrs: 110

Objectives:

To enable the students to

1. Gain knowledge on sources and properties of food.
2. Develop skills to judge the quality of cooked foods.
3. Apply the principles while preparing and cooking foods.

UNIT I - Physiochemical Changes

Introduction to food science, Different methods of cooking, Physical and physiochemical changes in foods in relation to cookery, Gel formation, denaturation of Proteins properties of colloids, emulsions stabilizers, browning reactions, Enzymatic and non- enzymatic changes in cooking.

UNIT II - Carbohydrates

Sugar Cookery — sources, uses and properties, Carbohydrates Crystallization of sugar, stages of sugar Cookery. Starch Cookery: Sources and use of starch. Factors affecting, Gelatinization, syneresis and Retrogradation, types of Flours, baking qualities. Bread making –role of ingredients, portion of ingredients, leavening agents.

UNIT III - Proteins

Meat- Structure, cuts of meat and post mortem changes -methods of cooking Fish- Kinds of fish, constituents, selection and cooking. Eggs- structure, composition and selection, coagulation. Milk and milk products, constituents, processing-clarification, homogenization, pasteurization. cheese making –basic steps, Pulses and legumes processing- germination, fermentation.

UNIT IV - Fats and Oils

Sources and extraction of edible fats and oils-characteristics of fats, physical, chemical properties. Changes in fat during storage and cooking - uses of fat-shortening , emulsifying and creaming agent

UNIT V - Fruits and Vegetables.

Structure, pigments and acids in Vegetables and fruits, Role of pectin substances. Effect of acids, alkalis and heat on pigments.

UNIT VI - Food Preservation

Needs, benefits, principles and methods of food Preservation, Use of irradiation and microwave for Preservation.

UNIT VII - Product Development and evaluation

Sensory evaluation of food. Factors to be considered in food testing. Types of sensory tests. Sensory panel. Planning, standardization and testing of a new food product.

UNITVIII - Food additives and adulteration

Definition, Types of Food Additives, Food Adulteration.

UNIT IX - Convenience foods

Fast foods, ready to eat foods - merits, demerits.

TEXTBOOKS

1. Food Science: Fifth Edition (Food Science Text Series) 5th Edition.by Norman N. Potter and Joseph H. Hotchkiss
2. Introduction to Food Engineering, Fifth Edition (Food Science and Technology)

   Aug 16, 2013. R Paul Singh and Dennis R. Heldman
3. Essentials of Food Science (Food Science Text Series) 4th ed. 2014 Edition. Vickie A. Vaclavik and Elizabeth W. Christian
4. Lawrie's Meat Science, Eighth Edition; Woodhead Publishing Series in Food Science, Technology and Nutrition; Fidel Toldra**.**
5. Flavor, Satiety and Food Intake Beverly Tepper and Martin Yeomans. ISBN: 978-1-119-04489-5

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester II
HS222D PAPER VI - NUTRITION THROUGH LIFE CYCLE
(Theory) SYLLABUS

Total Hrs 110

Objectives: To enable the students to

1. Understand the role of nutrition in different stages of life cycle.
2. Gain knowledge about the nutritional problems, its implications and appropriate diet during different life cycles.

Unit I Food Groups and Recommended Daily Allowance

Different food groups and planning diets using the Ready Reckoner to meet the requirement of different socio economic levels, Recommended Daily allowances for Indians- Basis for requirement, computation Comparison of India's Recommended allowances with that of U.K,

USA, and FAO/ WHO standards

Unit.II Nutrition in Pregnancy

Nutritional requirements in pregnancy, weight gain during pregnancy. Physiological cost of pregnancy, Nutritional complications of pregnancy. Effects of alcohol and smoking on foetal growth, RDA, balanced diet for pregnant woman using the Ready Reckoner.

Unit III - Nutrition in lactation

Nutritional needs in lactation, Physiological changes during lactation, common problems related to breast feeding, RDA, balanced diet for a lactating mother using the Ready Reckoner.

Unit III - Nutrition in infancy

Nutritional requirements of infants, assessment of Infant growth, growth charts- Indian, WHO,' breast feeding, breast feeding versus formula feeding, weaning foods, food square, feeding the premature infant. Baby friendly hospitals, significance of the first 1000 days of life, RDA for Indian infants

Unit IV - Nutrition in Preschool age

Nutritional requirements in Preschool age, assessment of nutritional status of pre-schoolers, Growth and development of preschool children, common nutritional problems in pre-schoolers- macronutrient and micronutrient deficiencies, Severe acute malnutrition, Kwashiorkor, RDA, balanced diet for pre-schoolers using the Ready Reckoner.

Unit V- Nutrition during school age

Nutritional requirements, assessment of nutritional status, Physical development during school age, common nutritional deficiencies in children, Breakfast and scholastic performance, RDA, balanced diet for school going child using the Ready Reckoner.

Unit VI - Nutrition during adolescence

Nutritional requirements, assessment of nutritional status, Puberty and growth related changes, Common nutritional problems of adolescence-obesity/overweight/skipping meals, eating disorders, RDA, balanced diet for an adolescent using the Ready Reckoner.

Unit VII - Nutrition for the adults

Nutritional requirements for the adults, assessment of nutritional status, body composition of male and female, Non communicable diseases (NCDs) in adults, RDA for adults involved in all levels of physical activity, balanced diet for the adult using the Ready Reckoner.

Unit VIII - Nutrition for the aged

Nutritional requirements, assessment of the aged, Factors affecting food intake,

nutritional problems seen in the aged, RDA, balanced diet for aged using the Ready Reckoner.

Related Experience

Assessment of nutritional status of children/adults/aged in their environment

Plan balanced diets for different individuals using the Ready Reckoner.

JOURNALS

1. Reports of the State of World's Children, Who and UNICEF, Oxford University.
2. Reports of National Family Health Survey, International Institute for Population Science, Mumbai.
3. World Development Reports, Investing in Health, World Development Indication.
4. Indian Journal of Medical Research, ICMR, New Delhi,
5. Indian Journal of Paediatrics,
6. Indian Journal of Nutrition and Dietetics, Avinashlingam Deemed University, Coimbatore.

TEXTBOOKS

1. Robinson C.H. , Lawler, M.R., Chenoweth, W.L., Garwich, A.E. Normal and Therapeutic Nutrition 7th Edition, Macmillan Publishing Co. New York 1994.
2. . Davidson,S. Passmore,R. Brook, J.F. and Truswell, Human Nutrition and Dietetics, 9th edition, F. and S Livingstone Ltd., Edinburgh and London 1993
3. Jelliffe, B.E. Assessment of the Nutritional status of the community, WHO, Geneva, 2nd edition 1989.
4. Shanti Gosh, The feeding and care of infants and young children, voluntary health association of India,, New Delhi 6th edition 1992.
5. Rao, D.H and Vijayaraghavan, K (1996), Anthropometric assessment of nutritional status in "Text Book of Human Nutrition", New Delhi; (eds. Bamji, M.S, Rao, N.P and Reddy, V.); Oxford and IBH Publishing Co. Pvt. Ltd., P 515.
6. Srilakshmi, B (2008), "Dietetics", New Delhi; New Age International (P) Ltd. Publishers, Pp 319-325.
7. Thimmayamma, B.V.S and Rao, P (1996), Dietary assessment as part of nutritional status in "Textbook of Human Nutrition", New Delhi; (eds.

Bamji, M.S, Rao, N.P and Reddy, V.); Oxford and IBH Publishing Co. Pvt. Ltd., P 135.

8. Indian Council of Medical Research (2010), “Nutrient requirements and Recommended Dietary Allowances for Indians”, Hyderabad; National Institute of Nutrition, Pp 7-230.
9. Mahan, L.K and Stump, S.E (2004), “Krause’s Food Nutrition and Diet therapy”, Philadelphia; WB Saunders Co., Pp 534-555.
10. Emma, M.L (2008), “Handbook of Nutrition and Food”, London; CRC Press, Taylor and Francis group, Pp 373-388.
11. FAO/WHO/UNU (1985),"Energy and Protein Requirements", Geneva; World Health Organisation.
12. Gopalan, C; Sastri, B.V.R and Balasubramanian, S.C (1989), “Nutritive Value of Indian Foods”, Hyderabad; National Institute of Nutrition, ICMR, Pp 45-95.

WEBLIOGRAPHY

1. http://www.eeb.cornell.edu/biogeo/nanc/Food_Feed/table%201%20gopalan%20et%20al%201989.pdf _Nutritive Value of Indian foods

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE - SEMESTER SYSTEM

(2018 Admission)

BRANCH X D- FOOD AND NUTRITION

Semester II

HS223D PAPER VII - ADVANCED FOOD TECHNOLOGY & ENGINEERING

(Theory) SYLLABUS

Total hrs 110

Objectives: To enable the students to

1. Understand the role of technology in food processing.
2. To learn principles of principles of food processing methods.

UNIT I - Introduction to Food Technology

Concept of Food Technology, Classification of food – Organic food, fabricated foods, ethnic food, Physico-chemical properties of food – Boiling point, melting point, smoking point, freezing point.

UNIT II - Food Grain and Oil Technology

Processing Technology of cereals -Avorio process, Conversion process, Malek process. Breakfast cereals – Processing- Batch cooking, continuous cooking, extrusion cooking. Processing technology of pulses - traditional and modern methods of milling. Processing technology of oil seeds – Oil expulsion and extraction, Textured protein products.

UNIT III- Diary Technology

Special milk products – Homogenized, Reconstituted, Recombined and Toned milk.

UNIT III - Meat, Fish and Poultry Technology

Grading, meat quality. Application of freezing system in meat and fish processing. Egg-Quality parameters, Product - Egg powder.

UNIT IV - Beverage technology

Processing technology of alcoholic beverages – Wine making and Types- white, red and sparkling wine, Carbonated soft drinks – Ingredients and preservatives used in carbonation, Tea and coffee – General processing technique. Types – Green and Oolong Tea, Expresso and Instant Coffee.

UNIT V -Application of Bio-Technology in Food and Nutrition

Impact and significance of biotechnology on the nutritional quality of foods. Genetic Engineering in foods.

UNIT VI - Advances in Food Technology

Nutrigenomics, Nutraceuticals, Xenobiotics, Nano Technology in Foods, Single cell protein, Novel proteins.

UNIT VII- Food Engineering

Principles of food engineering, Mechanical Operations – mixing, filtration, clarification, and dehydration system, Mechanical separation, Food freezing – Individual Quick Freezing (IQF), Fluidized bed freezer, Cryogenic freezing.

UNIT VIII- Post-harvest technology

Need for post- harvest technology, Food loss in the Post- harvest period- Types and reasons for losses of food, extent of losses, Agents causing food loss- Control of spoilage agents.

UNIT IX- Storage of grains

Role of Food Corporation of India FCI, Central Warehousing Corporation CWC, State Warehousing Corporation SWC, Indian Grain Storage Institute IGSI, Save Grain Campaign SGC in controlling food losses.

UNIT X- Packaging Technology

Concepts, classification, packaging materials, Selection of packaging materials for specific food materials.

RELATED EXPERIENCE

Visit to Food Processing Plant.

BOOK REFERNCE

1. Fellows, P.J. 2000. Food processing Technology: Principles and Practice, Second Edition, CRC Woodhead Publishing Ltd., C
2. Von Loesecke, H.W. 1998. Food Technology Series: Drying and dehydration of foods, Allied Scientific Publishers, Cambridge.
3. Horseny R.C. 1986. Principles of Cereal Science and Technology. American Association of Cereal Chemicals, St. Paul MN.
4. Sahu, J.K Introduction to Advanced Food Process Engineering. 2014. CRC Press Reference 717 Pages - 91 B/W Illustrations. ISBN 9781439880715 - CAT# K13794.
5. Zeki Berk. 2015. Food Process Engineering and Technology (Second Edition) A volume in Food Science and Technology. ISBN: 978-0-12-415923-5.

WEB REFERENCES

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2. www.sciencedirect.com/science/book/9780124159235
3. onlinelibrary.wiley.com/doi/10.1002/9781118406281.fmatter/pdf
4. https://www.elsevier.com
5. https://www.researchgate.net/publication/304571979_Latest_Food_Technology.

JOURNALS:

1. Food Technology, Journal of Institute of Food Technology, Illinois, U.S.A
2. Journal of Food Science and Technology by Association of Food Scientists and Technologists, India.
3. Food Technology, Abstracts, Central Food Technological Research Institute, Mysore.
4. Packaging in India, Indian Institute of packaging, Mumbai.
5. Journal of Technology, Institute of Technology, Illinois, U.S.2N.
6. Food Technology, Abstracts Control Food Technological Research Institute.
7. Advance Journal of Food Science and Technology
8. American Journal of Food Technology
9. Annual review of food science and technology.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester II
HS 224D PAPER VIII- APPLIED FOOD SCIENCE (Practical)
SYLLABUS

Total Hours 120

1. Sugar Cookery- sources, Crystallization of sugar, stages of sugar Cookery, fondant, fudge, caramel and brittles , Indian preparations (Halwa and Syrup of Gulab jamoon) coconut burfi, peanut brittle and an indigenous food item (eg. athirasam)

2. Starch cookery -use of flour mixtures, cereals and pulses, Microscopic examination of starch. Gelatinization of starch, preparation of dosai, iddli, appam, puri, chappathis and parathas (Batters and dough)

3. Demonstration of Bakery Products.

4. Fats-Smoking temperature-deep fat fried foods

5. Meat, fish and poultry- changes in cooking during different cooking methods and tenderness

6. Coagulation of egg proteins- Eggs cooked in shell, poached eggs, custards, egg white foams, Omelette, Cakes, Emulsion-mayonnaise.

7. Milk- principles involved in the preparation of tomato soup, cooking vegetables in milk, Cheese curry, setting of curds.

8. Fruit and vegetable cookery

9. Evaluating the acceptability of food through subjective and objective methods

10. Food preservation- Preparation of jams, jellies, squash, wine -dehydration, pickling

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE - SEMESTER SYSTEM

(2018 Admission)

BRANCH X D- FOOD AND NUTRITION

Semester III

HS 231D PAPER IX – FOOD SAFETY AND QUALITY ASSURANCE

(Theory) SYLLABUS

Total hrs 110

Objective

1. To enable the students to gain theoretical information and practical experience, directly and indirectly
2. To get a better understanding of food safety problems, their origin and solutions.
3. To ensure Food safety and quality in the food industry.

UNIT I - Food Safety Basics

Basic quality concepts, Food Hazards

UNIT II - Food Laws and Regulations

Food Safety and Standards Authority of India (FSSAI), The Prevention of Food Adulteration Act (PFA), The Bureau of Indian Standards (BIS), Agricultural Marketing Quality Certification Standard (AGMARK), Indian standard institute, International Organization for Standardization (ISI), Codex Alimentarius (CODEX), International Organisation for Standardisation (ISO).

UNIT III - Hazard Analysis Critical Control Point (HACCP)

Principles and pre- requisites of HACCP - Good Manufacturing Practices (GMP), Good Hygienic Practices (GHP), Good Agricultural Practice (GAP), Total Quality Management (TQM), Sanitation and safety in food services.

UNIT IV- Food Toxicology

Principles of toxicology, Toxic chemicals that cause diseases in humans.

UNIT V- Toxins in food

Natural toxins of importance in food- toxins of plant and animal origin; microbial toxins (e.g., bacterial toxins, fungal toxins and Algal toxins)

UNIT VI- Environmental contaminants and drug residues in food:

Fungicide and pesticide residues in foods; heavy metal and their health impacts; use of veterinary drugs (e.g. Malachite green in fish and β- agonists in pork); radioactive contamination of food, Food adulteration and potential toxicity of food adulterants.

UNIT VII -Processing contaminants

Indirect contaminants- contaminants during packaging, storage and transport: cleaners, sanitizers and cross contaminants.

RELATED EXPERIENCE

Visit to any food quality lab.

JOURNAL REFERENCES

1. Journal of Food: Microbiology, Safety & Hygiene.
2. Journal of Food Safety and Hygiene
3. Comprehensive Reviews in Food Science and Food Safety.
4. Journal of Food and Chemical Toxicology.
5. Journal of Food Quality and Preference.
6. Journal of Food Protection.

BOOK REFERENCES

1. Early, R. (2006) Guide to Quality Management Systems for the Food Industry, Blackie, Academic and professional, London.
2. Gould, W.A and Gould, R.W. (2005) Total Quality Assurance for the Food Industries, CTI Publications Inc. Baltimore.
3. Pomeraz, Y. and MeLoari, C.E. (2008) Food Analysis: Theory and Practice, CBS publishers and Distributor, New Delhi.
4. Bryan, F.L. (2007) Hazard Analysis Critical Control Point Evaluations A Guide to Identifying Hazards and Assessing Risks Associated with Food Preparation and Storage. World Health Organization, Geneva.
5. Kirk, R.S and Sawyer, R. (2005) Pearson's Composition and Analysis of Foods, Longman Scientific and Technical. 9th Edition, England.

6. FAO (2006) Manuals of Food Quality Control. 2-Additives Contaminants Techniques, Rome.
7. Pelczar, M.I., and Reid, R.D. (2009) Microbiology, 5th Ed., McGraw Hill Inc., New York.
8. James, M.J. (2007) Modern Food Microbiology, 2nd Ed., CBS Publisher, New Delhi
9. Adams, M.R., and Moss, M.G., (2005) Food Microbiology, 1st Ed., New Age International (P) Ltd., New Delhi.
10. Frazier, W.C. (2008) Food Microbiology, 4th Ed., McGraw Hill Inc., New York.
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12. The training manual for Food Safety Regulators. Vol.II- Food Safety regulations and food safety management. (2011) Food safety and Standards Authority of India. New Delhi.
13. AOAC International. (2005) Official methods of analysis of AOAC International. 17th Ed., current through 1st revision. Gaithersburg, MD, USA, Association of Analytical Communities.
14. Branen, A.L., Davidson, P.M. & Salminen, S. (2007) Food Additives, 2nd Ed., Marcel Dekker.
15. George, A.B. (2006) Encyclopedia of Food and Color Additives, Vol. III, CRC Press, LLC. Boca Raton, FL.
16. George, A.B. (2008) Fenaroli's Handbook of Flavor Ingredients, 5th Ed, CRC Press, LLC. Boca Raton, FL.
17. Madhavi, D.L., Deshpande, S.S., & Salunkhe, D.K. (2006) Food Antioxidants: Technological, Toxicological and Health Perspective, Marcel Dekker
18. Morton, I.D., & MacLeod, A.J. (2008) Food Flavors, Part A, B & C. Elsevier.
19. Nakai, S., & Modler, H.W. (2007) Food Proteins. Processing Applications. Wiley VCH.

20. The training manual for Food Safety Regulators. Vol.II- Food Safety regulations and food safety management. (2011) Food safety and Standards Authority of India. New Delhi

21. Mortimre, S., and Wallace, C., (2005) HACCP: A practical approach, 2nd Ed, Aspen Publication

22. Surak, J.G., and Wilson, S. (2007) American Society for Quality, 2nd Ed., Quality Press

23. Helferich, W., and Winter, C.K. (2007) Food Toxicology, CRC Press, LLC. Boca Raton, FL.

24. Shibamoto, T., and Bjeldanes, L. (2009) Introduction to Food Toxicology, 2nd Ed. Elsevier Inc., Burlington, MA.

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2. www.thanut-swu.com/images/BOT331/food%20quality%20assurance.pdf
3. www.sciencedirect.com/science/book/9781845690106
4. onlinelibrary.wiley.com/doi/10.1002/9781118846315.ch10/summary
5. www.value-chains.org/.../GTZ-Food_Quality_And_Safety_Referencebook-Ed_2007

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE - SEMESTER SYSTEM

(2018 Admission)

BRANCH X D- FOOD AND NUTRITION

Semester III

HS 232D PAPER X – PUBLIC HEALTH NUTRITION

(Common to Branches X D & X E)

(Theory) SYLLABUS

Total hrs :110

Objectives:

To enable the students to

1. Gain insight into the public health problems and their implications
2. Develop skills in organizing and evaluating nutrition, projects in the community.
3. Appreciate the national and international contribution towards nutrition improvement in India

UNIT I - Public Health Nutrition – An Overview

Concept and importance of public health nutrition, public health issues and problems, Health care system in India, Role of public nutritionist in health care delivery.

UNIT II - Public Health Problems I

Grade of malnutrition, Protein Energy Malnutrition (PEM), Severe acute malnutrition (SAM); Micronutrient deficiencies – Vitamin. A, Iron Deficiency Anaemia (IDA), Iodine Deficiency Disorders (IDD), Zinc deficiency, Vitamin deficiencies – Beri-beri, Ariboflavinosis, Pellagra, Folic acid and B_{12} deficiency, Scurvy, Rickets and Osteomalacia- prevalence and management.

UNIT III- Public Health Problems II

Incidence and prevalence of Communicable diseases – Tuberculosis, Cholera, Diarrhoea and AIDS Non-Communicable diseases- Obesity, Cardio-vascular diseases, Diabetes, Cancer-their preventive measures.

UNIT IV- Economics of Nutrition

Malnutrition and its economic consequences, Economics in Nutrition – Food security, food production and food pricing.

UNIT V- Assessment of nutritional status in Community settings

Methods of nutritional assessment -ABCD technique, Dietary assessment – family diet survey, Assessment of dietary intake of individuals, qualitative diet surveys, institutional diet surveys, food balance sheet.

UNIT VI-Strategies to combat Public Health Problems

Improving food and nutrition security – Green, White and Blue revolution, Nutrition education Principles of planning – where, when, whom, Kitchen garden, Audio-Visual Aids, food fortification, food enrichment, Public Distribution System, Primary Health Centres (PHC).

UNIT VII- Nutrition Intervention programmes

National Nutrition Policy, Preschool feeding programme, Integrated Child Development Services Scheme (ICDS), Mid-day meal Programs (MDM), Special Nutrition Programs (SNP),Wheat Based Nutrition Programs (WNP), Applied Nutrition Programs (ANP), Balwadi Nutrition Programs (BNP),National Nutritional Anaemia Prophylaxis Program (NNAPP), National Program for Prevention of Blindness due to Vitamin A Deficiency, National Goitre Control Program, Food and Nutrition Board (FNB),and other programmes. Organised by the governmental and non- governmental agencies for the vulnerable sections of the population.

UNIT VIII - Role of national and International Organizations to combat malnutrition

International organizations concerned with food and nutrition Food and Agriculture Organisation (FAO), World Health Organisation (WHO), United Nations Children Fund (UNICEF), Co-operative for Assistance and relief everywhere (CARE), Action for Food Production (AFPRO), Child Welfare Services (CWS), Corporate Social Responsibility Programmes (CRS), World Bank and others. National organizations concerned with Food and Nutrition- Indian Council of Medical Research (ICMR), Indian Council for Agricultural Research (ICAR), Central Health Education Bureau (CHEB), Central Social Welfare Board (CSWB), State Social Welfare Board (SSWB).

RELATED EXPERIENCE

Weighment of food intake by a family for 7 days (report)

Visiting a few local feeding centres and evaluating the conduct of the programmes.

Planning, conducting and evaluating nutrition education programme in rural areas.

JOURNALS

1. Proceedings of the Nutrition Society of India, Nutrition Society of India, New Delhi.
2. Nutrition Newsletter, Food and Agricultural Organization of the United Nations.
3. Ecology of Food and Nutrition, Gordon and Breach Science Publishers, London.
4. Social Welfare, Central Social Welfare Board, New Delhi.
5. WHO Chronicle, WHO, Geneva.
6. Swasth Hind, Central Health Education Bureau, New Dan.
7. Journal of Home Science, Sri Avinashlingam Home Science College, Coimbatore.
8. The Indian Journal of Nutrition and Dietetics, Sri Avinashlingam Home Science College, Coimbatore.

BOOK REFERENCES

1. Gulani, K.K. 2005. Community Health Nursing. 1st Edition. Kumar Publishing House. New Delhi. Pp – 662 to 664.
2. Gupta M.C., Mahajan B.K. 2003. Textbook of Preventive and Social Medicine. Third Edition. Jaypee Brothers Medical Publishers. New Delhi. India. Pp- 355-357.
3. Kishore J. 2007. National Health Programmes of India. 7th Edition Century Publication. New Delhi.Pp- 340-361.

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2. www.springerlink.com/index/pdf
3. http://wcd.nic.in/sites/default/files/nnp_0.pdf
4. "Nutrition and Anaemia" (PDF). Retrieved 2009-11-26.
5. "A campaign to end malnutrition in Bihar". www.ideasforindia.in.
6. National nutrition problems in India- a power point presentation - https://www.slideshare.net/harshahirdyani/national-nutritional-programmes-in-india-43239816
7. "Child Development Website". Source: Child Development programmes site (2009).

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE - SEMESTER SYSTEM

(2018 Admission)

BRANCH X D- FOOD AND NUTRITION

Semester III

HS233D PAPER IX – NUTRITION FOR SPORTS, SPACE TRAVEL AND DURING DISASTERS

Theory (SYLLABUS)

Total Hrs 110

Objectives: To enable the students to

1. To get an insight into the role of nutrition in different Sports activities, Space travel and various natural disasters
2. To provide nutritional support for sportspersons, for space travel and during disasters.

UNIT I - Exercise and Metabolism

Energy pathways during exercise of various duration and intensity- aerobic, anaerobic, very short duration, long duration, endurance, fatigue, onset of fatigue, nutrition and fatigue.

UNIT II - Carbohydrates

Carbohydrates and Exercise, Endurance training and fatigue, carbohydrate loading

UNIT III - Fats

Fats and exercise, Fat loading, Ergogenic effects of fats in exercise

UNIT IV - Proteins

Proteins and exercise, Protein requirements of sports –power sports/endurance athletes/

UNIT V - Ergogenic Aids

Commonly used Supplements

UNIT VI- Fluids & electrolytes

Water requirements, temperature regulation, loss of water and electrolytes during exercise, fluid and electrolyte replacements, sports drinks.

UNIT VII - Requirements & Nutritional problems

Macronutrients and micronutrients, requirements of sports person involved in various levels of activity, Balanced diets for individuals involved in various sports; Sports anaemia, female athlete triad, Eating disorders.

UNIT VIII-Space Travel

Dietary modification and nutritional requirements- Space diet, Space foods

UNIT IX - Disasters and Nutrition

Impact of the disasters (earthquakes, extreme weather conditions, war) on food availability.

RELATED EXPERIENCE

1. Provide nutritional counselling and suggests pre, post event food options to sportsperson

2. To identify nutritional deficiencies in the female sportsperson.

JOURNALS

1. Journal of Sports Nutrition and Exercise metabolism
2. Journal of Sports Science and Medicine
3. Physical Sports Medicine
4. Journal of Allied Sport Psychology
5. Physiology of Sports Medicine
6. Journal of Strength conditioning Research
7. Current Sports Medicine Reports
8. Sports Medicine
9. British Journal of Sports Medicine
10. Medicine Science of Sports Exercise
11. International Journal of Sports Nutrition and Exercise Metabolism

12. Clinical Sports Medicine

TEXTBOOKS

1. International Life Sciences Institute, Sports Authority of India and National Institute of Nutrition (2009), "Nutrition and Hydration guidelines for Excellence in Sports Performance", Hyderabad; ILSI, SAI & NIN, Pp 1-60.
2. McArdle, W.D; Katch, F.I and Katch,V.L (2009), "Exercise Physiology-Energy, Nutrition and Human Performance",Philadelphia; Lippincott Williams and Wilkins, 5th edition
3. Williams, M.H (2005), "Nutrition for Health, Fitness and Sport", Boston; MacGraw-Hill Higher Education, Pp 294-313, 397- 400.
4. Jamison D.T, Breman J.G, Measham A.R, et al., editors: The International Bank for Reconstruction and Development / The World Bank; Washington DCNew York: Oxford University Press; 2006

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1. http://sportsmedicine.about.com/od/fitnessevalandassessment/a/12MinRun.htm
2. http://www.athleticadvisor.com/weight_room/athletic_ nutrition.htm
3. http://www.nhs.uk/Conditions/**Sports-injuries**/Pages/**Causes**.aspx
4. http://www.nimh.nih.gov/health/publications/eating-disorders/complete-index.shtml
5. http://www.nof.org/
6. http://www.sportsmedicine.about.com/cs/nutrition/a/012604.htm
7. http://www.time-to-run.com/
8. http://www.wordiq.com/definition/Sports
9. www.innvista.com/ailments/anemias/sports-anemia
10. http://www.fao.org/3/a-i4434e.pdf- *Disasters*
11. https://www.cartercenter.org/resources/pdfs/health/ephti/library/lecture_notes/health_extension_trainees/disasterpreventionpreparedness.pdf- *Disasters*

12. http://nptel.ac.in/courses/105105110/pdf/m6l02.pdf- *Drought and Flood management*
13. http://www.wamis.org/agm/meetings/anadia06/Sivakumar_Overview.pdf-*an overview of Disasters*
14. https://spaceflight.nasa.gov/shuttle/reference/factsheets/food.html- *space foods*
15. https://www.nasa.gov/audience/forstudents/postsecondary/features/F_Food_for_Space_Flight.html -*space foods*
16. https://airandspace.si.edu/exhibitions/apollo-to-the-moon/online/astronaut-life/food-in-space.cfm- *space foods*

UNIVERSITY OF KERALA

MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)

BRANCH XD – D- FOOD AND NUTRITION

SEMESTER - III

HS234 D – PAPER XII – STATISTICS AND COMPUTER APPLICATIONS

(Common to all Branches X - B, C, D and E)

(Theory) SYLLABUS

Total Hrs : 110

Objectives

- To enable the students to develop knowledge in statistical tools and computer applications.

Unit I- Introduction to Statistics

- Definition, understanding of statistical measures
- Popular concepts and misuse of statistics

Unit II – Date Management and Analysis

- Quantitative analysis, descriptive statistics, inferential statistics: Uses and limitations
- Summation sign and its properties
- Proportions, percentages, ratios

Unit III – Measures of central tendency and dispersion

- Mean, median, mode, arithmetic mean and its uses, mid – range, geometric mean, weighted mean.
- Measures of dispersion – range, variance, standard deviation, standard error, co efficient of variation.
- Grouped data-frequency distribution, histogram, frequency polygons, percentiles, quartiles, ogive.

Unit IV – Data Analysis

- Coding of data
- Parametric and non-parametric tests
- Use of statistical tools.

Unit V – Normal Distribution and its Properties

- Normal distribution – importance and properties of normal distribution
- Theory of attributes,
- Probability, use of normal probability tables
- Area under normal distribution curve

Unit VI – Large and Small Sample tests and interpretation

- Z-test for single proportions and difference between proportions
- Large sample test for single mean and difference between means
- Small sample tests- 't' test, paired 't' test, 'F' Test

Unit VII- Chi square test and its interpretation

- Chi square test and its interpretation – general features, goodness of fit
- Independence of Attributes

Unit VIII – Correlation and Regression and its interpretation

- Basic concepts, linear regression and correlation coefficient
- Regression, Rank correlation

Unit IX – Analysis of Variance and its interpretation

- One-factor analysis of variance
- Two-factor analysis of variance

Unit X – Concepts of Hypothesis

- Null and Alternative Hypothesis
- Type I and II errors.

Unit XI – Introduction to SPSS and Excel: its Applications

- Application of excel and SPSS

- Histogram, pie diagram, scatter diagram graphs – presentation using SPSS / excel.

Unit XII – Presentation using Power point

- Creating presentations.

References:

1. Gosh, B.N. Scientific methods and social research, Sterling Publishers Pvt. Ltd. New Delhi.
2. Kothari, C.R. 2014. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi.
3. Sharma, B.A.V. Prasad, R D and Satyanarayana, P. 1990. Research Methods in Social Science, Sterling Publishers Pvt. Ltd.
4. Agarwal, Y.P. 1990. Statistical Methods, Sterling Publishers Pvt. Ltd,
5. Gupta, S. 2001. Research Methodology and Statistical Techniques., Deep and Deep, New Delhi.
6. Gupta, S.P. 1996 Practical Statistics, 37th edn, S. Chand, New Delhi.
7. Gupta, S.C. 2000 Fundamentals of Statistics, Himalaya Publishers, Mumbai.
8. Gupta, S.P. 2000. Statistical Methods, Sultan Chand & sons, New Delhi.
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UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE - SEMESTER SYSTEM

(2018 Admission)

BRANCH X D- FOOD AND NUTRITION

Semester IV

HS 241 D PAPER XIII- BIO CHEMISTRY

SYLLABUS

(Theory)

Total hrs 110

Objectives:

To enable the students to

1. Obtain depth in the study of Biochemistry of major nutrients and metabolic pathways.
2. Understand the application of Biochemistry in the field of Foods and Nutrition.

UNIT I - Carbohydrates

Structure and properties of monosaccharaides, Pentose (Ribose, deoxyribose) hexoses (glucose, galactose and fructose), disaccharides (Structural, elicitation is not necessary) polysaccharides (starch, glycogen and cellulose).

UNIT II - Metabolism of Carbohydrates

Glycogenesis, glycolysis, TCA cycle, HMP shunt, energy production in the above cycles, gluconeogenesis.

UNIT III - Lipids

Classification, reactions of fatty acids, Triglycerides, phospholipids and other conjugated Lipids, characteristics of fats, (free and esterified).

UNIT IV - Metabolism of lipids

Oxidation of fatty acids, Biosynthesis of fatty acids, biosynthesis of cholesterol.

UNIT V - Proteins

Structure, classification, properties of proteins and amino acids.

UNIT VI - Metabolism of Proteins

General Pathways of Metabolism of Amino Acids: Deamination, Transamination, Decarboxylation, Urea Formation, Synthesis and Breakdown of Haemoglobin, Bile Pigments, Bio-Synthesis of Proteins.

UNIT VI - Nucleic acids

Composition, functions and classification Isolation, structure and properties of DNA and RNA (M-RNA, T-RNA and R-RNA) Biosynthesis and breakdown of purine and pyrimidine.

UNIT VII - Techniques in biochemistry

Chromatography - Principles and applications of Chromatography; Electrophoresis Principles and applications of electrophoresis; Colorimetry - Principles and applications of colorimetry, fluorimetry, spectrophotometry; Isotopes - Radioactive and stable isotopes used in biological investigations and food preservation.

Related experiences

Visit to a lab to observe the various techniques in biochemistry

REFERENCES

1. Harold. A. Harper, Review of Physiological Chemistry, 16th Ed. The Kothari book Depot, Bombay
2. Albert, L. Lehninger, Biochemistry 2nd Ed. The Johns Hopkins University school of Medicine,1975
3. White, A., Andler, P. and Smith, E.L. Principle of Biochemistry, 5th ed. Mc Graw Hill,Kogakusha.Ltd.1975
4. Henry, R, Mahler and Eugene H. Cordes, Basic Biological Chemistry, 2nd ed., Harper International Ed., Harper and Row Publications, New York,1968
5. West, E.S. Todd, W.R. Mason, H.S and Van Burggen, J.T. Text Book of Biochemistry, IV Ed . Mac million Co., New York,1968
6. Nikola, Experimental Methods, Biophysical Methods, John Wiley & Sons, Inc.
7. Sepal, Biochemical calculation, Holland Publishing Co,1970
8. Viewing Instrumental methods, chemical analysis, Mc Graw Hill Co.

9. Zweig and Whitaker, Paper chromatography and Electrophoresis, Arnold Pvt ltd,1975
10. Harold Varley, Practical Clinical Biochemistry, Arnold Pvt Ltd,1975
11. Paul, D. Soyer, The Enzyme ,3rd Ed, Academic Press

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester III
HS 242 D PAPER XIV- ADVANCED HUMAN NUTRITON
(Common to Branches X D & X E)
(Theory) SYLLABUS

Total hr.: 110

Objectives:

To enable the students to

1. Obtain in-depth knowledge of both macro and micro nutrients.
2. Understand the role of each nutrient in various stages of life and diseases due to their deficiencies and excess intake.

UNIT I - Energy

Energy content of food, energy measurement, direct and indirect calorimetry, basal metabolism, physical activity, specific dynamic actions of food, energy requirements, ICMR standards, energy balance and control of body weight.

UNIT II- Carbohydrates

Nutritional importance of Carbohydrates; Dietary fibre- Components, types, sources, significance, consequence of over consumption.

UNIT III- Proteins and Amino acids

Source of energy, protein requirements- ICMR, computation of protein requirements through factorial method and balance study, dietary protein quality.

UNIT IV- Lipids

Lipids transformation in the liver, lipotropic factors, role of essential fatty acids, deposition of fats in the body. Effects of deficiency and excess of fats.

UNIT IV- Macro elements

Calcium- Calcium in skeleton and other tissues, measurements, bone mass, effect of diet and immobilization, calcium absorption and utilization, calcium balance, calcium requirements, source, hypercalcemia and hypocalcaemia. Phosphorus- Concentration

in the body, phosphorus - calcium ratio, phosphorus absorption and utilization, phosphates in blood.

UNIT V -Micro elements

Iron- Iron intake, sources, availability, absorption, transport, utilization and storage, Fluorine- physiology and sources. Role of fluoride in the prevention of dental caries and toxic effects of fluoride.

UNIT VI- Trace elements

The concept of trace elements, mode of action of trace elements, trace elements interaction. Physiology, sources, deficiency and toxicity of the following -Iodine and thyroid, recommended intakes and deficiency.

UNIT VII - Vitamins- Fat soluble vitamins

Introduction - units of measurements of Vitamins, Fat soluble vitamins- Classification, physiological action, transport-, storage, RDA and deficiency diseases- Toxicity.

UNIT VIII -Water Soluble Vitamins

Classification, physiological action, transport, storage, RDA, deficiency diseases and Toxicity.

BOOKS REFERENCES

1. Gray and Hill, S. The complete Handbook of Nutrition, Robert Spell and Sons Publishers Inc. New York, USA, 1972.
2. World Review of Nutrition and Diabetics, All the Volumes Published.
3. Browin, H. Protein Nutrition, Published by Charles, V. Thomas Publisher, Springfield, Illinois, USA. 1974.
4. Bergert, L. J., Bridges, G. M and Callaway, D. H. Nutrition and Physical Fitness, Published, W. B. Saunders and Co. Canden, N. J. 081011, USA, 1973.
5. Lawrie, R. A., Protein and Human Food, Published by AI Technical Books Inc., West Fort. Connecticut, USA, 1970.
6. Bajaj, J. S. Insulin and Metabolism, Elsevier North Holland Inc., 53, Vanderbilt Ave, New York.
7. Pinckney, R and Pinckney, C. The Cholesterol Controversy, Published by Rights and Permission Department, Sherbouree Press Inc. Los Angeles, USA.

8. Levine, R. D and Feeiffer, E. F. U. Lipid Metabolism, Obesity and Diabetes Mellitus, Published by George Thieme Publishers, Horlweg, Germany, 1974.
9. Thompson, J. H. The Pathology of Parenteral Nutrition with Lipids. Published by American Thomas Publishers.
10. Ramanand, A. L. Matz, W. D and Mangh, J. H. Energy and the future. Published by American Association for the Advancement of Science, Washington, USA, 1973.
11. Creviotom, J. Hambraeus, L and BoVehiqiet, Early malnutrition and Mental Development, Published by Almquist and Wiksell, Sweden, 1974.
12. Gardner, L and Amacker, P. Endocrine aspects of Malnutrition. Published by the Kroc Foundation, Santayner, California, USA, 1973.
13. Proceedings of the First Asian Congress, National Institute of Nutrition, Hyderabad.
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17. Howe, P. S. Basic Nutrition in Health and Diseases, W. B. Saunders Co. Philadelphia, London, Toronoto, 1971.
18. William, S. R. Nutrition and Diet Therapy. The C. V. Mosby Co. Saint Louis, 1973.
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20. Ayroyd, W. R., Gopalan, C and Balasubramonian, S. C. the Nutritive Value of Indian Food and Planning of Satisfactory Diet, ICMR, New Delhi, 1976.

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1. All Monographs and Technical Reports of FAO and WHO.
2. The Nutrition Foundation Inc. Nutrition Reviews, Present Knowledge in Nutrition, Fourth Edition, New York, Washington, 1976.
3. Beston, G. H and McHenry, W. W. Nutrition- A Comprehensive Treatise- Volume I, II and III. Academic Press, 1977.

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE - SEMESTER SYSTEM

(2018 Admission)

BRANCH X D- FOOD AND NUTRITION

Semester IV

HS 243 D PAPERXV - BIO CHEMISTRY (Practical)

(Theory) SYLLABUS

Total hrs. 110

1. Qualitative estimation a. Sugars- mono, di and poly -saccharides.. Proteins and amino acids.
2. Analysis of blood for a. Glucose b. Haemoglobin c. Cholesterol d. Serum phospholipid e. serum protein
3. Analysis of Urine for a. Creatinine b. Urea c. Calcium, d. phosphorus e. Vitamin C.
4. Operation of pH meter determination of serum proteins. Electrophoresis, isoelectric precipitation of protein.
5. Estimation of RNA & DNA
6. Chromatography of sugar amino acids- ascending; circular, column and chromatography of carotenoids.
7. Study of Electrophoresis technique.
8. Visit to Isotopes Laboratory observation of counting (Report)

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE - SEMESTER SYSTEM

(2018 Admission)

BRANCH X D- FOODS AND NUTRITION

Semester IV

HS 244 D PAPER XVI – ADVANCED HUMAN NUTRITION (Practical)

SYLLABUS

Total Hours 120

1. Experiments in Nutrition: (Individual Experiments)-

   (a) Analysis of Food for Fibre, Moisture, Nitrogen by Macro Kjeldhal method, Ash,

   Calcium, Phosphorus, Iron, Carotene, Vitamin C and Fat.

   (a) Fats, sap value, iodine number, Acid number, Extraction of lipids from egg Yolk.

   (b) Sorensen formal titration.

2. Food Adulteration, test for common adulterants.

3. Estimation of titrable acidity and alkalinity of fruit juices.

4. Therapeutic tube feed preparation – high calorie and low calorie feeds, high protein feeds.

5. Report of Four Weeks internship in a hospital with dietary department/food quality lab/food industry/food research institute.

M.Sc. HOME SCIENCE

BRANCH X-E

NUTRITION AND DIETETICS

SEMESTER SYSTEM

2018 ONWARDS

COURSE STRUCTURE & MARK DISTRIBUTION

M.Sc. HOME SCIENCE

Branch XE Annexure Nutrition and Dietetics

Sem-ester	Paper Code	Title of the Paper	Distribution of hours per semester	Instructional hours/week		ESE duration	Maximum Marks		
				L	P	(Hrs)	CA	ESA	Total
I	HS211E	Human Physiology	110	6	-	3	25	75	100
	HS212E	Medical Nutrition Therapy	110	6	-	3	25	75	100
	HS213E	Nutritional Biochemistry	110	6	-	3	25	75	100
	HS214E	Research Methodology	120	7	-	3	25	75	100
	Total for S1		450	25	-	-	100	300	400
II	HS221E	Applied Food Science	110	6	-	3	25	75	100
	HS222E	Nutrition in Critical Care	110	6	-	3	25	75	100
	HS223E	Medical Nutrition Therapy (Practical)	110	-	6	3	25	75	100
	HS224E	Internship & Case study in a life style disease management clinic	120	-	7	-	25	75	100
	Total for S2		450	12	13	-	100	300	400
III	HS231E	Hospital Internship	110	-	6	-	25	75	100
	HS232E	Public Health Nutrition	110	6	-	3	25	75	100
	HS233E	Applied Nutrition	110	6	-	3	25	75	100
	HS234E	Statistics and Computer Applications	120	7	-	3	25	75	100
	Total for S3		450	19	6	-	100	300	400
IV	HS241E	Paediatric & Geriatric Nutrition	110	6	-	3	25	75	100
	HS242E	Advanced Human Nutrition	110	6	-	3	25	75	100
	HS243E	Pathophysiology in Diseases	110	7	-	3	25	75	100
	HS244E	Techniques in Clinical Nutrition (Practical)	120	-	6	3	25	75	100
	Total for S4		450	19	6	-	100	300	400
	Dissertation							100	100
	Comprehensive Viva							100	100
	Grand Total		-	75	25	-	400	1400	1800

L-Lecture, P-Practical, ESE-End semester examination, CA-Continuous assessment ESA-End semester assessment.

UNIVERSITY OF KERALA

MSc –HOME SCIENCE-Semester System

(2018 ADMISSION ONWARDS)

Branch XE NUTRITION AND DIETETICS

Semester –I

1.1 Human Physiology

1.2 Medical Nutrition Therapy

1.3 Nutritional Biochemistry

1.4 Research Methodology

Semester –II

2.1 Applied Food Science

2.2 Nutrition in Critical Care

2.3 Medical Nutrition Therapy (Practical)

2.4 Internship & Case study in a life style disease management clinic

Semester –III

3.1 Hospital Internship

3.2 Public Health Nutrition

3.3 Applied Nutrition

3.4 Statistics and Computer Applications

Semester –IV

4.1 Paediatric & Geriatric Nutrition

4.2 Advanced Human Nutrition

4.3 Pathophysiology in Diseases

4.4 Techniques in Clinical Nutrition (Practical)

4.5. Dissertation

4.6. Viva Voce

Branch X E Nutrition and Dietetics

Semester	**C.A***	**ESA****	**Total**
SemesterI	**100**	**300**	**400**
SemesterII	**100**	**300**	**400**
SemesterIII	**100**	**300**	**400**
SemesterIV	**100**	**300**	**400**
Dessertation			**100**
Comprehensive Viva Voce			**100**
Grand Total			**1800**

- *C A Continuous Assessment
- **ESA End semester assessment

UNIVERSITY OF KERALA

M.Sc. Home Science

Branch XE Nutrition and Dietetics

Semester I

Paper I - HS211E - Human Physiology

(Common to Branches X D & X E)

(Theory) SYLLABUS

Total hrs: 110

Objectives

- To enable the students to understand the metabolic changes in different health and disease conditions
- To enable the students to gain knowledge about nutritional physiology

Unit I – Blood

- Composition & Functions of the blood
- Cellular Content of Blood- their properties and functions
- Blood Groups, Blood transfusion, Bleeding disorders
- Lymph, Tissue fluids, reticuloendothelial system, Blood volume, coagulation

Unit II – Circulatory system

- Structure of heart, Physiology and properties of cardiac muscle
- Cardiac cycle, Cardiac output, Heart rate, Heart sounds, and ECG

Unit III – Digestive system

- Physiology of digestive system-Structure, function, secretions
- Movements of gastrointestinal tract
- Digestion of protein, carbohydrate and fat

Unit IV – Respiratory system

- Structure of Respiratory organ
- Mechanism of respiration
- Exchange and transport of gases
- Respiratory volumes, Respiratory adjustments in health and diseases, spirometry

Unit V – Excretory system

- Physiology of the kidney, urine formation, micturition
- Normal and abnormal constituents of urine
- Elementary principles of dialysis, maintenance of homeostasis

Unit VI – Endocrine system

- Endocrinology – Hormones - pituitary, thyroid, parathyroid, adrenal, sex hormones, pancreas
- Effects of Hypo and Hyper functions of the glands

Unit VII – Nervous system

- Neurons, Synapse and neurotransmitters
- Central and Peripheral nervous system, Autonomic nervous system
- Brain: Parts and functions
- Spinal cord, CSF, Reflex action
- The physiology of sleep, Circadian rhythm

Unit VIII – Sense Organs

- Eye: Anatomy of eye and physiology of vision
- Ear: Structure of ear and physiology of hearing
- Nose: sense of smell
- Tongue: Sense of Taste
- Skin: Structure &Functions of skin

Unit IX – Skeletal and Muscular System

- Bone: Types, Functions Structure and Development of bone
- Vertebral Column, Thoracic cage
- Joints: Types of joints, Main synovial joints of the limbs
- Classification & function of muscles
- Anatomy and Physiology of skeletal muscle

Unit X – Reproductive System

- Female reproductive organs-menstrual cycle
- Male reproductive system organs
- Process of reproduction

Unit XI – Immunology

- Natural immune system, cell mediated and humoral immunity
- Components of immune mechanism (cellular and chemical)
- Role of inflammation / defense (acute and chronic)
- Immunoglobulins and production of antibodies
- Disorders –Immune deficiency
- Hypersensitivity

References

1. NM Muthaya (2010). Human Physiology. 4th ed. Jaypee Brothers PVT LTD, New Delhi.
2. Vidya Ratan (2004) Handbook of Human Physiology. 7th ed. Jaypee Brothers PVT LTD, New Delhi.
3. Sudha V Khanorkhar (2012)Insights in Physiology. 1st ed. . Jaypee Brothers PVT LTD, New Delhi.
4. R Chandramouli (2010)Textbook of Physiology.3rd edition. . Jaypee Brothers PVT LTD, New Delhi.
5. R L Bijlani & S Mnajunatha (2010) Understanding Medical Physiology.4th edition. Jaypee Brothers PVT LTD, New Delhi.

UNIVERSITY OF KERALA
M.Sc. Home Science
Branch XE Nutrition and Dietetics
Semester I
Paper II - HS212E - Medical Nutrition Therapy
(Common to Branches X D & X E)
(Theory) SYLLABUS

Total hours: 110

Objectives

- To enable the students to understand the role of nutrition for good health
- To obtain knowledge of different Therapeutic diets and their preparation
- To develop capacity and attitude for taking up dietetics as a profession

Unit I – Introduction to Dietetics

- Meaning and scope of dietetics
- Role of dietician in hospital and community
- Registered Dietitian, IDA, NSI

Unit II – Hospital Diets

- Hospital Diet - Clear fluid, Liquid diet, Soft diet, Balanced normal diet
- Feeding methods, Enteral nutrition, Calculation of diet using the Ready Reckoner 1200 cal, 1500cal, 1800 cal, 2000cal
- Commercial supplement available in the market
- Assessment of patient's needs, SGA
- Diet counselling using foods models, standardized vessels, food samples; education of the patient and follow up
- Common biochemical tests affecting nutritional needs–lipid profile, AC/PC, Liver Function tests, Kidney function tests, Homocysteine

Unit III – Febrile and Surgical Conditions

- Fevers of short duration
- Chronic fevers and infections, Dengue, Chikungunya, SARS
- Pre-operative and post-operative nutrition
- Tube feeding and parenteral feeding

Unit IV – Disease of the gastrointestinal tract

- Peptic ulcer, Diarrhoea, Constipation, Crohns' Disease, Lactose intolerance, Ulcerative colitis, Diverticulitis, Tropical sprue, Irritable Bowel Syndrome
- Diseases of the liver, gall bladder

Unit V – Metabolic disorders

- Diabetes Mellitus- Type 1, Type 2, Gestational diabetes
- Food exchange lists, My Plate Planner, Insulin carb counting, glycemic index
- Hypo and Hyperthyroidism, Gout

Unit VI – Obesity and Underweight

- Causes, Prevention, Dietary modifications
- Conservative management
- Surgical procedures- Sleeve gastrectomy, Post Bariatric surgery diet
- Popular diets in the modern society: low calorie diets, Atkins diet, Paleo diet

Unit VII – Cardiovascular Diseases

- Atherosclerosis, Myocardial Infarction, Heart Failure
- Blood Pressure & Hypertension, causes, prevention and dietary modification

Unit VIII – Disease of the Kidney

- Nephritis - acute and chronic
- Glomerulonephritis, Nephrosclerosis, Kidney stones
- Uremia, proteinuria, hematuria and hemoglobinuria, azotemia
- ESRD, Dialysis

Unit IX – Diet in Genetic diseases

- Galactosemia, Phenylketonuria, Glycogen storage disease

Unit X – Cancers

- Types of cancers and diet related carcinogens
- Anti-cancer agents in foods
- Cancer cachexia
- Feeding the cancer patients, nutrient needs, Neutropenic diet

Unit XI – Diet for Allergy

- Allergy and its manifestations, diet

UNIT XII – HIV/AIDS

- Dietetic management of HIV/AIDS

References

1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd.
2. Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins.
3. Escott-Stump, S. (1998): Nutrition and Diagnosis Related Care, 4th Edition, Williams and Wilkins.
4. Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone.
5. Williams, S.R. (1993): Nutrition and Diet Therapy, 7 th Edition, Times Mirror/Mosby College Publishing.
6. Davis, J. and Sherer, K. (1994): Applied Nutrition and Diet Therapy for Nurses, 2nd Edition, W.B. Saunders Co.
7. Walker, W.A. and Watkins, J.B. (Ed) (1985): Nutrition in Pediatrics, Boston, Little, Brown & Co. 8. Ritchie, A.C. (1990): Boyd's Textbook of Pathology, 9th Edition, Lea and Febiger, Philadelphia.
9. Fauci, S.A. et al (1998): Harrison's Principles of Internal Medicine, 14th Edition, McGraw Hill. 10. World Cancer Research Fund (1997). Food, Nutrition and the Prevention of Cancer- A Global perspective, Washington E.D. WCRF.

Journals

1. World Review of Nutrition and Dietetics
2. Journal of the American Dietetic Association
3. American Journal of Clinical Nutrition
4. European Journal of Clinical Nutrition
5. Nutrition Reviews

UNIVERSITY OF KERALA
M.Sc. Home Science
Branch XE Nutrition and Dietetics

Semester I

Paper III – HS213E – Nutritional Biochemistry

(Theory) Syllabus

Total hours: 110

Objectives

- To enable the students to learn the chemistry, properties and metabolism of macronutrients
- To understand the biophysical techniques

Unit I - Introduction to nutritional biochemistry

- Meaning, development and contemporary interests

Unit II - Carbohydrate metabolism

- Chemistry, classification, properties
- Metabolism with energetics - Glycolysis, TCA cycle, Gluconeogenesis, Glycogenesis, Glycogenolysis, HMP pathway
- Electron transport chain, oxidative phosphorylation, electron transport inhibitors
- Biosynthesis of Vitamin C

Unit III - Fat metabolism

- Chemistry, classification, properties - fatty acids, phospholipids, steroids, eicosanoids
- Metabolism of fatty acids, cholesterol and phospholipids
- Lipogenesis, Bile salts, Fatty liver, Ketosis
- Hyperlipoproteinaemias

Unit IV - Protein metabolism

- Chemistry, classification, properties, metabolism: transamination, deamination and decarboxylation
- Amino acid metabolism : essential and non-essential

- Urea cycle, Metabolism of haemoglobin and bile pigments

Unit V - Nucleic acid metabolism

- Composition, Functions, Classification, DNA and RNA – properties, differences and types
- Metabolism of nucleic acids: purines and pyrimidines
- Protein synthesis

Unit VI – Enzymes

- Definition, Classification, specificity, inhibition, factors influencing enzyme activity, co-enzymes
- Role of enzymes in metabolism and clinical diagnosis
- Biomarker enzymes : Heart, liver and kidney

Unit VII – Hormones

- Mode of action of hormones in carbohydrate and fat metabolism

Unit VIII - Biophysical Techniques

- Separation of sugars and amino acids by chromatography
- Electrophoretic separation of protein, colorimetry, spectrophotometry & radioimmunoassay (Principle & Procedure)
- Atomic absorption spectroscopy and flame photometry (Principle & Procedure)
- PCR (Principle & Procedure)
- Radio isotopes in clinical diagnosis

Unit IX - Xenobiotics

- Artificial Detoxification in the body
- Metabolism of Xenobiotics

Unit X - Antioxidants and Free Radicals

- Artificial and diet derived antioxidants, mode of action, role of free radicals in human pathology and disease

Related Experience

- Visit to a research institute to observe the biophysical techniques in nutrition.

References

1. Chaterjea,M.N and Shinde, R. Textbook of Medical Biochemistry, 2007, 7th edition. JayPee Brothers. Medical Publishing Pvt Ltd. New Delhi.
2. Lehninger, A.L, Nelson, D.L and Cox, M.M. Principles of Biochemistry. 2004, 4th edition. CBS Publishers, Jain Bhavan, Bhala Natu Nagar.
3. Harold Varley, 2005. Practical Clinical Biochemistry. 4h edition, 2010, CBS Publishers & Distributors, New Delhi.
4. Martin DW, Mayes PA and Rodwell VW, 1981. Harper's Review of Biochemistry, 18th edition, Large Medical Publications.

UNIVERSITY OF KERALA
M.Sc. Home Science
Branch XE Nutrition and Dietetics

Semester I

Paper IV – HS214E – Research Methodology

(Common to all Branches X-B, C, D and E)
(Theory) SYLLABUS

Total Hours: 120

Objectives:

- To have a basic knowledge about research and its methodologies.
- To identify and define appropriate research problems.
- To organize and conduct research in a more appropriate manner.
- To understand various steps in writing a research report, thesis and research proposal.

UNIT I : Research Methodology

Meaning, objectives and significance of research. Types of research, research approaches and scientific methods. Research process and criteria of good research.

UNIT II : Definition and identification of a research problem

Selection of research problem, justification, limitations and delimitations of the problem, Development of hypothesis and its significance, hypothesis testing, Variables – types and characteristics.

UNIT III : Review of Literature

Functions, sources, steps in carrying out a literature review.

UNIT IV : Research Design

Meaning and needs, features of a good design; Important concepts relating to research design; Different research designs – exploratory, descriptive and diagnostic (epidemiology and clinical trials); Pilot studies.

UNIT V: Methods and tools of Data Collection –

Interview, Case study, Survey, Scaling methods, Schedules and questionnaires, Reliability and validity of measuring instruments.

UNIT VI : Sampling Design

Population and sample, Steps in Sample Design, Criteria for selecting a sampling procedure, Different types of sampling techniques – probability sampling and non-probability sampling. Merits and demerits of sampling.

UNIT VII : Organisation, Analysis and interpretation of Data

a. Organisation – editing, coding and classifying – tabulation
b. Analysis – descriptive and statistical.
c. Interpretation
d. Formulation of conclusions and generalisations.

UNIT VIII : Ethics in Research in Home Science

Research strategies in Home Science – Issues in design, conduct, analysis and interpretation – Descriptive studies (correlation, case studies, cross-sectional surveys) – Analytical studies (observational, case-control, cohort studies – prospective and retrospective) – experimental studies (clinical / intervention trials including randomized controlled trials)

UNIT IX : Scientific Writing as a Means of Communication

Principles and steps in report writing - Different forms – research articles / notes, review articles, monographs, dissertations and reports. Components of dissertation / research report / article. Importance of illustrations. Methods of presenting research findings – oral / poster. Formulation of research design / proposal.

References

8. Best J M and Kahn, J.V. Research in education, 10th edition, Prentice Hall of India, New Delhi, 2006.
9. Devadas, R.P. A Handbook on methodology of research. Sri Ramakrishna Vidyalaya, Coimbatore, 1989.
10. Gosh B.N. Scientific methods and social research.4th edition, Sterling Publishers Pvt. Ltd. New Delhi, 2012.
11. Kothari, C.R. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi, 2014.
12. Kulbir Singh, Sidhu. Methodology of Research in Education, Sterling Publishers Pvt. Ltd. New Delhi,

13. Sharma, B.A. V, Prasad, R.D. and Styanarayana, P. Research methods in Social Science, Sterling Publishers Pvt. Ltd.
14. Wilkinson, T.S. and Bhandarkar, P.L. Methodology and Techniques of Social Research, Himalaya Publishing House, Bombay.

UNIVERSITY OF KERALA
M.Sc. Home Science
Branch XE Nutrition and Dietetics

Semester II

Paper V – HS221E – Applied Food Science

(Common to Branches X D & X E)

(Theory) SYLLABUS

Total Hours: 110

Objectives

- To gain knowledge on sources and properties of food
- To develop skills to judge the quality of cooked foods
- To enable application of principles while preparing and cooking foods

Unit I – Physiochemical Changes

- Introduction to food science
- Different methods of cooking
- Physical and physiochemical changes in foods in relation to cookery, Gel formation, denaturation of proteins
- Properties of colloids, emulsions, stabilizers
- Browning reactions; Enzymatic and non-enzymatic changes in cooking

UNIT II – Carbohydrates

- Sugar Cookery — sources, uses and properties, crystallization of sugar, stages of sugar cookery
- Starch Cookery: Sources and use of starch; factors affecting, Gelatinization, syneresis and retrogradation
- Types of Flours, baking qualities
- Bread making – role of ingredients, portion of ingredients, leavening agents

Unit III – Proteins

- Meat - Structure, cuts of meat and post mortem changes — methods of cooking
- Fish - Kinds of fish, constituents, selection and cooking
- Eggs — structure, composition and selection, Coagulation

- Milk and milk products, constituents, processing - clarification, homogenization, pastuerization, cheese making. –basic steps
- Pulses and legumes processing-germination, fermentation

Unit IV – Fats and Oils

- Sources and extraction of edible fats and oils - characteristics of fats, physical, chemical properties.
- Changes in fat during storage and cooking — uses of fat-shortening. ,emulsifying and creaming agent

Unit V – Fruits and Vegetables

- Structure, pigments and acids in vegetables and fruits,
- Role of pectic substances.
- Effect of acids, alkalis and heat on pigments

Unit VI – Food Preservation

- Needs, benefits, principles and methods of food preservation
- Use of irradiation and microwave for preservation

Unit VII – Product Development and evaluation

- Sensory evaluation of food. Factors to be considered in food testing. Types of sensory tests. Sensory panel.
- Planning, standardization and testing of a new food product

Unit VIII – Food additives and adulteration

- Definition and types of Food Additives
- Food Adulteration

Unit IX - Convenience foods,

- Fast foods, ready to eat foods
- Definition, merits, demerits

References

1. Charley, H. (1982): Food Science (2nd edition), John Wiley & Sons, New York.
2. Potter, N. and Hotchkiss, J.H. (1996): Food Science, Fifth edition, CBS Publishers and Distributors, New Delhi.
3. Belitz, H.D. and Grosch, W. (1999): Food Chemistry, (2nd edition), Springer, New York.
4. Pomeranz, Y. (Ed) (1991): Functional Properties of Food Components, (2nd edition), Academic Press, New York.

5. Bowers, J. (1992): Food Theory and Applications, (2nd edition), MacMillan Publishing Co., New York.
6. Marwaha, S.S. and Arora, J.K. (2000) Food Processing : Biotechnological Applications Asiatech Publishers Inc, New Delhi.

Journals

1. Journal of Food Science
2. Advances in Food Research
3. Journal of Food Science and Technology
4.Journal of Agricultural and Food Chemistry

UNIVERSITY OF KERALA
M.Sc. Home Science
Branch XE Nutrition and Dietetics
Semester II
Paper VI – HS222E – Nutrition in Critical Care
(Theory) Syllabus

Total Hours: 110

Objectives

- To understand the physiology, metabolism and special requirements of the critically ill
- To familiarize the special nutritional support techniques and feeding formulations for critically ill

Unit I - Nutritional screening and nutritional status assessment of the critically ill

Unit II - Enteral Nutrition

- Indications, sites, tubes and care, types of feeds, advantages and disadvantages of home based feed, commercial formula feeds, requirements of nutrients according to problems viz renal, respiratory.

Unit III - Total Parenteral Nutrition

- Indications, importance, long term effects, uses, sites, care, composition.

Unit IV - Understanding special nutritional requirements

- Goals and monitoring therapy in critical illnesses like: stroke, surgery, dialysis, respiratory failure, multi organ failure, cancer, hepatic failure, GI tract surgery, neurosurgery, trauma, sepsis, burns and ketoacidosis.

Unit V -Nutritional supports

- Role of immune enhancers, conditionally essential nutrients, immune suppressants and special diets in critical care

Unit VI - Complications of nutritional support system

- Refeeding syndrome and rehabilitation diets

Unit VII - Diet related ethical issues in the terminally ill

Unit VIII - Stress

- Definition, Types, Stressors, Psychosomatic disorders
- Biological effects on brain, cardiovascular system and respiratory system
- Stress enhancing foods and nutrients and nutritional management of stress.

References

1. Maurice E. Shils, James A. Olson, Moshe Shike, 2006.Modern Nutrition in Health & Diseases – Eds 10th edition, Vol I and II, Lippincott Willliams & Wilkins Publication.
2. Kathleen Mahan & Krause, Sylvia Escott Stump, 2004.11th edition. Food, Nutrition and Diet Therapy Sylvia Escott Stump, Saunders Co.
3. Kinney JM and Borum PR, 1989. Perspectives in Clinical nutrition. Urban & Schwarzenberg. Baltimore.
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5. Jennifer Jamison, 2003. 1sted Clinical Guide to Nutrition and Dietary Supplements in Disease Management. Elsevier. Churchill Livingstone, USA.

UNIVERSITY OF KERALA
M.Sc. Home Science
Branch XE Nutrition and Dietetics
Semester II
Paper VII – HS223E – Medical Nutrition Therapy Practical
Syllabus

Total Hours: 110

Objectives

- To have practical experience in planning and preparation therapeutic diets
- To develop skills in customized diet planning
- To enable the use of ready reckoner in computing nutritional requirements

1. Diet in disorders of energy balance- obesity, underweight.
2. Nutrition in fever and infections- typhoid, tuberculosis, AIDS.
3. MNT for upper gastrointestinal tract diseases- peptic ulcer, gastric surgery.
4. MNT for lower gastrointestinal tract diseases- constipation, diarrhoea, steatorrhoea.
5. Disease of large intestine - diverticular disease, irritable bowel syndrome
6. MNT for diseases of hepato- biliary tract- hepatitis, cirrhosis, hepatic coma, cholecystitis, pancreatitis
7. MNT for Kidney diseases – nephritis, renal calculi
8. MNT for life style diseases – Diabetes- IDDM, NIDDM, hypertension, atherosclerosis, Cancer

Related Experience

- A record to be maintained and submitted for external valuation.

References

1. Mahan,L.K and Shump,S.E.Krause's Food Nutrition & Diet therapy, W.B Saunder's Company,XII edition, 2001.
2. Shills,E.M, Olson,S.J and Shiks,M.C.Modern Nutrition in health and disease Lea and Febringer,Philadelphia,8th edition,1994.
3. Srilakshmi,B.Dietetics,New Age International Publishers Pvt Ltd,Chennai,2006.
4. Antia, F.P.Clinical Dietetics and Nutrition,Oxford University Press, New Delhi.
5. Davidson,Passmoore,P and Break ,L.P Human Nutrition and Dietetics. English language book society.Livingstone,1986.
6. Robinson.Normal and Therapeutic Nutrition Oxford and LBM Publishing,Calcutta,17th edition,1990.
7. Garrow,J,S & James,W.P.T.Human Nutrition and Dietetics. Churchill livingstone,1993.

UNIVERSITY OF KERALA

M.Sc. Home Science

Branch XE Nutrition and Dietetics

Semester II

Paper VIII – HS224E – Internship & Case Study at a Life Style Disease Management Clinic

SYLLABUS

Total Hours: 120

Objectives

- To understand principles and develop skills for nutritional management of life style diseases in clinical practice
- To interact effectively with patients and their families to give nutritional care and advice in order to achieve health and well being
- To develop standards of dietetic practice consistent with expanding database and advancement in the field of clinical dietetics
- To develop expertise in doing case study, preparation of teaching aids and acquiring professional competency.

A full time one and a half month internship in a multi-specialty hospital under a registered dietitian during the semester wherein the student should undergo training in diet counselling and should complete 3 case study on any diseases listed below and should submit a report on internship and case study for evaluation.

Contents:

A. Case – Study Approach – Interpretation of patient data handling:

i) Nutritional status and Diagnostic tests

ii) Drawing-up of patients prescription

iii) Discharge diet plans and follow-up where possible

iv) Acceptability and compliance

v) Preparation of teaching aids

vi) Monitoring patients progress for any 3 of the following:

1. Weight imbalance- Obesity, thyroid disorders, PCOD
2. Diabetes Mellitus

3. Renal disorders
4. Liver disorders
5. Respiratory disease
6. Cardiovascular disease
7. Cancer

B. Internship Report

i. Hospital- History, Organization, Departments, Functions, Services
ii. Case Study – 3 life style disease with teaching aids
iii. Internship Outcome

A report to be maintained and submitted for external valuation

UNIVERSITY OF KERALA

M.Sc. Home Science

Branch XE Nutrition and Dietetics

Semester III

Paper IX – HS231E – Hospital Internship

Syllabus

Total hours: 110

Objectives

1. To attain exposure to the dietary department in a hospital setting
2. To understand the duties and responsibilities of dietitians
3. To cater the needs of patients
4. To possess a sound knowledge of food and nutrition, quantitative food production, biological sciences, pathophysiology of disease, and the ability to act in a variety of capacities in clinical, administrative, and community settings.
5. To become competent to be a dietitian and to set up a diet clinic

A full time one and a half month internship in a multi-specialty hospital under a registered dietitian during the semester wherein the student should undergo training in dietary department and should understand the duties of dietitian and working of dietary department and complete 3 case study on any diseases and should submit a report on internship and case study for evaluation.

Contents:

A. Case – Study Approach – Interpretation of patient data handling:

i) Nutritional status and Diagnostic tests

ii) Drawing-up of patients prescription

iii) Discharge diet plans and follow-up where possible

iv) Acceptability and compliance

v) Preparation of teaching aids

vi) Monitoring patients progress for any 3 diseases

B. Internship Report

i) Hospital- History, Organization, Departments, Functions, types of feeds, supervision and preparation of feeds, Schedule & Services with emphasis to dietary department

ii) Case Study – 3 disease with teaching aids

iii) Internship Outcome

A Report to be maintained and submitted for external valuation.

UNIVERSITY OF KERALA

M.Sc. Home Science

Branch XE Nutrition and Dietetics

Semester III

Paper X – HS232E – Public Health Nutrition

(Common to Branches X D & X E)

(Theory) SYLLABUS

Total hours: 110

Objectives

- To gain insight into the public health problems and their implications
- To develop skills in organizing and evaluating nutrition projects in the community
- To appreciate the national and international contribution towards nutrition improvement in India

Unit I - Public Health Nutrition – An Overview

- Concept and importance of public health nutrition
- Public health issues and problems
- Health care system in India
- Role of public nutritionist in health care delivery

Unit II - Public Health Problems I

- Grade of malnutrition, PEM, Severe acute malnutrition (SAM)
- Micronutrient deficiencies – Vit. A, IDA, IDD, Zinc deficiency
- Vitamin deficiencies – Beri-beri, Ariboflavinosis, Pellagra, Folic acid and B_{12} deficiency, Scurvy, Rickets and Osteomalacia
- Prevalence and management

Unit III - Public Health Problems II

- Incidence and prevalence of Communicable diseases – Tuberculosis, Cholera, Diarrhoea and AIDS
- Non Communicable diseases- Obesity, Cardio-vascular diseases, Diabetes, Cancer and their preventive measures

Unit IV - Economics of Nutrition

- Malnutrition and its economic consequences
- Economics in Nutrition – Food security, food production and food pricing

Unit V - Assessment of nutritional status in community settings

- Methods of nutritional assessment - ABCD technique
- Dietary assessment – family diet survey, assessment of dietary intake of individuals, qualitative diet surveys, institutional diet surveys, food balance sheet

Unit VI - Strategies to combat Public Health Problems

- Improving food and nutrition security - Green White and Blue revolution
- Nutrition education - Principles of planning – where, when, whom, Kitchen garden, AV Aids, food fortification, food enrichment, PDS, PHC

Unit VII - Nutrition Intervention programmes

- National Nutrition Policy
- Preschool feeding programme: Integrated Child Development Services Scheme (ICDS)
- Mid-day meal Programs (MDM)
- Special Nutrition Programs (SNP)
- Wheat Based Nutrition Programs (WNP)
- Applied Nutrition Programs (ANP)
- Balwadi Nutrition Programs (BNP)
- National Nutritional Anaemia Prophylaxis Program (NNAPP)
- National Program for Prevention of Blindness due to Vitamin A Deficiency
- National Goitre Control Program
- Food and Nutrition Board (FNB) and other programmes organised by the governmental and non- governmental agencies for the vulnerable sections of the population.

Unit VIII - Role of national and International Organizations to combat malnutrition

- International organizations concerned with food and nutrition - FAO, WHO, UNICEF, CARE, AFPRO, CWS, CRS, World Bank and others.
- National organizations concerned with Food and Nutrition - ICMR, ICAR, CHEB, CSWB, SSWB

RELATED EXPERIENCE

Visiting a few local feeding centre and evaluating the conduct of the programmes. Planning, conducting and evaluating nutrition education programme in rural areas.

References

1. Oxford textbook of Public Health Ed. Roger Detels, James Mcewen, Robert Beaglehole, and Heizo Tanaka Oxford University Press (OUP) 4th Edition: 2002.
2. Public Health at the Crossroads – Achievements and Prospects. Robert Beaglehole and Ruth Bonita 2nd Edition Cambridge University Press
3) Maxcy-Rosenau-Last Public Health & Preventive Medicine, Fourteenth Edition Ed Robert Wallace, MD, et al.
4) Epidemiology and Management for Health Care: Sathe , P.V. Sathe, A.P., Popular Prakashan, Mumbai, 1991
5) International Public Health: Diseases, Programs, Systems, and Policies by Michael Merson, Robert E Black, Anne J Mills - Jones and Bartlett Publishers
6) Preventive and Social Medicine, K Park, Bansaridas Bhanot Publishing House.

UNIVERSITY OF KERALA
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Branch XE Nutrition and Dietetics

Semester III

Paper XI – HS233E – Applied Nutrition (Theory) SYLLABUS

Total hours: 110

Objectives

- To understand the significance of nutrition in the different stages of life cycle and in special conditions
- To gain knowledge about functional foods and nutraceuticals in health and disease.

Unit I - Menu Planning

- Rationale for menu planning
- Factors affecting food choice - Nutritional factors, other factors
- Menu Planning for adults - Recommended daily allowances, portion sizes for different age groups
- Food composition tables and their significance

Unit II - Nutrition during Pregnancy and lactation

- Physical and physiological changes during pregnancy
- Placental transfer of nutrients and maternal weight gain
- Nutritional needs during pregnancy
- Maternal nutrition and foetal outcome
- Nutritional management of high risk pregnancies
- Nutrition related disruptions in fertility (under and over nutrition)
- Physiology of lactation
- Human milk composition
- Infant growth and development
- Nutrient requirements during lactation, Galactogogues
- Breast feeding Vs bottle feeding, Benefits of Breast Feeding, Contraindications

Unit III - Nutrition in Infancy and preschool children

- Growth and development
- Nutrient needs and recommended dietary allowances
- Feeding of Low birth weight and premature infants
- Weaning: Homemade foods versus commercial foods
- Problems of infant and nutrition

Unit IV - Nutrition in School-going children and adolescents

- Nutritional requirements for School going children
- Factors to be considered while planning diet for school going children
- Influence of television on eating habits of school going children, packed lunch
- Adolescents: Sequence of developmental changes, Role of hormones on growth, development and maturation
- Nutritional requirements during adolescence
- Challenges in adolescence: weight control, skipping meals, anorexia, fast foods, smoking, alcohol and drug abuse, teenage pregnancy

Unit V - Nutrition during old age

- Physiological changes associated with ageing and complications
- Changing body composition and techniques for measuring body composition
- Nutritional requirements and dietary modification in the diet of the elderly

Unit VI - Nutrition for fitness and Sports

- Physical fitness and its measurement
- Measurement of body composition
- Sources of energy in the body – carbohydrates, protein and fat
- Factors affecting fuel utilization
- Nutritional requirements of athletes
- Hydration –water and other fluids
- Sport supplements
- Pre-competition, during competition and post competition meal

Unit VII - Nutrition in special conditions

- General adaptive mechanisms to extreme environments
- Nutritional requirements for extreme environments
- Health Hazards associated with extreme environments and high altitude
- Nutritional requirements for space missions

Unit VIII - Nutritional regulation of Gene Expression, Epigenetic & Nutrigenomics

- Introduction to Gene Expression
- Role of specific nutrients in controlling gene expression – Proteins, Lipids
- Definition and principles – epigenetics, nutrigenomics

Unit IX - Functional foods and nutraceuticals in health and disease

- History, Definition, Classification, Sources, Physiological effects - effects on human health and potential applications in risk reduction of diseases of the following:
    - Prebiotics
    - Probiotics
    - Synbiotics
    - Non-digestible carbohydrates/oligosaccharides: Dietary fibre, Resistant starch, Gums
    - Other Food Components
        - Polyphenols: Flavonoids, catechins, isoflavones, tannins
        - Phytoesterogens and Phytosterols
        - Pigments : Lycopene, Curcumin
        - Organo sulphur compounds

Related experience

Plan balanced diets for different age groups

References

1. Food, Nutrition and Diet Therapy – Kathleen Mahan & Krause, Sylvia Escott Stump, Saunders 2004
2. Modern Nutrition in Health & Diseases – Eds – Maurice E. Shils, James A. Olson, Moshe Shike, 10th edition, Vol I and II, Lippincott Willliams & Wilkins Publication 2006.
3. Nutrition and Dietetics – Shubhangini A Joshi, 3rd edition, Tata Mc Graw Hill publication 2010
4. Wardlow's Perspectives in Nutrition – Gordon M. Wardlaw, Margaret Kessel, 9th edition, Mc Graw Hill Publication 2012.
5. Nutrition and Metabolism – Nutrition Society Textbook, 2nd edition, Eds – Michael J. Gibrey, Ian A Macdonald and Helen, Wiley-Blackwell publishing.2010
6. Human Nutrition – Geissler & Powers, 11th edition, Elsevier Publications, 2010.
7. Dietetics – B Srilakshmi, 7th edition, New Age International Publishers, 2014.
8. Brown, J. E - Nutrition Now, West/Wadsworth: International Thomson Pub. Co. 1998.
9. Brown, J. E., Sugarman, I. J. - Nutrition through the Life Cycle, Wadsworth Thomson Learning2002.
10. Groff, J. L and Gropper, S. S. - Advanced Nutrition and Human Metabolism, 7th edition, Belmount CA: Wads worth/Thomson Learning, 2016.
11. Warthington, R., Vermeersch J. and Willams, S. - Nutrition in Pregnancy and Lactation St. Louis Times Mirror.Mosby College Publishing, 1997.

Journals

1. Journal of American Dietetic Association USA – The American Dietetic Association.
2. Nutrition Reviews, New York Springton Verlog
3. The American – Journal of Clinical Nutrition – USA Official Journal of the American Society for Clinical Nutrition Inc
4. The Indian Journal of Nutrition and Dietetics

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M.Sc. Home Science

Branch XE Nutrition and Dietetics

Semester III

Paper XII – HS234E – Statistics and Computer Application

(Common to all Branches X - B, C, D and E)

(Theory) SYLLABUS

Total hours: 120

Objectives

- To enable the students to develop knowledge in statistical tools and computer applications

Unit 1 - Introduction to Statistics

- Definition, understanding of statistical measures
- Popular concepts and misuse of statistics

Unit II - Data Management and Analysis

- Quantitative analysis, descriptive statistics, inferential statistics: Uses and limitations
- Summation sign and its properties
- Proportions, percentages, ratios

Unit III - Measures of central tendency and dispersion

- Mean, median, mode ,arithmetic mean and its uses, mid – range, geometric mean, weighted mean
- Measures of dispersion - range, variance, standard deviation, standard error, coefficient of variation
- Grouped data-frequency distribution, histogram, frequency polygons, percentiles, quartiles, ogive

Unit IV - Data Analysis

- Coding of data
- Parametric and non-parametric tests
- Use of statistical tools

Unit V - Normal Distribution and its Properties

- Normal distribution –importance and properties of normal distribution
- Theory of attributes,
- Probability, use of normal probability tables
- Area under normal distribution curve

Unit VI - Large and Small Sample tests and interpretation

- Z-test for single proportions and difference between proportions
- Large sample test for single mean and difference between means
- Small sample tests- 't'-test, paired 't'-test, 'F' Test

Unit VII - Chi square test and its interpretation

- Chi square test and its interpretation-general features, goodness of fit
- Independence of Attributes

Unit VIII - Correlation and Regression and its interpretation

- Basic concepts, linear regression and correlation coefficient
- Regression, Rank correlation

Unit IX - Analysis of Variance and its interpretation

- One-factor analysis of variance
- Two-factor analysis of variance

Unit X - Concepts of Hypothesis

- Null and Alternative Hypothesis
- Type I and type II errors

Unit XI - Introduction to SPSS and Excel: its Applications

- Application of excel and SPSS
- Histogram, pie diagram ,scatter diagram graphs - presentation using SPSS /excel

References

1. Gosh, B. N. Scientific methods and social Research , Sterling Publishers Pvt Ltd.New Delhi
2. Kothari, C. R. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi, 2014
3. Sharma, B. A. V. Prasad, R D and Satyanarayana, P. Research Methods in social science, Sterling Publishers Pvt.Ltd ,1985.
4. Agarwal, Y.P. Statistical Methods , Sterling Publishers Pvt.Ltd ,1990.
5. Gupta, S. Research Methodology and Statistical Techniques., Deep and Deep, New Delhi. 2001.
6. Gupta, S.P. Practical Statistics, 37th edn, S. Chand, New Delhi, 1996.
7. Gupta, S.C. Fundamentals of Statistics, Himalaya Publishers, Mumbai, 2000.
8. Gupta, S.P. Statistical Methods, Sultan Chand & Sons, New Delhi, 2000.
9. Nagar, A.L. & Das, R.K. Basic Statistics, 2nd ed., OUP, Delhi, 1997.

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Branch XE Nutrition and Dietetics

Semester IV

Paper XIII – HS241E – Paediatric and Geriatric Nutrition (Theory)Syllabus

Total hours: 110

Objectives

- Realize the importance of nutritional care and nourishment of children and elderly
- Understand the specific needs of children and the effects of various diseases on nutritional status and nutritional requirements

Unit I –Paediatric Nutritional Assessment

- Anthropometric measurements, biochemical parameters, clinical and dietary data
- Measuring, recording and plotting growth

Unit II - Identification of sick new born

- Detection of abnormal signs- cyanosis, jaundice, respiratory distress, bleeding, seizures, refusal of feed, abdominal distention, failure to pass meconium and urine, Apgar Score

Unit III - Nutritional considerations for LBW children, and children with developmental disabilities

- Premature, LBW babies, children with developmental disabilities- Autism Spectrum Disorders, Attention Deficit Hypertensive Disorder(ADHD); characteristics, causes, complications, Dental carries, allergies, Feeding methods, diet pattern/principles
- Failure to thrive, underweight nutrition

Unit IV - Immunization Schedule

- During pregnancy, infancy and childhood, types of vaccines, controversies in vaccine mandates

Unit V - Nutritional management in various diseases

- Childhood Obesity
- Inborn Errors of Metabolism: Nutritional Care Management
    - Disorders of Carbohydrate metabolism - Galactosemia, Glycogen storage disorder, lactose intolerance, fructose intolerance
    - Disorders of amino acid metabolism – alkaptonuria, Phenylketonuria, Maple syrup urine disease, Homocystinemia
- **Gastrointestinal diseases and disorders**: Diarrhoea, gluten sensitive enteropathy, inflammatory bowel disease, constipation
- **Neurological disease in children:** causes - congenital, pre/perinatal, acquired; Epilepsy (Ketogenic diets), Cerebral palsy, Neural tube defects, mental retardation, Down syndrome
- **Pulmonary disease in children**: perinatal respiratory distress, pneumonia, tuberculosis, cystic fibrosis
- **Renal disease in children**: Nephritic syndrome, acute and chronic renal failure

Unit VI - Geriatric Nutrition

- **The ageing process**: Theories of ageing, physiological, socio- psychological, and metabolic aspects of ageing, body composition changes and impact on health and nutritional status, special problems of elderly
- **Nutritional and health status of elderly**: Factors influencing food and nutrient intake - health status including lifestyle pattern, medication
- **Chronic degenerative diseases** – Osteoporosis, Dementia, Alzheimer's disease, Parkinson's disease and nutritional problems of the elderly-their causes, management and prevention
- **Policies and Programmes** of the Government sector pertaining to the elderly

Related Experience

1. Measuring, recording and plotting growth of infants
2. Problems of elderly- Report

References

1. Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone, New York
2. Mahan,L.K and Escott Stump,S. 2000.Krause's Food Nutrition and Diet Therapy.10th edition,W.B Saunders Ltd.
3. Modern Nutrition in Health & Diseases – Eds – Maurice E. Shils, James A. Olson, Moshe Shike, 10th edition, Vol I and II, Lippincott Willliams & Wilkins Publication 2006.
4. Escott-Stump,S. 1998. Nutrition and Diagnosis Related Care.4th edition, Williams and Wilkins.
5. Davis,J and Sherer,K.1994.Applied Nutrition and Diet therapy for Nurses .2nd edition.W.B Saunders Co.
6. Guyton, A.C and Hall, J.E, 2006. Textbook of Medical Physiology. 11th edition. W.B Saunders Co.
7. Madhu Sharma, 2009. Basic Paediatric Nutrition. Jaypee Publishers(P) LTD. New Delhi.
8. Rimple Sharma, 2013. Essentials of Paediatric Nursing. Jaypee Publishers (P) LTD. New Delhi.
9. Padmaja, A, 2016. Text book of Child Health Nursing. Jaypee Publishers (P) LTD.New Delhi.
10. Rabindra Nath Roy & Indranil Saha, 2013.Mahajan & Gupta Text Book of Preventive and Social Mediicne. Jaypee Publishers (P) LTD. New Delhi.
11. Chernoff Ronni, c2014.Geriatric Nutrition: The Health Professionals Handbook 4th ed. Burlington, M A : Jones & Bartlett Learning. CRC Press.

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M.Sc. Home Science

Branch XE Nutrition and Dietetics

Semester IV

Paper XIV – HS242E – Advanced Human Nutrition

(Common to Branches X D & X E)

(Theory) SYLLABUS

Total hours: 110

Objectives:

To enable the students to

1. Obtain in-depth knowledge of both macro and micro nutrients.
2. Understand the role of each nutrient in various stages of life and diseases due to their deficiencies and excess intake.

UNIT I - Energy

- Energy content of food, energy measurement, direct and indirect calorimetry, basal metabolism, physical activity, specific dynamic actions of food, energy requirements, ICMR standards, energy balance and control of body weight.

UNIT II- Carbohydrates

- Nutritional importance of Carbohydrates; Dietary fibre- Components, types, sources, significance, consequence of over consumption.

UNIT III- Proteins and Amino acids

- Source of energy, protein requirements- ICMR, computation of protein requirements through factorial method and balance study, dietary protein quality.

UNIT IV - Lipids

Lipids transformation in the liver, lipotropic factors, role of essential fatty acids, deposition of fats in the body. Effects of deficiency and excess of fats.

UNIT IV Macro elements

- Calcium- Calcium in skeleton and other tissues, measurements, bone mass, effect of diet and immobilization, calcium absorption and utilization, calcium balance, calcium requirements, source, hypercalcemia and hypocalcaemia. Phosphorus- Concentration in the body, phosphorus - calcium ratio, phosphorus absorption and utilization, phosphates in blood.

UNIT V Micro elements

- Iron- Iron intake, sources, availability, absorption, transport, utilization and storage, Fluorine- physiology and sources. Role of fluoride in the prevention of dental caries and toxic effects of fluoride.

UNIT VI Trace elements

- The concept of trace elements, mode of action of trace elements, trace elements interaction. Physiology, sources, deficiency and toxicity of the following -Iodine and thyroid, recommended intakes and deficiency.

UNIT VII. Vitamins- Fat soluble vitamins

- Introduction - units of measurements of Vitamins, Fat soluble vitamins- Classification, physiological action, transport-, storage, RDA and deficiency diseases- Toxicity.

UNIT VIII. Water Soluble Vitamins

- Classification, physiological action, transport, storage, RDA, deficiency diseases and Toxicity.

References

1. Gibney M.J. Introduction to Human Nutrition, 2nd edition, Wiley- Blackwell Publishers, 2009.
2. Modern Nutrition in Health & Diseases – Maurice E. Shils, James A. Olson, Moshe Shike, 10th edition, Vol I and II, Lippincott Willliams & Wilkins Publication 2006.
3. Food, Nutrition and Diet Therapy – Kathleen Mahan & Krause, Sylvia Escott Stump, Saunders 2004
4. Nutrition Science, B. Srilakshmi, 5th edition, New Age International Publishers, 2016.

Journals

1. Nutrition Reviews
2. Journal of Nutrition
3. American Journal of Clinical Nutrition
4. British Journal of Nutrition
5. European Journal of Clinical Nutrition
6. International Journal of Vitamin and Nutrition Research
7. International Journal of Food Science and Nutrition
8. Nutrition Research
9. Ann Nutr Metab

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Branch XE Nutrition and Dietetics
Semester IV
Paper XV – HS243E – Pathophysiology in Diseases
(Theory) SYLLABUS

Total hours: 110

Objectives

- To enable the students to understand the biochemical and physiological changes in disease conditions
- Relate an understanding of normal body functions to the pathologic changes that occur as a result of illness, as well as the body's ability to compensate for these illness-related changes
- Assess the multiple pathological factors which affect the patient's clinical presentation
- To be able to process the data available from history, physical signs and initial investigations of the selected clinical cases to achieve a meaningful conclusion about the possible diagnosis.

Unit I - Concepts of pathophysiology and adaptation in metabolic stress

- Cellular response to injury and injurious agents
- Systemic inflammatory response
- Multiple organ dysfunction syndrome
- Metabolic response to Stress and physiologic effects
- Pathophysiology of head injury and major burns
- Cellular proliferation and cancer

Unit II - Food drug and nutrient interactions

- Pharmacologic aspects of food-drug interactions- Pharmacodynamics, Pharmacokinetics, Pharmacogenomics
- Risk factors of food-drug interactions
- Effects of food on drug therapy
- Effects of drugs on nutrition and nutritional status

Unit III - Pathogenesis of obesity, malnutrition and starvation

- Pathogenesis, Metabolic changes

Unit IV - Pathophysiology of gastrointestinal tract diseases

- Manifestations of gastrointestinal dysfunction
- Pathophysiology of:-
    - Indigestion and dyspepsia, Gastritis, Peptic ulcer, Carcinoma of stomach, Dumping syndrome
    - Celiac disease, Inflammatory bowel diseases- Crohn's disease, Ulcerative colitis, Irritable bowel syndrome, Diverticulosis

Unit V - Pathophysiology of liver diseases and metabolic disorders

- Progression of liver diseases, metabolic and nutritional implications, role of alcohol, biochemical and pathophysiological changes in Diabetes mellitus, hypo and hyperthyroidism

Unit VI - Pathophysiology of cardio-vascular diseases

- Pathophysiology of Atherosclerosis, Thrombosis
- Alterations of cardio-vascular functions, metabolic and nutritional implications
- Dyslipidemias, Hypertension

Unit VII - Renal and urological biochemistry and pathophysiology

- Manifestations of renal diseases
- Alterations of renal and urinary tract function
- Pathophysiology of Nephritis, Nephrotic syndrome, Renal failure, ESRD, Kidney stones

Unit VIII - Organ Function Tests

- Liver, kidney, thyroid, pancreatic and gastric function tests (2 each)

References

1. Food, Nutrition and Diet Therapy – Kathleen Mahan & Krause, Sylvia Escott Stump, Saunders 2004 11th edition.
2. Chatterjea, M.N and Shinde, R. Textbook of Medical Biochemistry, JayPee Brothers. Medical Publishing Pvt Ltd. New Delhi. 2007 and Seventh edition.
3. Lehninger, A.L, Nelson, D.L and Cox, M.M. Principles of Biochemistry. CBS Publishers, Jain Bhavan,Bhala Natu Nagar.2004 and Fourth edition.

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Branch XE Nutrition and Dietetics

Semester IV

Paper XVI – HS244E – Techniques in Clinical Nutrition

Syllabus (Practicals)

Total hours: 120

Objectives

- To develop skills in the estimation of biochemical parameters
- To understand the levels of biochemical parameters in health and disease
- To develop skills in biophysical techniques in clinical nutrition

1. Analysis of blood for

a) Glucose
b) Haemoglobin
c) Cholesterol
d) Serum A/G ratio and total protein
e) Serum Vitamin A

2. Analysis of urine for

a) Creatinine
b) Urea
c) Calcium
d) Vitamin C
e) Protein
f) Glucose

Related Experience

- A record to maintained and submitted for external valuation
- A Visit report on biophysical techniques observed in a research centre

References

1. Boyer, R. (2000). 3rd Ed. Modern Experimental Biochemistry. Person Education, Asia.

2. Dawes, E.A. (1980) 6th Ed. Quantitative Problems in Biochemistry. Longman Group Ltd.

3. Khosla, B.D., Garg, V.C. and Khosla, A. (1987). 5th Ed. Senior Practical Physical Chemistry. R. Chand & Co. New Delhi.

4. Bhagya, D (2015) Techniques in Clinical Nutrition: A Manual. ISCA, Indore.1-68.

5. Raghuramulu N.; Madhavan Nair and K. Kalyanasundaram, S. (1983). A Manual of Laboratory Technique. NIN. ICMR.

6. Sharma, B.K. (1999). 8th Ed. Instrumental Methods of Chemical Analysis. Gel Publishing House.

7. Srivastava, A.K and Jain, P.C. (1986). 2nd Ed. Chemical Analysis: An Instrumental Approach. S Chand and Company Ltd.

8. Varley, H.; Gowenlock, A.H. and Bell, M. (1980). 5th ed. Practical Clinical Biochemistry. Heinemann Medical Books Ltd.

REVISED SYLLABI FOR

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In this programme, we aim to provide a solid foundation in all aspects of Physics and to show a broad spectrum of modern trends in physics and to develop experimental, computational and mathematical skills of students. The syllabi are framed in such a way that it bridges the gap between the plus two and post graduate levels of physics by providing more or less complete and logical framework in almost all areas of basic Physics.

The programme also aims to

Provide education in physics of the highest quality at the undergraduate level and generate graduates of the calibre sought by industries and public service as well as academic teachers and researchers of the future.

Attract outstanding students from all backgrounds.

Provide an intellectually stimulating environment in which the students have the opportunity to develop their skills and enthusiasms to the best of their potential.

Maintain the highest academic standards in undergraduate teaching.

Impart the skills required to gather information from resources and use them.

Equip the students in methodology related to Physics.

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By the end of the first year (2nd semester), the students should have,

Attained a common level in basic mechanics and properties of matter and laid a secure foundation in mathematics for their future courses.

Developed their experimental and data analysis skills through a wide range of experiments in the practical laboratories.

By the end of the fourth semester, the students should have

Been introduced to powerful tools for tackling a wide range of topics in Thermodynamics, Electrodynamics, Classical Mechanics and Relativistic Mechanics.

Become familiar with additional relevant mathematical techniques.

Further developed their experimental skills through a series of experiments which also illustrate major themes of the lecture courses.

By the end of the sixth semester, the students should have

Covered a range of topics in almost all areas of physics including Quantum Physics, Solid State Physics, Computational Physics, Electronics etc.

Had experience of independent work such as projects, seminars etc.

Developed their understanding of corePhysics.

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1	PY1141 – Basic mechanics & Properties of matter	2	2	36	3 hrs	
2	PY1241 - Heat	2	2	36	3	

	& Thermodynamics				
3	PY1341 – Electrodynamics	3	3	54	3
4	PY1441 - Classical & Relativistic Mechanics	3	3	54	3
	PY1541– Quantum Mechanics	4	4	72	3
	PY1542 – Statistical Mechanics Research Methodology and Disaster Manage	4	4	72	3

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	PY1543 – Electronics	4	4	72	3
	PY1544 –Atomic & Molecular Physics	4	4	72	3
	PY1551 – Open course	3	2	54	3
	PY1641 -Solid State Physics	4	4	72	3

	PY1642 – Nuclear & Particle Physics	4	4	72	3
6	PY1643 - Classical & Modern Optics	4	4	72	3
	PY1644 -Digital Electronics & Computer Science	4	3	72	3
	PY1661 – Elective Course	3	2	54	3

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Sem	Title of Paper	Duration of Exam	Number Of Credits	Weightage IA	Weightage UE	Allotted hours Per week	Allotted hours Per year
4	99 #", 35#", #)	3	3	1	3	S1---2 S2---2 S3---2 S4—2	144
6	:9 ; . % ,+ 35#", #)	3	2	1	3	S5---2 S6—2	72
	:9 : . % ,+	3	3	1	3	S5---2	72

6	35#", #) <					S6—2	
6	PY-1647-Project	-	4	-	4	S5-2 S6-2	72

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Semester	Theory		Practical		
	Number of hours/ week	Number of credits	Total hours/sem	number of hours/ week	Number of credits
1	2	2	36	2	-
2	2	2	36	2	-
3	3	3	54	2	-

4	3	3	54	2	4

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Seme Ster	Title of the course	No. of hours/ week	No. of credits	Total credits	Total hours per sem.	UE
1	PY1131.1-Mechanics & properties of matter 2	2	2	36	3	duration
	Practical	2			36	
2	PY1231.1-Thermal	2	2	2	36	3

	Physics and statistical mechanics							
	Practical		2			36		
3	PY1331.1-Optics,magnetism & electricity	3	3	3	54	3		
	Practical		2			36		
4	PY1431-Modern Physics & Electronics	3	3	7		3		

	PY1 432- Practical	2	4		36		

/ 35#",# 2$' 3+!"#-'5 / , '$4' !!+#

Semester	Title of the course	No. of	No. of hours/ week	Total credits	Total credits	UE hours per.	duration
1	PY1 131. 2- Rotational dynamics & properties of Matter	2	2	2	36	3	
	Practical		2			36	
2	PY 123	2	2	2	36	3	

	1.2-Thermal Physics							
	Practical		2			36		
3	PY 1331.2-Magnetism & Electricity	Optics,	3	3	3	54	3	
	Practical		2			36		
4	PY 1431.2-Atomic Quantum Electronics	physics, mechanics &	3	3	7	54	3	
	PY 143			2	4		36	3

	2- Pra ctic al							

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Semester	Title of the course	No. of	No. of hours/ week	Total credits	Total Credits	UE hours per sem.	duration
1	PY1131.3-Mechanics & properties of matter	2	2	2	36	3	
	Practical		2			36	
2	PY1231.3-Thermal & statistical mechanics	Physics 2	2	2	2	36	3

	Practical		2			36		
3	PY1331.3-Magnetism & electricity	Optics,	3	3	3	54	3	
	Practical			2			36	
4	PY1431.3-& Electronics	Modern	physics	3	3	7	54	3
	PY1432-Practical		2	4		36	3	

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Semester	Title of the course	No. of	No. of hours/ week	Total credits	Total credits	UE hours per sem.	duration
1	PY1131.4-properties of matter	Mechanics &	2	2	2	36	3
	Practical		2			36	
2	PY1231.4-Physics & Physics of the Earth	Thermal	2	2	2	36	3
	Practical		2			36	

3	PY1331.4-electrodynamics and Optics	3	3	3	54	3	
	Practical	2			36		
4	PY1431.4-Physics, crystallography Modern Electronics &	3	3	7	54	3	
	PY1432-Practical	2	4		36	3	

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Semester	Title of the course	No. of hours/ week	No. of credits	Total credits	Total hours per sem.	UE duration
1	PY1131.5-Mechanics & properties of matter 2	2	2	36	3	
	Practical	2			36	
2	PY1231.5-Thermal Physics	2	2	2	36	3
	Practical	2			36	
3	PY1331.5-Optics and	3	3	3	54	3

	electricity Practical		2			36	
4	PY1431.5-Atomic & Electronics	physics	3	3	7	54	3
	PY1432-Practical		2	4		36	3

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Semester	Title of the course	No. of hours/ week	No. of credits	Total credits	Total hours per sem.	UE duration	
1	EL1131-Electronics I	2	2	2	36	3	
	Practical	2			36		
2	EL1231-Electronics II	2	2	2	36	3	
	Practical	2			36		
3	EL1331-Electronics III	3	3	3	54	3	

	Practical	2			36	
4	EL1431-Electronics IV	3	3	7	54	3
	EL1432-Practical	2	4		36	3

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Seme Ster	Title of the course	No. of	No. of hours/ week	Total credits	Total credits	UE hours per sem.	duration
1	PY1131.7–Mechanics and Fluid	2	2	2	36	3	

	dynamics of							
	Practical		2			36		
2	PY 1231.7-Thermal Physics	2	2	2	2	36	3	
	Practical		2			36		
3	PY 1331.7-Modern Optics & Electricity		3	3	3	54	3	
	Practical		2			36		
4	PY 143	Physics	3	3	7	54	3	

	1.7-Atomic and Electronics	&							
	PY 1432-Practical		2	4		36	3		

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For all semesters

1. The examination has duration of 3 hours
2. Each question paper has four parts A, B, C & D.
3. Part A contains 10 questions and the candidate has to answer all questions. Each question carries 1mark. The answer may be in the forms-one word/one sentence
4. Part B contains 12 short answer questions. Out of these 12 questions, the candidate has to answer 8 questions. Each question carries 2marks.
5. Part C contains 9 questions of which the candidate has to answer 6 of them. Each question carries 4 marks.
6. Part D contains 4 long answer questions (essays) of which the candidate has to answer 2 questions. Each question carries 15 marks.
7. The total weightage for the entire questions to be answered is 80 marks.

QUESTION PAPER PATTERN FOR TEST

Question No	Type of Question	Marks
Part A : 1-10	10 One word/ One sentence	10
Part B : 11-22	8 out of 12; Short answer	16
Part C : 23-31	6 out of 9; Short essay/ problem	24
Part D : 32-35	2 out of 4; Essay	30

Total=
80
marks

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During the programme the students have to undergo two open/elective courses. The students attached to the Physics department can opt one course from the Physics department (Elective course) and the other from any one of the other departments (Open course). The student has to do the open course during the fifth semester and the elective course during the sixth semester. As a beginning, the department will choose one open course for the fifth semester and one elective course for the sixth semester depending on the faculty and infrastructure available.

(a). Open Courses.

i) Bio-Physics ii) Astronomy & Astrophysics iii) Applied Physics
iv) Environmental Physics v) Energy Physics

(b). Elective Courses.

i) Photonics ii) Nano science iii) Computer hardware and networking iv) Instrumentation v) Space Science

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As part of study the candidate has to do a project work. The aim of the project work is to bring out the talents of students and to introduce research methodology. The work may be chosen from any branch of Physics, which may be experimental, theoretical or computational. Emphasis should be given for originality of approach. The project shall be done individually or as a group of maximum 5 students. The projects are to be identified during the 4th semester with the help of the supervising teacher. The report of the project (of about 30-40 pages) in duplicate shall be submitted to the department by the end of the 6th semester well before the commencement of the examination. The reports are to be produced before the external examiners appointed by the University for valuation.

STUDY TOUR

Students are directed to visit one research institute /science museum preferably within the state of Kerala. Scientifically prepared hand-written study tour report must be submitted by each student for ESE on the day of the examination of project evaluation.

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There will be continuous evaluation (CE) based on continuous assessment and end semester examination (ESE) for each course. CE carries 20 marks based on specific components such as attendance, tests, assignments, seminars etc. and ESE 80 marks. Out of the 20marks in internal assessment, 5marks shall be given to attendance, 10 marks to test papers, 5marks to seminar / assignments (minimum one test & one assignment). The components of the internal evaluation for theory and practical and their marks are given below.

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No	Component	marks
	Attendance	5
	Assignment	5
3	Test paper	10
	Total	20

The continuous evaluation (CE) shall be based on periodic written tests, assignments, viva/ seminar and attendance in respect of theory courses. 8'"--+% +#-#: Each test paper may have duration of minimum 3 hours. For each course there shall be a minimum of one written test during a semester. ##"4%!+%-#Each student is required to submit one assignment for a theory course. Seminar / Viva: For each theory course, performance of a student shall also be assessed by conducting a viva – voce examination or seminar presentation based on topics in that course.

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$	$!=$%+%-	'@#
1	Attendance	5
2	Skill & Punctuality	5
3	Laboratory record	5
4	Test (internal exam)	5
	Total	20

Lab skill is to be assessed based on the performance of the student in practical classes. Minimum one practical test paper and an internal viva – voce examination based on the experiments done in the lab are to be conducted in each practical course. The laboratory record should contain an index and a certificate page. Separate records are to be used for each practical course. , % " -+ #3 00)+ =+'!"--+ -$ --+% % +% #+!+#-+' =' ,-", 0 +A !"% -"$% $%05 "2 3+ 6 #3+ #1)!"- ,+'-"2"+ '+,$' &"-3 !"%"!1! $2 +A=+'"!+%-# . This is to be

endorsed by the examiners.
The +. 01 -"$% $2 ,+'-"2"+ '+,$' shall be according to the scheme given below.

$ $2 +A=+'"!+%-# '+,$' +	'@#
18	10
16	9
14	8
12	7
10	6

, 3+ 00$-!+%- $2 ! '@# 2$' --+% %,+ #3 00)+ # 2$00$&#/

	% of attendance	Marks
Attendance	Attendance less than 50%	0
	51%-60%	1
	61%-70%	2
	71%-80%	3
	81%-90%	4
	91%-100%	5

+#-#B ##"4%!+%-# % +!"% '#

For each course there shall be at least two class tests during a semester. Marks for the test in continuous evaluation shall be awarded on the basis of the markssecured for the better of the two tests. Valued answer scripts shall be made available to the students for perusal within 10 working days from the date of the test.

Each student shall be required to do one assignment and one seminar for each course. Valued assignments shall be returned to the students. The seminars shall be organized by the teacher in charge and the same shall be assessed by a group of teachers including the teacher in charge of that course.

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The external theory examinations of all semesters shall be conducted by the University. There will be no supplementary examinations. For reappearance/ improvement, as per university rules, the students can appear along with the next batch.

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The evaluation of the project shall be done by two external examiners according to the scheme given above. Each candidate shall be evaluated separately. There shall be a maximum of 12 candidates per session with two sessions per day. However, there shall be no continuous evaluation for the project.

The +. 01 -"$% $2 ='$*+,-shall be according to the scheme given below.

Component	Marks
Originality of approach	15
Relevance of the topic	10
Involvement	10
Viva-voce	15
Presentation of report	20
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The evaluation of tour report shall be according to the scheme given below

$!=$%+%-	'@#
Presentation of the report	10
Certified report	20

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The practical examinations for the core subject shall be conducted by the University at the end of semesters 4 and 6 with a common time table and questions set by the University. Similarly, the practical examination for the complementary course shall be conducted by the University at the end of the 4th semester. The examiners shall be selected from a panel of experts prepared by the University.

$' + ,3 +A !"% -"$% ,+%-'+ -3+'+ #3 00)+ -&$ +A-+'% 0 +A !"%+'# % $%+ "%-+'% 0 +A !"%+' &3$ "# %$- "% ,3 '4+ $2 -3+ =' ,-", 0 - -3 - ,+%-'+ The mark sheet duly certified by the head of the institution should be sent to the University

before the commencement of the end semester examinations.
The evaluation scheme for the end semester practical examinations shall be as follows.

Component	Marks
Formula, circuit,graph, brief procedure	20
Setting and experimental skill	15
Observations and tabulations	15
Substitution, calculation, result with correct unit	20
Certified record with 18 experiments	10
Total	80

For electronics experiments, the scheme shall be as follows.

Component	Marks
Formula, circuit,graph, brief procedure	20
Observations, skill and	25

tabulations	
Substitution, calculation, result with correct unit	25
Certified record with 18 experiments	10
Total	80

For computer experiments, the following scheme shall be followed.

Component	Marks
Writing the programme	30
Execution of the programme	20
Output/Result	20
Certified record with 18 experiments	10
Total	80

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Equations of motion for rotating rigid bodies- angular momentum and M.I- Theorems on MI.- calculation of MI. of bodies of regular shapes- uniform rod, ring, disc, annular ring, solid cylinder, hollow cylinder and solid sphere- KE of rotating and rolling bodies- torque- Determination of MI. of a fly wheel (theory, experiment and applications).

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Energy Conservation law- Work – power- Kinetic Energy – Work Energy theorem- Conservative Forces - potential energy- Conservation of energy for a particle– energy function- .

%"- < #,"00 -"$%# 3'#

Simple harmonic motion – Energy of harmonic oscillators-simple pendulum-mass on a spring-oscillation of two particles connected by a spring- compound bar pendulum - interchange ability of suspension and oscillation-four points collinear with C.G about which the time period is the same-conditions for maximum and minimum periods - Determination of g using symmetric bar pendulum.Mechanical and electromagnetic wave motion- General equation of a wave motion-expression for a plane progressive harmonic wave- energy density for a plane progressive wave.

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Modulus of elasticity (revision)Relations connecting the three elastic moduli-Poisson's ratio- bending of beams- bending moment-cantilever-centrally loaded beams and uniformly bent beams-I section girders-torsion of a cylinder-expression for torsional couple -work done in twisting a wire-torsion pendulum-.

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Surface tension-molecular explanation of ST.-angle of contact(revision)shapes of drops -expression for excess of pressure on a curved liquid surface -variation of ST. with temperature.

%"- : D 01" 5% !",# < 3'#

Streamline and turbulent flow-equation of continuity-Bernoulli's theorem-venturimeter-viscosity-Newton's law- Stoke's formula.

$$@# 2$' -1 57

1. Mechanics: Hans H. S. and Puri S. P,TMH, 2nd Edn.

2. Mechanics: J.C. Upadhyaya and,Ram Prasad S. Chand Publications, 2017

3. Elements of Properties of Matter: D.S. Mathur, S. Chand Publications,2008

4. Fundamentals of Physics: Halliday and Resnick, Wiley India Pvt. Ltd.,2006

$$@# 2$' +2+'+%,+7

1. Properties of matter: Brijlal and Subramaniam, S.Chand & Co.,2004

2. Principles of Physics: P.V.Naik, PHI,2010

$=",# 2$' ##"4%!+%-# 6 "#,1##"$% "% -3+ -1-$"' 0 #+##"$% # !=0+

1. Physics-The fundamental science-historical development of mechanics-some implications of the principle of mechanics-The scope of mechanics.

2. Life of eminent physicists- Newton, Einstein, C.V.Raman, Edison.

3. Study of Young's modulus for different types of wood.

4. Study of variation of surface tension for different detergents.

5. Study of viscosity of different types of ink and to arrive at knowledge of its fluidity.

6. Wide applications of Bernoulli's equation.

7. Variation of surface tension with temperature by Jaeger's method

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Thermal conductivity - determination by Lee's Disc method for bad conductor radial flow of heat, cylindrical flow,thermal conductivity of rubber, Weidman-Franz law. Radiation of heat, Stefan's law, determination of Stefan's constant, solar constant, determination of solar temperature

%"- 3+'!$ 5% !",# 3'#

Zeroth Law & First law of Thermodynamics, differential form-Thermodynamic Processes-Expression for work done in isothermal and adiabatic processes. Application of first law to specific heat and latent heat.Reversible and irreversible processes.Second law of thermodynamics- Clausius and Kelvin statements-Carnot engine- Principle of refrigerator- working and efficiency, Otto engine and Diesel engine – working and efficiency.

%"- < %-'$=5 3'#/

Definition of entropy, change of entropy in reversible and irreversible cycle, Clausius inequality and second law of thermodynamics, entropy and available energy,Entropy, probability and disorder.Nernst theorem and third law of thermodynamics.phase transition, phase diagram,first order and second order phase transition (qualitative idea) Clausius-Clepeyron Equation

$$@# 2$' -1 57

Thermal and Statistical Mechanics: S.K. Roy, NewAge International
Heat and Thermodynamics: D. S. Mathur, S. Chand &Co
Heat and Thermodynamics: Brijlal &Subramaniam, S. Chand &Co
Thermal Physics, Statistical Physics and SolidState Physics: C. J. Babu, Calicut University Press
Engineering Thermodynamics:P. K. Nag, McGraw-Hill,5th Edn.

$$@# 2$' +2+'+%,+7

Heat and Thermodynamics: Zemansky, McGraw-Hill
Heat and Thermodynamics: Rose C McCarthy, The Rosen Publishing Group, Inc.NY,2005
Thermodynamics, Kinetic Theory and Statistical Thermodynamics: F. W. Sears and G. L. Salinger, Addison-Wesley Publishing Company, 3rd Edn.

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%"- 0+,-'$#- -", "+0 3'#

Electric field: introduction, Coulomb’s law,Electric field, continuous distribution(Revision) , Divergence and curl of electrostatic fields; Field lines,flux applications of gauss’s law,Curl of E, Electric potential: Introduction to potential, Comments on potential, Poisson’s and Laplace’s equations,potential of a localized charge distribution, Electrostatic boundary , Work and Energy in Electrostatics: The work done to move a charge, the energy of a point charge distribution, The energy of a continuous charge distribution.

%"- 0+,-'$#- -", 2"+0 # "% ! --+' 3'#

Polarization: Dielectrics,induced dipoles, Polarization, The field of a polarized object: Bound charges, physical interpretation of bound charges and the field inside a dielectric Electric displacement: Gauss’s law in the presence dielectrics,

Boundary conditions.

%"- < 4%+-$#- -",# >3'#

IntroductionThe Biot- Savart law,Ampere's force law (revision), Magnetic torque, Magnetic flux and gauss's law for magnetic fields, magnetic vector potential, Magnetic intensity and Ampere's circuital law, magnetic materials.

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Electromotive force: Ohm's law Electromagnetic Induction Faraday's law,the induced electric field, Maxwell's equations, Magnetic charge,

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Waves in one dimension: The wave equation Electromagnetic waves in vacuum: The wave equation for E and B, Monochromatic plane waves, Energy and momentum in electromagnetic waves.

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Growth and decay of current in LR and CR Circuits-Measurement of high resistance by leakage-Charging and discharging of a capacitor through LCR circuit.

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AC through series LCR (acceptor circuit) and parallel LCR circuit (rejecter circuit)- Q- factor, Power in AC-power factor.

$$@# 2$' -1 57

Electrodynamics: David J Griffith, PHI, 3rd Edn.

Electricity and Magnetism:Murugesan, S.Chand & Co.

3. Electricity and Magnetism: K.K.Tiwari, S.Chand & Co.
4. Principles of electromagnetics: Matthew N.O. Sadiku and S. V. Kulkarni, Oxford University Press, 6th Edn.

$$@# 2$' +2+'+%,+7

Electricity and Magnetism: Muneer H. Nayfeh & Norton K. Bressel, John Wiley & Sons

Electricity and Magnetism: E.M. Purcell, Berkley Physics course, Vol.2, MGH

Electricity and Magnetism: J.H. Fewkes & John Yarwood, University Tutorial Press

Classical Electrodynamics: Walter Greiner, Springer International Edn.

Electromagnetic waves and radiating systems: Jordan & Balmain, PHI

Electromagnetics: B.B.Laud, Wiley Eastern Ltd., 2nd Edn.

Introduction to electrodynamics: Reitz&Milford Addison Wesley

Electromagnetic theory fundamentals: Bhag Guru and Huseyin Hizirogulu, Cambridge University Press, 2nd Edn.

Electricity and Magnetism: D.C.Tayal, Himalaya Publishing Co.

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Comment on how electrostatic energy is stored in a field

Discuss the electrostatic properties of conductors

What is meant by electrostatic shielding? In what way it helps us?

Discuss the peculiarities of electric displacement D and electric field E. How they are incorporated in Maxwell's Equations

Discuss the properties of linear dielectrics. What differentiates adielectric to be linear or not?

Discuss applications of Ampere's circuital law

Compare electrostatics and magnetostatics

Why magnetic forces cannot do work

Discuss about cyclotron motion & cycloid motion

Discuss whether there exists any stand-off between ohm's law and Newton'ssecond law

A battery has an . Can this . be a 'force'? How will you interpret electromotive force?

Discuss the role of motional in power generation

Discuss the orthogonality of E, B and propagation vector k

A wave function can have a sinusoidal representation. Solve the wave equation for this function and discuss the various terms related to a wave such as amplitude, frequency, phase, wave number.

15. Complex representation of wave function has good advantage. Why?
Discuss the linearity of wave function. (use complex notation)

Discuss AC through LC, LR and CR circuits

Show that sharpness of resonance is equal to Q- factor

What is a choke coil? Discuss the advantage of using a choke coil instead of a resistor

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Mechanics of a particle – equation of motion of a particle – Motion of a charged particle in electromagnetic field – mechanics of a system of particles.

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linear uniformities of space and conservation of linear momentum – rotational invariance of space and law of conservation of angular momentum – homogeneity of flow of time and conservation of energy.

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Equivalent one body problem – motion in central force field – general features of motion – motion in an inverse square law force field – equation of the orbit – Kepler's laws of planetary motion and their deduction.

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Conservation laws- Conservation of momentum- laboratory and centre of mass systems- kinetic energies in thelab and CM systems-Cross-section of elastic scattering

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Constraints-generalized coordinates- principle of virtual work-D' Alembert's principle, Lagrange's equation from D'Alembert's principle-applications of Lagrange's equation in simple pendulum,Atwood's machine and compound pendulum, Comparison of Lagrangian approach with Newtonian approach.

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Generalized momentum and cyclic coordinates- Hamiltonian function H-conservation of energy- Hamilton's equation - examples of Hamiltonian dynamics-one dimensional harmonic oscillator

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Inertial frames of reference- Galilean transformation- non- inertial frames

Origin and significance of special theory of relativity-search for universal frame of reference-Michelson-Morley experiment- postulates of special theory of relativity-consequences-Lorentz transformation equations- kinematical consequences of Lorentz transformations-length contraction-time dilation-twin paradox-transformation of velocity- variation of mass with velocity- mass energy equivalence

$$@# 2$' -1 57

Classical Mechanics: J. C. Upadhyaya, Himalaya Publishing
Mechanics: H.S.Hans and S.P.Puri, Tata-McGraw Hill
Classical Mechanics: G. Aruldhas, PHI Learning Pvt Ltd., 2008
Introduction to classical mechanics: R.G.Thakwale and P.S.Puranik, Tata-McGraw Hill.
Classical Mechanics: Vimal Kumar Jain, ,Ane Books Pvt. Ltd., 2009

$$@# 2$' +2+'+%,+

1.Classical Mechanics: Goldstein.
2.Modern Physics:Ronald Gautreau, Shaum's outlines series,1999
3.Classical Mechanics-Systems of Particles & Hamiltonian Dynamics:Walter Greiner, Springer,2nd Edn.
4.Classical Mechanics: N.C Rana and P.S.Joag, TMH Education Pvt. Ltd., 2015

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Limitations of classical physics, Black body radiation curve-Optical spectra –- photoelectric effect -specific heat of solids -Plank's quantum hypothesis, Einstein's theory of photoelectric effect -Compton effect- Quantum theory of specific heat of solids, -Bohr model- hydrogen atom- Bohr postulates-The correspondence principle.

%"- 8 .+ +,3 %",# 3'#

Wave nature of particles-electron diffraction- standing wave of electron in the orbit uncertainty principle -uncertainty relation among canonically conjugate pairs-application- non-existence of electrons in the nucleus-ground state energy of hydrogen atom- width of spectral lines-Properties of wave function-Conditions for Physical Acceptability of Wave Function, Normalization and orthogonality condition. Superposition Principle-wave packets, relation between - Particle velocity- group velocity and phase velocity- Probability Interpretation of Wave Function -Statistical Interpretation of Wave function -probability current density in one dimension-Expectation value- Time dependent Schrodinger equation,-Time independent Schrodinger equation - stationary states.

%"- < %+ "!+%#"$% 0 %+'45 "4+% 01+ '$)0+!# 93'#

Free particle Schrodinger equation–square-well potential with infinite walls-Square well potential with finite walls, square potential barrier– The Harmonic oscillator- (Schrodinger method)-

%"- 9 +%+' 0 $'! 0"#! $2 ?1 %-1! +,3 %",# 3'#

Linear vector space, Linear operator, Eigen values and Eigen functions-, Hermitian operator, Postulates of Quantum Mechanics-Equation of motion-Schrodinger representation- Momentum representation

$$@# 2$' -1 57

Quantum Mechanics: G. Aruldhas, PHI, 2nd Edn., 2002

A Text book of Quantum Mechanics: P.M. Mathews & K. Venkatesan- McGraw Hill, 2nd Edn., 2010

Quantum Mechanics: Robert Eisberg and Robert Resnick, Wiley, 2nd Edn. 2002

Quantum Mechanics: Leonard I. Schiff, TMH, 3rd Edn., 2010

Concepts of Modern Physics: Arthur Beiser, TMH, 6th Edn.

F

$$@# 2$' +2+'+%,+7

Quantum Mechanics:Eugen Merzbacher, John Wiley and Sons Inc.,2004

Introduction to Quantum Mechanics: David J. Griffith, Pearson Education, 2nd Ed. 2005

Quantum Mechanics: Walter Greiner, Springer,4thEdn., 2001

Quantum Mechanics: Bruce Cameron Reed, Jones and Bartlett, 2008.

Quantum Mechanics for Scientists & Engineers: D.A. B. Miller, Cambridge University Press, 2008

Shaum's outline series

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Statistical probability, Macro and Micro states, Phase space, Statistical ensemble, Postulate of equal probability, Maxwell Boltzmann distribution, Velocity distribution. Indistinguishability of identical particles, Bose Einstein and Fermi Dirac distribution function, comparison of three statistics

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Research - Objectives and motivation in research – different types of research- research approaches- Significance of research- Research methods and

methodology – Research and scientific method- Various steps in a research process- importance of literature survey- criteria of good research.

Thesis/ Report writing - preliminary section (Title page, declaration of author, certificate of supervisor, table of contents, list of tables and figures, preface acknowledgement), Main Text (abstract, introduction, experimental section, results and discussion), Conclusions, references, scope for future study.

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Significant figures- Basic ideas of error measurement, uncertainties of measurement, importance of estimating errors, dominant errors, random errors, systematic errors, rejection of spurious measurements.

Estimating and reporting of errors, errors with reading scales, absolute and relative errors, and standard deviation, Variance in measurements, error bars and graphical representation.

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Global natural disasters: Natural hazards and natural disasters, Recent major disasters and their relief efforts, Impact of global climate change and major natural disasters, Human adaptability of natural disasters, Fragile natural eco-environment, Disaster reduction activity, achievements, challenges and future development

Earth quake disaster and their and their effects, Advancement in research of earthquake disaster, earthquake and tsunami warnings, earthquake disaster prevention, earthquake disaster mitigation

Health emergencies and diseases: environmental health and diseases, disasters and emergencies, steps in disaster management, pre-disaster activity, role of water supply, need for protecting large scale water supply schemes, assessment of damaged and available and water resources, water quality testing- Personal hygiene, control of communicable diseases and prevention of epidemics, measures for controlling communicable diseases and epidemics.

Radiation emergencies, health consequence of radiation, measures to prevent sudden health emergencies due to radiation

$$@# 2$' -1 57

Thermal and Statistical Mechanics: S.K. Roy –New Age International-2001

Elements of Statistical Mechanics: Kamal Singh and S. P. Singh- S. Chand & Co,1999

Thermal Physics, Statistical Physics and Solid State Physics: C. J. Babu, Calicut University Press

Introduction to Statistical Mechanics: S. K. Sinha, Alpha Science International Ltd. 2005

Statistical Mechanics: B. K. Agarwal- New Age International 2007

Research Methodology: C. R. Kothari, New Age International

Publishers.
7. Natural disaster mitigation – a scientific and practical approach: Science Press, Beijing, 2009
8. Environmental health in emergencies and disasters: A practical guide, B.Wisner & J.Adams (Eds.), WHO, Geneva, 2002 ISBN 92-4 154541-0.
9. Introduction to Disaster Management: SatishModh, Macmillan, 2010

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Statistical Mechanics: S. Rajagopal
Introduction to Statistical Physics: Kerson Huang -CRC Press, 2001
Statistical Mechanics: Norman Davison, Courier Corporation, 2013
Disaster Management: Harsh K Gupta, Universities Press, 2003

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Kirchhoff's law- Ideal voltage and current sources- Thevenin's and Norton'stheorem, Maximum power transfer theorem

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Extrinsic semiconductors-n- type and – p-type semiconductors-PN junction-PN junction under forward and reverse biased conditions-r m s value and peakinverse voltage- diode characteristics-ac and dc resistances- half wave and full wave rectifiers- (average dc value of current, ripple factor and efficiency)- different types of filters(shunt capacitor, LC and RC)- break down mechanism in diodes- Zener diode- voltage regulator-

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Theory of BJT operation- CB,CE and CC characteristics-alpha , beta and gamma – relation between transistorcurrents- biasing circuits(CE configuration)- stability factors-selection of operating point-ac and dc load lines-Q point-collector feedback; base resistor and potential divider methods- BJT amplifiers- input and outputimpedances-graphical analysis of CE amplifier(frequency response,band width and gain in dB)- emitter follower.

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Amplifier classes and efficiency - class A operation - transformer coupled class A amplifier - class B amplifier - push pull amplifier - basic ideas of class C operation - distortion in amplifiers.

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Feedback principles – negative feedback - advantages of negative feedback - positive feedback - principle of sinusoidal feedback- oscillation - Barkhausen criterion for oscillations - RC phase shift, Hartley Oscillator, Colpitt's, Oscillator (derivations not required).

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Fundamentals of modulation - AM, FM - frequency spectrum of AM - power in AM - demodulation of AM signal - frequency spectrum for FM

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JFET- Basic construction - Theory of operation - Static characteristics - Drain characteristics- Advantages - MOSFET – Depletion enhancement MOSFET – Construction – Static characteristics. Uni-junction Transistor - Construction-operation.

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Introduction – Schematic symbol and pin configuration - circuit configuration and block diagram representation – differential amplifier-ideal OP amp. - CMRR – differential mode and common mode – virtual ground principle – parameters of OP amp. - inverting amplifier – non-inverting amplifier –summing- differentiator-integrator amplifiers.

$$@# 2$' -1 57

1. Basic electronics: Devices, circuits and IT fundamentals: Santiram Kal, PHI, 2009

2. Basic Electronics-Solid State: B. L. Theraja, S. Chand Ltd., 2005

3. Principles of Electronics: V. K. Mehta, S. Chand Ltd.,2005

4. A first course in Electronics: Anwar A. Khan, Kanchan K. Dey,PHI, 2006

5. Communication Electronics:Jose Robin and Ubald Raj, Indira Publications, 2002

$$@# 2$' +2+'+%,+

5. Electronic Devices and Circuits: Theodore F. Bogart Jr., Universal book stall

6. Electronic devices and Circuit theory: Robert Boylestad & Louis Nashelski,PHI,5th Edn.

7. Electronic fundamentals & applications: John D Ryder, PHI, 4thEdn.

8. Electronic Communications: Dennis Roddy, John Coolen,Pearson, 4thEdn.

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1. Electronic projects using flip flops.

2. Electronic projects using logic gates.

3. Electronic projects using IC 741 OP amp.

4. Electronic projects using timer 555.

5. Electronic projects using IC 311.

6. Constant voltage power supplies.

7. Constant current sources.

8. Oscillators of different frequencies.

9. Low range frequency generators.

10. High range frequency generators.

11. Voltage regulated dc power supplies with variable output.

12. Voltage regulated dual power supplies with variable output.

13. Instrument for the measurement of capacitance.

14. Instrument for the measurement of dielectric constant of a liquid/ solid.

15. Effect of temperature on electronic components.

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Bohr's theory, correspondence principle Somerfield's atom modeland explanation of fine structureof H line inBalmer series of hydrogen atom.Limitationof Sommerfeld atommodel.Vector atommodel-Various quantum numbers associated with vector atom model-, L.S and j.j couplings –application of spatial quantization-Pauli's exclusion principle - magnetic dipole moment of electron due to orbital and spin motion - Spin-Orbit coupling.

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Optical spectra-Spectral terms and notations - selection rules - intensity rule and interval rule - fine structure of sodium D lines – hyperfine structure-alkali spectra - Zeeman effect - Larmor's theorem – quantum mechanical explanation of normal Zeeman effect. Anomalous Zeeman effect –Paschen-Back effect-Stark effect.

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X-rays- Discovery- properties -scattering -Measurement of X-ray wavelengths by ruled gratings-X-ray Spectra- continuous and characteristics X- ray spectrum-Origin of continuous Spectrum -Origin of characteristic X-rays-X-ray energy level diagram. -Absorption of X-rays-Applications of X-rays

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Electromagnetic spectra-molecular energies-classification of molecules-rotational spectra of diatomic molecules-rotational energy levels-selection rules-rotational spectrum-isotope effect- bond length and atomic mass.

Diatomic vibrational spectra-vibrational energy levels-selection rule-vibrational transitions-Rotation-Vibration transitions-IR spectrometer
Raman scattering- classical description of Raman scattering, quantum theory of Raman scattering- -vibrational Raman spectra-diatomic molecules-polyatomic molecules-rotational Raman spectra Raman spectrometer.
Electronic spectra sequences and progressions-Frank-Condon principle-

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NMR principle-Resonance condition-NMR spectrometer-chemical shift-indirect spin-spinInteraction- applications of NMR spectroscopy-
ESR principle- Resonance condition –ESRspectrometer-hyperfineinteraction – applicationsofESRspectroscopy.
Mossbauerspectroscopy- principle -isomer shift.

$$@# 2$' -1 57

Modern Physics: G.Aruldas and P.Rajagopal, PHI, New Delhi, 2005
Modern Physics: R.Murugesan, S.Chand& Co., Reprint, 2008
Atomic and Nuclear Physics: N.Subramaniam&Brijlal, S.Chand& Co.
Atomic Physics: J.B.Rajam, S.Chand&Co.
Concepts of Modern Physics: A. Beiser, TMH, New Delhi, 6thEdn.

$$@# 2$' +2+'+%,+7

Fundamentals of Molecular Spectroscopy: Banwell, TMH
Spectroscopy: Walker & Straw, Chapman & Hill.
Molecular Spectroscopy: G.Aruldhas, PHI, 2004
Atomic and Nuclear Physics: Dr.V.W.Kulkarni-Himalaya Publishing House

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Bio mechanics- biophysics and fluid flow—Gas transport—physics of audition
Physics of vision (chapter 1 to 5 of Reference 3)

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Cell -components-proteins-nucleic acids—physics of bio-membranes
-Thermodynamics of bio systems (Chapter 6 to 9 of reference 3)

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Bio –electronics and Bio Instrumentation (chapter 17 of reference 1) Bio – informatics - (chapter 6 of reference 1) Demonstration of biophysics experiments (reference 3)

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Essentials of Biophysics: P. Narayanan, 2nd Edn. New Age publishers

A text book of biophysics: R.N.Roy, New central book agency Kolkata.

Elementary bio physics,P.K.Srivastava,Narosa publishing house ,New Delhi
Introduction to Biophysics ,Pranab kumar banerjee,S.Chand& co ,New Delhi

5.Biological science ,Green,Stout,&Taylor, Cambridge university press
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What is Astronomy – Branches of Astronomy - The celestial sphere and stellar magnitudes: constellations, stellar magnitudes, apparent magnitudes – The celestial coordinate system – Precession of Earth's axis.

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Ptolemy's model of Universe – Copernican and Galilean contributions – Laws of planetary motion: Tycho Brahe's observations, Kepler's laws – Newton and his law of Universal law of Gravity – Einstein's special and general theories of relativity ( )

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Formation of solar system: Nebular hypothesis – The Sun: Physical properties – Internal structure – Solar atmosphere - Sun spots – Solar wind, prominences and flares – Physical characteristics of planets in solar system – Earth's motion and Seasons - Lunar and Solar eclipses – Brief familiarisation of solar system objects: Satellites, Asteroid belt, Kuiper belt, Comets and Meteorites.

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Properties of stars: luminosity, colour and surface temperature – Spectral types of stars – Hertzsprung-Russel diagram – Evolution of a Sun-like star – Fate of high-mass stars: Supernova, Neutron stars and Black holes ( ) – Brief familiarization of Milky Way galaxy, Types of galaxies according to shape.

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https://www.space.com/16014-astronomy.html

Introduction to Astronomy and Cosmology – Ian Morison (Wiley)

https://theplanets.org/solar-system/

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Planet Earth, Cesare Emiliani, (Cambridge University Press)

Astrophysics - K. D. Abhayankar (University Press)

Introduction to Astrophysics – Baidyanadh Basu

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Electric motor-principles of working, Microwave oven-principle-technical specifications-applications-advantages, public address system-Block diagram representation- function of each unit-CD player and drives-DVD player and drives-Telephonic communication(Cable and cellular)-principles (qualitative study using block diagram) -Cell phone-SIM card-technical specifications-Radio –History of radio revolution-different types of radios-Television-working(qualitative)-Touch screens & ATM (Automatic Telling machine)

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Discovery of X-rays, Gas filled tube, Coolidge X-ray tube, Properties of X-ray, X-ray spectra-continues and characteristic spectra, C T Scan-basic principle-applications and advantages –MRI Scan-Principle, applications and advantages.

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Introduction-Interaction of light with matter, Absorption, spontaneous emission, stimulated emission, Light amplification, population inversion, metastable states-Components of Laser-Principal pumping Schemes-Role of resonant cavity- Ruby laser, He-Ne Laser-Applications.

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Introduction, principle of holography, Recording of the hologram, Reconstruction of the image-applications.

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Introduction, optical fibre, Necessity of cladding, optical fibre system, Total internal reflection, propagation of light through an optical fibre, critical angle of propagation , Modes of propagation- Types of rays-classification of optical fibres-Applications

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Audio and Video Systems. R.G.Gupta, Technical Education Series.

Mobile Satellite Communication Network (ch 1 &2),Ray E Sherrif &Y. Funttu,Wiley India Edu.

Television Engineering & Video System, R.g.Gupta,TMH.

Electrical Technology (Vol 1& 2),B.L.Theraja

A Text book of Optics by DR. N. Subrahmanyam Brijlal,Dr MN Avadhanulu-S.Chand & Company Pvt Ltd

Modern Physics by R.Murugesan & Kiruthiga Siva Prasath

S.Chand & Company Pvt Ltd

7. Atomic and Nuclear Physics By Dr.V.W.Kulkarni-Himalaya Publishing House

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Structure and thermodynamics of the atmosphere; composition of air; Greenhouse effect; Transport of matter; energy and momentum in nature; Stratification and stability of the atmosphere; Laws of motion; Hydrostatic equilibrium; General circulation of the tropics; Elements of weather and climate in India.

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Factors governing air, water and noise pollution; Air and water quality standards;Waste disposal; Heat island effect; Land and sea breeze; Puffs and Plumes; Gaseous and particulate matter; Wet and dry deposition; Dispersal mechanism of air and water pollutants; Mixing height and turbulence; Gaussian plume models; Dispersion models; Environmental degradation; Thermal and radioactive pollution; Nuclear radiation; Health hazards and safety.

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Energy sources and combustion processes; Renewable sources of energy; Solar energy, Wind energy, Bio energy, hydro power; fuel cells; and nuclear energy;Forestry and bio-energy; Deforestation; Degradation of soils; Agriculture and land use changes; Changing composition of local and global environment; Remote sensing techniques.

$$@# 2$' -1 57

The Physics of Monsoon:R.N.Kesavamoorthy andN. Sankar Rao,Allied Publications

2 The Physics of Atmosphere: J.T.Houghton, Cambridge University

Renewal Energy Resources:J.T Widell and J Weir,ELBS 1988

Numerical Weather Prediction:G.J.Haltiner and R.T.Williams, John Wiley

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Various forms of energy – renewable and conventional energy systems – comparison – coal, oil and natural gas – availability – applications – merits and demerits.

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Solar energy - Solar radiation measurements, solar energy collector, principle of the conversion of solar radiation in to heat, Solar energy storage, solar heaters, space cooling, solar ponds, solar cookers, solar distillation, solar furnaces, solar green houses, merits and demerits of solar energy.

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Wind energy: Basic principle of wind energy conversion, basic components of wind energy conversion system (WECS), wind energy collectors. application of wind energy.

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Biomass energy, classification, photosynthesis, biomass conversion process, Gober gas plants, wood gasification, ethanol from wood, merits and demerits of biomass as energy source

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Energy from Oceans and Chemical energy resources: Ocean thermal energy Conversion, energy from waves and tides – basic ideas, nature, applications, merits and demerits.

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Patterns of energy consumption in domestic, industrial, transportation and agricultural sectors –energy crisis and possible solutions – energy options for the developing countries – energy storage-primary and secondary cells – fuel cells (basics) – impact due to non-conventional energy sources – global warming.

$$@# 2$' -1 57

1. Non – Conventional Energy Resources: G. D. Rai, Khanna Publishers,2008.

2. Solar energy: G.D. Rai, 5th edition, 1995.

3. Solar Energy Fundamentals and application: H.P. Garg and J. Prakash, Tata McGraw - Hill Publishing company Ltd., 1997.

$$@# 2$' +2+'+%,+7

1. Energy Technology: S. Rao and Dr. B.B. Parulekar, 1997, 2nd Edn.

2. Power Plant Technology: A. K. Wahil. 1993.

3. Solar energy: S. P. Sukhatme, Tata McGraw- Hill Publishing company Ltd.,1997.

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Solids: Amorphous and Crystalline Materials. Lattice Translation Vectors.Lattice with a Basis – Unit Cell-Elements of symmetry-Types of Lattices -two and three dimensional- Miller Indices-Reciprocal Lattice.-.Brillouin Zones.Diffraction of X-rays by Crystals.Bragg’s Law.X- ray diffraction techniques-Inter atomic forces. Types of bonding

%"- $% 1,-"$% "% +- 0# '++ +0+,-'$% !$ +0 3'#) Introduction-conduction electrons-free electron gas-electrical conductivity-electrical resistivity versus temperature-heat capacity of conduction electrons -Fermi surface -electrical conductivity-effects of the Fermi surface-thermal conductivity in metals-Hall effect and magneto resistance -A.C conductivity and optical properties-failure of free electron model. -The Kronig -Penney model- conductors, semiconductors and insulators.

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Bloch theorem- Kronig Penny model-Band Gaps- Conductors-Semiconductors and insulators- P and N type Semiconductors- Conductivity of Semiconductors- mobility- Hall Effect- Hall coefficient.

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Polarization- Local Electric Field at an Atom- Depolarization Field- Electric Susceptibility- Polarizability- Clausius Mosotti Equation- Classical Theory of Electric Polarizability- Normal and Anomalous Dispersion- Cauchy and Sellmeir relations- Langevin-Debye equation- Complex Dielectric Constant- Optical Phenomena- Application: Plasma Oscillations- Plasma Frequency- Plasmons

%"- ; 4%+-", '$=+'-"+# $2 --+' 3'# Dia, Para, Ferri and Ferromagnetic Materials.Classical Langevin Theory ofDia and Paramagnetic Domains.Quantum Mechanical Treatment of Para magnetism.Curie's law, Weiss's Theory of Ferromagnetism and Ferromagnetic Domains.Discussion of B-H Curve. Hysteresis and Energy Loss

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Critical Temperature-Critical magnetic field-Meissner effect- Type I and type II Superconductors- London's Equation and Penetration Depth- Isotope effect-.BCS theory- Tunnelling and Josephson effect(Qualitative study)

$$@# 2$' -1 57

1.Elements of Solid State Physics: J.P. Srivastava, 2nd Ed., 2006, Prentice-Hall of India

2.Elementary Solid State Physics: 1/e M. Ali Omar, Pearson India, 1999

3.Solid State Physics: M.A.Wahab,NarosaPublication, 2011

4. Elements of Solid State Physics: J.P. Srivastava, 2nd Edn., Prentice-Hall of India, 2006

$$@# 2$' +2+'+%,+7

Introduction to Solid State Physics: Charles Kittel, 8th Edn., Wiley India Pvt. Ltd., 2004

Introduction to Solids: Leonid V. Azaroff, Tata Mc-Graw Hill,2004

Solid State Physics: Neil W. Ashcroft and N. David Mermin, Cengage Learning,1976

Solid State Physics: Rita John, McGraw Hill, 2014

Solid-state Physics: H. Ibach and H Luth, Springer,2009

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Constituents of nucleus and their Intrinsic properties-quantitative facts about size-mass- charge density (matter energy), binding energy- average binding energy and its variation with mass number- main features of binding energy versus mass number curve- nuclear stability- angular momentum- parity- magnetic moment-electric quadrupole moments- Nuclear forces-meson theory.

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Liquid drop model -semi empirical mass formula and significance of various terms, condition of nuclear stability. Shell model-evidence for nuclear shell structure, nuclear magic numbers, basic assumptions of shell model, Collective model.

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Alpha decay-basics of α-decay processes, theory of α-emission, Gamow's theory, Geiger Nuttall law, -decay- energy kinematics for -decay, positron emission, electron capture, neutrino hypothesis, Gamma decay: Gamma ray emission & kinematics, internal conversion.

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Types of Reactions, Conservation Laws, kinematics of reactions, Q-value- reaction rate- reaction cross section- reaction mechanism-Concept of compound nucleus.

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GM counter-scintillation counter- Linear accelerator- Cyclotron- Synchrotron-betatron.

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Nuclear fission-energy released in fission-Bohr and Wheeler's theory-chain reaction -multiplication factor-critical size-atom bomb-nuclear reactors-breeder reactors-uses of nuclear reactors. Nuclear fusion-sources of stellar energy-thermonuclear reactions-hydrogen bomb-controlled thermo-nuclear reactions-magnetic bottle-Tokamak- inertial confinement-nuclear power in India.

%"- >/ '-",0+ =35#",#7 3'# Particle interactions- basic features- types of particles and its families-Symmetries and Conservation Laws-baryon number-Lepton number- Isospin- Strangeness and charm- concept of quark model-Cerenkov radiation.

$$@# 2$' -1 5

Modern Physics: R. Murugesan, S. Chand & Co., Reprint,2008

Modern Physics: G. Aruldhas and P. Rajagopal, PHI, New Delhi, 2005.

Nuclear Physics: D. C. Tayal, Himalaya Publishing House, 4th Edn.

Concepts of Modern Physics: A. Beiser, Tata McGraw-Hill, New Delhi, 6th Edn.

Atomic and Nuclear Physics:N. Subramaniam and Brijlal, S.Chand & Co.

Atomic Physics: J.B.Rajam, S.Chand & Co.

Introduction to Elementary Particles: D. Griffith, John Wiley & Sons
Nuclear Physics: S.N.Ghoshal, S.Chand & Co.

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Concepts of nuclear physics: Bernard L. Cohen, Tata Mcgraw Hill, 1998
Nuclear Physics: Kaplan, Narosa publications
Introductory nuclear Physics: Kenneth S. Krane, Wiley India Pvt. Ltd., 2008
Introduction to the physics of nuclei & particles: R.A. Dunlap, Thomson Asia, 2004
Quarks and Leptons: F. Halzen and A.D. Martin, Wiley India, New Delhi
Basic ideas and concepts in Nuclear Physics An Introductory Approach: K. Heyde, Institute of Physics Publishing, 2004
Radiation detection and measurement: G.F. Knoll, John Wiley & Sons, 2000
Theoretical Nuclear Physics: J.M. Blatt & V.F. Weisskopf, Dover Pub.Inc., 1991

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The principle of superposition - coherent sources – Double slit interference (theory of interference fringes and band width) - Interference by division of wave front and amplitude –Fresnel's biprism-interference in thin films-classification of fringes-wedge shaped films-testing of optical flatness-Newton's rings(reflected system)-refractive index of a liquid-
Michelson interferometer – determination of wavelength

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Fresnel diffraction: - Half-period zones - explanation of rectilinear propagation of light– diffraction at a straight edge-zone plate. Fraunhofer diffraction: - Diffraction at a single slit,
double slits – plane transmission grating - Rayleigh's criterion for resolution -

resolving power ofdiffraction grating.

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Plane polarized light -polarization by reflection – Brewster's law - pile of plates -
Malus law - Double refraction - Huygens explanation for double refraction in uniaxial
crystals - Nicol prism - Nicol prism as a polarizer and analyzer – Theory- production and
analysis of plane, circularly and elliptically polarized light - quarter and half wave plates.

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Basic principle of laser operation Einstein coefficient, light propagation through medium and condition for light amplification population inversion by pumping and cavity threshold condition, line shape function- optical resonators (qualitative) Q factor various laser systems –Ruby laser - He-NE laser, Dye laser, semiconductor laser, (working principle only) Application of lasers- characteristics of laser beams -spatial coherence - Temporal coherence and spectral energy density Nonlinear optics : Nonlinear Polarization –second harmonic generation – phase matching

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Introduction, optical fibre, the numerical aperture, coherent bundle, pulse dispersion in step
index fibre, graded index fibre, single mode fibre, multimode fibre, Fibre optic sensors
(qualitative), fibre optic communication (qualitative), Advantages of fibre optic communication system.

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Principle of holography, recording of holograms, reconstruction of images (Theory not needed), application of holography, different types of holograms, transmission and reflection types.

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Text Book of Optics: Subramaniam & Brijlal, .Avadhanulu, 23rd edition,2006

Optics: Ajoy Ghatak, TMH, 2005

Optics and spectroscopy: R.Murugesan and K Sivaprasad, S. Chand & Co., 2010

Lasers Principles, Types and applications: K.R.Nambiar, New Age International Pvt. Ltd. 2006

Optics: Eugene Hecht, Addison-Wesley 2002

$$@# 2$' +2+'+%,+7

1. Fundamentals of Optics: Jenkins and White, MCH

2. Modern Classical Optics: Geoffrey Brooker, Oxford University Press, 2003

3.Fundamentals of Optics-Geometrical Physical and Quantum:D. R. Khanna and H. R. Gulati, R. Chand,1984

4.Lasers &Non-Linear Optics: B. B. Laud,New Age International Pvt. Ltd., 2011

5.Electronic Communications: Dennis Roddy & John Coolen, Pearson, 1995

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Michelson’s interferometer-Standardization of metre.

Diffraction at a rectangular aperture and circular aperture

Optical activity-Fresnel’s theory of optical rotation.

Resolving power of prism and telescope

5. Constant deviation spectrometer.

6.Laurent’s half shade polarimeter.

8. Laser applications.

9.Study of Fraunhofer lines using spectrometer. .

Determination of refractive index of liquid by Newton’s rings method.

11.Comparison of radii of curvature by Newton’s rings method.

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1!)+' #5#-+!# :-Decimal number system-binary number system-conversion 2of binary number to decimal and decimal number to binary-binary addition and subtraction-21's complement-2's complement-binary subtraction using 2's complement-signed arithmetic operation-conversion of real numbers-conversion of decimal fraction to binary fraction-binary coded decimal -hexadecimal number system-conversion of hexadecimal number to decimal, decimal to hexadecimal, binary to hexadecimal and hexadecimal to binary-real or floating point representation of numbers-ASCII code.

$$0+ % 04+)' % 0$4", 4 -+#. - Logic gates AND, OR, NOT, NAND,NOR And Ex-OR gate-realization of other logic functions using NAND / NOR gates-tri state logic gate-Boolean laws- Demorgan's theorem-Simplification of Boolean equations using Boolean laws. Karnaugh map

"'-3!+-", ,'",1"-# :-Half adder-full adder-controlled inverter-binary adder-subtractor.

+G1+%-" 0 ,'",1"-#- Flip-Flop, S-R Flip Flop, J-K Flip-flop, Master slave JK Flip-Flop

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#",# $2 ,$!=1-+'# :-Hardware- input and output units- memory unit-ALU-control unit–basicoperational concepts-Software – operating systems

3+ !+!$'5 #5#-+!# :- Basic concepts-semiconductor RAM- internal organization memorychips-static memories-asynchronous and synchronous DRAM-structure of large memories– ROM,PROM,EPROM, EEPROM–flash memory-speed size and cost-Basic concepts of cache memory and virtual memories. Secondary storage-magnetic hard disks-optical disks-magnetic tape systems.

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Features of c++ - basic structure of c++ program – library files-header files – preprocessor directives- inbuilt functions- output using cout- input with cin - constants and variables – data types – declaration of variables – integer variables, character variables, floating point types, type bool - assigning values to variables–manipulators-operators and expressions–arithmetic operators, relational operators, logical operators, short hand operators-control statements-for loops , while loop, do…while loop- if statement, if……else, else….if constructions, switch statement- break, continue, goto statements-user defined functions-function definition,

function declaration, function header and body, function call and execution, passing arguments to functions, returning values from functions, overloaded functions, inline functions, default arguments, scope rule for functions- storage classes-Arrays-array elements, array initialization, multidimensional arrays, passing arrays to functions-strings-basics of structures and pointers in c++, classes and objects (introduction only)-basic file operations-serial and sequential files, reading and writing -simple examples of c++ programs for solving problems in physics-compilation and execution of data.

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Microprocessors and microcontrollers (definition only)-intel 8085- 8 bit microprocessor-pin disruption - 8085 instructions - addressing modes(definition only)- interrupts (definition only) -assembly language - simple programs- addition, subtraction.

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Fundamentals of Microprocessors and Microcomputers: B. Ram,Dhanpat Rai Publications

Digital principles and Applications: Malvino and Leach.TMH, New Delhi, 4th Edn.

Fundamentals of Computers: V.Rajaram, PHI, New Delhi, 4th Edn.

A first course in Computers: S. Saxena, Vikas Publishing House Pvt. Ltd.,

Programming in C++: D. Ravichandran, Tata Mc Graw Hill, 2011

Object oriented programming in C++:Robert Lfore,Galgotia publications Pvt Ltd., 3Edn., 2004

The C++ programming language:Bjome Stroustrup, 4th Edn. Addison Wesley

Object oriented programming with C++: E. Balaguruswami, 5Edn., Tata Mc Graw Hill

Programming in C++: M.T. Somasekharan, PHI Pvt. Publishing,2005

Numerical Methods with computer programs in C++:P. Ghosh, PHI Learning Pvt. Ltd.

The 8085 microprocessors:K. Udayakumar and B. S. Umasankar, Dorling Kindersley (India) Pvt. Ltd.,2008

Microprocessor 8085,8086:Abhishek yadav, University Science Press, New Delhi 2008

Microprocessor-Architecture, Programming and applications with 8085:R.S. Gaonkar,

$$@# 2$' +2+'+%,+7

Introduction to digital electronics:NIIT, PHI.

A first course in Computers:Sanjay Saxena, Vikas publishing house Pvt. Ltd.

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Fly Wheel - Moment of Inertia
Compound Bar Pendulum – Symmetric
Compound Bar Pendulum – Asymmetric
Uniform Bending---Y---Pin and Microscope
Uniform bending—Y- optic lever method
Non-uniform bending-Y-Optic lever& telescope
Rigidity modulus –Static torsion
Torsion pendulum I- By Torsional oscillations
Torsion pendulum I- By Equal masses
Kater’s pendulum-Acceleration due to gravity
Melde’s string-----Frequency of fork
Phase transition-determination of M.P of wax.
Determination of thermal conductivity of rubber
Lee’s disc-determination of thermal conductivity of a bad conductor
Viscosity-Continuous flow method using constant pressure head.
Viscosity-Variable pressure head arrangement
Surface tension-Capillary rise
Sonometer-frequency of A.C
Kundt’s tube-determination of velocity of sound.

Determination of m and Bh using deflection and vibration magnetomers.
Potentiometer-Resistivity.
Comparison of least counts of measuring instruments.
Evaluation of errors in simple experiments.

References

Yarwood and Wittle; Experimental Physics for Students, Chapman &Hall Publishers.

An advanced course in practical physics, Chathopadhyaya, Rakshit and Saha, New central agency, Kolkata.

A text book of practical physics, S.Viswanathan & Co., Chennai.

Advanced Practical Physics, B.L.Worsnop and H.T.Flint, Khosla Publishers, Delhi.

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Spectrometer-A, D and n of a solid prism.

Spectrometer –Dispersive power and Cauchy's constants

Spectrometer Grating—Normal incidence- N & wavelength

Spectrometer-i-d curve

Spectrometer- Hollow prism

Liquid lens-refractive index of liquid and lens

Newton's Rings—Reflected system

Air wedge-diameter of a wire

Potentiometer-Resistivity.

Potentiometer-Calibration of ammeter

Potentiometer –Reduction factor of T.G
Potentiometer –Calibration of low range voltmeter

Potentiometer – Calibration of high range voltmeter

Thermoemf-measurement of emf using digital multimeter.

Carey Foster’s bridge-Resistivity

Carey Foster’s bridge-Temperature coefficient of resistance.

Mirror galvanometer-figure of merit.

BG- Absolute capacity of a condenser

Conversion of galvanometer into ammeter and calibration using digital Multimeter

Conversion of galvanometer into voltmeter and calibration using digital Voltmeter.

Circular coil-Calibration of ammeter.

Study of network theorems-Thevenin’s & Norton’s theorems and maximum power transfer theorem.

Circular coil-Study of earth’s magnetic field using compass box.

Absolute determination of m and Bh using box type and Searle’s type vibration magnetometers.

Searle’s vibration magnetometer-comparison of magnetic moments.

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Yarwood and Wittle; Experimental Physics for Students, Chapman & Hall Publishers.

An advanced course in practical physics, Chathopadhyaya, Rakshit and Saha, New central agency, Kolkata.

A text book of practical physics, S.Viswanathan & Co., Chennai.

Advanced Practical Physics, B.L.Worsnop and H.T.Flint, Khosla Publishers, Delhi.

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PN junction Diode (Ge & Si) characteristics-To draw the characteristic curves of a PN junction diode and to determine its ac and dc forward resistances.

Full wave (centre tapped) rectifier-To construct a full wave rectifier using junction diode and to calculate the ripple factor with and without shunt filter (10 readings for R_L 100 to 5000).

Full wave (centre tapped) rectifier-To construct a full wave rectifier using junction diode and to study effect of L,C, and LC filters on the ripple factor (for different R_L).

Bridge rectifier-To construct a bridge rectifier using junction diodes and to calculate the ripple factor with and without shunt filter (10 readings for R_L 100 to 5000).

Bridge rectifier- Dual power supply-To construct a dual power supply using bridge rectifier and measure the output voltages for different pair of identical load resistors.

Zener diode characteristics-To draw the I-V characteristic of a Zener diode and to find the break down voltage and the dynamic resistance of the diode.

Zener diode as a voltage regulator-To construct a voltage regulator using Zener diode and to study the output voltage variation (i) for different RL and (ii) for different input voltage with same R_L.

Transistor characteristics-CE-To draw the characteristic curves of a transistor in the CE configuration and determine the current gain, input impedance and output impedance.

Transistor characteristics-CB-To draw the characteristic curves of a transistor in the CB configuration and determine the current gain, input impedance and output impedance.

Single stage CE amplifier-To construct a single stage CE transistor amplifier and study its frequency response.

OP amp. IC741- Inverting amplifier-To construct an inverting amplifier using IC741 and determine its voltage gain.

OP amp. IC741- Non inverting amplifier

To construct a non inverting amplifier using IC741 and determine its voltage gain.

OP amp. IC741- Differentiator-To construct an OP amp. Differentiator, determine its voltage gain and study the output response to pulse and square wave.

OP amp. IC741- Integrator-To construct an OP amp. Integrator, determine its voltage gain and study the output response to pulse and square wave.

Phase shift oscillator-To construct a phase shift oscillator using transistor and measure the frequency of the output waveform.

Logic gates- OR and AND-To verify the truth tables of OR and AND gates using diodes.

Logic gate- NOT-To verify the truth tables of NOT gate using a transistor.

Network theorems (Superposition, Thevenin's & Norton's theorems)

To verify the (i) Superposition, (ii) Thevenin's & (iii)
Norton's theorems

19. RC-Filter circuits (Low pass)

To construct an RC –low pass filter circuit and to find the upper cut off frequency.

20. RC-Filter circuits (High pass)-To construct an RC –high pass filter circuit and to find the lower cut off frequency.

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Program to find the roots of a quadratic equation (both real and imaginary root)

Program to find the dot product and cross product of vectors

Program to plot the functions Sin x, Tan x and e^x

Program to find the matrix addition, multiplication, trace, transpose and inverse.

Program to convert hexadecimal to decimal number, decimal to hexadecimal number, binary to hexadecimal numbers and hexadecimal to binary numbers

Program to find the result of binary addition and subtraction.

Program to find the moment of inertia of regular bodies about various axes of rotation.

Program to find the velocity of a rolling body (without sliding) at any point in an inclined plane

Program to study the motion of a spherical body in a viscous fluid

Program to study the motion of projectile in central force field

Program to study the planetary motion and Kepler’s law

Monte carlo simulation

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Basic electronics and linear circuits; N.N. Bhargava, D.C. Kulshreshtha, S.C.Gupta

OP- Amps and linear integrated circuits; Ramakant A. Gayakwad

Basic electronics; Santiram Kal

Basic electronics; B. L. Theraja

Principles of electronics; V. K. Mehta

A first course in Electronic s; Anwar A. Khan, Kanchan K. Dey

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Basic concepts of measurements- Instruments for measuring basic parameters-

ammeter-voltmeters-multimeter- digital voltmeter-accuracy and resolution of DVM.

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Cathode ray tubes- CRT circuits- vertical deflection system- delay line- horizontal deflection system-multiple trace- oscilloscope probes and transducer- storage oscilloscopes.

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Basic principles- classification of transducers- Passive and Active transducers- strain gauges- temperature measurements- thermistors-photosensitive devices.

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Sine wave generator- frequency synthesizer- sweep generator- astable multivibrator- laboratory pulse generator- function generator- wave analysers harmonic distortion analyzer- wave meter- spectrum analyzer (qualitative idea only).

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Modern Electronic Instrumentation and Measurement Techniques: Albert D.Helfrick & William D.Cooper, PHI, Ltd.

Electronic Instrumentation:Kalsi H. S, 2nd Edn, TMH Publishers.

Instrumentation-Devices and Systems: C.S. Rangan, G.R.Sarma, V.S.V.Mani, TMH Publishers.

Electronic Instruments and Instrumentation Technology: M.M.S.Anand, PHI Ltd.

$$@# 2$' +2+'+%,+7

Sensors and Transducers: D.Patranabis, Wheeler Publishing Co. Ltd.

Industrial Electronics and Control: S.K.Bhattacharya & S.Chatterjee,TMH Publishers.

Electronic measurement and Instrumentation: K.B.Klaassen,Cambridge University Press.

Measurement Systems-Applications and Design: Ernest O.Doebelin & Dhanesh N.Manik, 5th Edn.TMH Publishers.

Principles of Measurement systems: John P.Bentley,Longman, Pearson Education Publishers. 3rd Edn.

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Large Scale Structure of the Universe: Astronomy and Cosmology, Our Galaxy,Galaxy types, Radio sources, Quasars, Structures on the largest scale, Coordinates and catalogues of astronomical objects, Expansion of the Universe

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Introduction, Classification of Stars: The Harvard classification, Hertzsprung – Russel diagram, Stellar evolution, White dwarfs, Electrons in a white dwarf star,Chandrasekhar limit, Neutron stars, Black holes, Supernova explosion, Photon diffusion time, Gravitational potential energy of a star, Internal temperature of a star,Internal pressure of a star.

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Introduction, Sunspots and Solar storms, Sunspots and Solar activity, Cosmic rays of Solar origin, The Solar wind, Solar corona and the origin of the solar wind, Disturbed Solar wind.

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Introduction, Nomenclature and temperature profile, Temperature distribution in the troposphere, Temperature of stratosphere, temperature of mesosphere and thermosphere,Temperature variability, The pressure profile, Scale height, Density variation.The Ionosphere: Effect on scale height, Ionospheric electric fields, Ionization profile,Layer of charge, Ionospheric hydrogen and Helium.

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Introduction, The magnetic field of Earth, Earth’s variable magnetic field, Solar activity and Earth’s magnetic weather, solar wind interaction, The Chapman-Ferraro closed magnetosphere, Dungey’s open magnetosphere, Structure of the

magnetosphere: Magneto tail and Plasma sheet, Plasma sphere, Earth's radiation belts.

$$@# 2$' -1 5

Introduction to Space Science – Robert C Hymes (1971), John Wiley & Sons Inc.

Earth's Proximal Space- Chanchal Uberoi (2000), Universities Press (India)

Introduction to Cosmology- J. V. Narlikar (1993), Cambridge University Press

Modern Physics- R. Murugeshan, Kiruthika Sivaprasath (2007), S.Chand & Company Ltd.

$$@# 2$' '+2+'+%,+

Space Physics and Space Astronomy – Michael D Pappagiannis (1972), Gordon and Breach Science Publishers Ltd.

Introductory Course on Space Science and Earth's environment-Degaonkar (Gujarat University, 1978)

Introduction to Ionosphere and magnetosphere- Ratcliffe (CUP, 1972)

The Physics of Atmospheres-Houghton (Cambridge University Press)

Introduction to Ionospheric Physics-Henry Rishbeth &Owen K. Garriot (Academic Press, 1969)

Space Science –Louise K. Harra& Keith O. Mason(Imperial College Press,London, 2004)

Introduction to Space Physics- Kivelson and Russel

Introduction to Astrophysics – Baidyanadh Basu

9.Astrophysics - K. D. Abhayankar (University Press)

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Photons in semiconductors-semiconductors-energy band and charge carriers-direct and indirect gap semiconductors –Different type of semi conducting materials--generation, recombination and injection-electron hole injection homo andhetero junctions-quantum wells ,quantum dots and quantum wires.

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Semiconductor photon sources -light emitting diodes-injection electroluminescence-in thermal equilibrium –in the presence of carrier injection-LED characteristics- internal photon flux-output photon flux and efficiency-responsivity- spectral distribution- materials- response time-device structures (Basics).

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Semiconductor laser amplifiers-gain-amplifier band width-optical pumping-electrical current pumping-hetero structures -semiconductor injection lasers-amplification-feedback and oscillators-laser amplification-resonator losses -gain condition-Laser threshold-Power-internal photon flux-output photon flux.

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Semiconductor photon detectors-The external photo effect-photo electron emission-The internal photo effect-properties of semiconductor photo detectors--quantum efficiency-responsivity devices with gain-response time-photoconductors-gain-spectral response- p-n photo diodes-PIN photo diodes-hetero structure photo diode- Schotky barrier photodiodes - array detectors-avalanche photodiodes (basics)-

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Electro optics, Pockels and Kerr effects- electro optic modulators and switches phase modulators–dynamic wave retarders- intensity Modulators- scanners-directional couplers-spatial light modulators-

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Non linear optics-second order non-linear optics - electro-optic effect-three wave mixing- third order non-linear optics- self phase modulation-optical kerr effect-self focusing. .

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Photonic switching and computing-photonic switches-switches-opto mechanical, electro optic, acousto-optic and magneto optic switches-all optical switches-optical computing-digital optical computing-analog optical processing.

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Fundamentals of Photonics: BFA Saleh and M.C.Teich, John Wiley &Sons, Inc.

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1. Semiconductor optoelectronic devices: Pallab Bhattacharya, Printice Hall of India.
2. Optics and Photonics- An introduction: F. Graham Smith and Terry A.King, John Wiley & Sons,Inc.
3. Lasers and Non linear Optics: B.B.Laud, New Age International Pvt Ltd.

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Length scales in Physics- nanometre- Nanostructures: Zero, One Two and Three dimensional nanostructures (Chapter 3, Text 2)

Band Structure and Desnsity of State at nanoscale: Energy Bands, Density of States at low dimensional structures. (Chapter 3, Text 1)

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Electrical conduction in metals, The free electron model. Conduction in insulators/ionic crystals - Electron transport in semiconductors - Various conduction mechanisms in 3D (bulk), 2D(thin film) and low dimensional systems: Thermionic emission, field enhanced thermionic emission (Schottky effect). (Chapter 4, Text 1)

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Size effects in small systems, Quatum behavious of nanometric world: Applications of Schrödinger equation – infinite potential well, potential step, potenial box; trapped particle in 3D (nanodot), electron trapped in 2D plane (nanosheet), electrons moving in 1D (nanowire, nanorod, nanobelt), Excitons, Quantun confinement effect in nanomaterials (Chapter 5, Text 1)

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Top down vs bottom up techniques, Lithographic process, Non Lithographic techniques: Plasma arc discharge, sputtering. Evaporation: Thermal evaporation, Electron beam evaporation. Chemical Vapour Deposition (CVD). Pulsed Laser Deposition, Molecular Beam Epitaxy, Sol-Gel Technique, Electro-deposition., Ball-milling. (Chapter 6, Text 1)

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Atomic Structures -Grain size determination – XRD (Debye Scherrer equation), Microscopy – Scanning Electron Microscope (SEM), Tunneling Electron Microscope (TEM), Scanning Probe Microscope (SPM), Scanning Tunneling Microscope (STM), Atomic Force Microscope (AFM). (Text -1).

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Buckminster fullerene, Carbon nanotube, nano diamomd, BN Nanotune, Nanoelectronics - single electron transistor (no derivation), Molecular machine, Nanobiomatrics (Chapter 8, Text 1).

==0", -"$%# $2 % %$-+,3%0(45 0+!+%- '5 " + # $%05) Potential applications, Expected benefits from nanotechnologies, Can nanotechnology helps in addressing various challenges?, Energy and Energy Efficiency, new energy producers, Medicine, security, Other Applications. (Text book-2, Chapter 5, 6, 7 &8, Nanotechnology: Technology Revolution of 21st Century, Rakesh Rathi, S Chand & Company, New Delhi.).

Text books:

1. Introduction to Nanoscience & Nanotechnology by K. K. Chattopadhyay and A. N. Banerjee, Publisher: PHI Learning and Private Limited

2. Nanotechnology, Rakesh Rathi, S Chand & Company, New Delhi

3.NANO: The Essentials, T.Pradeep, McGraw Hill Education (India) Private Limited

References:

1. Nanoparticle Technology Handbook – M. Hosokawa, K. Nogi, M. Naita, T. Yokoyama (Eds.), Elsevier 2007

2. Encyclopaedia of Materials Characterization, Surfaces, Interfaces, Thin Films, Eds. Brundle, Evans and Wilson, Butterworth – Heinmann, 1992

3. Springer Handbook of nanotechnology, Bharat Bhushan (Ed.), Springer-Verlag, Berlin, 2004

4. Nano Science and Technology, V. S. Muraleedharan and A Subramaniam, Ane Books Pvt. Ltd, New Delhi

5. A Handbook on Nanophysics, John D, Miller, Dominant Publishers and Distributors, Delhi-51 6. Introduction to Nanotechnology, Charles P Poole Jr. and Frank J Owens, Wiley Students Edition 7. Nano-and micro materials, K Ohno et. al, Springer International Edition 2009, New Delhi

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P.C. Architecture Functional block diagram of a computer. Processors Introduction to Microprocessor.CISC, RISC processors Type of Processors and their specification.(Intel: Celeron, Pentium family-PII, PIII, PIV, dual core, core 2duo - AMD-K5,K6 series

%"- 10 hrs

Motherboards:Motherboard components Types, Form factor, Different components of Motherboard (BIOS, CMOS,BICMOS, RAM, CMOS Battery, I/O slots, I/O connectors), Riser architecture, Main Memory (SIMM, DIMM, RIMM), extended/expanded/cache memories. Chipsets (Intel & AMD)-ROM, DRAM, SDRAM, CDRAM, RDRAM, WRAM. Bus standards: Types of Buses (PC, ISA, MCA, AGP, PCI, USB, IEEE FireWire).Add on Cards Different latest Add on Cards (TV Tuner Card, DVR card, Video Capture,Internal Modem, Sound Card)

%"- < 9 hrs

Drivers:

Floppy Disk Drive- Floppy Drive Components(overview only)

Hard Disk Drive (HDD)

Types, Capacity, Hard Disk Components (Media, Read/Write Head, Spindle Motor Head Actuator), Connector, Jumper setting, trouble shooting in HDD.Hard Disk Controller (HDC) – Block diagram,

Working, Interfacing (IDE,SCSI, ATA and SATA series) Configuration of HDD-Installation, Formatting, File Format (FAT, NTFS).Pen drive, i-pods

3.Optical Disk Drive

Types (ROM, R/W, DVD ROM, DVD R/W), Capacity, Difference between CD &DVD (capacity, format)-trouble shooting.

%"- 9 5 hrs
Peripherals . Keyboard and Mouse- operation

Types of VDU (CRT, LCD, and TFT), Resolution, and Dot pitch -Printers – Types (dot matrix, inkjet, laser) Scanner- operation.Power conditioning Device:SMPS-Block diagram, operation-UPS- Types (online, off line, Hybrid)-trouble shooting in all these devices.

%"- ; 4 hrs

Viruses & Vaccines-Virus- Introduction, infection methods,Types of viruses, Different symptoms of virus attack, precautions.Vaccine- Method of vaccine, Different types of Antivirus used in PC,Firewalls
%"- : 7 hrs

NETWORKING ESSENTIALS
Introduction-Need for networking-Network Topology-OSI Model-Types of networks (LAN, WAN, MAN)

Protocols-LAN Protocols- Classification, Examples, Ethernet networking-WAN Protocols- PPP, X

.25, PPTP, L2TP, ISDN
%"- > 8 hrs

LAN Connectivity Devic es- NIC, Repeater, Hub, Switch, Bridge.Internet Connectivity Device-Routers, Gateways, CSU/DSU-TCP/IP Protocol Suite-What is TCP/IP, Importance, OSI vs TCP/IP
%"- 6 hrs

IP Addressing-Overview, Address classes, Network ID, Host ID and Subnet Mask,Addressing guidelines, Reserved IP Address, Subnetting and Supernetting(overview)

%"- E 2 hrs

Emerging Technologies-Wireless Technology - Bluetooth, WAP-Mobile Technology- GSM, CDMA, GPRS
$$@# 2$' -1 5:
D. Balasubramanian, “Computer Installation & Servicing”, Tata McGraw Hill.

Rom Gilster, Black book, “PC Upgrading and Repairing”, Dream tech, New Delhi.

Street Smart, James Pyler, “PC Upgrading and Repairing”, Wiley Publishing, Inc.

Stephen.J.Bigelow,”Bigelow’s Troubleshooting, Maintenance & Repairing PCs”,Tata McGraw Hill

Craig Zacker, “The Complete Reference- Networking”, Tata McGraw Hill

Douglowe, “Networking All in One Desk Reference”-3Edn, Wiley India Pvt Ltd

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Mark Minasi, “The Complete PC Upgrade & Maintenance Guide” BPB Publication

C.A. Schmidt, “The Complete Computer Upgrade & Repair Book”, Dreamtech

Craig Zacker, John Rourke, “The Complete Reference- PC Hardware”Tata McGraw Hill

Scott Mueller, “Upgrading & Repairing PC’s”, Pearson Education

Vishnu Priya Sing & Meenakshi Singh, “Computer Hardware Course”, Computech

Manahar Lotia, Pradeep Nair, Payal Lotia, “Modern Computer Hardware Course”,BPB Publication.

Richard Mc Mohan, “Introduction to Networking”, Tata McGraw Hill.

www.edugrid.ac.in/webfolder/courses/cn/cn_resourses.htm

www.howstuffwork.com

www.e-tutes.com

www.learnthat.com

www.intel.com

www.amd.com

http://en.wikipedia.org

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Theorems of M.I with proof-Calculation of M.I of bodies of regular shapes rectangular lamina, uniform bar of rectangular cross section, annular disc, circular disc, solid sphere-K.E of a rotating body. Determination of M.I of a fly wheel (theory and experiment).
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Examples of S.H oscillator-compound pendulum-determination of g -torsion pendulum-oscillations of two particles connected by a spring-vibration state of a diatomic molecule.
Wave motion-general equation of wave motion-plane progressive harmonic wave -energy density of a plane progressive wave -intensity of wave and spherical waves-

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Bending of beams-bending moment-cantilever-beam supported at its ends and loaded in the middle-uniform bending-experimental determination of Y using the above principles with pin and microscope-twisting couple on a cylinder-angle of twist and angle of shear-torsional rigidity, /
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Excess of pressure on a curved surface-force between two plates separated by a thin layer of liquid-experiment with theory to find surface tension and its temperature dependence by Jaeger' method-equilibrium of a liquid drop over solid and liquid surfaces.

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Flow of liquid through a capillary tube-derivation of Poiseuille's formula -limitations-Ostwald's viscometer-variation of viscosity with temperature.
$$@# 2$' -1 5
1. Mechanics: J.C.Upadhyaya, Ram Prasad & Sons

2. Oscillations & Waves: K.RamaReddy, S.Bbadami & V.Balasubramaniam (University Press)

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Thermal conductivity and thermometric conductivity-Lee's disc experiment-Weidmann and Franz law (statement only)-energy distribution in the spectrum of black body and results-Wien's displacement law-Rayleigh-Jeans law-their failure and Planck's hypothesis-Planck's law-comparison-solar constant-its determination-temperature of sun.

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Isothermal and adiabatic processes-work done-isothermal and adiabatic elasticityHeat engines-Carnot's cycle -derivation of efficiency-petrol and diesel engine cycles-efficiency in these two cases-second law of thermodynamics-Kelvin and Clausius statements.

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Concept of entropy-change of entropy in reversible and irreversible cycles-principle of increase of entropy-entropy and disorder-entropy and available energy-T-S diagram for Carnot's cycle-second law in terms of entropy-calculation of entropy when ice is converted into steam.

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Statistical probability-Macro and Microstates- Phase space-statistical ensemble-postulates of equal probability-Maxwell Boltzmann Distribution- velocity distribution.

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Heat & Thermodynamics: N.Subramaniam & Brijlal, S.Chand & Co

Heat & Thermodynamics: W.Zemansky, McGraw Hill

Heat & Thermodynamics: C.L.Arora.

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Analytical treatment of interference-theory of interference fringes and

bandwidth.Interferencein thin films-reflected system-colour of thin films-fringes of equal inclination and equal thickness -Newton's rings-reflected system-measurement of wavelength and refractive index of liquid.

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Phenomenon of diffraction-classification-Fresnel and Fraunhofer.Fresnel's theory of approximate rectilinear propagation of light-Fresnel diffraction at a straight edge and circular aperture. Fraunhofer diffraction at a single slit, two slits and N slits. Plane transmission grating-determination of wavelength.

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Magnetic properties of matter-definition and relation between magnetic vectors B, H and M. Magnetic susceptibility and permeability.Magneticproperties-diamagnetism-paramagnetism-ferromagnetism-antiferromagnetism.Electron theory of magnetism-explanation of ferromagnetism.

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EMF induced in a coil rotating in a magnetic field-peak, mean, rms and effective values of A.C. Ac circuits-AC through RC, LC, LR and LCR series circuits-resonance-sharpness of resonance-power factor and choke coil-transformers.

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1.A text book of optics – Brijlal & Subramaniam

2.Electricity and Magnetism – R.Murugeshan, S.Chand & Co Ltd.

3.A text book of B.Sc subsidiary Physics – P.Vivekanandan.

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Basic features of Bohr atom model-Bohr's correspondence principle -vector atom model-various quantum numbers-magnetic moment of orbital electrons -electron spin-Spin-Orbit coupling-Pauli's exclusion principle-

Atomic nucleus-basic properties of nucleus-charge, mass, spin, magnetic moment-binding energy and packing fraction-nuclear forces-salient features-radioactivity-radioactive decay-decay laws-decay constant-half life and mean life-radioactive equilibrium-secular and transient equilibrium-measurement of radioactivity.

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Inadequacies of classical physics-experimental evidences- quantum theory-Planck's hypothesis-foundation of quantum mechanics-wave function and probability density-Schrödinger equation-time dependent and time independent-particle in a potential box.

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Current-voltage characteristics of a diode-forward and reverse bias-breakdown mechanism of p -n junction diode-Zener diode and its characteristics-half wave and full wave rectifiers-bridge rectifier-ripple factor, efficiency.

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Number systems and codes-decimal numbers-binary arithmetic -1's and 2's compliment-decimal to binary conversion-octal numbers-hexadecimal numbers-binary coded decimal-digital codes-logic gates-NOT, OR, AND, NOR and NAND gates. Boolean algebra-Boolean operations -logic expressions-laws of Boolean algebra-DeMorgan's theorem-Boolean expression for gate network-simplification of Boolean expression.

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1. Modern Physics – R.Murugeshan, S.Chand & Co. Ltd.
2. Principles of Electronics – V.K.Mehta.

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Theorems of M.I with proof -Calculation of M.I of bodies of regular shapes-

rectangular lamina, uniform bar of rectangular cross section, annular disc, circular

disc, solid cylinder, solid sphere-K.E of a rotating body-Determination of MI of a flywheel(Theory and Experiment).

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Flow of liquid through a capillary tube-derivation of Poiseuille’s formula -limitations-Ostwald’s viscometer-variation of viscosity with temperature.

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Mechanics: J.C.Upadhyaya, Ram Prasad & Sons

Oscillations&Waves: K.RamaReddy, S.B.badami & V.Balasubramaniam (University Press)

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Graham's law of diffusion in liquids-Fick's law-analogy between liquid diffusion and heat conduction-methods of estimating concentrations-determination of coefficient of diffusivity.

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Thermal conductivity and thermometric conductivity – Lee's Disc experiment-Weidmann and Franz law (statement only) -Radiation of heat-black body radiation-Kirchoff's laws of heat radiation-absorptive power-emissive power-Stefan's law (no derivation) -energy distribution in the spectrum of black body and results-Wien's displacement law - Rayleigh-Jeans law-their failure and Planck's hypothesis -Planck's law-comparison-solar constant-temperature of sun.

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The general Properties of matter: F.H.Newman & V.H.L.Searle

Heat & Thermodynamics: N.Subramaniam & Brijlal, S.Chand & Co

Heat & Thermodynamics: W.Zemansky, McGraw Hill

Heat & Thermodynamics: C.L.Arora.

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Properties of superconductors-zero electrical resistance- Meissner effect- electrical magnetic filed-TypeI and Type II superconductors-isotope effect-high temperature ceramic superconductors-applications of superconductors.

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EM Spectrum- UV, Visible, IR,, Radio and microwave regions-principle of various spectrometers used in specific regions of EM spectrum-absorption spectroscopy, emission spectroscopy.

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Concepts of phase-space-ensemble and statistical equilibrium-probability

theorems in

statistical thermodynamics-distribution laws-Maxwell-Boltzman, Fermi -Dirac and Bose-Einstein distribution laws (no derivation)-comparison of three statistics-Molecular energies in an ideal gas-Quantum statistics-Rayleigh-Jeans formulaPlanck’s radiation law-specific heat of solids-free electrons in metals-electron energy distribution.

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Heat & Thermodynamics: N.Subramaniam & Brijlal, S.Chand & Co

Heat & Thermodynamics: W.Zemansky, McGraw Hill

Heat & Thermodynamics: C.L.Arora.
Concepts of modern physics: Arthur Beiser (TMH).
Statistical Mechanics: Sinha (TMH).

Theoretical Chemistry: Samuel Gladstone, New York, D Van Nostrand Co., Inc.
Heat: Saha and Srivasthava.

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Examples of S H oscillator- compound pendulum- determination of g-torsion pendulum-oscillations of two particles connected by a spring- vibrational state of diatomic molecule -damped and forced harmonic oscillators-damping force-damped harmonic oscillator -examples-power dissipation-Q factor. Wave motion-general equation of wave motion-plane progressive harmonic wave intensity of wave and spherical waves-waves in solids-longitudinal waves –transverse waves-torsional waves-common characteristics-reflection and transmission of waves-reflection and transmission of energy- flexural vibrations-applications of geophysicscharacteristics-reflection and transmission of waves-reflection and transmission of energy-flexural vibrations-applications in geophysics.

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The solar system-origin of solar system-the dynamic earth-continental drift-earth's

structure-earth's size and shape-gravitation-gravitational field and potentialequipotential surfaces-gravitational field and potential due to a thin spherical shell and solid sphere-gravitational self energy-gravity measurements-free fall method-rise and fall method-gravity anomalies. The tide-tidal effect of sun-earth quakes-causesseismic wave propagation-seismographs.Atmospheric physics-atmospheric structure and composition-atmospheric pressure, density and temperature-measurement of air temperature-daily cycle of air temperature-atmospheric radiation-ionosphere-magnetosphere.

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Heat & Thermodynamics: N.Subramaniam & Brijlal, S.Chand & Co

Heat & Thermodynamics: W.Zemansky, McGraw Hill
Heat & Thermodynamics: C.L.Arora.

Fundamentals of Geophysics: William Lowrie, Cambridge University Press.
Applied Physics: G.Aruldas et al, Rajam publishers, Tvpm.

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Earth’s magnetism-dip- inclination -vertical components-magnetic maps -magnetographs -cause of earth’s magnetism geomagnetic prospecting.

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Crystallography (16 hours)

Crystal structure-crystal lattice and translation vectors-unit cell-symmetry operations point groups and space groups-types of lattices-lattice directions and planes interplaner spacing-simple crystal structures-close packed structures-structure of diamond-zinc blend structure-sodium chloride structure. X-ray crystallography-diffraction of x -rays-Bragg's law-x-ray diffraction methodsrotating crystal method-powder diffraction method.

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Flow of liquid through a capillary tube -derivation of Poiseuille's formula-limitations - variation of viscosity with temperature-Stokes formula-determination of viscosity of a highly viscous liquid by Stokes method.

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Mechanics: J.C.Upadhyaya, Ram Prasad & Sons
Oscillations & Waves: K.RamaReddy, S.Bbadami & V.Balasubramaniam
(University Press)

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Graham's law of diffusion in liquids-Fick's law-analogy between liquid diffusion and heat conduction-methods of estimating concentrations-determination of coefficient of diffusivity.

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Thermal conductivity and thermometric conductivity- disc experiment Lee's -
Weidmann and Franz law (statement only) -Radiation of heat-black body radiation - absorptive power-emissive power-Stefan's law (no derivation) -energy distribution in the spectrum of black body and results-Wien's displacement law -Rayleigh-Jeans law -
their failure and Planck's hypothesis-Planck's law-comparison-solar constanttemperature of sun.

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Isothermal and adiabatic processes-work done-isothermal and adiabatic elasticity.Heat engines-carnot's cycle -derivation of efficiency-petrol and diesel engine cycles-efficiency in these two cases-second law of thermodynamics-Kelvin and Clausius statements.
Phase transition- first order and second order-liquid helium-super fluidity.

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Concept of entropy-change of entropy in reversible and irreversible cycles-principle of increase of entropy-entropy and disorder-entropy and available energy-T-S diagram for Carnot’s cycle-second law in terms of entropy-calculation of entropy when ice is converted into steam.

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The general Properties of matter: F.H.Newman & V.H.L.Searle
Heat & Thermodynamics: N.Subramaniam & Brijlal, S.Chand & Co
Heat & Thermodynamics: W.Zemansky, McGraw Hill
Heat & Thermodynamics: C.L.Arora.

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Analytical treatment of interference-theory of interference fringes and bandwidth.Interference in thin films-reflected system-colour of thin films-fringes of equal inclination and equal thickness.Newton’s rings-reflected system-measurement of wavelength and refractive index of liquid.

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Phenomenon of diffraction-classific ation-Fresnel and Fraunhofer.Fresnel’s theory of approximate rectilinear propagation of light-Fresnel diffraction at a straight edge and circular aperture. Fraunhofer diffraction at a single slit, two slits and N slits. Plane transmission grating-determination of wavelength.

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Principle of operation of laser-population inversion-optical pumping-ruby laser-applications of lasers.

Light propagation in optical fibers-step index fibre-graded index fibre-applications.

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EMF induced in a coil rotating in a magnetic field-peak, mean, rms and effective values of A.C. Ac circuits-AC through RC, LC, LR and LCR series circuits-resonance-sharpness of resonance-power factor and choke coil-transformers.

Electric motors- principles of working- Devices working with electric motors-Electric fan- wet grinder, Mixer grinder, Microwave oven – principle – technical specifications - applications – advantages,

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A text book of optics – Brijlal & Subramaniam
. Electricity and Magnetism – R.Murugeshan, S.Chand & Co Ltd.
A text book of B.Sc subsidiary Physics – P.Vivekanandan.
Electrical Technology (Vol I & II), B.L.Theraja.

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Basic features of Bohr atom model-Bohr's correspondence principle -vector atom model-various quantum numbers-magnetic moment of orbital electrons -electron spin-Spin-Orbit coupling-Pauli's exclusion principle-periodic table.

Atomic nucleus-basic properties of nucleus -charge, mass, spin magnetic moment-binding energy and packing fraction-nuclear forces-salient features-radioactivity-

radioactive decay-decay laws-decay constant-half life and mean life-radioactive equilibrium-secular and transient equilibrium-measurement of radioactivity-

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Properties of superconductors-zero electrical resistance-Meissner effect-critical magnetic field-Type I and Type II superconductors-isotope effect-high temperature ceramic superconductors-applications of superconductors.

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EM spectrum-UV, Visible, IR, Radio and microwave regions-principle of various spectrometers used in specific regions of EM spectrum-absorption spectroscopy-emission spectroscopy-mass spectroscopy-qualitative ideas of ESR & NMR spectrometer.

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Current-voltage characteristics of a diode-forward and reverse bias-breakdown
mechanism of p -n junction diode-Zener diode and its characteristics-half wave and full wave rectifiers-bridge rectifier-ripple factor, efficiency. Construction and operation of a bipolar junction transistor-transistor configurations-current components-transistor characteristics-DC load line-Q point-AC load line-transistor biasing-need for biasing-bias stabilization-biasing circuits-fixed bias, emitter feedback bias, voltage divider bias (qualitative study only).
Transistor amplifier-basic features of an amplifier-gain, input and output resistances-frequency response and band width-small signal CE amplifier-circuit and its operation

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Number systems and codes-decimal numbers-binary arithmetic -1's and 2's compliment-decimal to binary conversion-octal numbers-hexadecimal numbers-binary coded decimal-digital codes-logic gates-NOT, OR, AND, NOR and NAND gates.Boolean algebra-Boolean operations -logic expressions-laws of Boolean algebra-DeMorgan's theorem-Boolean expression for gate network-simplification of Boolean expression.

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Modern Physics – R.Murugeshan, S.Chand & Co. Ltd.
A text book of B.Sc subsidiary Physics – P.Vivekanandan.
Principles of Electronics – V.K.Mehta.

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Ohm's Law, Linear and non-linear Resistors, Resistor types-Wire wound Resistors, Carbon composition Resistors, Carbon film Resistors, Metal film Resistors, Resistor Colour code, Resistive circuits, Series and Parallel Resistor

circuits, Series aiding and Series opposing Voltages, Proportional Voltage formula, Proportional Current formula, Series Voltage Dividers, ‘Open’ and ‘Short’ in Series, Parallel and Series –Parallel Circuits.

Inductor, Inductor Types- Air core inductor, Iron-core Inductor, Ferrite-core Inductor, Self Inductance, Mutual Inductance, Coefficient of Coupling, Inductors in Series or Parallel without M, series combination with M, Stray Inductance, Reactance offered by a Coil.

Capacitors, Type of Capacitors- Fixed Capacitors, Variable Capacitors, Capacitance, Capacitors in Series and Parallel, Reactance offered by the Capacitor, Cells in Series and Parallel

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Kirchhoff’s Law, Super position theorem, Ideal constant Voltage Source, Ideal constant Current Source, Thevenin’s and Norton’s Theorem, Maximum Power Transfer Theorem(Proof).

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Magnetic Field, Type of Magnets, Magnetic Shielding, Magnetic Terms and Units, Ohm’s Law in Magnetism, Transformer, Transformer working, Transformer Types, Transformer Impedance.

Type of alternating waveforms, Different values of sinusoidal voltage and current, Phase and Phase difference of A.C, Non-sinusoidal waveform, Harmonics, A.C through Resistor, Inductor, Capacitor, L-R, R-C and LCR circuits, Sharpness of resonance, Q-factor, Bandwidth, Tuning of radio, Parallel LCR.

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Rise and fall of Current in pure Resistance, Time constant of an L-R Circuit, Inductive Kick, Time constant of an R-C Circuit, Charging and Discharging of capacitor, Decreasing Time Constant, Flasher, Pulse Response of an R-C Circuit, Effect of Long and Short Time Constants.

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Energy Band, Valance band, Conduction Band, Classification of materials based on energy bands, Type of semiconductors-Intrinsic and Extrinsic, hole formation and its movements, Type of Extrinsic semiconductors-P-type and N-type, Drift current in Intrinsic semiconductors.

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Basic Electronics Solid State – B.L.Theraja, S.Chand & Co. Ltd.

Principles of Electronics – V.K.Mehta.

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Tuning circuits and filters (4 hrs), Opto-electronic devices (4 hrs), DC power supplies (5 hrs), The basic transistor (4 hrs), Transistor characteristics and approximations (4 hrs).

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Load line and DC bias circuits (5 hrs), Transistor equivalent circuits and models (10 hrs).
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1Basic Electronics Solid State – B.L.Theraja, S.Chand & Co. Ltd. 2Principles of Electronics – V.K.Mehta.

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Amplifier Classifications - Common Base (CB), Common Emitter (CE) and Common Collector (CC) Amplifier : Gains and Characteristics - Comparison of Amplifier Configurations - Classification of Amplifiers Based on Biasing Conditions - Class A Amplifier - Transformer Coupled Class A Amplifier - Class B Amplifier - Class B Push Pull Amplifier - Cross Over Distortion - Complimentary Symmetry Push Pull Class B Amplifier - Class C Amplifier - Distortion in Amplifiers - Noise

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Amplifier Coupling - RC Coupled Two Stage Amplifier - Impedance Coupled Two Stage Amplifier - Transformer Coupled Two Stage Amplifier - Direct Coupled Two Stage Amplifier Using Similar Transistors - Direct Coupled Two Stage Amplifier Using Complimentary Symmetry of Two Transistors - Darlington Pair - Differential Amplifier.

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Decibel System - Frequency Response - Cut off Frequencies - Alpha and Beta Cut off Frequencies - Gain Bandwidth Product.

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Feedback Principle - Types of Feedback - Negative Feedback and its Properties - Forms of Negative Feedback.

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FET - JFET : Structure, Theory of Operation and Characteristics - JFET Parameters - MOSFET - DE MOSFET and E only MOSFET : Working and Characteristics - FET Applications.

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Unijunction Transistor (UJT) - UJT Relaxation Oscillator - Silicon Controlled Rectifier (SCR) - Triac - Diac - Silicon Controlled Switch.

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Difference between Amplifier and Oscillator - Classification of Oscillators - Types of Sinusoidal Oscillations - Oscillatory Circuit and its Frequency - Essentials of Transistor LC Oscillator - Barkhausen Criterion for Oscillator - Tuned Base Oscillator - Tuned Collector Oscillator - Hartley Oscillator - Colpitt's Oscillator - Clapp Oscillator - Phase Shift Oscillator - Wien Bridge Oscillator - Crystal Controlled Oscillators.

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Nonsinusoidal Waveforms - Classification of Nonsinusoidal Oscillators - UJT Sawtooth Generator - Multivibrators - Astable Multivibrator - Monostable Multivibrator - Bistable Multivibrator - Schmitt Trigger - Transistor Blocking Oscillator.

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1Basic Electronics Solid State – B.L.Theraja, S.Chand & Co. Ltd. 2Principles of Electronics – V.K.Mehta.

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Integrated circuits (8 hrs), Number systems (6 hrs), Logic gates (8 hrs), Boolean algebra (6 hrs), Logic families (4 hrs).

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Transducers (8 hrs), Electronic instruments (6 hrs), Fibre optics (8 hrs).

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Basic Electronics Solid State – B.L.Theraja, S.Chand & Co. Ltd.

Principles of Electronics – V.K.Mehta.

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Theorems of M.I with proof -Calculation of M.I of bodies of regular shapes-

rectangular lamina, uniform bar of rectangular cross section, circular disc, annular ring

solid cylinder, solid sphere- spherical shell, K. E of a rotating body-

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Examples of S.H oscillator- oscillations of two particles connected by a spring, vibration state of a diatomic molecule- wave motion-general equation of wave motion-plane progressive harmonic wave - energy density of a plane progressive wave-intensity of wave and spherical waves, superposition principle-

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Mechanics of solids (8 hours)

Bending of beams-bending moment-cantilever-beam supported at its ends-and loaded in the middle-uniform bending-experimental determination of Y using the above principles with pin and microscope-twisting couple on a cylinder-angle of twist and angle of shear- Torsional rigidity (Qualitative study)

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Excess of pressure on a curved surface- force between two plates separated by a thin layer of liquid-experiment with theory to find surface tension of a liquid by

Jaeger’ method- temperature dependence of surface tension.

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Equation of continuity, Bernoulli’s theorems- venturimeter, - Flow of liquid through a pipe -derivation of Poiseuille’s formula-limitations – variation of viscosity with temperature-Stokes formula-

Books for study:

Mechanics: J. C. Upadhyaya, Ram Prasad & Sons

Oscillations & Waves: K. RamaReddy, S. Badami & V.Balasubramaniam (University Press)

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Joule Thomson effect- Theory and experiment, Phase transition- first order and second order-liquid helium-super fluidity.

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$$@# 2$' -1 57

1.The general Properties of matter: F.H.Newman & V.H.L.Searle
2.Heat & Thermodynamics: N.Subramaniam & Brijlal, S.Chand & Co
3.Heat & Thermodynamics: W.Zemansky, McGraw Hill
4.Heat & Thermodynamics: C.L.Arora.

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Experiments showing the transverse nature of light-plane polarized light-polarization by reflection-Brewster's law-double refraction-Nicol prism-propagation of light in uni-axial crystals-positive and negative crystals-principal refractive indices-half wave plate and quarter wave plate-elliptically and circularly polarized light-optical activity-Fresnel's theory and applications.

#+' % ")'+ =-",# 3$1'#

Principle of operation of laser-population inversion-optical pumping-ruby laser-applications of lasers -Light propagation in optical fibres-step index fibre-graded index fibre-single mode and multi-mode fibres (qualitative ideas only).

Unit III

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EMF induced in a coil rotating in a magnetic field-peak, mean, rms and effective values of A.C. Ac circuits-AC through RC, LC, LR and LCR series circuits-resonance-sharpness of resonance-power factor and choke coil-transformers,

Electric motors principle of working Devices working with electric motors – electric fan wet grinder.

$$@# 2$' -1 57

A text book of optics – Brijlal & Subramaniam
Electricity and Magnetism – R.Murugeshan, S.Chand & Co Ltd.
A text book of B.Sc subsidiary Physics – P.Vivekanandan.
Electrical Technology (Vol I & II), B.L.Theraja.

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Basic features of Bohr atom model-Bohr's correspondence principle -vector atom model-various quantum numbers-magnetic moment of orbital electrons -electron spin-Spin-Orbit coupling-Pauli's exclusion principle-periodic table. Atomic nucleus-basic of nucleus -charge, mass, spin magnetic properties moment-binding energy and packing fraction-nuclear forces-salient features-Radioactivity radioactive decay-decay laws-decay constant-half life and mean life-radioactive equilibrium-secular and transient equilibrium-measurement of radioactivity-

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Properties of superconductors-zero electrical resistance-Meissner effect-critical magnetic field-Type I and Type II superconductors-isotope effect-high temperature ceramic superconductors-applications of superconductors.

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Inadequacies of classical physics-experimental evidences-evidences for quantum

theory-Planck’s hypothesis-foundation of quantum mechanics-wave function and probability density-Schrödinger equation-time dependent and time independent-particle in a potential box.

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Current-voltage characteristics of a diode-forward and reverse bias-breakdown
mechanism of p -n junction diode-Zener diode and its characteristics-half wave and full wave rectifiers-bridge rectifier-ripple factor, efficiency. Construction and operation of a bipolar junction transistor-transistor configurations-current components-transistor characteristics-DC load line-Q point-AC load line-transistor biasing-need for biasing-bias stabilization-biasing circuits-fixed bias, emitter feedback bias, voltage divider bias (qualitative study only).
Transistor amplifier-basic features of an amplifier-gain, input and output resistances-frequency response and band width-small signal CE amplifier-circuit and its operation

$$@# 2$' -1 57

Modern Physics – R.Murugeshan, S.Chand & Co. Ltd.
A text book of B.Sc subsidiary Physics – P.Vivekanandan.
Principles of Electronics – V.K.Mehta.

(Common for all complementary subjects)

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Torsion Pendulum- n by torsional oscillations

Torsion Pendulum- n and I using equal masses
Fly Wheel
Cantilever- Y by pin and microscope method
Uniform bending- Y by pin and microscope
Symmetric bar pendulum - g and radius of gyration
Surface tension- capillary rise method
Coefficient of viscosity- capillary flow method
Specific heat-method of mixtures applying Barton’s correction

Lee’s disc- Thermal conductivity of cardboard

Melde’s string- frequency of tuning fork

Method of parallax- optical constants of convex lens using

mirror and mercury ii) mirror and water

13Method of parallax- refractive index of liquid.

Spectrometer- A, D and n

Spectrometer- dispersive power of a prism

Spectrometer- Grating-normal incidence

Deflection and vibration magnetometer- M and Bh

Circular coil- magnetization of a magnet

Carey Foster’s bridge - Resistivity

Potentiometer- Resistivity

Potentiometer- Calibration of ammeter

Mirror galvanometer- Current and Voltage sensitivity

Diode Characteristics (for Ge and Si diodes)

Half wave rectifier-Measurement of ripple factor with and without filter capacitor

Full wave rectifier- Measurement of ripple factor with and without filter capacitor

Semiconductor diode (IN 4001/ IN 4007) characteristics; To (i) trace and construct the circuit,
to draw the forward V-I characteristic curve and
to determine the static and dynamic resistances of the diode at a particular operating point.

2. Zener diode characteristics: To (i) trace and construct the circuit, (ii) to plot the V-I characteristic under reverse biased condition and (iii) to calculate the dynamic resistance of the diode under reverse bias when conducting.

3. LED and photo diode characteristics: To (i) study the variations in resistance with varying current and (ii) to study the output characteristics of a photo diode.

4. Thevenin and Norton equivalent circuits: To (i) determine Thevenin's and Norton's equivalent circuits of Wheatstone's bridge and (ii) to verify the power transfer theorem.

5. R-C resonant circuits: To (i) study the input-output characteristics of an R -C circuit as a function of frequency and (ii) to study the square wave response of R-C circuits.

6. Transistor characteristics; CE configuration: (i) Construct the circuit, (ii) To plot the input characteristics (IB-VBE graph for constant V CE) and to calculate the dynamic resistance at an operating point, (iii) To study the output characteristics (IC-VCE graph for constant I B) and to calculate the output ac resistance, dc gain and ac current gain at a given operating point.

7. Transistor characteristics; CB configuration: (i) Construct the circuit, (ii) Plot the input characteristics (IE-VEB graph for constant VCB) and to calculate the dynamic resistance at an operating point, (iii) To study the output characteristics (IC-VCB graph for constant I C) and to calculate the output dynamic resistance, dc current gain and ac current gain at a given operating point.

8. FET characteristics: (i) Trace the circuit (ii) To plot the static drain characteristics of FET (iii) To calculate the FET parameters (drain dynamic resistance, mutual conductance and amplification factor at a given operating point).

9. Fixed-bias circuit with and without emitter resistor: (i) Trace the circuit (ii) To measure the Q-Point (IC and VCE) with and without emitter resistor RE. (iii) To note the variation of Q -point by increasing the temperature of the transistor in fixed bias circuit with and without emitter resistor (iv) To note the variation of Q-point by changing the base resistor in bias circuit with and without emitter resistor

10. Collector-to-base feedback bias circuit: (i) Trace the circuit (ii) To measure the Q-Point (IC and VCE) (iii) To note the variation of Q-point by increasing the temperature of the transistor

11. Potential -divider biasing circuit: (i) Trace the circuit (ii) To measure the Q-Point (IC and VCE) (iii) To note the variation of Q-point by increasing the temperature of the transistor (iv) To measure the operating point when one of the bias resistor changes

12. Half-wave rectifier: (i) To draw the input and output wave shapes (ii) To verify Vdc = Vm/p and ripple factor = 1.21 (Observe for different load resistances)

13. Full-wave rectifier – Centre tapped: (i) To draw the input and output wave shapes (ii) To verify Vdc = 2Vm/p and ripple factor = 0.482 (Observe for different load resistances)

14. Bridge rectifier: (i) To draw the input and output wave shapes (ii) To verify Vdc = 2Vm/p and ripple factor = 0.482 (Observe for different load resistances)

15. Filter circuits (shunt capacitor, LC and CLC filters): (i) To plot the output wave shapes with and without shunt capacitor (ii) To find the ripple factor with and without different filters

16. Single stage RC coupled amplifier: (i) To measure the Q-point (IC and VCE) (ii) To measure the maximum signal that can be amplified by the amplifier without clipping (iii) To measure the voltage gain at 1 KHz (iv) To plot the frequency response (v) To find the voltage gain for different values of load resistance

17. FET amplifier: (i) To measure the frequency response (ii) To measure voltage gain, BW and gain-BW product

18. Hartley oscillator: (i) Trace the circuit (ii) To measure the Q-point of the transistor (iii) To observe the output wave form and to measure the frequency of oscillations

19. Phase shift oscillator: (i) Trace the circuit (ii) To measure the frequency from the output wave form (iii) To observe the phase shift at different points

20. Clipping circuits: (i) To observe the output wave form corresponding to different clipping circuits

21. Clamping circuits: (i) To observe the output wave form corresponding to different clamping circuits

22. OP amp. - Inverting amplifier using IC 741 (i) Trace the circuit (ii) To construct an inverting amplifier using IC 741 and determine its voltage gain for different input voltage

23. OP amp. - Non inverting amplifier using IC 741 (i) Trace the circuit (ii) To construct a Non inverting amplifier using IC 741 and determine its voltage gain for different input voltage

24. OP amp. - Unity gain buffer using IC 741 (i) Trace the circuit and (ii) To construct a unity gain buffer using IC 741 and to find the voltage gain.

UNIVERSITY OF KERALA

Revised Syllabus for

M.Sc Degree Program in Physics

(With effect from 2020 admissions)

UNIVERSITY OF KERALA

M. Sc Degree Program in Physics

Objectives: Major objective of the M. Sc Physics program of University of Kerala is to equip the students for pursuing higher studies and employment in any branches of Physics and related areas. The program also envisages developing thorough and in-depth knowledge in Mathematical Physics, Classical Mechanics, Quantum Mechanics, Statistical Physics, Electromagnetic Theory, Nuclear Physics, Atomic and Molecular Spectroscopy and Electronics. The program also aims to enhance problem solving skills of students so that they will be well equipped to tackle national level competitive exams. The program also acts as a bridge between theoretical knowhow and its implementation in experimental scenario. The program also introduces the students to the scientific research approach in defining problems, execution through analytical methods, systematic presentation of results keeping in line with the research ethics through M. Sc dissertations.

Program Outcome

(i) Define and explain fundamental ideas and mathematical formalism of theoretical and applied physics.

(ii) Identify, classify and extrapolate the physical concepts and related mathematical methods to formulate and solve real physical problems.

(iii) Identify and solve interdisciplinary problems that require simultaneous implementation of concepts from different branches of physics and other related areas.

(iv) To define a research problem, translate ideas into working models, interpret the data collected draw the conclusions and report scientific data in the form of dissertation.

(v) To disseminate scientific knowledge and scientific temper in the society to contribute towards greater human cause.

UNIVERSITY OF KERALA

M.Sc Degree Program (effective from 2018 - 19) Branch

A: COURSE STRUCTURE & MARK DISTRIBUTION

Semester	Paper Code	Title of Paper	Contact hours per week			UE duration (h)	Maximum marks		
			L	T	P		IA	UE	Total
I	PH 211	Classical Mechanics	6	1	…	3	25	75	100
	PH 212	Mathematical Physics	6	1	…	3	25	75	100
	PH 213	Basic Electronics	6	1	…	3	25	75	100
	PH 251	General Physics Practicals	…	1	3	…	…	…	…
	PH 252	Electronics & Computer Science Practicals	…	1	4	…	…	…	…
	Total for Semester I (S1)		18	5	7	…	75	225	300
II	PH 221	Modern Optics & Electromagnetic theory	6	1	…	3	25	75	100
	PH 222	Thermodynamics, Statistical Physics & Basic Quantum Mechanics	6	1	…	3	25	75	100
	PH 223	Computer Science & Numerical Techniques	6	1	…	3	25	75	100
	PH 251	General Physics Practicals	…	1	3	6	25	75*	100
	PH 252	Electronics & Computer Science Practicals	…	1	4	6	25	75*	100
	Total for Semester II (S2)		18	5	7	…	125	375	500

III	PH 231	Advanced Quantum Mechanics	6	1	…	3	25	75	100
	PH 232	Atomic and Molecular Spectroscopy	6	1	…	3	25	75	100
	PH 233 X	Special Paper I	6	1	…	3	25	75	100
	PH 261	Advanced Physics Practicals	…	1	4	…			
	PH 261	Advanced Electronics Practicals	…	1	3	…			
	Total for Semester III (S3)		18	5	7		75	225	300
IV	PH 241	Condensed Matter Physics	6	1	…	3	25	75	100
	PH 242	Nuclear & Particle Physics	6	1	…	3	25	75	100
	PH 243 X	Special Paper II	6	1	…		25	75	100
	PH 261	Advanced Physics Practicals	…	1	3	6	25	75*	100
	PH 262	Advanced Electronics Practicals	…	…	4	6	25	75*	100
	PH 201	Project	…	…	…	…	25	75	100
	PH 202	Viva voce	…	…	…	…	…	100	100
	Total for Semester IV (S4)		18	5	7	…	150	550	700
Grand Total			**72**	**20**	**28**	**…**	**425**	**1375**	**1800**

* 10 marks for records

L - Lecture IA - Internal Assessment

T - Tutorial UE - University Exam

P - Practical

X: E (Electronics), M (Materials Science) N (Nuclear Physics), S (Space Physics) T (Theoretical Physics)

B: SPECIAL PAPERS FOR THIRD AND FOURTH SEMESTERS

Sl. No	Special paper Category	Code Nos of	Name of Special Papers
1	ELECTRONICS	PH 233 E PH 243 E	Advanced Electronics-I Advanced Electronics-II
2	MATERIALS SCIENCE	PH 233 M PH 243 M	Materials Science-I Materials Science-II
3	NUCLEAR PHYSICS	PH 233 N PH 243 N	Advanced Nuclear Physics Radiation Physics
4	SPACE PHYSICS	PH 233 S PH 243 S	Space Physics and Plasma Physics Advanced
5	THEORETICAL PHYSICS	PH 233 T PH 243 T	Theoretical Physics-1 Theoretical Physics-2

C: GENERAL GUIDELINES

C-1 **Theory papers**

Books of study and corresponding chapters are given for most of the theory papers in the syllabus to define the scope of the syllabus.

For internal evaluation of theory papers at least one Viva must be conducted for each paper

For assignments and seminars current developments in the areas of the syllabus may be chosen for improving the general awareness of the student

In tutorial sessions of theory papers problem solving in different topics of the syllabus may be discussed.

C-2 **Lab Courses**

Rough records may be properly maintained for each practical paper and should be produced during the University Practical Examinations along with original record book.

Each student is encouraged to include critical comments on each experiment done in the original records including sources and estimates of errors, limitations in the experiments done and scope for improvements/additions in the experimental work.

In performing Electronics Practicals: Bread Board Practice is recommended in addition to soldering of electronic circuits.

C-3 **Special papers**

Depending on the expertise and facilities available in a College (with approval of the University and Government as per rules) one of the five Specialisations (Special paper Category) may be chosen by a student for the third and fourth semesters of the M.Sc Programme in Physics. At present for all specialisations, practical courses are common.

C4-Project work and Project Evaluation

The Project may be started during the second semester of the M.Sc programme.

25 marks of the project are to be awarded on the basis of internal assessment carried out in the College for each student concerned. A Project rough record may be maintained by each student to help to evaluate the progress of the project. Each student is required to present the completed project along with experimental demonstration if any in the college before the final University examinations in the Fourth Semester of the MSc (Physics) Programme.

For University Examinations for the Project: 50 marks is allotted for Project report evaluation and 25 marks allotted for Project based Viva Voce to be conducted along with General Viva Voce examination by the University.

D Pattern of University Question papers D-1
Theory Papers

Each question Paper has three parts: Part A, Part B and Part C

Part A: Eight short answer questions covering the entire syllabus. *One of the questions from this section may be used to test the CURRENT AWARENESS (general knowledge) of the student in the areas of syllabus covered for this paper.* Each question carries 3 marks.

Part B: contains three compulsory questions with internal choice. Questions cover all the three units in the syllabus. Each question carries 15 marks.

Part C: contains six problems covering the entire syllabus. The student needs to answer any three. Each question carries five marks.

The question paper pattern for the theory papers is given separately.

D-2 PRACTICALS

Each practical paper carries a total of 75 marks. 10 marks are allotted for practical records. PH

252: Electronics and Computer Science: Unit A-Electronics practical (4h, 45 marks)

Unit B- Computer Science (2h, 20 marks)

PH261: Advanced Physics has two parts: Physics Experiment (5h, 45 marks) Data Analysis of given scientific data (1 h, 20 marks)

PH 262: Advanced Electronics has two parts: (i) Electronics Practicals (4h, 45 marks)

(ii) Microprocessor Practicals (2h, 20 marks)

PH 201 Project: Internal Evaluation for project is 25 marks

For University Examinations: 50 marks for Project Dissertation/report evaluation and 25 marks for Project based Viva Voce

PH 202 General Viva Voce: For General Viva Voce covering the entire MSc Syllabus,

University Examinations: 100 marks

(University Question Paper pattern given separately)

Question paper pattern

MSc Degree Examination

Branch II PHYSICS

PH 2xy……

Duration: 3 hours **Maximum marks: 75**

Instructions to question paper setter

1. Each question paper has three parts - Part A, Part B and Part C

2. Part A contains eight short answer questions spanning the entire syllabus, of which the candidate has to answer any *five* question carries *three* marks.
3. Part B contains *three* compulsory questions with internal choice. Each question shall be drawn from each unit of the syllabus. Each question carries 15 marks
4. Part C contains six problems spanning the entire syllabus. The candidate has to answer any *three*. Each question carries *five* marks

PART A

(Answer any five questions. Each question carries three marks)

1.

2.

3.

4

5.

6.

7.
8.

(5 x 3 = 15 marks)

PART B

Answer three questions each question carries 15 marks

9 (a)

(b)

OR

10 a) (15 marks)

(b)

11 a)

(b)

OR

12 a) (15 marks)

b)

13 a

b

OR

14 a)

b)

Part C

(Answer any three questions. Each question carries five marks)

16

17

18

19

20

21

(3 x 5= 15 marks)

PH 211: CLASSICAL MECHANICS (6L, 1T)

Objectives: This course is aimed to provide basic and advanced concepts in classical mechanics. The course discusses Lagrangian and Hamiltonian formalisms, central force problems, theory of small oscillations, Hamilton -Jacobi equations, Kepler's problem, Rigid body dynamics and Euler's equations, Concepts of special and general theory of relativity, Non linear dynamical systems and chaos.

Unit I

Lagrangian Mechanics (12 hours)

Mechanics of a particle and system of particles- constraints- D'Alemberts principle and Lagrange's equations-simple applications of Lagrangian formulation-Hamilton's principle-techniques of calculus of variations-derivation of Lagrange's equations from Hamilton's principle-conservation theorems and symmetry properties

Two body central force problem (14 hours)

Reduction to one body problem-equations of motion-equivalent one dimensional problem-differential equation for the orbit in the case of integrable power law potentials- Virial theorem- Kepler's problem-inverse square law of force-scattering in central force field-transformation of the scattering problem to laboratory coordinates

Theory of small oscillations (10 hours)

Equillibrium and potential energy-theory of small oscillations-normal modes- two coupled pendula- longitudinal vibrations of carbon dioxide molecule

Unit II

Hamiltonian Mechanics (12 hours)

Generalised momentum and cyclic coordinates-conservation theorems-Hamilton's equations-examples in Hamiltonian dynamics (harmonic oscillator, motion of a particle in a central force field, charged particle in an electromagnetic field, compound pendulum)- canonical transformations-generating functions- poisson brackets- Liouoville's theorem

Hamilton-Jacobi equations (10 hours)

Hamilton-Jacobi equation-harmonic oscillator as an example-separation of variables in Hamilton-Jacobi equation-action angle variables-Kepler's problem

Rigid body dynamics (14 hours)

Generalised coordinates of rigid body-Euler's angles- infinitesimal rotations as vectors-angular momentum and intertia tensor- Euler's equations of motion of a rigid body-force free motion of symmetrical top-motion of heavy symmetrical top.

Unit III

Special and General Theory of Relativity (16 hours)

Postulates of special theory- four-vectors and tensors- relativistic particle dynamics- Lorentz transformations -relativistic Lagrangian- mass-energy equivalence- covariant Lagrangian, Relativistic Langrangian, Mass energy equivalence.

General theory of relativity principle of equivalence applications - ideas of Riemannian geometry-space time curvature geodesics –Einstein's equations of General theory of relativity, Observational evidence to general theory of relativity.

Introduction to non-linear dynamics (12 hours)

Linear and nonlinear systems-integration of second order non-linear differential equations-pendulum equation-phase plane analysis of dynamical systems-linear stability analysis-limit cycles

Elements of classical chaos (10 hours)

Bifurcation- logistic map-strange attractors- Lyapunov exponent and Chaos-ideas of fractals- solitary waves- Kdv equations and solutions

Course Outcome

(i) Students are able to learn the concepts of Lagrangian and Hamiltonian mechanics and use them to solve problems in mechanics. Able to learn concepts of generating functions, Poisson brackets Hamilton Jacobi equations and action angle variables.

(ii) To equip the students to deal with central force problem and analyzing Kepler's laws.

(iii) To inculcate the students the concepts of special and general theory of relativity and related problems.

(iv) To acquaint the students about the theory of small oscillations and Euler's equations of motions of rigid bodies.

(v) To analyze nonlinear dynamical systems and to explain the concepts of classical chaos.

Books for study

a. H. Goldstein, C.Pooleabd S. Safko, *Classical Mechanics*,3rd Edn, Pearson Education Inc (2008 Print)
b. V.B. Bhatia, *Classical Mechanics with introduction to nonlinear oscillations and chaos*, Narosa Publishing House (1997)
c. J.C. Upadyaya, *Classical Mechanics*, Revised Edition, Himalaya Publishing Company (2005)
d. G. Aruldas, *Classica lMechanics*, Prentice Hall of India Pvt Ltd (2008 Print)
e. K.D.Krori, *Fundamentals of Special and General Relativity*, PHI Learning Pvt Ltd (2010)
f. S.K. Srivastava, *General Relativity and Cosmology*, PHI learning Pvt Ltd (2008)
g. P.G Drazin and R.S Johnson, *Solitons – an Introduction*, Cambridge University Press (1989)

References

1. N.C. Rana and B.S. Joag, ClassicalMechanics,TataMcGrawHill (1991)
2. M. Tabor Chaos and integrability in nonlinear dynamics,Johnwiley& Sons (1989)
3. R.K. Pathria, The Theory of Relativity, Second Edition, Over Publications (2003)

PH 212: Mathematical Physics (6L, 1T)

Objectives: This course is aimed to equip the students with the mathematical techniques used for developing strong back ground in the basic and advanced level problems. The course describes about curvilinear coordinates, Fourier series and transforms, probability distributions, partial differential equations and different integral transforms, special functions, tensors and group theory.

Unit I

Vector analysis and matrices (8 hours)

Review of vector analysis-vector calculus operators-orthogonal curvilinear coordinates-gradient, divergence, curl, Laplacian in cylindrical and spherical polar coordinates-orthogonal and unitary matrices- Hermitian matrices- diagonalization of matrices- normal matrices- Cayley-Hamilton theorem

Complex analysis (8 hours)

Cauchy-Riemann conditions-Cauchy's integral theorem and formula-singularities and mapping-calculus of residues-dispersion relations

Fourier series and applications (8 hours)

General principles of Fourier series, Complex representation, Parseval's identity, Fourier's Integrals, Fourier transforms and its properties.

Probability (12 hours)

Definitions and simple properties of probability-random variables- Chebychev inequality and moment generating function-discrete and continuous probability distributions-binomial distributions- poisson distributions- Gauss Normal distribution-error analysis and least square fitting-chi-square and student 't' distributions

Unit II

Differential equations (16 hours)

Partial differential equations-first order equations-separation of variables-singular points-series solutions and Frobenius method- non-homogeneuous partial differential equations-Green's functions-Laplace transforms and inverse Laplace transforms-applications to solution of simple differential equations

Special functions (20 hours)

Bessel functions of the first kind-orthogonality-Neumann functions-Hankelfuctions-modified Bessel functions-spherical Bessel functions-Legendre functions-generating

function-recurrence relations and orthogonality-associated Legendrefunctions-spherical harmonics-Hermite functions-Lagurerre functions-Chebyshev polynomials-hypergeometric functions

Unit III

Tensor analysis (18 hours)

Notations and conventions in tensor analysis-Einstein's summation convention-covariant and contravariant and mixed tensors-algebraic operations in tensors-symmetric and skew symmetric tensors-tensor calculus- Christoffel symbols-kinematics in Riemann space-Riemann- Christoffel tensor.

Group theory (18 hours)

Definitions of a group-elementary properties-sub groups-homomorphism and isomorphism of groups-representation of groups-reducible and irreducible representations-simple applications in crystallography and molecular symmetry- Lie groups- SU(2) groups and their representations

Course Outcome

(i) To apply and analyze the various vector and matrix operations and to perform complex analysis for solving physical problems.

(ii) To demonstrate and utilize the concepts of Fourier series and its transforms.

(iii) To explain and differentiate different probabilistic distributions.

(iv) To apply partial differential equations and special functions for solving mathematical problems.

(v) To illustrate and apply concepts of group theoretical operations and tensors.

Books for study

1. G.B. Arfken and H.J. Weber, *Mathematical methods for Physcisits*,6th Edition,Elsavier (2005).
2. H.K. Dass and R. Verma, *Mathematical Physics*, S.Chand & Co Pvt Ltd (1997)
3. A.W. Joshi, *Matrices and Tensors in Physics*,3rd Edition,New Age International Pub (1995)
4. B.D. Gupta, *Mathematical Physics*, 4th Edition, Vikas Publishing House (2004)
5. A.W. Joshi, *Elements of Group Theory for Physicists*, Fourth Edition, New Age International Pub (1997).
6. S.C. Bagchi, S.Madan, A, Sitaram,V.B Tewari, *A first course in representation theory and linear Lie groups*, Universities Press (India) Pvt Ltd (2000).
7. C. Harper, Introduction to Mathematical Physics, Prentice Hall (1986)

References

1. Harry Lass, Vector and Tensor Analysis, McGraw Hill Pub (1950)
2. M.L.Jain,Vector Spaces and Matrices in Physics, Alpha Science International (2001)
3. W.W.Bell, Special Functions for Scientists and Engineers, Dover Publications (2004)
4. W.K.Tung, Group theory in Physics, World Scientific Pub Co (1999)
5. A.K. Ghatak, I.C. Goyalamd S.T. Chua, Mathematical Physics, Macmillan India (1985)

PH 213: BASIC ELECTRONICS (6L,1T)

Objectives: This course is aimed to introduce the students with the basic knowledge of analog and digital circuits. The course illustrates the concepts of various amplifier circuits, solid state electronic devices, sequential digital circuits, optoelectronics devices and measurements using electronic instruments.

Unit I

Selections from electronic circuits (10 hours)

Frequency response of an amplifier circuits-power and voltage gain- impedance matching- Bode plots- Miller effects- rise time bandwidth relations- frequency analysis of BJT and FET amplifier stages

Operational amplifier and its applications (18 hours)

Opamp - frequency response, poles and zeroes, transfer functions (derivation not required), expression for phase angle- Active filters-first order and second order Butterworth transfer function-first order and second order active filters- low pass, high pass and band pass filters- comparators-OP Amp as a voltage comparator-zero crossing detectors-Schmitt trigger-voltage regulators- square, triangular and saw tooth wave form generators-Weinberg oscillator- monostable and astable multivibrator circuits using IC 555 timer- Phase Locked Loop circuits (PLL)

Microwave solid state electronic devices (8 hours)

Tunnel diode-varacter diode-IMPATT diode- QWITT diode- TRAPATT diode- Gunn diode

Unit II

Digital electronics

Arithmetic and data processing digital circuits (16 hours)

Binary adder and subtractor- arithmetic logic unit- binary multiplication and division- arithmetic circuits using HDL- multiplexers- demultiplexers- BCD to decimal decoder- seven segment decoder- parity generators and checkers- magnitude comparator- programmable logic arrays

Sequential digital circuits (20 hours)

Flip flops- edge triggered- SR flip flops- JK flip flop- D- flip flop- JK master-slave flip flop- different types of registers (SISO, SIPO, PISO, PIPO)- universal shift registers- applications- counter asynchronous and synchronous electronic counters- decade counters-

digital clock

Unit III

Optoelectronics (22 hours)

Optical fibre as a wave guide-mode theory of circular wave guide- -modes in step index fibres- signal distortion in optical fibres- group delay, material dispersion, wave guide dispersion- sources of attenuation- absorption, scattering, bending loss, core and cladding loss- optical sources- LED's- structure, quantum efficiency and power- laser diodes- modes and threshold conditions, rate equations, efficiency and resonant frequency- photo detector- pin and avalanche photodiodes- principles- optical amplifier- basic applications and types, semiconductor optical amplifiers, erbium doped fibre amplifiers.

Electronic Instrumentation (14 hours)

Electronic measurements and instruments-comparison between analog and digital instruments- performance and dynamic characteristics-ideas of errors and measurement standards- voltmeters-ammeters- CRO- Block diagram, CRT, CRT circuits, vertical deflection system- delay line, multiple trace, horizontal deflection system, oscilloscope probes and transducers, oscilloscope techniques, storage oscilloscope, digital storage oscilloscope- classification of transducers-active and passive transducers-force and displacement transducers-strain gauges- temperature measurements-thermistors-thermocouples-flow measurements.

Course Outcome

(i) To equip the students design and analyze different analogue and digital circuits.

(ii) To summarize the knowledge of basic arithmetic and data processing circuits and memory devices.

(iii) To equip the students to explain various components in optical communications systems and microwave devices.

(iv) To measure and analyze the different electronic signals.

Books for study

1. A. Malvino and D.J.Bates, *Electrinics Prinicples*,7th Edition,Tata McGraw Hill (2007)
2. R.A. Gayakwad, *Operational Amplifiers and Linear integrated Circuits*, Prentice Hall of India (2000)
3. M.S. Tyagi, *Introduction to semiconductior materials and devices*, Wiley India (2005)
4. B.G. Streetman, S.K. Banerjee, *Solid state electronic devices*. Pearsoninc (2010)
5. J. Millman, C. Halkias and C.D. Parikh, *Integrated Electronics*, Tata McGraw Hill (2010)
6. D.P. Leach,A.P. Malvino, and G. Saha ,*Digital principles and applications*,Tata Mc Graw Hill (2011)

7. G.Keiser, *Optical Fibre Communication*,3rd edition,McGraw Pub (2000)
8. Lal Kishore*, Electronic measurements and Instrumentation*, Dorling Kindersley (India) Pvt Ltd (2010)
9. W.D. Cooper, A.O. Helfrik and H. Albert, *Electronic Instrumentation and measurement Techniques*, PHI (1997)
10. Electronic Devices and Circuits Theory, Robert L. Boylestad, Louis Nashelsky, Pearson 10th edition (2009).

References

1. T.F. Bogart Jr, J.S. Beasley and G. Reid, Electronic devices and circuits, Sixth Edition, Pearson Inc (2004)
2. Thomas. L. Floyd, Digital Fundamentals, 10th edition, Dorling Kindersley (India) Pvt Ltd (2011)
3. Joachion Piprek, Semiconductor Optoelectronic Devices, Academic Press (2003)

PH 221: MODERN OPTICS AND ELECTROMAGNETIC THEORY (6L, 1T)

Objectives: This course covers linear and non-linear optical phenomenon, propagation of electromagnetic waves, relativistic electrodynamics, radiation and antenna theory.

Unit I

Modern optics (24 hours)

Multiple beam interference-Fabry-Perot interferometer- theory of multilayer films-antireflection films and high reflectance films -Fresnel- Kirchoff integral theorem and formula- Fraunhofer and Fresnel diffraction patterns and theory-applications of Fourier transforms to diffraction- acoustic- optic modulation- basic ideas of Raman-Nath diffraction and Bragg diffraction- holography as wavefront reconstruction-propagation of light in crystals-optical activity and Faraday rotation

Non-linear optics (12 hours)

Harmonic generation- second harmonic generation- phase matching- third harmonic generation- optical mixing- paramagnetization of light- self focusing- multiquantum photoelectric effect- two photon process and theory- multiphoton processes- three photon processes- second harmonic generation- parametric generation of light.

Unit II

Electromagnetic waves (12 hours)

Electromagnetic wave equations-electromagnetic waves in non-conducting media-plane waves in vacuum-energy and momentum of electromagnetic waves-propagation through linear media- reflection and transmission at normal and oblique incidence-electromagnetic waves in conductors-modified wave equations and plane waves in conducting media-reflection and transmission at a conducting interface

Relativistic electrodynamics (14 hours)

Vector and scalar potential- gauge transformations- Coulomb gauge and Lorentz gauge-Magnetism as a relativistic phenomena- transformation of the field-electric field of a uniformly moving point charge-electrodynamics in tensor notation-electromagnetic field tensor-potential formulation of relativistic electrodynamics

Radiation (10 hours)

Dipole radiation- electric dipole radiation- magnetic dipole radiation- radiation from an arbitrary source- point charges- power radiated by a point charge- radiation reaction

Unit III

Transmission lines (12 hours)

Transmission line parameters and equations-input impedance-standing wave ratio and power- The Smith Chart-applications of transmission lines

Waveguides (12 hours)

Rectangular wave guides-transverse magnetic (TM) modes-Transverse electric (TE) modes- wave propagation in the wave guide-power transmission and attenuation

Antennas (12 hours)

Radiation from Hertzian dipole-half wave dipole antenna-quarter wave monopole antenna- antenna characteristics -antenna arrays-effective area and Friji's equations

Course Outcome

(i) To demonstrate the linear and nonlinear optical phenomena.

(ii) To explain and discuss propagation of electromagnetic waves through different media.

(iii) To restate formulations and relativistic effects in electrodynamics.

(iv) To analyse the propagation of electromagnetic waves through waveguides.

(v) To use radiation theory in developing different antennas.

Books for study

1. G.R. Fowles,, *Introduction to Modern Optics*, Second Edition, Dover Publications (1989).
2. A. Yariv, *Introduction to Optical electronics*, Holt, Reinhart and Winston (1976).
3. A. Ghatak and K. Thyagarajan, *Optical Electronics*, Cambridge University Press (1998)
4. D. Roody and J. Coolen, *Electronic Communications*, Fourth Edition, Dorling Kindersley (India) Pvt Ltd (2008)
5. D.J. Griffiths ,*Introduction to Electrodynamics*, PHI Learning India Pvt Ltd (2007).
6. M.N.O. Sadiku, *Elements of electromagnetics*, Oxford University Press (2007).
7. B.B. Laud, *Lasers and Non-linear Optics*, Second Edition, Wiley-Eastern Limited (1991)

References

1. J.R. Meyer-Arendt, Introduction to Classical and Modern Optics, Prentice Hall Intl (1995)
2. J.C. Palais, Fibre optic communications, Fifth Edition, Pearson Education Inc (2005)
3. E.C. Jordan and K.G. Balmain, Electromagnetic waves and radiating systems, Second Edition, Pearson Education (2002)
4. D.K.Cheng, Field and Wave electromagnetics , Second Edition ,Addison Wesley (1999).
5. L.Ganesan and S.S.Sreejamole,Transmission lines and wave guides, Second Edition, Tata McGraw Hill (2010)

PH 222: THERMODYNAMICS, STATISTICAL PHYSICS AND BASIC QUANTUM MECHANICS (6L, 1T)

Objectives: This course is aimed to introduce the concepts of thermodynamic equations, foundations of classical and quantum statistics, theory of phase transitions and foundations quantum mechanics together with problems.

Unit I

Thermodynamic relations and consequences (20 hours)

Thermodyanamic functions and Maxwells's equations-Clausius -Claepyrans equations-Properties of thermodyanamic potentials-Gibbs-Helmoltz relation-thermodynamic equilibrium-Nernst –heat theorem and its consequences-Gibb's phase rule-chemical potential-vapour pressure relation and chemical constants

Foundations of classical statistical physics (16 hours)

Phase space-ensembles-Lioville's theorem-statistical equilibrium-microcanonical ensemble-partition functions and thermodynamic quantities-Gibb's paradox-Maxwell-Boltzmann distribution laws-grand canonical ensemble

Unit II

Quantum statistics (26 hours)

Quantum statistics of classical particles-density matrix in microcaonical, canonical and grand canonical ensembles-Bose Einstein statistics and Bose Einstein distribution law-Maxwell Boltzmann statistics and Maxwell Boltzmann distribution law—Fermi Dirac statistics and Fermi Dirac distribution law-comparison of three types of statistics-applications of quantum statistics-Planck radiation laws-Bose Einstein gas and Bose Einstein condensation—Fermi Dirac gas-electron gas in metals-thermionic emission-statistical theory of white dwarfs

Phase transitions (10 hours)

Triple point-Vanderwal's equation and phase transitions-first and second order phase transitions- Ehrenfest's equations- Ising model

Unit III

Foundations of quantum mechanics (14 hours)

Basic postulates if quantum mechanics- Hilberts space- observables- Hermitian operators-general statistical interpretation-Uncertainty principle-minimum uncertainty wave packet-energy time uncertainty principle-Dirac notation-Matrix representation of state vectors and operators-change of representations- eigenvalue problem in matrix mechanics-energy and momentum representations-unitary transformations involving time- Schrodinger, Heisenberg and interaction pictures.

Exactly solvable problems in quantum mechanics (22 hours)

One dimensional eigen value problems-square well potential-potential barrier-alpha particle emission-Bloch waves in periodic potential-linear harmonic oscillator problem using wave mechanics and operator methods-free particle wave functions and solutions-three dimensional eigen value problems-particle moving in spherical symmetric potential-rigid rotator-hydrogen atom problem-three dimensional potential well- Deuteron

Course Outcome

(i) To explain the basic thermodynamic relations, Maxwell's equations and its consequences.
(ii) To equip the students to demonstrate and apply classical and quantum statistics in different physical phenomena.
(iii) To distinguish the different phase transitions using Ising model.
(iv) Outline and apply foundations of quantum mechanics.

Books for study

1. R. K. Pathria, *Statistical Mechanics*, Pergamon Press (1991)
2. Satya Prakash, *Statistical Mechanics*, Kedarnath Ram Nath Publishers,Meerut and Delhi (2009)
3. B.K. Agarwal and HariPrakash, *Quantum Mechanics*, Prentice Hall of India (2002)
4. S. Devanarayanan, *Quanrtum Mechanics*, Sci Tech Publications (India) Pvt Ltd (2005)
5. D.J. Griffiths, *Introduction to Quantum Mechanics*, Second Edition, Pearson Education Inc ((2005)
6. G. Aruldas, *Quantum Mechanics*, Second Edition, PHI learning Pvt Ltd (2009).
7. J. J Sakurai , Modern Quantum Mechanics, Second edition, Pearson (2010).
8. N. Zettili, Quantum Mechanics concepts and Applications, Second edition, Wiley (2009).

References

1. R.K. Srivastava and J. Asok , Statistical Mechanics, Wiley Easter Ltd (2005)

2. S.K. Sinha, Statistical Mechanics-Theory and Applications, Tata Mc Graw Hill
3. P.M. Mathews and K.Venkitesan, A Text Book of Quantum Mechanics, Tata Mc Graw Hill (2010)
4. A. Ghatak and S. Lokanathan ,Quantum Mechanics Theory and Applications, Kluewer Academic Publishers (2004).
5. V.K. Thankappan, Quantum Mechanics, Second Edition, New Age International Pvt Ltd (2003).

PH 223: COMPUTER SCIENCE AND NUMERICAL TECHNIQUES (6L, 1T)

Objectives: This course provides introduction to computer architecture, microprocessors, programming in python and C++ and computational numerical methods.

Unit I

Foundations of computer science (12 hours)

Introduction to computers-computer architecture-memory (RAM and ROM, cache) and storage- I/O devices- operating systems-data communications, computer networks and topology

Introduction to microprocessors (12 hours)

Evolution of microprocessors-microcontrollers and digital signal processors- Intel 8085 8 bit microprocessor- pin description-functional description- 8085 instruction format-addressing modes of 8085- interrupts of 8085- memory interfacing- 8085 machine cycles and Bus timings- assembly language programming of 8085

Introduction to Python Programming (12 hours)

Python - Python shell, number, variables, comparisons and logic, Python objects - strings, lists, tuples, loops; control flow, file input and output functions

Unit II

Programming with C++ (36 hours)

C++- flow control-conditional statements-iterative statements-switch statements-conditional operators as an alternative to IF-nested loops-break statements-ext( ) functions-structured data types-arrays-storage classes-multidimensional arrays-sorting of strings-functions-built in and user defined- accessing function and passing arguments to functions-calling functions with arrays-scope rule for functions and variables-structures in C++-classes abd objects – definition- class declaration-class function definitions-creating objects-use of pointers in the place of arrays-file handling in C++-basic file operations-serial and sequential files-reading and writing on to disks.

Unit III

Numerical Techniques (36 hours)

Solution of simultaneous linear algebraic equations-Gauss elimination method-Gauss

Jordan method-inverse of a matric using Gauss elimination method-Finite differences-forward and backward differences-central differences-difference of a polynomial-error propagation in difference table-Interpolation with equal intervals-Gregory Newton forward and backward formula- error in polynomial interpolation-central difference interpolation formula-Gauss's forward and backward formula- Striling's formula-Lagrange interpolation formula-numerical differentiation-numerical integration using general quadrature formula-Trapezoidal rile- Simsons 1/3 and 1/8 rules-numerical solutions to ordinary differential equations-Euler and modified Euler methods-Runge Kutta methods-numerical solution to partial differential equations-solutions to Poisson and Laplace equations.

Course Outcome

(i) To summarize computer hardware and its operating systems
(ii) Explain internal architecture of microprocessors 8085 and create assembly language programing.
(iii) To develop and compile programs in python and C++.
(iv) Apply numerical methods to solve physical problems.

Books for study

1. ITL Education Solutions Ltd, *Introduction to Computer Science*, Second Edition, Dorling Kindersley (India) Pvt Ltd (2011)
2. V.N. Vedamurty and N. Iyengar,*Numerical Methods*,Vikas Publishing Pvt Ltd (1998)
3. K. Udayakumar, and B.S. Umasankar,*The 8085 microprocessor*,Dorling Kindersley (India) Pvt Ltd (2008)
4. Christian Hill, *Learning Scientific Programming with Python*, Cambridge University Press (2015)
5. V. Carl Hamacher, Z.G.Vranesic and S.G. Zaky, *Computer Organization*, Fourth Edition, McGraw Hill International Edition (1996)
6. Peter Norton etal., *Beginning Python*, Wiley Publishing (2005)
7. Abishek Yadav, *Microprocessor 8085 8086*,University Science Press, New Delhi (2008)
8. D.Ravichandran, *Programming in C++*,Tata McGraw Hill (2011)
9. M.T.Somasekhara, *Programming in C++*, PHI Pvt Publishing (2005).
10. B. Ram, Fundamentals of Microprocessors and Microcontrollers, Dhanpat Rai Publications (2008).
11. S. S. Sastry, Introductory method of Numerical analysis, Fifth Edition, PHI (2012).

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1. V. Rajaraman, Fundamentals of Computers, Fifth Edition, PHI (2010)
2. R.S.Gaonkar, Microprocessor-Architecture, Programming and Applications with 8085
3. S.S. Sastry, Introductory method of Numerical analysis, Fifth Edition, PHI
4. P. Ghosh, Numerical Methods with computer programs in C++,PHI learning Pvt Ltd
5. Bjorne Stroustrup, The C++ Programming Language ,Fourth Edition, Addison Wesley

PH231: ADVANCED QUANTUM MECHANICS (6 L, 1 T)

Objectives: This course describes a thorough conceptual understanding of advanced quantum mechanics covering variation method, WKB approximation, perturbation theory, symmetry and conservation laws, theory of scattering, system of identical particles, angular momentum and relativistic quantum mechanics.

Unit I

Variation method (6 hours)

The variational principle-Rayleigh Ritz method-variation method for excited states-ground state of Helium and Deutron.

WKB approximation (8 hours)

WKB method-connection formulas-barrier potential-penetration-alpha particle emission-bound states in a potential well

Time dependent and time-independent perturbation theory (22 hours)

Time independent perturbation- basic concepts- non-degenerate energy levels- anharmonic oscillator-ground state of helium- effect of electric field on the ground state of hydrogen- degenerate energy levels- effect of electric field on the n=2 state of hydrogen- spin-orbit interaction.
Time dependent perturbation- first order, harmonic, transition to continuous states, absorption and emission of radiation- Einstein's coefficients- selection rules.

Unit II

Symmetry and conservation laws (10 hours)

Symmetry transformations-space translation and conservation of angular momentum-time translation and conservation of energy-rotation in space and conservation of angular momentum-space inversion-time reversal

Quantum theory of scattering (12 hours)

Scattering cross section and scattering amplitude-partial wave analysis and scattering by a central potential-scattering by attractive square well potential-scatteriing length-expression for phase shifts-Born approximation-scattering by Coulomb potential-Laboratory and centre of mass coordinate transformations.

System of identical particles (14 hours)

Identical particles- Pauli's exclusion principle-inclusion of spin-spin function for a two electron system-Helium atom-central field approximation-Thomas Fermi model of an atom-Hartree and Hartree-Fock equations.

Unit III

Angular momentum (12 hours)

Angular momentum in operators and commutation relations-eigen values and eigen functions of L^2 and L_z –general angular momentum-eigen values of J^2andJ_z-angular momentum matrices-

spin angular momentum –spin vectors for a spin ½ system-addition of angular momentum-Clebsch-Gordan coefficients.

Relativistic quantum mechanics (24 hours)

Klein-Gordon equations and its relevance-particle in a Coulomb's field-Dirac's relativistic theory-Dirac's equation for a free particle-Dirac matrices-covariant form of Dirac's equations-probability density-plane wave solutions-negative energy starts-spin in Dirac's theory-magnetic moment of an electron-relativistic corrections of Hydrogen atom spectrum-spin orbit correction-Lamb shift

Course Outcome

(i) To extend the use of approximation methods viz variation, WKB, time dependent and time independent perturbations.
(ii) To summarize different types of symmetry, conservation laws and quantum theory of scattering.
(iii) To distinguish different approximation methods, to study the structure and properties of many electron systems.
(iv) To compute eigen values of angular momentum and evaluation of CG coefficients.
(v) Infer the requirements of relativistic quantum mechanics.

Book for study

1. G.Aruldas,*QuantumMechanics*,SecondEdition,PHI learning Pvt Ltd (2009)
2. D.J.Griffiths,*Indroducion to Quanum Mechanics*, Second Edition, Pearson Education Inc (2005)
3. J.J.Sakurai,Advamced Quantum Mechanics, Pearson Education Inc (2009)

References

1. P.M.Mathews and K.Venkitesan,A Text Book of Quantum Mechanics,TataMcGraw Hill (2010)
2. A.Ghatak and S.Lokanathan ,QuantumMechancis Theory and Applications, Kluwer Academic Publishers (2004)
3. V.K.Thankappan,QuantumMechancics, Second Edition, New Age International Pvt Ltd (2003)
4. S.Devanarayanan,QuanrtumMechanics, Sci Tech Publications (India) Pvt Ltd (2005)
5. L.H.Ryder,Quantum Field TheorySecondEdition,Cambridge University Presss (1996)
6. Steven Weinberg,Quantum Theory of Fields(in Three Volumes), Cambridge University Presss (2002)

PH 232: ATOMIC AND MOLECULAR SPECTROSCOPY (6L, 1T)

Objectives: This course provides an overview of symmetry of molecules, concepts of atomic spectra, Photoelectron and photo acoustic spectroscopy, Rotational, vibrational, electronic, Raman, Mossbauer, nuclear and electron spin resonance spectroscopic techniques.

Unit I

Atomic Spectroscopy (14 hours)

Spectra of Atoms - Spectroscopic terms– selection rules– exchange symmetry of wave functions- Pauli's exclusion principle. Many electron atoms- Building principle- the spectra of Li and hydrogen like elements, The L-S and j-j coupling schemes- total angular momentum – term symbols- The spectra of Helium-Zeeman effect – The magnetic moment of atom, Lande's g factor- The normal Zeeman effect- Emitted frequencies in anomalous Zeeman transitions- Nuclear spin and Hyperfine structure, Stark Effect, Paschen Bach effect

Molecular symmetry (10 hours)

Symmetry operations-symmetry elements-algebra of symmetry operations-multiplication tables-matrix representation of symmetry operators-molecular point groups-reducible and irreducible representations-great orthogonality theorem-character tables for C_{2V} and C_{3V} point groups, symmetry species of point groups-IR and Raman activity

Photoelectron and Photo-acoustic spectroscopy (12 hours)

Photoelectron spectroscopy-experimental methods-photoelectron spectra and their interpretation-Auger electron and X ray Fluorescence spectroscopy-Photo-acoustic effect-basic theory-experimental arrangement-applications.

Unit II

Molecular rotational spectroscopy (12 hours)

Classification of molecules-rotational spectra of diatomic molecules-isotope effect and intensity of rotational lines-non rigid rotator-linear polyatomic molecules-symmetric and asymmetric top molecules-microwave spectrometer-analysis of rotational spectra.

IR spectroscopy (12 hours)

Vibrational spectra of diatomic molecules-characteristic IR spectra-vibrations of polyatomic molecules- anharmonicity- Fermi resonance-hydrogen bonding-normal modes of vibration in a crystal- interpretation of vibrational spectra- IR spectrometer- Fourier transform IR spectroscopy

Electronic spectra of molecules (12 hours)

Vibrational coarse structure and analysis of bound systems- Deslanders table-Frank-Condon principle-vibrational electronic spectra-rotational fine structure- Fortrat parabola-electronic angular momentum in diatomic molecules

Unit III

Raman spectroscopy (12 hours)

Theory of Raman scattering-rotational and vibrational Raman spectra-Raman spectrometer-structure determination using Raman and IR spectroscopy-nonlinear Raman effects-Hyper Raman effect-stimulated Raman scattering- coherent anti-stokes Raman scattering

ESR and NMR spectroscopy (16 hours)

Principle of NMR-ESR spectrometer-Hyperfine structure-ESR spectra of Free radicals-Magnetic properties of nuclei-resonance condition-NMR instrumentation-chemical shift-NMR spectra of solids-NMR imaging-interpretation of NMR spectra

Mossbauer spectroscopy (8 hours)

Recoilless emission and absorption-Mossbauer spectrometer-experimental techniques-isomer shift- quadrupole interaction-magnetic hyperfine interaction

Course Outcome

(i) Explain different symmetry operations and deduction of molecular structure.
(ii) Distinguish and classify the different spectra shown by atoms and molecules
(iii) Illustrate the various spectroscopic experimental techniques.

Books for study

1. J.M. Hollas, *Modern Spectroscopy*, Fourth Edition, John Wiley &Sons (2004)
2. G. Aruldas, *Molecular Structure and Spectroscopy*, PHI learning Pvt Ltd (2007)
3. Suresh Chandra, *Molecular Spectroscopy*, Narosa Publishing Co (2009)
4. H E White, Introduction to Atomic Spectroscopy McGraw-Hill Inc. 1st Edition. (1934).

References

1. C.N. Banwell and E.M. McCash, Fundamentals of Molecular Spectroscopy, Fourth edition, Tata McGraw Hill (1995).
2. D.N. Satyanarayana, Vibrational spectroscopy-Theory and applications, New Age International Pvt Ltd (2004)
3. J.L.McHale, Molecular Spectroscopy, Pearson education Inc (2008).

SYLLABUS FOR SPECIAL PAPERS (SPECIAL PAPER I)

PH 233 E: ADVANCED ELECTRONICS -I (6L, 1T)
Objectives: To impart knowledge in advanced digital and analog communications systems and familiarize the concepts of digital signal processing.

Unit I

Analog radio frequency communications (16 hours)

Different types of analog continuous wave modulation-analog baseband signal transmission-signal distortions and equilization-linear continuous wave modulation schemes-amplitude modulation-DSB and SSB schemes-frequency conversion-angle modulation-spectra of angle modulated signals-power and bandwidth of FM signals-generation and demodulation of FM signals-commercial radio broadcasting techniques-AM and FM radio broadcasting and reception.

Microwave radio communications (10 hours)

Advantages and disadvantages of microwave radio communications-digital and analog systems-frequency and amplitude modulation techniques-FM microwave radio system-FM microwave repeaters-FM microwave radio stations-line of sight path characteristics

Pulse modulation (10 hours)

Different types of pulse modulation-pulse amplitude modulation (PAM)-PAM spectrum-pulse code modulation (PCM)-sampling and quantization of analog signals-quantization error-signal to noise ratio-differential PCM delta modulation-other pulse modulation schemes-applications of pulse modulation.

Unit II

Digital communications (16 hours)

Basics of information theory-ideas of digital codes –noise in information carrying channel-Digital carrier modulation -binary ASK,PSK and FSK schemes-bandwidth and power requirements-synchronization methods-ideas of error control coding and error corrections-digital transmission of analog signals-transmission using PCM – frequency and time division multiplexing (TDM) –TDM in PCM telephone system.

Optical fiber communications (20 hours)

Overview of the optical communication system and its components-optical communication receiver and its equivalent circuit-direct and coherent detection systems- digital modulation and

demodulation schemes for coherent optical communication receivers-heterodyne and homodyne detection – principles of wavelength division and code division multiplexing in optical communication-optical solitons- soliton based optical communication systems

Unit III

Mobile cellular communications (10 hours)

Mobile telephone services-cellular telephone-frequency reuse-cell splitting-sectoring, segmentation and dualisation-cellular system topology-roaming and handoffs-cellular telephone network components and call processing-first and second generation cellular telephone services-digital cellular telephone system-global system for mobile communication-personal satellite communication system

Basics of signals and systems (6 hours)

Classification of signals-amplitude and phase spectra-classification of system-simple manipulations of discrete time signals-representation of systems-analog to digital conversion of signals

Fourier analysis of signals and systems (12 hours)

Trigonometric Fourier series-exponential form-Parseval's identity-power spectrum of a period function-Fourier transform-properties of Fourier transform-Fourier transform of important signals-Fourier transform of power and energy signals-Discrete time fourier transform - Fast Fourier transform (FFT).

Z-transforms (8 hours)

Definition of z transform-properties of z-transform-evaluation of the inverse z-transform

Course Outcome

(i) To summarize various techniques of digital and analog communication systems.
(ii) Generalize the idea of information theory
(iii) Illustrate various techniques for digital signal processing based Fourier and Z transform.

Books for study

1. K. Sam Shanmugam, *Digital and Analog communication systems*, John Wiley & Sons (2006).
2. W. Tomasi, *Electronic communications systems: Fundamentals through Advanced*, Dorling Kinderley (India) Pvt. Ltd (2009).
3. G. Kennedy and B. Davis, *Electronic communication systems*, Fourth Ediion, Tata McGraw Hill (2003)
4. G. Keiser, *Optical Fibre Communication*,3rd edition, McGraw Pub (2000).
5. G. P. Agrawal, *Fibre optic communication systems*, John Wiley& Sons (1993)
6. S. Salivahanan and G. Ganapriya, *Digital Signal Processing*, Tata McGraw Hill (2011).

References

1 H. Taub ,D. Schilling and G. Saha, Principle of Communication systems, 3rd Edition, Tata McGraw Hill (2008).

2 W.C.Y. Lee, Mobile Communications- design, Fundamentals, Second Edition, John Wiley & Sons (1993).

3 .J.S. Chitode, Digital Communications, Technical Publications Pune (2008)

4 J.M. Senior, Optical Fibre Communications-Principles and Practice, Second Edition, Pearson Education (2006).

5 J.J. Carr, Microwave and Wireless communications Technology, Butterworth-Heinemann (1996).

PH 233 M: MATERIALS SCIENCE –I

Objectives: To understand and familiarize fundamentals of materials, structure and its imperfections, growth techniques and associated nucleation theories.

Unit I

Classification of materials, Functional classification of materials (36 hrs)

Size effects on the optical, electrical, magnetic and mechanical properties. Size effects on the optical properties of semiconductor nanostructures, weak excitonic confinement, strong excitonic confinement. Materials for Aerospace, Biomedical, Electronic, Energy technology, Environmental technology, Magnetic, Photonic and Structural Applications- Smart materials. Structural classification of Materials- Crystalline-Single crystals-polycrystalline materials-Grains and grain boundaries.

Crystal structures of ionic materials-Cesium chloride, Fluorite, Perovskite and Corundum type structures-Covalent structures.

Imperfections in crystals

Types of imperfections in crystals -Point defects-Interstitial defects-Substitutional defects-Frenkel and Schottky defects-Line Kronger-Vink notation for defect chemical reaction-Dislocations and Diffusion in crystals - Dislocations- Burgers vectors – edge and screw dislocations –slip-significance of dislocations- Schmid's law-Surface defects-Domain boundaries- Importance of defects –Diffusion- Applications of Diffusion-Stability of atoms and ions-Mechanism for diffusion-Activation energy for diffusion- Permeability of polymers-Composition profile-Diffusion and materials processing.

Unit II

Formation of crystalline materials (36 hrs)

Ambient phase equilibrium – Super saturation – Equilibrium of finite phases - Equation of Thomson- Gibbs – Types of nucleation – Formation of critical nucleus – Classical theory of nucleation – Homo and heterogeneous formation of 3D nuclei – Rate of nucleation – Growth from vapor phase, solutions and melts – Epitaxial growth – Growth mechanism and classification – Kinetics of growth of epitaxial films – Mechanisms and controls for nanostructures in 0 and 1 dimensions.

Crystallization Principles and Growth Techniques

Classes of crystal system – Crystal symmetry – Solvents and solutions – Solubility diagram – Super solubility – Expression for super saturation – Metastable zone and induction period – Miers TC diagram – Solution growth – Low and high temperatures solution growth – Slow cooling and solvent evaporation methods – Constant temperature bath as a crystallizer.

Gel, Melt and Vapor Growth Techniques

Principle of gel technique – Various types of gel -- Structure and importance of gel – Methods of gel growth and advantages -- Melt technique – Czochralski growth – Floating zone – Bridgeman method – Horizontal gradient freeze – Flux growth – Hydrothermal growth – Vapor-phase growth – Physical vapor deposition – Chemical vapor deposition –

Stoichiometry.

Unit III

Thin Film Physics (36 Hours)

Film Preparations: Vacuum evaporation - Evaporation theory - Rate of evaporation - Hertz-Kundsen equation - Free evaporation and effusion - Evaporation mechanisms - Directionality of evaporating molecules - vapour sources - wire and metal foils - Electron bean gun - flash evaporation - sputtering - Glow discharge sputtering - Bias sputtering - Reactive sputtering - Triode sputtering - Magnetron sputtering - Ion beam sputtering – Pulsed laser deposition – Molecular beam epitaxy- Chemical methods – Thermal CVD – Plasma enhanced CVD – Spray Pyrolysis – Sol Gel method – Spin and Dip coating – Electro plating and Electroless plating – Deposition mechanisms.

Nucleation Theories: Condensation process - Theories of Nucleation – Capillarity theory – Atomistic theory – Comparison – stages of film growth – Incorporation of defects during growth - Film thickness measurements - Optical methods – Ellipsometry.

Course Outcome

(i) To identify and distinguish various crystal structures and the associated imperfections.

(ii) To prepare and demonstrate the synthesis of crystalline materials by different growth techniques.

(iii) To demonstrate different methods for growth of thin films.

(iv) To discuss various nucleation theories of film growth and analyze the synthesized thin films.

Reference Books

1. S.V. Gaponenko, Optical properties of semiconducting nanocrystals, Cambridge University Press (1997)
2. A. K. Bandhyopadhyay, Nanomaterials, New Age International Publishers (2007)
3. Solid State Physics, A.J.Dekker, Macmillan, (1967).
4. The Science and Engineering of Materials: Donald R Askeland and Pradeep P Phule 6 Edition- Thomson Brooks/Cole.
5. I.V. Markov, *Crystal Growth for Beginners: Fundamentals of Nucleation, Crystal Growth and Epitaxy* (2004) 2nd edition.
6. P. Santhanaragavan and P. Ramasamy, *Crystal Growth Process and Methods* (KRU Publications, Kumbakonam, 2001).
7. A. Goswami, *Thin Film Fundamentals* (New Age, New Delhi, 2008).
8. Maissel and Glang, Hand Book of Thin Film Technology
9. K.L. Choppra, Thin Film Phenomena
10. Dupy and Kachard, Physics of Non-Metallic Thin Films
11. T. Pradeep: NANO: The Essentials: Understanding Nanoscience and Nanotechnology, McGraw- Hill Educatio

PH 233N: ADVANCED NUCLEAR PHYSICS (6L, 1T)

Objectives: To understand fundamentals of nuclear structure and models, nuclear reactors, nuclear detectors and accelerators. To describe various types nuclear reactions and theory if elementary particles.

Unit I

Nuclear properties and structure (36 hours)

Nuclear structure – charge, mass, shape, and size of nucleus, spin, parity, electric and magnetic moments, isospin, binding energy, packing fraction, Experimental determination of nuclear mass, Aston's mass spectrograph, Measurement of nuclear spin (using Zeeman effect) and magnetic moment (using NMR), nature of nuclear forces, ground and excited states of deuteron, spin dependence, effective range theory, non-central force, n-p scattering and p-p scattering at low energies, nature of two nucleon potential, charge independence and saturation of nuclear force, exchange forces, meson theory of nuclear force.

Nuclear models - liquid drop model: Bethe-Weizsacker formula and its applications, shell model, evidence and limitations of shell model, single particle shell model, nuclear vibrations and rotations, optical model, collective model.

Unit II

Nuclear instrumentation (36 hours)

Gas filled detectors, Ionization Chamber, Proportional counter, GM Counter, Scintillation counter, Cerenkov counter, semiconductor detectors [Si(Li), Ge(Li), HPGe], Solid state nuclear track detectors, Nuclear emulsion, neutron detectors, scaling circuits.

Classification of accelerators, cyclotron, synchro-cyclotron, Betatron, Tandem accelerators, linear accelerator (LINAC). Nuclear Reactor – self sustained reaction, four factor formula, reactor theory, critical size, reactor materials, reactor control, breeder reactor, thermonuclear fusion, fusion in plasma, fission reactor, conditions for sustained fusion, magnetic confinement, toroidal confinement: Tokomak.

Unit III

Nuclear reactions and Particle Physics (36 hours)

Types of nuclear reactions, conservation laws, energetics of nuclear reactions, nuclear transmutations, cross section of nuclear reaction, compound nucleus hypothesis, Breit-wigner one level formula, direct reactions, stripping and pick up reactions, heavy ion induced reactions, Nuclear fission, energetic of nuclear fission, Bohr-wheeler theory, nuclear fusion, stellar energy and nucleo-synthesis.

Neutrons, Kinematics in high energy collisions, particles in high energy reactions,

classification of elementary particles, interactions among particles, states of particles in terms of quantum numbers, Yukawa hypothesis, properties of pi mesons, muons, K-mesons and hyperons, particle interactions and Feynman diagrams, symmetries and conservation laws, CPT invariance, Gellmann Nishijima Formula, Quark Model, Quantum Chromo Dynamics (QCD), symmetry classifications of elementary particles, weak interactions, Grand Unification Theory (GUT).

Course Outcome

(i) To outline and analyze nuclear properties, structure, models and reactions.
(ii) To illustrate the mechanisms of nuclear fission and fusion.
(iii) Explain various nuclear detectors and particle accelerators.
(iv) To differentiate elementary particles and discuss their interactions

Books for Study

1. S.N. Goshal. *Atomic and Nuclear Physics*, S Chand & Company Ltd. 1998
2. Kenneth S Krane. *Introductory Nuclear Physics*, John Wiley & Sons, 1987
3. Sathya Prakash. *Nuclear Physics & Particle Physics*, S Chand 2005
4. John S Liley. *Nuclear Physics*, Wiley India, 2007

References

1. Irving Kaplan, "Nuclear Physics", Narosa Book Distributors, (2002).
2. R.D. Evans, "The atomic Nucleus", McGraw-Hill, (1955).
3. D.C.Tayal, Nuclear Physics, Himalayan Publication house, Bombay, (1980)
4. R.R. Roy & B P Nigam, Nuclear Physics Theory and Experiments, Wiley Eastern, (2000).
5. D.J. Griffiths, Harper & Row, Introduction to elementary particles, Wiley Eastern, (1987)

PH 233 S: SPACE PHYSICS AND PLASMA PHYSICS (6L, 1T)

Objectives: To explore the different physical processes that occurs in space environment. The course will provide information about basic plasma phenomena, magnetohydrodynamics, solar physics, cosmic rays and solar energetic particles, physics of atmospheric layers and experimental techniques.

Unit I

Basic Plasma Phenomena (6 hours)

Plasma Concepts – Debye shielding – plasma parameters – Plasma as a fluid - Fluid equations – Fluid drift perpendicular to B – Fluid drift parallel to B.

Waves in plasma (20 hours)

Plasma oscillations –Electron plasma waves – sound waves – ion waves – Electrostatic electron oscillations perpendicular to B - Electrostatic ion waves perpendicular to B – Lower hybrid frequency – Electromagnetic waves perpendicular to B_0 – cut offs and resonances - Electromagnetic waves parallel to B_0 – Hydromagnetic waves – Magnetosonic waves.
Diffusion and Resistivity- Decay of plasma by diffusion – steady state solutions – Recombinations – Diffusion across a magnetic field – Collisions in fully ionized plasma – Single fluid MHD equations.

Magnetohydrodynamics (10 hours)

Maxwell's equations in MHD – MHD Induction equation – Magnetic Reynold's number – Momentum equation, Pressure force – Magnetic tension force – Magnetic Buoyancy – Acoustic waves – Alfven waves – Internal gravity waves – MHD waves – Whistlers.

UNIT II

Solar Physics (16 hours)

Solar interior and energy production – Neutrino problem – Helioseismology – solar activity – sunspot cycle - Sun's magnetic field – solar rotation - Photosphere – Chromosphere – Corona – Coronal heating – Solar flares – Solar wind – importance of solar terrestrial studies.

Solar wind Physics (16 hours)

Coronal expansion – Parker's hydrodynamic theory – solar wind parameters – interplanetary magnetic field – sector structure – solar wind variations and its relationship with solar phenomena.

Cosmic rays and energetic particles (4 hours)

Galactic cosmic rays – solar cycle modulation of galactic cosmic rays – solar energetic particles – Interstellar pick up ions – Anomalous cosmic rays – Cosmic ray detectors.

UNIT III

Neutral atmosphere (8 hours)

Neutral atmosphere – scale height – Variation of temperature with altitude – Troposphere – Stratosphere – Mesosphere – Thermosphere – Heat balance equation – Exosphere.

Ionosphere and Magnetosphere (16 hours)

Ion composition and chemistry – D, E, F_1 and F_2 regions – Ionospheric conductivities and currents – Equatorial anomaly. Magnetosphere, intrinsic magnetic field – Interaction of solar wind with magnetosphere – Bow shock and magnetopause – Magnetospheric current systems – Magnetic diffusion – Magnetic reconnection – magnetic activity and substorms – magnetic storms – geomagnetic activity indices.

Observational technique (12 hours)

Upper atmosphere sensing – direct, indirect and remote – Direct methods for neutral atmosphere – Direct methods for ionized component – Langmuir probe – Impedance and resonance probes – Mass spectrometers – Detectors for energetic particles and radiation environment – Satellite drag and related methods – Remote sensing of the neutral atmosphere – Remote sensing by radio propagation – Experimental technique for ionospheric studies – Ionosonde technique – Incoherent scatter technique.

Course Outcome

(i) Explain fundamental properties of plasma and plasma waves.
(ii) Apply basic electromagnetism to derive the kinetic theory of plasmas.
(iii) Discuss Sun's interior structure and interpret the physics of solar activity.
(iv) Discuss the experimental technique for atmospheric studies.

References

1. Chen F. F.: Introduction to Plasma Physics and Controlled Fusion, Plenum Press.
2. Dendy R. O.: Plasma Dynamics (Clarendon Press, 1990).
3. Tamas I. Gombosi: Physics of the Space Environment (Cambridge University Press, 1998)
4. Harra L. K. and Mason K. O.: Space Science (Imperial College Press)
5. Peter Foukal: Solar Astrophysics (Wiley, 1990)

6. Ratcliffe: Introduction to ionosphere and magnetosphere (CUP,1972)
7. Robert G. Fleagle and Joost A. Businger: An Introduction to Atmospheric Physics, Academic Press, London, 1971.
8. Banks P. M. and G. Kocharts: Aeronomy, Academic Press, London, 1973.
9. Savindra Singh: Climatology, Prayag Pustak Bhavan, 2005.
10. Michael D. Pappagiannis: Space Physics and Space Astronomy, Gordon and Breach Science Publishers Ltd., 1972.

PH 233 T: THEORETICAL PHYSICS-I (6L, 1T)

Objectives: To familiarize with the concepts of advanced theoretical physics covering relativistic quantum mechanics, quantum field theory, stochastic processes and general theory of relativity.

Unit I - Quantum Mechanics (36 hours)

Formalism

Linear vector space, linear operators, normed spaces, Hilbert spaces, self- adjoint operators, representation of operators and states in suitable basis, spectral properties of self-adjoint operators - spectral theorem.

Groups and Symmetry

Review of groups: Irreducible representations of groups, discrete and continuous groups, Lie groups, Lie algebra, how symmetries form a group, unitary and anti-unitary symmetry operators, Rotation and O(3) group, SU(2) group, angular momentum algebra, vector operators, Tensor operators, Wigner-Eckart theorem Discrete symmetries - space and time inversion symmetries.

Relativistic quantum mechanics

Lorentz group - generators, representation of Lorentz group extended by parity and Dirac equation, hydrogen atom

Field theory

Lagrangian formalism, Noether's theorem, Hamiltonian density, quantization of fields, second-quantization, quantization of EM field.

Unit II

Statistical Physics (36 hours)

Stochastic processes

Review of probability and measure, equilibrium vs non-equilibrium, Brownian motion, Langevin equation, Ito vs Stratanovic, Markov processes, Fokker-Planck equation, Fluctuation-Dissipation theorem.

Special topics in non-equilibrium systems

Einstein diffusion equation - derivation and boundary conditions, free diffusion in one-dimensional half-space, fluorescence micro photolysis.

Unit III - General relativity (36 hrs)

Differential geometry

Tensors, differentiable manifolds, geodesics, curvature, Riemannian tensor

Relativity

Principle of equivalence, Einstein equations, centrally symmetric gravitational fields, Schwaarzchild solution, singularities.

Course Outcome

(i) To discuss introductory level problems in relativistic quantum mechanics and field theory.
(ii) To describe the basic theory of Stochastic processes with emphasize on non-equilibrium systems.
(iii) To illustrate formalism of general theory of relativity.

References

1. F. Scheck, Quantum Physics, Springer (2007).
2. G. Teschl, Mathematical Methods in Quantum Mechanics, American Mathematical Society (2009).
3. P. Szekeres, Modern Mathematical Physics, Cambridge University Press (2004).
4. M. T. Vaughn, Introduction to Mathematical Physics, Wiley - VCH Verlag (2007).
5. Arfken, Mathematical Physics for Physicists, Academic Press (2013).
6. J. J. Sakurai, Modern Quantum Mechanics, Addison-Wesley Publishing Company (1994).
7. L. I. Schiff, Quantum Mechanics, McGraw-Hill Book Co. (1968).
8. R. Shankar, Principles of Quantum Mechanics, Springer (1994).
9. L. E. Ballentine, Quantum Mechanics, World Scientific Publishing Co. (2000).
10. L. H. Ryder, Quantum Field Theory, Cambridge University Press (2008).
11. J. J. Sakurai, Advanced Quantum Mechanics, Addison-Wesley (1967).
12. M. Le Bellac, Quantum and Statistical Field Theory, Oxford University Press (2001).
13. K. Schulten and I. Kosztin, Lectures in Theoretical Biophysics, University of Illinois at Urbana- Champaign (2000).
14. R. Kubo, M. Toda and N. Hashitsume, Statistical Physics II: Non equilibrium Statistical Mechanics, Springer-Verlag (1985).
15. G. F. Mazenko, Non equilibrium Statistical Mechanics, Wiley-VCH Verlag (2006).
16. V. Balakrishnan, Elements of Non equilibrium Statistical Mechanics, CRC Press (2008).
17. B. F. Schutz, A First Course in General Relativity, Cambridge University Press (2009).
18. S. Caroll, Spacetime and Geometry: An Introduction to General Relativity, Addison-Wesley (2004).
19. A. Altland and B. Simons, Condensed Matter Field Theory, Cambridge University Press (2008).
20. J. W. Negele and H. Orland, Quantum Many-particle Systems, Levant Books (2006).
21. E. Fradkin, Field Theories of Condensed Matter Systems, Levant Books (2006).
22. P. M. Chaikin and T. C. Lubensky, Principles of Condensed Matter Physics, Cambridge University Press (2004).
23. A. M. Tsvelik, Quantum Field Theory in Condensed Matter Physics, Cambridge UniversityPress(2003).

PH 241: CONDENSED MATTER PHYSICS (6L, 1T)

Objectives: To understand and familiarize fundamentals of crystals, lattice vibrations, band theory, dielectric, magnetic and superconducting properties of materials. To introduce the synthesis and characterization techniques of nanomaterials.

Unit I

Crystal physics (10 hours)

Lattice points and space lattice-basis and crystal structure-unit cells and lattice parameters-symmetry elements in crystals –space groups-Bravais lattice-density and lattice constant relation-crystal directions, planes and Miller indices-reciprocal lattice-allotropy and polymorphism in crystals-imperfections in crystals.

Lattice vibrations and thermal properties (10 hours)

Dynamics of identical atoms in crystal lattice-dynamics of linear chain-experimental measurement of dispersion relation-anharmonicity and thermal expansion-specific heat of solids-classical model-Einstein's model-Debye model-thermal conductivity of solids-role of electrons and phonons-thermal resistance of solids.

Free electron and band theory (16 hours)

Electrons moving in one dimensional potential well-Fermi-Dirac statistics-effect of temparature on Fermi distribution-electronic specific heat-electrical conductivity of metals-Wiedmann- Franz- Lorentz law-electrical resistivity of metals-Hall effect-energy bands in solids-Kronig- Penny model-construction of Brillouin zones-nearly free electron model-conductors, semiconductors and insulators-elementary ideas of Fermi surfaces

Unit II

Semiconductors (12 hours)

Free carrier concentration in semiconductors-mobility of charge carriers-temperature effects-electrical conductivity of semiconductors-Hall effect in semiconductors - semiconductor junction properties.

Dielectric and magnetic properties of materials (24 hours)

Dipole moment-polarisation-local electric field in an atom-dielectric constant and its measurement-polarizability-classical theory-Peizo, Pyro and Ferro electric properties of Crystals-Ferreoelectric domains-classification of magnetic materials-atomic theory of magnetism- Langevin's theory-paramagnetism and quantum theory-Weiss molecular exchange field-ferromagnetic domains-anti ferromagnetism-Ferrites.

Unit III

Superconductivity (20 hours)

Experimental attributes to superconductivity-critical temperature, critical current and critical magnetic field of superconductors-effects of magnetic field on superconductors-Type I and II superconductors-intermediate and vortex states-thermal conductivity, specific heat and energy gap in superconductors-microwave and IR properties-coherence length-Theories of superconductivity-London equations-Ginzberg-Landau theory-BCS theory-AC and DC Josephson effects in superconductors- Examples and properties of High Temperature Superconductors.

Introduction to nano science and technology (16 hours)

Introduction to nanomaterials, properties, classification of nanomaterials, quantum confinement effects, Density of states-nano material preparation techniques-sputtering-chemical vapor deposition-pulsed laser deposition-sol-gel technique-characterization of nano materials-X-Ray diffraction- Scanning Probe Microscopy-atomic force microscopy-SEM and TEM techniques-carbon nano structures-elements of nano electronics.

Course Outcome

(i) Discuss crystal physics, lattice vibrations, models of thermal properties and band theory of solids.

(ii) Explain the theoretical concepts of semiconductors, dielectric, magnetic and superconducting materials.

(iii) To describe the synthesis and characterization techniques of nanomaterials.

(iv) To apply the concepts in condensed matter physics to meet the challenges.

Books for study

1. N.W. Ashcroft and N.D. Merwin, *Solid State Physics*, Cenage Learning India (2001)

2. Charles.C. Kittel, *Introduction to Solid State Physics*, wiley Student Edition (2007)

3. M. Ali Omar, *Elementary Solid State Physics*, Pearson Education Inc (1999)

4. K.K. Chattopahyay, A.N. Banerjee, *Introduction to Nano Science and NanoTechnology*, Prentice Hall of India (2009)

5. Gabor L Hornyak, H F Tibbals and Joydeep Dutta, *Introduction to Nanoscience and Nanotechnology, CRC press (2009)*

References

1 S.O. Pillai, *Solid State Physics*, Third Edition New Age International Pvt. Ltd (1999).

2. M.A. Wahab, *Solid State Physics*, Narosa Publishing House (1999).

3 R.J. Singh, Solid State Physics, Dorling Kindersley (India) Pvt Ltd (2012).

4 P. Phillips, Advanced Solid State Physics, Second Edn, Cambridge University Press (2012).

PH 242: NUCLEAR AND PARTICLE PHYSICS (6L, 1T)

Objectives: To familiarize the fundamental properties of nucleus, its structure, models, nuclear reactions, nuclear detectors and accelerators. To introduce the concept of elementary particles and their interactions.

Unit I

Nuclear forces (10 hours)

Deuteron-neutron –proton scattering and proton-proton scattering at low energies-non central forces- nuclear exchange force-meson theory of nuclear forces

Nuclear models (12 hours)

Detailed studies on liquid drop, shell and collective models of the nuclei.

Nuclear reactions (14 hours)

Conservation laws-energetic nuclear reactions-Q value equation-partial wave analysis of nuclear reaction cross section- compound nuclear hypothesis-resonance reactions-Brot-Wigner one level formula-optical model-theory of stripping reactions.

Unit II

Nuclear fission (20 hours)

Mechanism of nuclear fission-calculation of critical energy based on liquid drop model-fission products and energy release-fission chain reactions-neutron cycle and four factor formula-general features and classification of nuclear fission reactors.

Nuclear fusion (16 hours)

Nuclear fusion in stellar interiors-proton-proton reactions-carbon-nitrogen cycle-thermo nuclear reactions in the laboratary-conditions for the construction of nuclear fusion reactor-critical ignition temperature-Lawson criterian-plasma confinement in fusion- principles of pinch, magnetic an inertial confinements.

Unit III

Nuclear detectors and particle accelerators (20 hours)

Gas filled detectors-ionization chamber and proportional counters-GM counter-scintillation detectors-semiconductor detectors- Cerenkov detector-bubble chamber. Particle accelerators-electrostatic accelerators-cyclotron accelerators-synchrotrons-linear accelerators-colliding beam accelerators.

Elementary particle physics (16 hours)

Elementary particle interactions-symmetries and conservation laws-quark model of elementary particles-colored quarks and gluons-ideas of charm, beauty and truth-quark dynamics-ideas of grand unified theories of fundamental forces

Course Outcome

(i) To describe and analyze nuclear structure, models and reactions.
(ii) To illustrate the mechanisms of nuclear fission and fusion reactions.
(iii) Discuss various nuclear detectors and particle accelerators.
(iv) To classify elementary particles and discuss their interactions.

Books for study

1 D.C. Tayal, *Nuclear Physics*,5thEdition,Himalaya Publishing Co (2008)
2 J. Verma, R.C.Bhandari, D.R.S.Somayajulu, *Fundementals of Nuclear Physics*, CBS Publishers and Distributors (2005).
3. K.S. Krane, *Introductory Nuclear Physics*, Wiley India Pvt. Ltd (1988)

References

1 S.B. Patel, Nuclear Physics-An Introduction, New Age International Pvt. Ltd (1996).

2. B.R. Marhu, Nuclear and Particle Physics- an Introduction, Second Edition, Wiley (2012)

3. S.N. Ghoshal, Nuclear Physics, S. Chand Ltd (1997)

4. M.P. Khanna, Introduction to Particle Physics, PHI (2011)

5. J. Freidberg, Plasma Physics and Fusion Energy, Cambridge University Press (2007)

6. FF.Chen, Introduction to Plasma Physics, Springer, London (2002)

SPECIAL PAPER SYLLABUS: SPECIAL PAPER

243 E: ADVANCED ELECTRONICS-II (6L, 1T)

Objectives: The course introduces microprocessors and interfacing devices, embedded systems, artificial intelligence and neural networks. It also provides fundamental data communication codes, RADAR and Satellite communications.

Unit I

Microprocessor 8086: Introduction and Programming (22 hours)

Internal architecture of 8086-pin configuration of 8086-memory organization of 8086-addressing modes of 8086-minimum and maximum mode configurations-instructions set of 8086-data movement instructions-arithmetic and logic instructions-programming of 8086-flow charts and programming steps- Simple programs- One's complement of a 16-bit number - BCD to ASCII, ASCII to BCD - addition of 2-16 bit numbers – generation of Fibonacci series.

Microprocessor interfacing devices and advanced microprocessors (14 hours)

Programmed I/O –direct memory access-micro controllers-8251A USART-8257 DMA controller-8259A programmable interrupt controller-8279 programmable keyboard/display interface-analog to digital and digital to analog converters-advanced microprocessors-80186/80188 high integration 16-bit microprocessors-80386 and 80386 processors-RISC processors.

Unit II

Elements of embedded systems (6 hours)

Example of an embedded system-processor chips for embedded applications-a simple micro controller using embedded systems-embedded processor families

Introduction to artificial intelligence and expert systems (20 hours)

Overview of artificial intelligence (AI)-knowledge representation in AI-problem solving in AI- search methods-predicate and propositional logic-Formal symbolic logic-LISP and PROLOG basics-network representations of knowledge-natural language study in AI-Fuzzy sets and Fuzzy logic- Expert systems-rule based expert systems-nonproduction system architectures- examples of expert systems.

Artificial Neural Networks (10 hours)

Basic concepts of artificial neural networks –neural network architectures- neural network systems- ADALINE and MADALINE networks-advantages and disadvantages of artificial neural networks- neural network application domains- basics of neuro fuzzy systems.

Unit III

Radar (12 hours)

Basic principles of radar-Radar equation-MTI, Pulse and Doppler Radars-Radar signal analysis- ideas of Radar transmitters and receivers-hyperbolic systems for navigation-LORAN and DECCA systems.

Satellite communications (10 hours)

Satellite orbits-Geosynchronous satellites-antenna look angles-satellite classifications-spacing and frequency allocations-satellite antenna radiation patterns-satellite system link models – satellite system parameters and link equations.

Fundamental Concepts of Data Communication (12 hours)

Data communication codes – Baudot code, ASCII code, EBCDIC code, Bar codes – Code 39, Universal product code, Error control, Error detection- Redundancy checking, Error correction-retransmission, Forward error correction, Character synchronization- Asynchronus serial data and Synchronus serial data, Data communication hardware- Data communication circuits- line control unit- universal synchronous Receiver/Transmitter.

Course Outcome

(i) Demonstrate microprocessor architecture, programing and interfacing devices.

(ii) Outline the basic concepts of embedded systems, artificial intelligence and neural networks.

(iii) Illustrate fundamental data communications codes, radar and satellite communication systems.

Books for study

1 Sunil Mathur, *Microprocessor 8086-Architecture,Programming and Interfacing*, PHI learning Pvt Ltd (2011)

2. AbishekYadav, *Microprocessor 8085 8086*,University Science Press, New Delhi (2008)

3. Carl Hamacher, Z.G. Vranesic, S.G. Zaky, *Computer organization*, 5th Edition, McGraw Hill Education (2002).

4. B. Ram, *Fundamentals of microprocessors and microcontrollers*, Dhanpat Rai Publications, New Delhi (2016).

5. Robert J Schalkoff, *Artificial Neural Networks*, Mc Graw Hill International Edition (1997).

6. V.S. Janakiraman, K. Sarukesi and P. Gopalakrishnan, *Foundations of Artificial Intelligence and Expert systems*, Macmillan Publishers India Ltd (2011).

7. E.Rich and K.Knight, *Artificial Intelligence*, Second Edition, Tata McGraw Hill Pub Co (2006).

8 W. Tomasi, *Electronic communications systems: Fundamentals through Advanced*, Dorling Kinderley (India) Pvt. Ltd (2009).

9. . D.W. Patterson, *Introduction to Artificial Intelligence and Expert Systems*, Prentice Hall of India Pvt Ltd (2001).

10. S. Rajasekharan and G.A. VijalekshmiPai, *Neural Networks Fuzzy logic and Geneticalgorithms*, PHI learning Pvt Ltd (2010).

11.S.N. Sivanandan, S.Sumathi and S.N. Deepa, *Introduction to Fuzzy logic using MATLAB*, Springer (2007).

12. A.Veera Lakshmi and R.Srivel, *Television and Radio engineering*, Ann Books Pvt Ltd (2010)

13. Skolini. M.I, *Introducion to Radar systems*, Third editon, Tata Mc Graw Hill (2001)

14 Nagaraja, *Elements of Electronic navigation*, Second Edition, Tata Mc GrawHill (2006)

PH 243 M: MATERIALS SCIENCE –II

Objectives: This course introduces optical and thermal properties of materials, synthesis of nanostructured materials, its characterization and applications. It also gives elements of nanoelectronics and its applications.

Unit I

Optical and thermal properties (36 hrs)

Electronic materials and properties- Electrical conductivity-Conductivity of metals and alloys-superconductivity-conduction in ionic materials-semiconductors-Insulators-dielectrics-polarisation in dielectrics-Photonic materials and properties- Electromagnetic spectrum-Reflection, refraction, absorption and transmission-Selective absorption and transmission-Emission phenomenon luminescent and phosphorescent materials Optical Properties of Materials- Absorption, Photo conductivity, General consideration of Luminescence, excitation, absorption and emission processes of luminescence, configuration coordinate diagram, energy level diagram. Radiative and non-radiative processes. Different kinds of Luminescence – Electroluminescence, photoluminescence. Color centers, different kinds of color centers in the context of luminescence in alkali halides Electrostriction-piezoelectricity piezoelectricity and ferroelectricity- Thermoelectric power-Seebeck effect, Peltier effect, and Thomson relation, figure of merit, Concept of phonon, Thermal conductivity due to phonons and electrons, conflicting thermoelectric properties,

Unit-II

Nanostructured materials and properties (36 Hrs)

Size and dimensionality effects - size effects - potential wells - partial confinement - conduction electrons and dimensionality – quantum well-quantum wires-quantum dots-Fermi gas and density of states - Carbon based nano-materials-Fullerenes-carbon nanotubes- nanoshells- graphene-biological and smart nanomaterials. Properties of nanomaterials- elctrical-optical-mechanical-and thermo dynamical properties. Synthesis of nanomaterials- CVD-Sol-gel-Combustion-hydrothermal- Colloidal growth- nanotube synthesis-Lithographic process-: Lithography, Nanolithography, split gate technology, self-assembly, limitation of lithographic process**.** Nonlithographic techniques**:** Plasma arc discharge, sputtering, evaporation. Tools of nanomaterials**:** X-ray diffraction-FTIR spectroscopy-Raman spectroscopy-Band assignments-UV-Visspectroscopy-Determination of band gap-Tauc's plot – ***For qualitative study only (Non evaluative)****:* Scanning probe microscopy-STMAFM- NSOM- Electron Microscopies-TEM-HRTEM and SEM.

Unit III

Nano-electronics (36 Hrs)

Introduction to Nanoelectronics

Properties dependent on density of states - excitons - single-electron tunnelling - applications infrared detectors - quantum dot lasers-. Intrduction to Spintronics-History and overview of spin electronics; Classes of magnetic materials; Quantum Mechanics of spin; Spin relaxation mechanisms; spin relaxation in a quantum dots. Magneto resistance, Ordinary Magneto resistance, Giant Magneto resistance, Colossal Magnetoresistance, Micro-electromechanical systems (MEMSs)

and Nano-electro-mechanical systems (NEMSs),

Qualitative study only (Non evaluative)

Resonant Tunnelling Diode, Quantum Cascade lasers, Single electron transistor-: Coulomb Blockade, single electron transistor, other SET and FET structures. Molecular Machines, Nano-biometrics- Molecular and Nano-electronics-Microbial Fuel Cells-Hydrogen storage-Nano medicine-Biological applications-Photonic nanocrystals and integrated circuits-Quantum computers Introduction to Spintronics- :Spin Galvanic effect; Spin LEDs: Fundamental and applications, Spin photoelectronic devices, Electron spin filtering, Materials for spin electronics,. Spin-Valve and spin-tunneling devices: Read Heads, MRAMS, Field Sensors, Spintronic Biosensors, Spin transistors, Quantum Computing with spins.

Course Outcome

(i) Discuss optical and thermal properties of materials.

(ii) Explain fundamentals of nanostructured materials, synthesis and various characterization techniques.

(iii) Discuss basic ideas and applications of nanoelectronics.

Reference Books

1. M.S. Ramachandra Rao, Shubra Singh, Nanoscience and Nanotechnolgy, Fundamentals to Frontiers, Wiley 2017,
2. Thermoelectrics: Basic Principles and New Materials Development, by G.S. Nolas, J. Sharp, H.J. Goldsmid, Springer, 2001
3. Introduction to Thermoelectricity, by H. Hulian Goldsmid, Springer, 2010
4. Nano The Essential-T Pradeep; Mc Graw Hill Education
5. The Science and Engineering of Materials: Donald R Askeland and Pradeep P Phule 6 Edition- Thomson Brooks/Cole.
6. Guozhong Cao Nano Structures and Nano materials , Synthesis Properties and Applications.
7. Principles of Electronic Materials and Devices , S.O.Kasap .Tata Mc Graw Hill
8. Crystallography and crystal defects, A. Kelley, G.W. Groves & P. Kidd, Wiley
9. Crystallography applied to Solid State Physics, A.R. Verma, O.N. Srivastava, NAI
10. Solid State Physics, A.J.Dekker, Macmillan, (1967).
11. Solid State Physics, S.L. Gupta and V.Kumar, Pragati Prakashan.
12. Introduction to Theory of Solids, H.M. Rosenberg, Prentice Hall.
13. Solid State Physics,J.S. Blakemore, W.B.Saunders & Co. Philadelphia.
14. Solid State Physics, N.W. Ashcroft & N.D. Mermin, Brooks/ Cole (1976).
15. Crystal Defects and Crystal Interfaces, W. Bollmann, Springer Verlag.
16. Elementary solid State physics M.Ali Omar-Pearson
17. Solid State Physics R.J.singh-Pearson
18. Introduction to Nanotechnology, Charles P. Poole, Jr. and Frank J.Owens, Wiley, (2003) 92
19. Nanotechnology An Introduction to Synthesis properties and Applications of Nanomaterials: Thomas Varghese and K.M.Balakrishna-Atlantic Publishers.
20. MEMS/NEMS: micro electro mechanical systems/nano electro mechanical systems Volume1, Design Methods, Cornelius T.Leondes, Springer, (2006).

21. Mick Wilson, Kamali Kannangara, Geoff Smith, Michelle Simmons and Burkhard Raguse “Nanotechnology”, Overseas Press New Delhi (2005).

22 W. R. Fahrner (Ed.) “Nanotechnology and Nanoelectronics”, Springer 2006. S. Bandyopadhyay,

M. Cahay

PH 243 N: RADIATION PHYSICS (6L, 1T)

Objectives: The course covers the interaction of radiation with matter, radioactivity, its detection, its measurement and radiation exposure and biological effects of radiation.

Unit –I

Interaction of radiation with matter (36 hours)

Ionizing radiations, terrestrial sources, extraterrestrial sources, non-ionizing radiations, natural and man-made sources, interaction of radiation with matter, energy loss rate, bremsstrahlung, range energy relation, stopping power, photoelectric absorption, Compton scattering, pair production, properties of gamma gays and neutrons.

Particle flux and fluence, Energy flux and fluence, Cross section, Linear and mass attenuation coefficients, Mass energy transfer and mass energy absorption coefficients, Stopping power – Linear Energy Transfer (LET) - Weighing Factors(W-values), Radiation and tissue weighting factors, absorbed dose- equivalent dose, effective dose, committed equivalent dose, committed effected dose – Concept of KERMA (Kinetic Energy Released per unit Mass)

Unit II

Radioactivity, detection and dosimetry (36 hours)

Law of radioactive decay, half-life, mean life, specific activity, successive disintegration, radioactive equilibriums, age of minerals and rocks, α-decay: barrier penetration, range energy relationship, β decay: Fermi theory, parity violation, Kurie-plot, γ-decay, radiative transitions in nuclei, selection rules.

Thermo luminescent Dosimeters (TLD) – Optically stimulated Luminescence dosimeters (OSLD) –Neutron Detectors – Nuclear track emulsions for fast neutrons – Solid State Nuclear track (SSNTD) detectors, Radon dosimetry, Instruments for personnel monitoring – TLD badge readers – Digital pocket dosimeters using solid state devices and GM counters - Contamination monitors for alpha, beta and gamma radiation – Scintillation monitors for X and gamma radiations - Neutron Monitors, Tissue equivalent survey meters – Flux meter and dose equivalent monitors – Pocket neutron monitors

Unit III

Biological effects of radiation (36 hours)

Somatic effects of radiation – Physical factors influencing somatic effects – Dependence on dose, dose rate, type and energy of radiation - Acute radiation sickness – Effects of chronic exposure to radiation – Induction of leukemia – Radiation Carcinogenesis – Risk of

carcinogenesis – Genetic effects of radiation – Factors affecting frequency of radiation induced mutations – Dose-effects relationship- first generation effects – Effects due to mutation of recessive characteristics – Genetic burden – Prevalence of hereditary diseases and defects – Spontaneous mutation rate – Concept of doubling dose and genetic risk estimate.

Course Outcome

(i) To discuss sources of radiation, its interaction with matter and its measurement.

(ii) To illustrate radioactive decay and various measurements techniques used.

(iii) To list and discuss biological effects of radiation.

Books for study

1. G.F. Knoll, *Radiation detection and Measurement*, John Wiley & Sons, 2000
2. K. Thayalan, *Basic Radiological Physics*, Jaypee brothers medical publishers, New Delhi,2003
3. Alan Martin and Samuel A. Harbison, *An Introduction to Radiation Protection*, Third edition, Chapman and Hall, New York 1986

References

1. R.R. Roy & B P Nigam, Nuclear Physics Theory and Experiments, Wiley Eastern, 2000
2. UNSCEAR Report, United Nations Scientific Committee on the Effects of Atomic Radiation, 2008.

PH 243 S: ADVANCED ASTROPHYSICS (6L,1T)

Objectives: This course describes general features of observational astronomy, ideas of stellar evolution, galactic physics and elements of cosmology.

UNIT I

General features of observational astronomy (36 hours)

Emergence of modern astronomy - Astronomy in different bands of electromagnetic radiation. Celestial co-ordinates – Spherical coordinates – Altazimuth system – Local equatorial system – universal equatorial system – Ecliptic system – Galactic coordinates – conversion of coordinates. Apparent luminosity of stars – measurement of apparent luminosity –various magnitude systems – correction for apparent magnitude. Stellar distances and absolute luminosities – measurement of distances within the solar system – trigonometric parallaxes of stars – method of measurement of luminosity -. surface temperature of stars – spectral classification of stars-stellar magnetic fields**.**

UNIT II

Stellar physics and Stellar evolution (36 hours)

Theory of radiative transfer – Radiative transfer equation – Thermodynamic equilibrium – radiative transfer through stellar atmosphere – formation of spectral lines-Basic equation of stellar structure – Hydrostatic equilibrium in stars – Virial theorem – energy transport inside

stars – convection inside stars – stellar models – some relations among stellar quantities – determination of stellar parameters – main sequence – red giants and white dwarfs

Nucleosynthesis and Nuclear reactions in stars – calculation of nuclear reaction rates – Important nuclear reactions in stellar interiors – Helioseismology – solar neutrino experiments – Stellar evolution – Evolution of binary systems – mass loss from stars – stellar winds-Stellar collapse – Degeneracy pressure of Fermi gas – structure of white dwarfs – Chandrasekhar limit – neutron stars – pulsars – binary X – ray sources. Accretion disks.

Unit III

Galactic Physics and elements of Cosmology (36 hours)

Normal galaxies – morphological classification - physical characteristics and kinematics – expansion of the universe – active galaxies – super luminal motion in quasars – black hole as central engine – unification scheme – cluster of galaxies – large scale distribution of galaxies – gamma ray bursts.

Space time dynamics of the universe – general relativity – the metric of the universe – Friedman equation for the scale factor – cosmic background radiation – evolution of matter dominated universe – evolution of radiation dominated universe- Primordial nucleo synthesis – cosmic neutrino background – nature of dark matter.

Course Outcome

(1) Explain general features of observational astronomy.
(2) Describe the formation of stars and stellar structure.
(3) Explain origin of various galaxies.

References

1. Abhyankar K. D. - Astrophysics Stars and Galaxies, Universities Press.
2. Arnab Rai Choudhuri - Astrophysics for Physicists, Cambridge University Press.
3. Padmanabhan T. – Theoretical Astrophysics, Cambridge University Press.
4. Narlikar J. B - Introduction to Cosmology, Cambridge University Press.

PH 243 T; THEORETICAL PHYSICS – II (6L, 1T)

Objectives: To familiarize with the concepts of advanced theoretical physics covering functional and path integrals in quantum mechanics, theory of many particle systems and critical phenomenon.

Unit I

Functional Integrals in Physics (36 hours)

Functionals

Function vs functional, functional derivatives, functional integration, Gaussian integrals.

Path integrals in quantum mechanics

Single particle systems- Feynman path integral, propagator as a functional integral, Born approximation, Coulomb scattering.

Many particle systems - Second quantization, coherent states and many-body path integrals, field integral for the quantum partition function.

Quantum Fields - Path integrals for fields, functionals for bosonic and fermionic fields, generating functions for free and interacting fields, Wick's theorem, Perturbation theory.

Unit II

Many particle physics (36 hours)

Broken symmetry and collective phenomena

Mean field theory, Bose-Einstein condensation and superfluidity, superconductivity, interacting electron gas and disorder

Response functions

Linear response theory, analytic structure of correlation functions, electromagnetic linear response

Unit III

Critical phenomena (36 hours)

Continuous phase transitions, critical behavior, scaling, renormalization group, Ising model, RG analysis of ferromagnetic transition.

Course Outcome

(i) Describe functional and path integrals in quantum mechanics.
(ii) Discuss theory of many particle systems and critical phenomenon.

References

1. F. Scheck, Quantum Physics, Springer (2007).
2. G. Teschl, Mathematical Methods in Quantum Mechanics,

American Mathematical Society (2009).
3. P. Szekeres, Modern Mathematical Physics, Cambridge University Press (2004).
4. M. T. Vaughn, Introduction to Mathematical Physics, Wiley - VCH Verlag (2007).
5. Arfken, Mathematical Physics for Physicists, Academic Press (2013).
6. J. J. Sakurai, Modern Quantum Mechanics, Addison-Wesley Publishing Company (1994).
7. L. I. Schiff, Quantum Mechanics, McGraw-Hill Book Co. (1968).
8. L. H. Ryder, Quantum Field Theory, Cambridge University Press (2008).
9. J. J. Sakurai, Advanced Quantum Mechanics, Addison-Wesley (1967).
10. M. Le Bellac, Quantum and Statistical Field Theory, Oxford University Press (2001).
11. K. Schulten and I. Kosztin, Lectures in Theoretical Biophysics, University of Illinois at Urbana-Champaign (2000).
12. R. Kubo, M. Toda and N. Hashitsume, Statistical Physics II: Non equilibrium Statistical Mechanics, Springer-Verlag (1985).
13. G. F. Mazenko, Non equilibrium Statistical Mechanics, Wiley-VCH Verlag (2006).
14. V. Balakrishnan, Elements of Non equilibrium Statistical Mechanics, CRC Press (2008).
15. B. F. Schutz, A First course in General Relativity, Cambridge University Press (2009).
16. S. Caroll, Space time and Geometry: An Introduction to General Relativity, Addison-Wesley (2004).
17. A. Altland and B. Simons, Condensed Matter Field Theory, Cambridge University Press (2008).
18. J. W. Negele and H. Orland, Quantum Many-particle Systems, Levant Books (2006).
19. E. Fradkin, Field Theories of Condensed Matter Systems, Levant Books (2006).
20. P. M. Chaikin and T. C. Lubensky, Principles of Condensed Matter Physics, Cambridge University Press (2004).
21. A. M. Tsvelik, Quantum Field Theory in Condensed Matter Physics, Cambridge University Press (2003).
22. R. Shankar, Principles of Quantum Mechanics, Springer (1994).
23. L. E. Ballentine, Quantum Mechanics, World Scientific Publishing Co. (2000).

PH 251: GENERAL PHYSICS PRACTICALS

Objectives: Demonstrate and understand various general physics experiments for acquiring fundamental concepts.

(Total of 10 experiments to be done from Section A and B)

Section A (*atleast 5 experiments to be done in this section*)

1. Determination of elastic constants by Cornu's method (elliptical and hyperbolic fringes)

2. Analysis of absorption spectra of liquids using spectrometer

3. Study of ultrasonic waves in liquids

4. Determination of e/k using Ge and Si transistors

5. Anderson Bridge –determination of self and mutual inductance

6. Michelson Interferometer experiments

7. Identification of Fraunhofer lines in solar spectra

8. Verification of Richardson's equation using diode valve

9. LED experiments (a) wavelength determination (b) I-V characteristics (c) output power variations with applied voltage etc.

10. Thermal diffusivity of brass

Section B (at least 2 experiments to be done from this section)

1. BH curve-anchor ring

2. Study of photoelectric effect and determination of of Planck's constant

3. Determination of Stefan's constant

4. Experiments using Laser:

(a) Laser beam characteristics (b) Diffraction grating (c) Diffraction at different types of slits and apertures (d) refractive index of liquids (e) particle size determination

5. Young's modulus of different materials using strain gauge

6. Determination of magnetic force in a current carrying conductor

7. Optical fibre characteristics – numerical aperture, attenuation and bandwidth of given specimen.

8. Variation of dielectric constant with temperature of ferroelectric material.
9. Dielectric constant of non-polar liquid.
10. Cauchy's constants of liquids and liquid mixtures using hollow prism and spectrometer

11. Surface tension of a liquid using Jaeger's method

12. Experiments using Phoenix Kit

(a) Capacitor charging/discharging experiments (b) Dielectric constant of glass

Course Outcome

(i) To measure and analyze various physical quantities.
(ii) To calculate error in various general physics experiments.
(iii) To develop experimental skills

PH 252 Electronics and Computer Science Practicals
Objectives: Design, construct and verify various electronics circuits and object oriented programing using C++ to solve numerical problems.

Unit I – Electronics Experiments (A total of 10 experiments to be done)

Section A (*atleast 5 experiments to be done*)

1. Single stage CE amplifier –Design and study of frequency response

2. Study of RC Phase shift oscillator circuits using Transistors

3. Construction and study of astable multivibrator and VCO circuits using Transistors

4. Study of OP Amp circuits (a) summing amplifier (b)difference amplifier

5. OP Amp as an integrator and differentiator

6. Characteristics of JFET and MOSFET

7. Characteristics of SCR

8. Design and study of negative feedback amplifier circuits

9. Study of Clipping and Clamping circuits

10. UJT Characteristics and UJT relaxation Oscillator

Section B (atleast 3 experiments to be done)

1. Emitter follower and source follower circuits

2. Weinberg oscillator using OP Amp

3. SR and JK Flip Flops -construction using Logic Gates and study of truth tables

4. Study of the frequency response of a tuned amplifier

5. Study of power amplifier circuits

6. Frequency multiplier using PLL

7 Study of Schmitt trigger circuits using transistors

8. Construction and study of cascade amplifier circuit using transistors.
9. Simple electronics experiments using Phoenix and Python based Kits.

Unit II Computer Programming

(*A minimum of 8 experiments to be done, programs should be written in C++ language*)

1. Least square fitting

2. First derivative of tabulated function by difference table

3. Numerical integration (Trapezoidal rule and Simpson method)

4. Solution of algebraic and transcendental equations using Newton-Ralphson method

5. Solution of algebraic equations using bisection method

6. Numerical interpolation using Newton and Lagrangian methods

7. Monte Carlo simulation

8. Evaluation of Bessel and Legendre functions

9. Matrix addition, multiplication, trace, transpose and inverse.

10. Fourier series analysis

11. Study of motion of projectile in a central force field

12. Study of Planetary motion and Kepler's laws

Course Outcome

(i) To design and construct various electronic circuits and its validation.
(ii) To calculate error in various electronics experiments.
(iii) To develop experimental and programming skills

PH 261 Advanced Physics Practicals

Objectives: Demonstrate and understand various advanced physics experiments for acquiring fundamental concepts and analyze various experimental data.

(*A total of 10 experiments to be done*)

Unit I: Physics experiments

Section A (*atleast 5 experiments to be done*)

1. e/m of an electron-Thompson's method

2. Charge of an electron-Millikan's method

3. Determination of Fermi energy of Copper

4. Study of variation of resistance of a semiconductor with temperature and determination of band gap

5. Magnetic Susceptibility of a liquid using Quincke's method

6. Ferromagnetic studies using Guoy's method

7. Hall effect in a semiconductor

8. Rydberg constant determination using grating, spectrometer and discharge tubes.

9. Thermo-emf of bulk samples like Al, Cu. Brass etc.

10. Zeeman effect using Fabry-Perot Interferometer.

Section B (*at least two experiments to be done*)

1. Electrical characteristics of a solar cell

2. Studies using UV visible spectrophotometer

3. Refractive index of liquids and liquid mixtures using Abbe's refractometer

4. Optical activity studies using Polarimeters

5. Determination of temperature characteristics of a Flame

(a) Candle flame using digital photography and image analysis

(b) Sodium flame in comparison with incandescent lamp using a spectrometer

6. LDR and photodiode characteristics

7. Simple experiments using GM counter

8. Determination of dielectric constant of materials

9. Experimental determination of Avogadro's number using an electrochemical cell

10 Study of arc spectra and hydrogen spectra using an imager (CCD) and photoelectric/electronic recorder.

Unit II: Data Analysis (*Five experiments to be done*)

1. Analysis of the given band spectrum

2. Analysis of given rotation-vibration spectrum

3. Interpretation vibration spectra of simple molecules using Raman and IR spectra

4. Dissociation energy of diatomic molecules

5. Analysis of powder XRD data

6. Study of stellar spectral classification from low dispersion stellar spectra

7. Study of HR diagram of stars

8. Radioactive material counting statistics

9. Interpretation of UV- visible spectra of materials

10. Weather and astronomy related image processing

Course Outcome

(j) To measure and analyze various physical quantities.
(iii) To calculate error in various advanced physics experiments.
(iii) To develop experimental skills
(iv) To analyze and point out results of experimental data.

PH 262 E Advanced Electronics Practicals

Objectives: Design, construct and study various electronics circuits and programing using microprocessor.

Unit I- ELECTRONICS (*a total of seven experiments to be done***)**

Section A (*at least 5 experiments to be done***)**

1. Study of active filters using OP amps (a) low pass (b) high pass (c) band pass for both first order and second order-gain/ roll off determination

2. Wave form generation using OP amp circuits:

   (a) astable and monostable multivibrators (b) square, triangular and saw-tooth wave generation

3. IC 555 timer experiments (a) monsostable and astable multivibrators (b) VCO

4. D/A convertor circuits using OP Amp 741

5. Differential amplifier circuits using transistors

6. Design of series pass voltage regulators using
   (a) transistors with load and line regulation (b) OP Amp

Section B (at least 2 experiments to be done)

1 Study of IF tuned amplifier and Amplitude modulation (generation and detection) using transistor, diode etc.

2. Frequency modulator and detector circuits.

3. Pulse modulation circuits using 555 timer (a) PAM (b) PWM

4. Digital modulation circuits (a) BFSK generation using 555 timer (b) BFSK detector using 555 timer and PLL (c) BPSK generation

5. Shift register and ring counter circuits using flip flops

6. Miscellaneous transistor applications (a) automatic night light with LDR

   (b) invertor circuit (transistors as a switch) (c) time delay circuit using SCR

7. BCD to decimal decoder and seven segment display using IC 8

8. Design of Electronic counters (up and down counters)

Unit II: Microprocessor Based Experiments

(*Five experiments to be done*)

1. 8085 /8086 program to find out largest from a group of 8bit/16 bit numbers
2. Square wave generation using 8255A interface using 8085/8086
3. 8086 program for block additions
4. Interfacing LED display board with 8085/8086
5. 8086 program to convert binary to ASCII and ASCII to BCD
6. 8086 program to arrange a given data in ascending and descending order
7. 8086-simple traffic light controller
8. 8086 program for binary to BCD conversion and vice versa
9. Program of Fibonacci series using 8086

Course Outcome

(i) To design and construct various electronic circuits and its validation.
(ii) To calculate error in various electronics experiments.
(iii) To develop and test assembly language programs using microprocessors

Reference Books:

1. B.L. Worsnop and H.T. Flint - Advanced Practical Physics for students - Methusen& Co (1950)
2. E.V. Smith - Manual of experiments in applied Physics - Butterworth (1970)
3. R.A. Dunlap - Experimental Physics - Modem methods - Oxford University Press (1988)
4. D. Malacara (ed) - Methods of experimental Physics - series of volumes - Academic Press Inc (1988)
5. S.P. Singh —Advanced Practical Physics — Vol I & II — PragatiPrakasan, Meerut (2003) — 13th Edition
6. A.C. Melissinos and J.Napolitano, Experiments in Modern Physics, Academic Press, 2003
7. Navas, K. A. (2009). Electronics Lab Manual Vol.2, Rajath Publishers, 4th ed
8. Navas, K. A. (2013). Electronics Lab Manual Vol.1, Rajath Publishers, 5th ed.
9. Zbar, Paul B, et al. (1994), Basic Electronics: a text – lab manual, Tata McGraw-Hill Publishing Co.7th ed.
10. Sunil Mathur, *Microprocessor 8086-Architecture,Programming and Interfacing*, PHI learning Pvt Ltd (2011)
11. B. Ram, *Fundamentals of microprocessors and microcontrollers*, DhanpatRai Publications, New Delhi (2016).

Scheme and syllabus of Biochemistry for career related First degree programme in Biochemistry (core) and Industrial Microbiology (vocational)-Choice Based Credit and Semester System

Paper	Lecture hours	Practical hours	credits	Total credits
Semester I				
English-I	5	-	3	
Additional language-I	5	-	3	
IM 1121:Foundation course-I(Core) (Fundamentals of Biochemistry)	**3**	**2**	**3**	
IM 1171-Vocational Course-I (Fundamentals of Microbiology)	**3**	**2**	**4**	16
CH 1131.7Complementary course-I (Basic theoretical and analytical chemistry)	3	2	3	
Semester II				
English-II	5	-	3	
Additional language-I	5	-	3	
IM 1241:Core course I (Biomolecules)	**3**		**3**	
IM 1242: Core course II- Practicals (Qualitative analysis of aminoacids)		**2**	**2**	19
IM 1221-Foundation Course-II (Microbial Taxonomy and Physiology)(Vocational)	**3**	**-**	**2**	
IM1271-Vocational Course-II (practicals)	**-**	**2**	**3**	
CH1231.7Complementary course-II (Physical chemistry)	3	2	3	
Semester III				
English-III	5	-	3	
IM1341:Core course-II (Methods in Biochemistry)	**3**	**3**	**4**	
IM1371:Vocational course-III (Cell Biology)	**4**	**-**	**3**	
IM1372-Vocational Course-IV (Microbial genetics and biotechnology)	**3**	**2**	**3**	16
CH1331.7Complementary course-III (Bio-organic chemistry)	3	2	3	
Semester IV				
English-IV	5	-	3	
IM1441:Core course-III (Physiological aspects of Biochemistry)	**3**	**-**	**4**	
IM1442:Core course-IV (Qualitative analysis of carbohydrates)	**-**	**3**	**3**	
IM1471-Vocational Course-V (Environmental Microbiology)	**3**	**-**	**3**	
IM 1472 –Vocational course-VI (Food Microbiology)	**3**	**-**	**2**	25
IM 1473 –Vocational course-VII (practicals)	**-**	**3**	**3**	
CH1431.7Complementary course-IV (Bio-inorganic and Electro chemistry)	3	-	3	
CH1432.7Complementary course-V (chemistry Lab)	-	2	4	

Semester V				
IM1541:Core course-VI **(Metabolism-I)**	**2**	**-**	**3**	18
IM1542:Core course-VII **(Metabolism-II)**	**2**	**-**	**3**	
IM1543:Core course-VIII **(Quantitative analysis of biomolecules)**	**-**	**6**	**3**	
IM1571-Vocational Course-VIII **(Fermentation Technology)**	**4**	**-**	**3**	
IM 1572 Vocational course-IX **(Microbiology practicals)**	**-**	**6**	**4**	
IM 1551/1552 Open course(Core) **Clinical approach to life /Lifestyle diseases**	**3**	**-**	**2**	
Project(Core/Vocational)		**2 hrs** **1hr-Core(Biochemistry)** **1hr-Vocational (microbiology)**	**-**	
Semester VI				
IM1641:Core course-IX **(Clinical Biochemistry)**	**3**	**-**	**3**	26
IM1642:Core course-X **(Molecular Biology)**	**3**	**-**	**4**	
IM1643:Core course-XI **(urine analysis& Hematology)**	**-**	**4**	**3**	
IM1644-Core Course-XII **(Serum estimation)**	**-**	**4**	**3**	
IM 1671 Vocational course-X **(medical Microbiology)**	**3**	**-**	**3**	
IM 1672 Vocational course-XI **(Microbiology practicals)**	**-**	**6**	**4**	
IM1661 Elective course(Vocational) **Immunology**	**2**	**-**	**2**	
IM1645 Project			**4**	

Summary of courses and credits of various study components included in the Programme

Study components	**Number of courses**	**Total credits**		**Total**
Language courses 1.English	4	12	18	120
2.Additional Language	2	6		
Foundation courses	2	5		
Core courses	12	38		
Vocational courses	11	35		
Complementary courses	5	16		
Open courses	1	2		
Elective courses	1	2		
Project	1	4		

Accumulated Total Minimum Credits required for Programmes of study = 120 Credits.
Minimum Credits for Social Services/Extension Activity = 1 Credit
Minimum Duration = 6 Semesters

Scheme of Examination, Evaluation and Grading:

 Each theory examinations are of 3 hours (for core, elective and open).
 Practical examination is of six hours duration.
 Evaluation and grading are in accordance with the general guidelines given by the university.
 Evaluation of each course shall be done in percentage score and shall involve Continuous Evaluation (CE) with a weightage of 25 percent and End Semester Evaluation with a weightage of 75 %.

Continuous Evaluation (CE) -25%

1. Attendance
   The allotment of grade for attendance shall be as follows:
   Attendance less than 75 % - E grade
   75 & less than 80% - D grade
   80% & less than 85% - C grade
   85% & less than 90% - B grade
   90% & above - A grade
2. Assignment –
   Assignments or Seminars: (WEIGHT 1)
   Each student shall be required to do one assignment or one seminar for each Course. Valued assignments shall be returned to the students. The seminars shall be organized by the teacher/teachers in charge of CE and the same shall be assessed by a group of teachers including the teacher/teachers in charge of that Course. Assignments/Seminar shall be graded on the basis of their quality. The teacher shall define the expected quality of an assignment in terms of structure, content, presentation etc. and inform the same to the students. Due weight may be given for punctuality in submission.
3. Tests: (WEIGHT 2)
   For each Course there shall be at least two class tests during a Semester. Grades for the test component in CE shall be awarded on the basis of calculating average of the grades secured for the two class tests.

Scheme for practical examination

For CE

Attendance:

- Upto 75% - E grade
- 75% - 80% - D grade
- 81% - 85% - C grade
- 86% upto 90% - B grade
- Above 90% - A grade

 Laboratory record:
 Test - Better of the two can be taken for grading.
 Viva voce.

Scheme for the Evaluation of Practical Examination

Weightage may be assigned for various components as follows

A. For Qualitative Analysis

Step 1. Result & Conclusion
Step 2. Confirmatory test 1
Step 3. Confirmatory test 2
Step 4. Neatly written scheme of experiments used for arriving at the final conclusion

Grading scheme
For step 1 only - Grade D
For step 1 & 2 - Grade C
For step 2 & 3 - Grade C
For step 1, 2 & 3 - Grade B
For step 2, 3 & 4 - Grade B
For all steps - Grade A
5
B. For Quantitative Experiments
Step 1. Result of the reported value (minimum error)
Step 2. Calculation, presentation of the result (Graph)
Step 3. Procedure
Step 4. Skill
Grading scheme
For step 1 only - Grade D
For step 1 & 2 - Grade C
For step 2 & 3 - Grade C
For step 1, 2 & 3 - Grade B
For step 2, 3 & 4 - Grade B
For all steps - Grade A
PROJECT
Components required: - (a) Institutional visit (compulsory) + report
(b) Project work (lab work)
(c) Report of the project work done
(d) Viva voce of the work

Scheme for the Evaluation of Project

Weightage may be assigned for various components as follows
1. Rationale of the study
General background of the study
Relevance of the study
2. Objective & scope of the study
3. Methodology-Appropriateness & Accuracy
4. Results & Discussion
Presentation (figures, graphs, legends etc)
Analysis
Relevance/ importance
5. References/literature up to latest reports & documentation
6. Conclusions
7. General presentation
- Free of typographic errors
- Free of redundant material

First Semester

Code:*IM 1121*
Foundation course I –Core related
Fundamentals of Biochemistry

Credits:3 **No. of contact hours:54hrs (3 hrs/wk)**

Objective: To provide comprehensive information on fundamentals of Biochemistry and to provide an in-depth understanding on the origin and history of biochemistry. It also provides a perspective of research methodology and familiarizes the student with the varied branches of biochemistry,bioinformatics and biostatistics.

Module I (6 hours)

History of biochemistry, Contributions of several scientists to biochemistry-Edward Buchner, Francis Crick, James Watson, Emil Fischer, Otto Meyerhoff, Franz Knoop, Hans Kreb, Francis Jacob & Jacques Monod – their discoveries and the classical experiments associated with them.

Core Text:

• A history of the Life Sciences: Magner L N 2nd edition, Marcel Dekker , Inc

Module II (10 hours)

Types of knowledge:Practical, Theoretical and Scientific Knowledge. What is Science; laws of science,basis of scientific laws and factual truths. Hypotheses: Theories and laws in science-observations, evidences and proof. Formulation of hypothesis; hypothetico-deductive model, inductive model. Access to methodologically based biochemical literature-monographs and series, reference works and handbooks, literature searches, internet as an information resource, documentation of practical work.

Core Text:

• Biochemical methods.Pingoud A, Urbanke C, Hoggett J and Jeltsch A,Chapter 1.

Module III (8 hours)

Fundamentals of biophysical chemistry: Normality, molarity, molality, percentage solutions, mole fractions (simple numerical problems) Dissociation of water, ionic product of water, concept of pH, pOH (Simple problems). Determination of pH using indicators and pH meter and derivation of mathematical expression of pH. Dissociation of weak acids and bases. Meaning of ka and pKa values. Buffers-buffer action, buffers in biological systems, Henderson-Hasselbalch equation with derivation (simple problems).

Module IV (8 hours)
Informatics

Overview of information technology: Features of modern personal computer and peripherals - computer networks and Internet -Overview of operating system and major applications of software. Academic search techniques –, plagiarism - Introduction to use of IT in teaching and learning. Power point features and slide preparation.

Core Text:

• Principles of Biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6

Module V (10 hours)

Bioinformatics

Familiarisation with the following terms for studying bioinformatics-Aminoacids, proteins, nucleic acids, gene. Introduction, importance and scope of bioinformatics, internet concepts (PubMed). Introduction to data mining and data analysis methods. Applications of sequence searching tools- BLAST, Clustal X, RASMOL-Elementary study of databanks- Genbank, EMBL, PDB,

Core Text:

• Bioinformatics: A Beginner's Guide. By Jean-Michel Claverie and Cedric Notredame; Wiley Publishing, Inc.2003.

• Bioinformatics: A Practical approach. K.Mani and N.Vijayaraj, Aparnaa Publication, 2004

Module VI (12 hours)

Statistics

Significance of statistical methods in biological investigations, Introduction to statistical software SPSS- Probability theory, random variables. Basic idea about regression and correlation analysis. student's .t-test, Chi-square(X^2). Correlation coefficient Data presentation - tables,histograms and pi diagrams.

(***Study of the statistical terms and methods expected only in the biological perspective)***

Core Text:

• Alexis and Mathews Leon, Fundamentals and Information and Technology. Leon Vikas ISBN 08125907890.

• An Introduction to Biostatistics: A Manual for Students in Health Sciences by P. Sundar Rao, J. Richard publishers: Prentice-Hall Pvt. Ltd. ISBN 81-203-1008-X.

Core Practicals

No. of contact hours:36 hrs.(2 hrs/wk)

Familiarisation with biochemistry laboratory

Reactions of Aminoacids- Tyrosine, Tryptophan, Methionine, Proline, Arginine, Cysteine, Cystine, Histidine.

Second Semester

Code:*IM 1241*
Core Course-I
Biomolecules

Credits:3 **Total teaching hours: 54**
3 hrs/wk

Scope of the Course
Biochemistry is the study of molecules and chemical reactions of life. It is the discipline that uses the principles and language of Chemistry to explain Biology at the molecular level. Chemical structures are the vocabulary of Biochemistry. Here we deal with an overview study of biomolecules to make the students geared up to absorb the finer principles of biochemistry.

Module I Carbohydrates (10 hours)
Classification of carbohydrates, ketoses and aldoses C3 to C6 series exemplified by one in each group (structure only), reactions and structure of glucose, fructose, sucrose,maltose and lactose. Mutarotation-Inversion of cane sugar. glycosides,polysaccharides- starch, cellulose, and glycogen – important structural features. General reactions of carbohydrates-oxidation, reduction, osazone formation. Mucopolysacharides chondroitin sulphates, Heparin, Hyaluronic acid.

Ref: Fundamentals of Biochemistry by J.L.Jain, Sanju Jain & Nitin Jain (2008) Publishers Chand and Co Ltd ISBN81- 219-2453-7 P 73,91,100,114

Module II Lipids (12 hours)
Classification of lipids, classification of fatty acids, Emulsification- Saponification- Glycerides. Phospholipids- lecithin, cephalins, plasmalogens, phosphatidyl inositides (indicate structure and function),cerebrosides, gangliosides, saponification number and acid number, iodine value, sterols-cholesterol- structure and two color reactions. Bile acids.

Ref: Fundamentals of Biochemistry by J.L.Jain, Sanju Jain & Nitin Jain (2008) Publishers Chand and Co Ltd ISBN81- 219-2453-7 P 230,244,265

Module III Amino acids and Peptides (12 hours)

Classification of amino acids, abbreviated names of amino acids(one letter, three letter) , optical activity, UV absorption, zwitter ion and titration of amino acid ,general reactions of amino acids – ninhydrin reaction, formol titration, van slyke method, transamination. Peptide nomenclature, Properties of the peptide bond. Steps in the synthesis of simple peptide(-NH2 and COOH blocking –COOH activation and condensation, release of blocked group). Synthesis of peptide, hydrolysis of proteins and separation of amino acids.

Ref: Fundamentals of Biochemistry by J.L.Jain, Sanju Jain & Nitin Jain (2008) Publishers Chand and Co Ltd ISBN81- 219-2453-7 P 132, 204, 214.

Module IV Proteins Structure, Classification and Properties (10 hours)

Classification, physical properties, solubility, isoelectric Point, protein denaturation, isoelectric precipitation, salt effect, heavy metal precipitation.-Structure of proteins-primary, secondary, tertiary and quaternary- forces stabilizing each level of structure.
Ref: Fundamentals of Biochemistry by J.L.Jain, Sanju Jain & Nitin Jain (2008) Publishers Chand and Co Ltd ISBN81- 219-2453-7 P 132,204,214

Module Protein Sequencing (4 hours)

Determination of primary structure, N-terminal and C-terminal residues (one method each). Sequence of amino acid in polypeptide, digestion by enzyme (chymotrypsin & trypsin) oligopeptide separation and overlapping of amino acid.

Ref: Fundamentals of Biochemistry by J.L.Jain, Sanju Jain & Nitin Jain (2008) Publishers Chand and Co Ltd ISBN81- 219-2453-7 P 132,204,214.

Module VI Nucleic acids (6 hours)

Purines, pyrimidines, ribose, deoxyribose, ,nucleoside structure, nucleotide structure, different types of RNA-mRNA, tRNA and rRNA- basic structural features, Action of DNAase,RNAase, secondary and tertiary structure of DNA-Watson and crick double helix model of DNA.

Ref: - Fundamentals of Biochemistry by J. L. Jain, Sunjay Jain and Nitin Jain (2008) Publishers: S. Chand & Co Ltd ISBN: 81-219-2453-7 p 280

Suggested reading:-

• Lehninger Principles of Biochemistry, Fourth Edition by David L. Nelson Michael M. Cox Publisher: W. H. Freeman; Fourth Edition edition (April 23, 2004) ISBN-10: 0716743396 ISBN-13: 978-0716743392

- Biochemistry –Sixth edition by Mary K. Campbell, Shawn O. Farrell. Thomson Brooks/Cole

• Biochemistry (2004) by Donald Voet, Judith G. Voet Publisher: John Wiley & Sons Inc ISBN: 047119350X ISBN-13: 9780471193500, 978-0471193500

• Principles Of Biochemistry (1995) by Geoffrey L Zubay, William W Parson, Dennis E Vance Publisher: Mcgraw-hill Book Company – Koga ISBN:0697142752 ISBN-13: 9780697142757, 978-0697142757

• Principles Of Biochemistry, 4/e (2006) by Robert Horton H , Laurence A Moran, Gray

Scrimgeour K Publisher: Pearsarson ISBN: 0131977369, ISBN-13:9780131977365, 978-0131977365
• Biochemistry 6th Edition (2007) by Jeremy M.berg John L.tymoczko Lubert Stryer Publisher: B.i.publicationsPvt.Ltd ISBN:071676766X ISBN-13: 9780716767664, 978-716767664
• Biochemistry (2008) by Rastogi Publisher: Mcgraw Hill ISBN:0070527954 ISBN-13: 9780070527959, 978-0070527959
• Fundamentals of Biochemistry by J. L. Jain, Sunjay Jain and Nitin Jain (2008) Publishers: S. Chand & Co Ltd ISBN: 81-219-2453-7

Code:*IM 1242*
Core course II
Qualitative Analysis of Aminoacids
(Practicals)

Credits:2

Qualitative Analysis of any one of the given unknown aminoacid

Tyrosine, Tryptophan, Methionine, Proline, Arginine, Cysteine, Cystine, Histidine.

The student should have done and recorded atleast seven aminoacids from the above list. The practical exam of 3 hrs duration consists of identification of any one of the given unknown amino acid from the above list.

References

• Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.
• Analytical Techniques in Biochemistry and Molecular Biology- By Rajan Katoch.Springer Publishers
• Standard Methods of Biochemical Analysis, S. K. Thimmaiah (ed), Kalyani Publishers, Ludhiana ISBN 81-7663-067-5.
• Hawks Physiological Chemistry, Bernard L.Oser (ed).Tata McGRAW Hill Publishing Company LTD, New Delhi.
• Experimental Biochemistry: A Student Companion, Beedu Sasidhar Rao & Vijay Despande(ed). I.K International Pvt. LTD, NewDelhi. ISBN 81-88237-41-8.

Third Semester

Code:*IM 1341*
Core Course-II
METHODS IN BIOCHEMISTRY

Credits: 4 **No. of contact hours : 54 hrs.**
3hrs/wk

Scope of the course

Advances in biochemistry are based on the careful design execution and data analysis of experiments designed to address specific questions or hypotheses. Biochemical experiments usually have much experimental detail in common. The aim of this course is to address many of
these common experimental techniques. A thorough learning of this course will enable one to independently understand, design and carry out scientific experiments.

MODULE I (16 hours)
Centrifugation

.Centrifugation-principle of sedimentation technique. Principle, procedure (only elementary details) and application of differential centrifugation, density gradient centrifugation, ultra centrifugation.Cell disruption techniques. Subcellular fractionation

Ref: - Introduction to Biophysics by Pranab Kumar Banerjee (2008) Publishers: S. Chand & Company ltd ISBN: 81-219-3016-2 p 177

MODULE II (10 hours)
Electrophoretic techniques

PAGE, SDS-PAGE, agarose gel electrophoresis-separation of proteins and nucleic acids, staining and molecular weight determination

Ref: - Introduction to Biophysics by Pranab Kumar Banerjee (2008) Publishers: S. Chand & Company ltd ISBN: 81-219-3016-2 p 197

MODULE III (12 hours)
Chromatographic techniques

Principle, procedure (only elementary details) and applications of Paper chromatography, TLC, ion exchange chromatography, gel filtration, affinity chromatography.

Ref: - Introduction to Biophysics by Pranab Kumar Banerjee (2008) Publishers: S. Chand & Company ltd ISBN: 81-219-3016-2 p 183

MODULE IV (6 hours)
Colorimetry and spectrophotometry

Principles and applications of colorimetry, spectrophotometry -Beer Lamberts law-Limitations- calculation of molar extinction co-efficient.
Ref: - Introduction to Biophysics by Pranab Kumar Banerjee (2008) Publishers: S. Chand & Company ltd ISBN: 81-219-3016-2 p 166

MODULE V (10 hours)
Principles of radioactivity and blotting techniques

Principles of radioactivity- types and properties of α, β and γ-rays. Technique of autoradiography.Basic principle and applications of blotting techniques-western, northern and southern blotting.
Ref: - Immunology by Roitt Publisher: Mosby ISBN: 0702025496 ISBN-13: 9780702025495.

References

1. Principles and techniques of biochemistry and molecular biology- Keith Wilson and John Walker. 6th edition, Cambridge university Press.
2.Analytical Techniques in Biochemistry and Molecular Biology- By Rajan Katoch.Springer Publishers
3. Instrumental Methods of analysis- Chatwal, Anand.
4.Manuals of biochemistry- Satya narayana.
5. Principles and techniques of practical biochemistry- Bryan L. Williams and Keith Wilson.
6. A biochemical guide to principles and techniques of practical biochemistry- Keith Wilson and Kenneth H. Gouldin.
7. Basic Techniques In Biochemistry And Molecular Biology By R. K. Sharma, S. P. S. Sangha

Core Practicals

No. of contact hours:54 hrs
(3 hrs/wk)

Study of the general reactions of Carbohydrates
Glucose, Fructose, Galactose, Xylose, Sucrose, Lactose, maltose, Starch.

Molisch's test, Benedict's test, Fehling's test, Barfoed's test, Bial's test, Phloroglucinol test, Hydrolysis test, Iodine test, Seliwanoff's test, Foulger's test, Osazone test.

Reference:

- Basic Techniques In Biochemistry And Molecular Biology By R. K. Sharma, S. P. S. Sangha-I.K.International Publishers PVt.Ltd.
• Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.
• Principles and techniques of biochemistry and molecular biology- Keith Wilson and John Walker. 6th edition, Cambridge university Press.

Fourth Semester

Code:*IM 1441*
CORE COURSE III
Physiological aspects of Biochemistry
Credits:4 **No. of contact hours:54 hrs**
3hrs/wk

Scope and Objective
Science of Physiology is the study of functions in living organisms. More recently, this field has proceeded apace, and biochemists have been really successful in learning the impeccable working of the body systems at a finer level. A thorough learning of Physiological Biochemistry will help the students understand themselves more, and to build up their own living standards.

Module I: Digestion, Absorption and nutrition (9 hours)

Digestion and absorption of carbohydrates, proteins and lipids. role of bile in lipid digestion and absorption. Defects in digestion and absorption.
Fundamentals of nutritional biochemistry
Nutrition: Calorific value. BMR Fat and water soluble vitamins. Functions and deficiency Diseases(Structure of vitamins not needed).Co-enzyme form of the vitamins and their functions.

Ref: -Textbook Of Medical Physiology, 11/e With Student Consult Access (2005) by Arthur C Guyton, John E Hall Publisher: Else ISBN: 8181479203 ISBN-13: 9788181479204,

Module II: Biochemistry of Blood. (9 hours)

Constituents of Blood, types of blood cells, components of plasma, types of plasma proteins and functions. Mechanism of blood clotting (Extrinsic and Intrinsic pathway).Structure of hemoglobin.-Types of hemoglobin, sickle cell anemia.
Ref: -Principles Of Biochemistry, 6e (1959) by Abraham White, Philip Handler Publisher: Tata McGraw-hill Publishing Company Limited ISBN:0070590494 ISBN-13: 9780070590496, 978-0070590496

Module III: Biochemistry of Respiration and Renal function (9 hours)

Transport of oxygen and carbon dioxide in blood, oxygen dissociation curve and Bohr Effect, Carbonic anhydrase, Chloride shift.Structure of nephron, Mechanism of formation of Urine. Basic principles of acidosis and alkalosis-metabolic and respiratory.

Ref: - Textbook of Biochemistry – U. Satya Narayana.

Module IV: Biochemistry of specialized tissue (9 hours)

Muscle proteins, Organization of Contractile proteins and mechanism of muscle contraction.-Sliding filament theory. Sources of energy for muscle contraction.

Nerve: Structure of Neuron, Mechanism of nerve impulse transmission.

Ref: -Textbook Of Medical Physiology, 11/e With Student Consult Access (2005) by Arthur C Guyton, John E Hall Publisher: Else ISBN: 8181479203 ISBN-13: 9788181479204,

Module V: Endocrinology (9 hours)

Important functions of the following hormones.: -Thyroxin. GH, TSH, LH and FSH hormones. ADH and oxytocin. Cortisol, cortisone, corticosterone (mineralocorticoids), aldosterone (glucocorticoid). epinephrine and nor-epinephrine. Sex hormones- Testosterone, estrone and estrasdiol. (Structures of hormones in the above-mentioned list are not expected.)Salient features and the endocrine defect associated with the following disorders- Addisons disease, Cushings syndrome,Diabetes Mellitus, Goitre, Hypothyroidism and Hyperthyroidism, Hashimotos thyroiditis, Diabetes Insipidius, Acromegaly.

Ref: -Principles Of Biochemistry, 6e (1959) by Abraham White, Philip Handler Publisher: Tata McGraw-hill Publishing Company Limited ISBN:0070590494 ISBN-13: 9780070590496, 978-0070590496

Module VI: Enzymes (9 hours)

Introduction to enzymes, apoenzyme, holoenzyme, prosthetic group, classification of enzymes, lock and key model, induced fit model, active site, enzyme specificity and types.Enzyme kinetics, factors affecting the velocity of enzyme action. Enzyme concentration, temperature, pH, substrate concentration. Derivation of MM equation and Km Value determination, its significance. LB plot, Enzyme inhibition, reversible and irreversible,competitive, non-competitive and uncompetitive inhibition, allosteric enzymes. Isoenzymes,Zymogen form of enzyme and its activation.

Ref:- Enzymes-M.Dixon and E C Webb. Longman publication.

References:

1. Medical Biochemistry – Vasudevan and Sreekumari
2. Text book of Medical Physiology – A.C Guyton and J. E Hall, Saunder's Elsevier publication.
3. Human Physiology – Chatterjee, Medical allied agency
4. Mammalian Biochemistry – White A, Handler P and Smith P.L (Mc Graw Hill)
5. Review of Medical physiology – G. William, Mc Graw Hill Karan Books.
6. Principles of Anatomy and Physiology – Gerald J Tortora, Bryan Derrickson. John villey and sons, INC

Code:*IM 1442*
Core course IV
Qualitative Analysis of carbohydrates
(Practicals)

Credits:3 **No. of contact hours: 54 hrs.**
(3 hrs/wk)

Qualitative analysis of any one of the given carbohydrate
Glucose, Fructose, sucrose, galactose, xylose, maltose, lactose, starch

The student should have done all the above experiments.

The practical exam will be of three hours duration and involves identification of the given carbohydrate from the above list.

References

• Experimental Biochemistry: A Student Companion, Beedu Sasidhar Rao & Vijay Deshpande (ed), I.K International Pvt. LTD, New Delhi ISBN 81-88237-41-8.
• Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.
• Standard Methods of Biochemical Analysis, S. K. Thimmaiah (Ed), Kalyani Publishers, Ludhiana ISBN 81-7663-067-5.
• Hawks Physiological Chemistry, Bernard L.Oser (ed).TATA McGRAW Hill Publishing Company LTD, New Delhi.

Fifth Semester

Code:*IM 1541*
Core course VI
Metabolism-I
Credits:3 **No. of contact hours:36 hrs.**
2 hrs/wk.

Scope of the course
Life is a biochemical process involving thousands of reactions occurring in an organized manner. These reactions are collectively called metabolism. The major objective of learning this course is the complete understanding of all the metabolic reactions at a molecular level. This course is related to almost all the life sciences and without a background knowledge of this course, a thorough understanding of health and well-being is not possible.

Module I (10 hrs)
Glucose metabolism

Reactions and energetics of glycolysis (aerobic and anaerobic), galactose & fructose metabolism, oxidative decarboxylation- TCA cycle, anaplerotic reaction, gluconeogenesis, HMP shunt. galactosemia, fructosuria, essential pentosuria

Core Text:

• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.

• Principles of Biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6.

Module II (4 hrs)
Glycogen Metabolism

Glycogen Metabolism**:** Glycogenesis, glycogenolysis,Regulation of glycogen metabolism. Cori cycle, Brief study of the Glycogen storage diseases(Von Gierke, Pompes, Cori's or Forbe's, Anderson, Her's, McArdle, Tarui's).

Core Text:

• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.

Module III (8 hrs)
Fatty acid metabolism

Transport of fatty acid in to mitochondria,Carnitine shuttle: α, β, ω oxidation of saturated,monounsaturated and polyunsaturated fatty acid, Refsums disease, sources of acetyl Co A, Biosynthesis of saturated fatty acid..

Core Text:

• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.

• Principles of Biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6.

Module IV (8 hrs)
Lipid Metabolism

Biosynthesis of triglycerides and important phospholipids(cephalin, lecithin). Ketone bodies-formation, utilization and significance. Ketoacidosis and ketonuria.Action of lipases and phospholipases. Gaucher's disease, Tay-Sach's disease

Core Text:

• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.

• Principles of Biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6.

Module V (6hrs)
Steroid metabolism

Biosynthesis of cholesterol. Formation of sex hormones and bile acids from cholesterol. Regulation of cholesterol biosynthesis.Brief idea about prostaglandins.

Core Text:

• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.

• Principles of Biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6.

Code:*IM 1542*
Core course VII
Metabolism II

No. of credits:3 **No. of contact hours:36 hrs.**
2 hrs/wk.

Module I (6 hrs)

Nitrogen assimilation: conversion of nitrate to ammonia by plants, biological nitrogen fixation(symbiotic, non – symbiotic) Nitrogen balance (positive, negative).

Core Text:

• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.

• Principles of biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6.

Module II (6 hrs)

General reactions of amino acid metabolism: transamination, transdeamination, oxidative deamination and decarboxylation, Urea cycle and regulation, glucogenic and ketogenic amino acids, biosynthesis and degradation of glycine, phenyl alanine. Alkaptonuria, phenylketonuria,

Core Text:

• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.

• Principles of biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6.

Module III (6 hrs)

Nucleic acid metabolism**:** Sources of atoms of purines and pyrimidines, Biosynthesis and degradation of purines and pyrimidines- *de novo* and salvage pathways with regulation,Biosynthesis of adenylic acid, ATP and Uridylic acid (Outline pathway). gout, Lesch Nyhan syndrome

Core Text:

• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-

2009-4, 4th Edition.
• Principles of biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6.

Module IV (6 hrs)

Electron Transport Chain: Structure of mitochondria, sequence of electron carriers: NADH dehydrogenase, Succinate dehydrogenase, cytochrome reductase and cytochrome oxidase (outline of electron transport chain), sites of ATP synthesis, inhibitors of electron transport chain.

Core Text:
• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.
• Principles of biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6.

Module V (6 hrs)

Oxidative phosphorylation: Sites of ATP production, hypothesis of mitochondrial oxidative Phosphorylation-Chemiosmotic theory, P/O ratio, inhibitors and uncouplers, transport of reducing potentials into mitochondria-Malate aspartate and glycerol-3-phosphate shuttle.
Core Text:
• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.
• Principles of biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6.

Module VI (6 hrs)
Photosynthesis

Structure of chloroplast, light reaction, cyclic and noncyclic photophoshorylation, chlorophyll (structure only), dark reaction, fixation of CO_2 and formation of carbohydrate (brief treatment only), C3 and C4 plants, photorespiration, CAM pathway.

Core Text:
• Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.
• Principles of Biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN 81-239-0295-6.

Code:*IM 1543*
Core course VIII
Quantitative Analysis of Biomolecules
(practicals)

credits:3 **No. of contact hours:108 hrs.**
6 hrs/wk.

I Quantitative Analysis

A. Estimation of Carbohydrates

1. Estimation of glucose by Nelson-Somogyi method
2. Estimation of glucose by anthrone method.
3. Estimation of pentose by Orcinol method.
4. Estimation of ketose by Roe-Papedopaulose method.

B. Estimation of Lipids

Estimation of Cholesterol Zak's method

C. Estimation of Aminoacids and Proteins

1. Estimation of aminoacid by Ninhydrin method.
2. Estimation of Protein by Biuret method.
3. Estimation of Protein by Folin-Lowry method.

D. **Estimation of Nucleic Acids**

1. Estimation of DNA by diphenylamine method.
2. Estimation of RNA by Orcinol method

II Food analysis

1. Estimation of cholesterol in egg-Zak's method
2. Estimation of reducing sugar in honey-Roe & Pappadopoulos method
3. Estimation of pentose in grapes-Bial's method.

The student should have done and recorded a minimum of eight experiments from the quantitative analysis section and two experiments from the food analysis section.

The core practical exam will be of three hours duration and involves colorimetric estimation of a biomolecule by the graphical method (from the above list of experiments)

References

• Experimental Biochemistry: A Student Companion, Beedu Sasidhar Rao & Vijay Deshpande (ed), I.K International Pvt. LTD, New Delhi ISBN 81-88237-41-8.
• Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.
• Standard Methods of Biochemical Analysis, S. K. Thimmaiah (ed), Kalyani Publishers, Ludhiana ISBN 81-7663-067-5.
• Hawks Physiological Chemistry, Bernard L.Oser (ed).TATA McGRAW Hill Publishing Company LTD, New Delhi.

OPEN COURSE

The open course is to be studied by students from other departments of the college and will be handled by core (biochemistry) faculty. The department can choose any one of the open course available in the scheme-Either Clinical approach to life or Life style diseases.

Code: *IM 1551*
Open Course(Core): Clinical Approach to Life

Credits: 2 **No. of Contact Hours: 54**
3hrs/wk

Objective: To provide layman knowledge to the students of common stream about the various biochemical tests done to determine disease conditions, and a general interpretation of lab results.

Note:This course is studied by students from other departments like music, Malayalam, Hindi etc. who may not even have studied biology at their higher secondary level. Hence only an introduction to the terms and their significance in everyday life is aimed at in the present course.

Course Outline
Module I(8 hrs)
Blood

Components of blood and their function,- difference between plasma and serum. Blood groups, Rh factor, hemolytic disease of the new born, Basic idea about blood transfusion

Module II (10 hrs)
Routine Blood Analysis

Clinical significance and normal values of glucose- (fasting blood sugar, random blood sugar, post prandial blood sugar,Hb1Ac),total Protein, albumin, Urea, bilirubin, Cholesterol- HDL and LDL.(determination methods of these parameters not needed).

Module III (9 hrs)
Hematology

Normal values and and clinical significance of the routine hematological tests – RBC count, WBC count, ESR, PCV, hemoglobin concentration, platelet count, bleeding time, clotting time.(Detailed procedures not needed).

Module IV (9 hrs)
Urine analysis

Routine examination of urine- Name of the normal constituents- Names and clinical significance of the abnormal constituents-Glucose, ketone bodies, blood, protein, bile pigments-. microbiological examination-casts, crystals, detection of infection.

Module V (18 hrs)
Function tests

Liver function tests-List the functions of liver. Serum bilirubin. Jaundice-Features Names of enzymes used for diagnosis of liver diseases-AST/ALT.
Renal function test-List the functions of kidney.Renal threshold. Clearance tests-urea and creatinine clearance,. Dilution and concentration test.
Thyroid function test.-Significane of T3,T4 and TSH values. Definition of hypo-and hyper thyroidism.

Core Text:
Medical Laboratory Technology Volume I, Kanai. L. Mukharjee,
Medical Laboratory Technology-Ramnik Sood.
Textbook of Biochemistry for Medical Students, 6th Edition- By D. M. Vasudevan, Sreekumari S, Kannan Vaidyanathan.

Suggested Readings:

• Medical Laboratory Technology (Volume, II& III) By Kanai. L. Mukharjee.
• A procedure for routine diagnostic tests, Tata Mc. Graw- Hill Publishing Company Ltd., New Delhi, 12 th reprint, 1988)
• Fundamentals of Biochemistry for Medical students Dr. Mrs. Ambika Shanmugam, Published by 12, III- Cross street, West C.I.T. Nagar, Madras; III Edition, 1977)
• Bauer J.D. Clinical Laboratory Methods, C.V. Mosby, St. Louis 1982.
• Mollison P.L. Blood Transfusion in Clinical Medicine, 6th Ed, Blackwell Scientific Publications, Oxford; 1979.
• Bowley C. C., K.L.G. Goldsmith & Wd'A Maycock, Blood Transfusion: A guide to the formation & operation of a transfusion service, World Health Organisation, 1971.
• Bishop M.L.-J.L. Dlaufer & E.P. Fody, Clinical Chemistry, Lippincott Company, Philadelphia, 1985.
• Lamberg S.L., Laboratory Manual of Haematology and Analysis, AV I publishing Co. Inc., Westport, Connecticut, 1978.

Code: *IM 1552*
Open Course: Lifestyle Diseases
(Core)
No. of Credits: 2 **No. of Contact Hours: 54**
3 hrs/wk.

Objective: To create awareness among students about the various diseases which originate and which could be prevented by controlling the life style. The course also covers the general aspects of diagnosis, methods of prevention and pharmaceutical intervention.

Course Outline

Module I (9hrs)

Concept of lifestyle diseases- importance of lifestyle factors in preventing disease developmentdiet,exercise, smoking, alcohol etc.

Module II (9 hrs)

Diabetes- Type 1 and type2, characteristics, causes, diagnosis, prevention and management

Module III (9 hrs)

Cancer: Characteristics, Causes, Diagnosis, Prevention, Management,familiarization with .treatment modalities

Module IV (9 hrs)

Body mass index, determination and significance Obesity- factors leading to development, prevention, management

Module V (6 hrs)

Atherosclerosis and cardiovascular diseases- Myocardial infarction, congestive heart failure, ischemic diseases-Causes, diagnosis and management.

Module VI (6 hrs)

Importance of diet and exercise in health- balanced diet, BMR, calorific value, How to reduce cholesterol and risk of heart attack through life style changes, use of *life style medicine* to treat disorders.

Reference :

Guide to prevention of lifestyle diseases- M.N. Kumar, R.Kumar, Deep & Deep Publications, ISBN: 817629518

Sixth semester

Code:*IM 1641*
Core course IX
CLINICAL BIOCHEMISTRY

Credits:3 **No. of contact hours:54 hrs.**
3 hrs/wk.

Scope
Clinical Biochemistry mainly deals with the biochemical aspects that are involved in several clinical conditions. The results of qualitative and quantitative analysis of body fluids assist the clinicians in the diagnosis, treatment, prevention of disease, drug monitoring, forensic investigation, tissue and organ transplantation.

Module I *(6 hrs)*

Sample collection and preservation methods of body fluids.
Collection and preservation procedures of blood, plasma, serum, and urine ,Preparation of swabs.

Module II *(12 hrs)*
Blood analysis

Principle of estimation, normal values and clinical significance of the following parameters of blood-Glucose- fasting , random, post prandial, Hb1Ac- Glucose tolerance test, Hb, Uric acid, Lipid profile,- triglycerides, total cholesterol, HDLcholesterol and LDL cholesterol, Urea, Acid phosphatase, Creatine phosphokinase. (Detailed determination procedures not needed).

Module III *(10 hrs)*
Haematology

Principle of determination, clinical significance of the following parameters-Total count, differential count, erythrocyte sedimentation rate, packed cell volume, prothrombin time, bleeding time and clotting time. Brief study of blood groups-anticoagulants, storage and transfusion of blood, hemolytic disease of the newborn.

Module IV (12 hrs)
Organ function test

Principles of the following tests of liver function and the interpretation of the results- total protein, total and conjugated bilirubin,Jaundice-features-hemolytic and obstructive- AST , ALT, ALP,
Thyroid function test- T_3, T_4, TSH-determination of hypo-and hyperthyroidism.primary and secondary.
Renal function test- Urea, creatinine, urea clearance test.

Module V (6 hrs)
Urine analysis

Urine – Names of normal constituents.Abnormal constituents-ketone bodies, protein, glucose, blood, bile pigments- procedures of qualitative analysis and their clinical significance.

Module VI ***(8 hrs)***
Life style disorders

Introduction to life style disorders-definition, lifestyle factors in the development of diseases-
Diabetes- Types, causes, diagnosis, prevention and management.
Cancer-a basic idea about the disease.

References

• Tietz Text book of Clinical chemistry and Molecular Diagnostics. Carl A. Burtis, Edward R. Ashwood, David E. Bruns (6TH Eds), Elsevier (Saunders) 2006 ISBN: 8131213749, ISBN-13: 9788131212742, 978-8131213742.
Notes on Clinical Biochemistry by John K. Candlish (1992) Publisher: World Scientific Publishing Company ISBN: 9810210663 ISBN-13: 9789810210663, 978-9810210663
• Clinical Biochemistry: Metabolic And Clinical Aspects by William J. Marshall, Stephen K. Bangert, Elizabeth S.m. Ed. S.m. Ed. Marshall (2008) Publisher: Elsevier Science Health Science Div ISBN: 0443101868 ISBN-13: 9780443101861, 978-0443101861
• Basic Medical Biochemistry: A Clinical Approach by Dawn B., PH.D. Marks, Allan D. Marks Colleen M. Smith (1996) Publisher: Lippincott Williams & Wilkins; illustrated edition ISBN-10: 068305595X ISBN-13: 978-0683055955
• Clinical Chemistry, 6/e Ie by William J Marshall, Stephen K Bangert (2008) Publisher: Else ISBN: 0723434603, ISBN-13: 9780723434603, 978-0723434603
• Tietz Fundamentals of Clinical Chemistry, 6/e by Carl A Burtis, Edward R Ashwood (2008) Publisher: Else ISBN: 8131213749, ISBN-13: 9788131213742, 978-8131213742
• Preventive and social medicine By K. Park
• Text book of medical Biochemistry by Sreekumari and Vasudevan

Code:*IM 1642*
Core course X
Molecular Biology
Credits:4 **No. of contact hours:54 hrs.**
3 hrs/wk.

Scope of the course
Molecular biology is a new research field that is a result of traditional industrial microbiology and recombinant DNA technology. It is a revolutionary scientific discipline based on the ability of researchers in gene transfer. This very interesting course will definitely equip the students to surf the world of genetic engineering and genetic manipulations.

Module I: Introduction to Molecular Biology (8 hrs)

Classical experiments proving DNA as the genetic material- transformation experiments,Hershey Chase experiment, Central dogma of molecular biology, Concept of gene- Split genes- introns and exons. C-value paradox.

Ref:- Cell and molecular biology- concepts and experiments by Gerald Karp,Wiley 1807-2007, ISBN 978-0-470-16961-2

MODULE II: Replication (10 hours)

Replication- Semi conservative replication, Messelson-Stahl experiment. DNA polymerase and other proteins required for replication. Replication fork-Continuous and discontinuous replication-Okazaki fragments. Mutation –Point and frame shift mutations. Mutagens-physical and chemical and their mode of action, Fundamental study about DNA repair-photoreactivation, excision repair and mismatch repair mechanisms.(detailed pathways not needed).

Ref: - Cell biology, Genetics, Molecular Biology, Evolution and Ecology by P.S. Verma and V. K. Agarwal (2008) Publisher: S. Chand & Company Ltd ISBN: 81-219-2442-1

MODULE III: **Transcription (9 hours)**

Prokaryotic Transcription – process-Initiation, elongation and termination, different forms of RNA-mRNA, tRNA, rRNA. Prokaryotic RNA polymerase-promoters and enhancers.Definition of splicing.

Ref: - Cell biology, Genetics, Molecular Biology, Evolution and Ecology by P.S. Verma and V. K. Agarwal (2008) Publisher: S. Chand & Company Ltd ISBN: 81-219-2442-1

MODULE IV: **Genetic code and translation (9 hours)**

Salient features of genetic code, codons, anticodons, recognition, Prokaryotic translation-aminoacid activation, initiation, elongation and termination- inhibitors of protein synthesis.

Definition of protein folding and chaperones.

Ref: - Cell biology, Genetics, Molecular Biology, Evolution and Ecology by P.S. Verma and V. K. Agarwal (2008) Publisher: S. Chand & Company Ltd ISBN: 81-219-2442-1

MODULE V: **Regulation and expression in prokaryotes (6 hours)**

Constitutive and inducible enzymes, operon concept Brief study about lactose operon and tryptophan operon- Positive and negative regulation of lactose operon.

Ref: - Cell biology, Genetics, Molecular Biology, Evolution and Ecology by P.S. Verma and V. K. Agarwal (2008) Publisher: S. Chand & Company Ltd ISBN: 81-219-2442-1

MODULE VI: **Recombinant DNA technology (12 hours)**

Outline study of recombinant DNA technology- vectors, cosmid, plasmid, phage,restriction enzyme, palindromes, reverse transcriptase, construction of genome library, cloning, identification of clones, fingerprinting, DNA sequencing- Maxam Gilbert sequencing, Sanger's method, an introduction to PCR and RFLP.

Ref: - Cell biology, Genetics, Molecular Biology, Evolution and Ecology by P.S. Verma and V. K. Agarwal (2008) Publisher: S. Chand & Company Ltd ISBN: 81-219-2442-1

REFERENCES:

Genes IX by Benjamin Lewin (2008) Publisher: J&b ISBN:0763752223 ISBN-13: 9780763752224, 978-0763752224
Molecular Biology Of The Gene 5/e (s) by James D Watson, Tania A Baker, Stephen P Bell (2008) Publisher: Dorling Kindersley (India) Pvt Ltd ISBN: 8177581813
ISBN-13: 9788177581812, 978-8177581812
Cell and Molecular Biology, 3e (2003) by Karp Publisher: Jw
ISBN: 0471268909 ISBN-13: 9780471268901, 978-0471268901
Molecular Cell Biology (2002) by H.S. Bhamrah Publisher: Anmol Publications ISBN: 8126111429 ISBN-13: 9788126111428, 978-8126111428
Cell and Molecular Biology by S. Sundara Rajan (2003) Publisher: Anmol Publications
ISBN: 8126113553 ISBN-13: 9788126113552, 978-8126113552

Code:*IM 1643*
Core course XI
(Practicals)

Credits: 3 **No. of contact hours:72hrs**
4hrs/wk

Urine analysis and Hematology

Qualitative tests of urine: Abnormal constituents

- Proteins (Coagulation test, sulfosalicylic acid test,)
- Sugars (Benedicts test)
- Hemoglobin (Benzidine test)
- Ketone bodies (Rothera test, Gerhardt's test)
- Bile pigments (Fouchet's test, Gmelin's test)
- Bile salts (Hay's test)

Hematology

ESR, PCV, TC/DC count, Blood Grouping, Hemoglobin

The student should have done a minimum of five abnormal constituents in urine analysis and four hematology experiments. The core practical exam will be of three hours duration and involves identification of an abnormal constituent in the given urine sample and a hematology experiment from the above list.

References

- Experimental Biochemistry: A Student Companion, Beedu Sasidhar Rao & Vijay Deshpande (ed), I.K International Pvt. LTD, New Delhi ISBN 81-88237-41-8.
- Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.
- Standard Methods of Biochemical Analysis, S. K. Thimmaiah (Ed), Kalyani Publishers, Ludhiana ISBN 81-7663-067-5.
- Hawks Physiological Chemistry, Bernard L.Oser (ed).TATA McGRAW Hill Publishing Company LTD, New Delhi.

Code:*IM 1644*
Core course XII
(Practicals)

Credits: 3 **No. of contact hours:72hrs**
4hrs/wk

Serum estimation

1. Estimation of blood glucose by Nelson – Somogyi Method
2. Estimation of serum Cholesterol by Zak's Method
3. Estimation of blood Urea by Diacetylmonoxime Method
4. Estimation of Total Protein in serum by Biuret Method
5. Estimation of total protein in serum by Folin-Lowry method
6. Estimation of Uric acid in serum using Phosphotungstic acid reagent
7. Estimation of inorganic phosphate in serum by Fiske-Subbarao Method
8. Estimation of serumBilirubin
9. Estimation of serum creatinine.

Clinical Enzymology:

10. Assay of serum alkaline phosphatase
11. Assay of Serum alanine amino transferases (ALT/SGPT)
12. Assay of serum aspartate amino transferases (AST/SGOT)

The student should have done and recorded a minimum of seven experiments from the above list. The core practical exam will be of three hours duration and involves estimation of a biomolecule in the given serum/blood sample.

References

• Experimental Biochemistry: A Student Companion, Beedu Sasidhar Rao & Vijay Deshpande (ed), I.K International Pvt. LTD, New Delhi ISBN 81-88237-41-8.
• Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.
• Standard Methods of Biochemical Analysis, S. K. Thimmaiah (ed), Kalyani Publishers, Ludhiana ISBN 81-7663-067-5.
• Practical Clinical Chemistry, Harold Varley, CBS Publishers and Distributors, New Delhi.

IM1645 Project
Credits:4

Contact hours: 36 hours (2 hrs/wk)
1hr/wk for core and 1hr/wk for vocational

The students should do one project either in Biochemistry or Microbiology. The total number of students in the program should be equally divided into two batches and one batch should do a project in core subject and the other batch should do the project in the vocational subject. Which batch would come under which faculty can be decided by drawing lots.

The project report should be based on a mini-project work done by the students. This should include original laboratory work, analysis of results and should be presented along with relevant and current literature review. The evaluation of dissertation should be done on the basis of evaluation of the project report and a viva-voce examination of the student. The students will do the project in the fifth semester and have to submit their reports in the sixth semester.

A report of the industrial visit carried out to any industries/institutions relevant to the subject should accompany the project report.

Scheme for evaluation of project

Total weightage:	30
Project:	20
Industrial Visit:	10(The visit carries a weightage of 6 and the visit report carries a weightage of 4)

Scheme and syllabus of Industrial Microbiology for

Career related First Degree programme in

“BIOCHEMISTRY AND INDUSTRIAL MICROBIOLOGY”

Under CBCSS

(Two Major, 2a Career Related Course)

EXAMINATION FOR VOCATIONAL MICROBIOLOGY

Semester	Course code	Paper	Duration	Maximum weightage
I	IM 1171	Vocational course- I Fundamental Microbiology	3 hours	30
II	IM1222	FOUNDATION COURSE II- Microbial Taxonomy and Physiology	3 hours	30
	IM 1271	Vocational course- II Microbiology Practicals	6 hoursX2 days	30
III	IM1371	Vocational course- III Cell Biology	3 hours	30
	IM1372	Vocational course- IV Microbial Genetics & Biotechnology	3 hours	30
IV	IM 1471	Vocational course- V Environmental Microbiology	3 hours	30
	IM 1472	Vocational course- VI Food Microbiology	3 hours	30
	IM 1473	Vocational course- VII Microbiology Practical	6 hours X 2 days	30
V	IM 1571	Vocational course- VIII Fermentation Technology	3 hours	30
	IM 1572	Vocational course- IX Microbiology Practical	6 hours X 2 days	30
VI	IM 1671	Vocational course- X Medical Microbiology	3 hours	30
	IM 1681	Elective course- Immunology- Elective	3 hours	30
	IM 1672	Vocational course- XI Microbiology Practical	6 hours X 2 days	30

SEMESTER I

CODE: IM1171

VOCATIONAL COURSE I

Fundamentals of Microbiology

Total Hrs-54 CREDITS -4

(3Hrs /week)

MODULE I **(9 Hrs)**

Introduction and history of Microbiology-contribution of Louis Pasteur, Robert Koch, Alexander Fleming, Anton Van Leeuwenhoek, Joseph Lister, & Needham. Concepts of origin of life- abiogenesis and biogenesis, Spontaneous generation theory. Scope of Microbiology.

MODULE II **(9 Hrs)**

Microscopy- Principles & uses of bright field, dark field, phase contrast, fluorescent, electron microscopy (TEM&SEM). Principles of staining of bacteria- simple staining, Negative staining, Gram's staining, Acid fast staining (Ziehl Neelsen staining), spore staining & staining of metachromatic granules.

MODULE III **(9 Hrs)**

Morphology and anatomy of bacterial cell- Cell size, shape, arrangement. Structure of Prokaryotic plasma membrane, cell wall, capsule, slime layer, S-layer, flagella, pili, nucleoid, inclusion bodies, endospore.

MODULE IV **(9 Hrs)**

Culture media- Nutritional requirements of bacteria, classification of media. Methods of isolation of pure cultures - Serial dilution technique, streak plate method, pour plate method, spread plate method. Anaerobic culture methods. Preservation of cultures- refrigeration, deep-freezing, freeze drying (lyophilization).

MODULE V **(9 Hrs)**

Sterilization (physical and chemical methods)-Sterilization by heat (Moist heat, dry heat and incineration), radiation (ionizing radiations and Ultraviolet rays), aldehydes and disinfectants. Factors influencing sterilization.

MODULE VI **(9 Hrs)**

Distinguishing characters of bacteria, fungi, algae and protozoa. General structure of Fungi, Algae and Protozoa, General characters of viruses, structure, classification, multiplication and cultivation. Structure and replication of bacteriophages.

REFERENCES

1. Microbiology - Pelczar, Chan and Kraig (ISBN 0-07-462320-6)
2. Microbiology -Prescott, Harley and Klein (ISBN 0-07-111217-0)
3. Microbiology-Bernard D Davis
4. Foundations in Microbiology-Talaro and Talaro
5. Essentials of Microbiology (Sixth edition) - Purohit and Singh (ISBN 81-85031-67-3)

SEMESTER I

VOCATIONAL PRACTICAL

Total Hrs-36 CREDIT-0

(2Hrs /week)

Part I (18 Hrs)

1. Laboratory precautions- General rules and regulations.

2. Common instruments in Microbiology laboratory.

3. Cleaning and sterilization of glass wares.

4. Preparation of media.

5. Isolation of pure culture - Isolation of bacteria by pour plate, streak plate and spread plate methods.

6. Cultural characteristics of Microorganisms - Colony morphology on culture plate.

Part II (18 Hrs)

7. Study of the various components of the microscope, its handling and maintenance.

8. Preparation of bacterial smear

9. Staining of bacteria:

(a) Simple staining of bacteria,

(b) Gram staining,

(c) Negative staining,

(d) Spore staining,

(e) Volutin granule staining

10. Motility of bacteria by hanging drop method.

11. Lactophenol cotton blue mounting of fungi and study of fungal microscopic characteristics.

REFERENCES

1. Dubey R C and Maheswari, D K (2002). Practical Microbiology. S. Chand & Co Ltd. (ISBN 81-219-2153-8)
2. Microbiology *A Laboratory Manual* - James G Cappucino Natalie Sherman(ISBN 81-297-0265-7)
3. Experiments in Microbiology Plant Pathology and Biotechnology- K. R. Aneja

SEMESTER II

CODE: IM 1222

FOUNDATION COURSE II

Microbial Taxonomy and Physiology

Total Hrs-54 CREDITS-3 **(3 Hrs /week)**

MODULE I **(12 Hrs)**

Classification of microorganisms- Objectives and practical value of taxonomy. Criteria for classification-morphological, Nutritional, ecological, molecular. Numerical taxonomy, matching coefficients, dendrogram, phylogenetic tree. Phylogenetic relationship. Major systems of classification. Three-kingdom and Five kingdom classification. Bergy's manual.

MODULE II **(10Hrs)**

Classification of fungi-with examples (brief account only). Classification of algae-green algae, brown algae and diatoms with examples. Classification of protozoa- flagellates, Amoebas, sporozoa and ciliates- (brief account) with examples.

MODULE III **(10 Hrs)**

Bacterial growth- Binary fission, Bacterial growth curve, factors affecting bacterial growth. Significance of various phases of growth. Batch, continuous culture, Fed batch, Synchronous growth.

MODULE IV **(12Hrs)**

Bacterial Photosynthesis -: oxygenic and anoxygenic types, Nitrogen fixation: Symbiotic and non-symbiotic types

MODULE V **(10 Hrs)**

Uptake of nutrients by bacteria- Passive diffusion, facilitated diffusion, active transport, group translocation, Iron uptake. Biosynthesis of cell wall peptidoglycan. Utilization of energy by halo bacteria. Bioluminescence and its Applications.

REFERENCES

1. Microbiology - Pelczar, Chan and Kraig (ISBN 0-07-462320-6)
2. Microbiology -Prescott, Harley and Klein (ISBN 0-07-111217-0)
3. Essentials of Microbiology-Purohit and Singh
4. Brock's Biology of Microorganisms-Mardigon Martinko And Parker
5. Microbial Genetics-Frifielder
6. Microbiology-Zins

SEMESTER II

CODE: IM1271

VOCATIONAL COURSE II Microbiology Practical

Total Hrs-36 CREDITS-3

(2Hrs /week)

Part I (18 Hrs)

1. Isolation and enumeration of bacteria from soil.

2. Isolation and enumeration of bacteria from Water.

3. Isolation and enumeration of bacteria from Air.

4. Biochemical tests-

(a) IMViC

(b) Sugar fermentation

(c) Urease test

(d) TSI

(e) Catalase and Oxidase

Part II (18 Hrs)

5. Candle jar method for cultivation of anaerobic bacteria.

6. Slide culture technique for fungi

7. Measurement of fungal growth by colony diameter method.

8. Germicidal effect of ultra violet light on bacterial growth.

9. Effect of different disinfectants and antiseptics on bacteria.

REFERENCES

1. Dubey R C and Maheswari, D K (2002). Practical Microbiology. S. Chand & Co Ltd. (ISBN 81-219-2153-8)
2. Microbiology *A Laboratory Manual* - James G Cappucino Natalie Sherman
3. Experiments In Microbiology Plant Pathology And Biotechnology- K.R Aneja

SEMESTER III

CODE: IM1371

VOCATIONAL COURSE III

CELL BIOLOGY

Total Hrs-72 CREDITS -3

(4 Hrs /week)

MODULE I **(12 Hrs)**

Introduction to cell biology: Early conditions on earth, Origin of life on earth. Spontaneous generation theory, Darvin's concept about the orgin of life, Haldane and Oparin theory of the orgin of life, Urey-Miller experiment, Fox's experiments. Preliminary idea about speciation, natural selection and genetic drift. Robert Hooke –Discovery of cells and the cell theory.

MODULE II **(12 Hrs)**

Fundamentals of cell biology: ultrastructure of cell- prokaryotic and eukaryotic cell, Structure and functions of subcellular organelles- nucleus, mitochondria, chloroplast, ribosomes, Endoplasmic reticulum, Golgi bodies, lysosomes, microfilaments, microtubules, glyoxysomes and peroxisomes.

MODULE III **(12 Hrs)**

Cell-cell interactions, cell-matrix interactions, cell-cell adhesion, cell-cell signaling, Role of bacterial cell-cell signaling in virulence and pathogenesis.

MODULE IV **(12 Hrs)**

Apoptosis- definition, mechanism- difference between apoptosis and necrosis.Cell cycle- check points and arrest. Regulation of cell cycle. Analysis of cell cycle by flow cytometry. Cell division- mitosis and meiosis- different stages. Cell differentiation.

MODULE V **(12 Hrs)**

Chromosomal changes and cytogenetics: Euploidy, Aneuploidy, Chromosomal aberrations: structural alterations, gene mutations- complementation test, molecular changes, intra and interchromosomal aberrations, chromosome preparation, G-Banding, FISH. Disorders associated with chromosomal aberrations-Philadelphia chromosome.

MODULE VI **(12 Hrs)**

Genetic organization- chromatin and nucleoid structure, chromosomes-nucleosomes, plectonemic and solenoidal supercoiling, microsatellites. DNA binding protein families- Helix-loop-Helix, Helix loop Turn and Leucine zipper. Oncogenes and tumor suppressor genes- role in malignant transformation.

REFERENCES

1.Cell and Molecular Biology by Gerald Karp, John Wiley & Son, Inc. New York

2.Principles of Genetics by D. Peter Snustad and Michael J Simmons, John Wiley & Son,

3.Biochemistry by Lubert Stryer, W.H Freeman and Company, New York

4.Cell and Molecular Biology by De Robertis & De Robertis,jr.

SEMESTER III

CODE: IM1372

VOCATIONAL COURSE IV

Microbial Genetics and Biotechnology

Total Hrs-54 CREDITS -3

(3 Hrs /week)

Module I **(9Hrs)**

Introduction to history of genetics, Mendel's laws of genetics, alleles, multiple alleles, Test cross and back cross. Basic idea about linkage and crossing over, Mapping, Sex linked inheritance, (simple numerical problems to be worked out) A brief idea about population genetics-Hardy Weinberg law.

Module II. (9Hrs)

Prokaryotic replication & its types: ϕ- Theta mode and σ-sigma mode or rolling circle model of replications. Different method used for introducing foreign DNA into the cell: DNA direct transformation, electroporation, Microinjection and biolistic methods.

Module III (9Hrs)

Gene transfer mechanisms- Transformation, conjugation and transduction- generalized and specialized transduction. Ames test & its significance

Module IV (9Hrs)

Animal cell tissue culture- Preparation of culture media, primary culture, cell lines & its types. Maintenance of cell lines. Genetically modified organisms. Transgenic animals – engineering embryos (brief account only)..

Module V (9Hrs)

Plant cell tissue culture- Media composition. Plant tissue culture techniques- callus culture, cell suspension culture, protoplast culture and somatic hybridization. Applications of plant tissue culture, Transgenic plants- improving crops and foods (brief account only).

Module VI (9Hrs)

Ethical problems associated with the use of rDNA technology. Intellectual property: Intellectual property rights- patents, trade secrets, copyrights &trademarks). Patenting of transgenic organisms and isolated genes.

Reference:

1. Molecular Biology of the Gene by Watson, JD, Hopkins NH, Roberts JW, Steitz JA, Weiner AAM.

2. Genes V by Lewin B, 1994. Oxford University press.

3. Molecular Cell Biology by Lodish, H, Baltimore D, Berk A, Zipursky SL, Matsudaira P, Darnell J.

4. Molecular Biology by Freifelder D., 1991 Narosa Publishing Home.

5. Principles of Gene Manipulation, 4th Ed., by R.S.Old and S.B.Primrose.

7. Principles of Genetics by Gardner EJ, Simmons MJ, Snustad DP.

8. Genes and Genomes by Singer M, Berg P.,1991 University Science Books.

SEMESTER III

VOCATIONAL PRACTICAL

Total Hrs 36 CREDITS-0

(2 Hrs /week)

Part I (18 Hrs)

1. Isolation of antibiotic resistant bacterial population by gradient plate method.

2. Isolation of streptomycin resistant mutant by replica plate technique.

3. Isolation of plasmid DNA.

4. Preparation of genomic DNA from bacteria.

5. Principle and application of agarose gel electrophoresis

Part II (18 Hrs)

6. Plant regeneration from callus or plant tissue.

7. Mushroom cultivation

8. Bioassay for evaluating the mutagen or carcinogen by Ames test.

9. Demonstration of genetic recombination in bacteria by conjugation.

10. Demonstration of Bacterial transformation.

REFERENCES

1. Lab manual in Biochemistry, Immunology and Biotechnology-Arti Nigam, Archana Ayyagari (ISBN 13:978-0-07-061767-4)
2. Dubey R C and Maheswari, D K (2002). Practical Microbiology. S. Chand & Co Ltd. (ISBN 81-219-2153-8)
3. Experiments in Microbiology plant pathology and Biotechnology- K.R.Aneja
4. Molecular Cloning: A Laboratory Manual, Volume 1& 2 : Joseph Sambrook, David William Russell

SEMESTER IV

CODE: IM1471

VOCATIONAL COURSE V

Environmental Microbiology

Total Hrs 54 CREDITS-3

(3 Hrs /week)

MODULE I **(9 Hrs)**

Microbial ecology-interactions. Microorganisms as components of ecosystem-as producers and decomposers. Bacterial life in extreme environments & effect of temperature, pH, pressure, salt and heavy metals.

MODULE II **(9 Hrs)**

Waste – types; Solid waste - treatment of solid waste – composting, incineration, land filling. Liquid waste - Conventional methods of treatment of liquid waste. House hold sewage treatment – septic tank, imhoff tank, cess pool. Municipal sewage treatment-primary, secondary and tertiary, disinfection.

MODULE III **(9 Hrs)**

Bioremediation: Degradation of pesticides, detergents, degradation of lignin, xenobiotic compounds, petroleum and hydrocarbon compounds. Microbes in mining. Bacterial leaching.

MODULE IV **(9 Hrs)**

Microorganisms in soil processes-carbon cycle-organic matter decomposition, humus formation Nitrogen cycle-nitrogen fixation -symbiotic, non-symbiotic, associative symbiotic nitrogen fixing organisms. Microbial transformation of phosphorous, iron, sulfur micronutrients in soil.

MODULE V **(9 Hrs)**

Rhizosphere concept. Rhizosphere microorganisms-their importance in plant growth. Mycorrhizae – brief account of ectomycorrihizae ,endo mycorrhizae and ecto-endo mycorrhizae. Applications of mycorrhizal fungi. Biofertilizers: microbial inoculants-definition and perspectives of agriculturally useful inoculants; brief account of production and application of *Rhizobium, Azotobacter, Azospirillum and cyanobacteria.*

MODULE VI **(9 Hrs)**

Plant pathology- Symptoms, etiology, epidemiology and management of the following plant diseases: mosaic disease of tobacco, bunchy top of banana, bacterial blight of paddy, damping off of tobacco, blight of maize/sorghum, leaf spot of paddy and citrus canker.

REFERENCES

1. Microbial Ecology Fundamentals and applications – Atlas and Bartha (ISBN 981-405-344-9)
2. Environmental Microbiology- K.Vijaya Ramesh (ISBN 81-8094-003-9)
3. Agricultural Microbiology- Rangaswamy G, D.J. Bhagyaraj (ISBN-81-203-0668-6)
4. Soil Microbiology an *exploratory approach* – Mark S.Coyne (ISBN 981-240-203-9)
5. Introduction to Soil Microbiology –Alexander
6. Soil Microbiology-Waksman
7. Soil Microorganisms And Its Growth-N.S. Subba Rao
8. Biofertilizers in Agriculture- Subha Rao

SEMESTER IV

CODE: IM1472

VOCATIONAL COURSE VI

Food Microbiology

Total Hrs 54 CREDITS-2 **(3 Hrs /week)**

ModuleI **(10Hrs)**

Introduction: Importance of food and dairy Microbiology – Types of microorganisms in food – Source of contamination (primary sources) – Factors influencing microbial growth in foods (extrinsic and intrinsic)

ModuleII **(10Hrs)**

Fermented food: Cheese, bread, wine, fermented vegetables – methods and organisms used. Food and enzymes from microorganisms –single cell protein, production of enzymes.

ModuleIII **(10Hrs)**

General principles underlying spoilage, Spoilage different kinds of foods, cereals and cereal products – sugar and sugar products – vegetable and fruits – meat and meat products –fish and other sea foods – eggs and poultry – dairy and fermentative products (icecream/milk/bread/wine).

ModuleIV **(12Hrs)**

Food Poisoning: food borne infections and intoxications: Source, symptoms and Management of the following- (a) Bacterial (Staphylococcal, Brucella, Clostridium, Escherichia, Salmonella) (b) Fungal : Mycotoxins,(c) Viral: Hepatitis, (d) Protozoa – Amoebiasis. Management

ModuleV **(12Hrs)**

Food preservation: Principles of food preservation – methods of preservation. Physical (irradiation, drying, heat processing, chilling and freezing, high pressure and modification of atmosphere). Chemical preservation- (Sodium benzoate Class I & II). Food Sanitation: Good manufacturing practices – HACCP, Presonnel hygiene.

REFERENCES

1. Food Microbiology by Adams, M.R. and Moss, M.O.1995. The Royal Society of Chemistry, Cambridge.

2. Food Microbiology by Frazier, W.C. and Westhoff, D.C.1988. TATA McGraw Hill Publishing company ltd., New Delhi.

3. Modern Food Microbiology by Jay, J.M.1987. CBS Publishers and distributors, New Delhi.

4. A Modern Introduction to Food Microbiology by Board, R.C.1983. Blackwell Scientific Publications, Oxford.

5. Dairy Microbiology by Robinson, R.K.1990. Elsevier Applied Science, London.

6. Food Poisoning and Food Hygiene, Hobbs, B.C. and Roberts, D.1993. Edward Arnold. London.

SEMESTER IV

CODE: IM1473

VOCATIONAL COURSE VII Microbiology Practical

Total Hrs 54 CREDITS-3

(3 Hrs/week)

Part I (27 Hrs)

1. Determination of Biochemical oxygen Demand (BOD) of water.

2. Determination of Chemical oxygen Demand (COD) of water.

3. Bacteriological examination of water by multiple tube fermentation test.

(a. Presumptive coliform test, b. Confirmed coliform test, c. Completed coliform test)

4. Isolation & culturing of *Rhizobium* from root nodules of higher plants.

5. Study of the following disease

(a) Tobacco mosaic disease, (b) Bacterial blight of paddy, (c) Leaf spot of mulberry, paddy

(d) Bunchy top of banana, (e) Citrus canker

Part II (27 Hrs)

6. Determination of number of bacteria in milk by standard plate count.

7. Determination of quality of a milk sample by MBRT, phosphatase test.

8. Determination of TDT and TDP

9. Effect of pH on bacterial growth.

10. Effect of salt concentrations on bacterial growth.

11. Microbiological examination of foods-

(a)Isolation and enumeration of bacteria and fungi from spoiled vegetables,

(b) Isolation and enumeration of bacteria and fungi from spoiled fruits

(c) Isolation and enumeration of bacteria and fungi from Spoiled fish or meat.

(d) Isolation and enumeration of bacteria and fungi from soft drinks.

REFERENCES

1. Experiments in Microbiology, Plant pathology and Biotechnology- K. R. Aneja
2. Practical Microbiology- R C Dubey and D K Maheswari.

SEMESTER V

CODE: IM1571

VOCATIONAL COURSE VIII

Fermentation Technology

Total Hrs 72 CREDITS-3

(4 Hrs /week)

MODULE I **(12 Hrs)**

Fermentation technology-isolation, screening and strain improvement of industrially important microorganisms. Introduction to fermentation processes- media for industrial fermentation, sterilization, inoculum preparation.

MODULE II **(12 Hrs)**

Design and parts of fermenter – agitation, aeration, pH, temperature, dissolved oxygen-control and monitoring, difference in fermentation process of biomass, chemicals and conversion products- comparative brief account. Cell and enzyme immobilization.

MODULE III **(12 Hrs)**

Recovery of fermentation product (Down-stream processing) - Methods for cell lysis, Physical separation, liquid liquid extraction, Precipitation, chromatography, drying.

MODULE IV **(12 Hrs)**

Microbial products- raw materials, organism and industrial process involved in the production of penicillin, streptomycin, ethanol, butanol, acetone, vitamin B12, riboflavin, alpha lysine,amylase, protease, pectinase, citric acid. Biopesticide production.

MODULE V **(12 Hrs)**

Microbes in food industry-bacteria (lactics, acetics, proteolytic and lipolytic bacteria, Thermophillic and thermoduric bacteria, pigmented bacteria and coliform bacteria), molds (Mucor, rhizopus, penicillium, Aspergillus and yeasts (Genus Saccharomyces, zygosaccharomyces, Genus candida & salt tolerant yeast). Production of SCP.

MODULE VI **(12 Hrs)**

Fermentation -Bacteria grouped according to major products of glucose, dissimilation-Lactic acid fermentation, Homolactic fermentation, Heterolactic fermentation, Ethanolic fermentation, and propionicacid fermentation, mixed acid, fermentation, Butanediol fermentation and butyric acid fermentation. Amino acid fermentation (stickland reaction). Pasteur effect.

REFERENCES

1. Industrial Microbiology - L.E. Casida,JR (ISBN 0 85226 1012)
2. Industrial Microbiology-A.H.Patel (ISBN 0333 90842 2)
3. Prescott & Dunn's Industrial Microbiology Reed G (Ed) ISBN 81-239-1001-0) (Fourth Edition)
4. Food Microbiology-William C.Frazier Dennis .C Westhoff (ISBN 0-07-46210147)
5. Fermented foods Economic Microbiology Vol 7 rose A (ed)
6. Manual Of Industrial Microbiology And Biotechnology, Demin & Davis
7. Applied Microbiology-Musharraffudde

SEMESTER V

CODE: IM1572

VOCATIONAL COURSE IX Microbiology Practical

Total Hrs 108 CREDITS-4

(6 Hrs /week)

Part I (54 Hrs)

1. Yeast Cell immobilization

2. Isolation of amylase producers.

3. Demonstration of microbial antibiosis by crowded plate technique.

4. Production of wine from grapes.

5. Isolation of lipolytic microbes.

6. Isolation of protease producers.

7. Bioassay of antibiotic.

Part II (54 Hrs)

8. Citric acid production by Aspergillus sp..

9. Amylase production by SSF.

10. Enrichment of coir pith degraders.

11. Analysis of Mycotoxin (Aflatoxin) in fungus- contaminated food materials.

12. Demonstration of fermentation by yeast.

REFERENCES

1. Experiments in Microbiology plant pathology and Biotechnology - K. R. Aneja
2. Practical Microbiology-R C Dubey and D K Maheswari.

IM1645 PROJECT (Core/Vocational)

Credit 4

(1 Hr /week)

The students should do one project either in Biochemistry or Microbiology. The total number of students in the program should be equally divided into two batches and one batch should do a project in core subject and the other batch should do the project in the vocational subject. Which batch would come under which faculty can be decided by drawing lots.

The project report should be based on a mini-project work done by the students. This should include original laboratory work, analysis of results and should be presented along with relevant and current literature review. The evaluation of dissertation should be done on the basis of evaluation of the project report and a viva-voce examination of the student. The students will do the project in the fifth semester and have to submit their reports in the sixth semester.

A report of the industrial visit carried out to any industries/institutions relevant to the subject should accompany the project report.

Scheme for evaluation of project

Total weightage:	30
Project:	20
Industrial Visit:	10 (The visit carries a weightage of 6 and the visit report carries a weightage of 4)

SEMESTER VI

CODE: IM1671

VOCATIONAL COURSE X

Medical Microbiology

Total Hrs 54 CREDITS-3

(3 Hrs /week)

MODULE I **(9 Hrs)**

Normal Microbial flora- Resident flora and transient flora, Beneficial and harmful effects of normal flora. Brief account on normal flora of skin, conjunctiva, upper respiratory tract, mouth, teeth, stomach, upper and lower intestine, genitourinary tract. Nosocomial infection

MODULE II **(9 Hrs)**

Bacteriology: Pathogenicity, laboratory diagnosis, prevention and control of the diseases caused by (brief account only): *Staphylococcus aureus, Streptococcus pyogenes , Neisseria gonorrhoeae, Escherichia coli, Salmonella typhi, Vibrio cholerae, Corynebacterium diptheriae, Clostridium tetani , Mycobacterium tuberculosis, Treponema pallidum, Mycoplasma pneumoniae & Chlamydia trachomatis.*

MODULE III **(9 Hrs)**

Mycology: Brief account on the following fungal diseases: **Superficial mycoses-** Pityriasis versicolor, Tinea nigra. **Cutanaceous mycoses**- Dermatophytes, Candidiasis. **Subcutanaceous mycoses**- Mycotic mycetoma, Rhinosporidiosis. **Systemic mycoses-** Cryptococcosis, Histoplasmosis and **Opportunistic mycoses**- Aspergillosis, Penicilliosis.

MODULE IV **(9 Hrs)**

Virology: Air borne viral disease (Influenza, measles, mumps, rubella, small pox). Insect borne (yellow fever, dengue fever) food and water borne disease (polio). Direct contact diseases – Hepatitis B. rabies, AIDS.

MODULE V **(9 Hrs)**

Protozoology: Disease caused by Protozoa (Pathogenic mechanisms, Disease transmission and life cycle) – Plasmodia, Toxoplasma, *Entamoeba histolytica, Trypanosoma*

MODULE VI **(9 Hrs)**

Antimicrobial chemo therapy: Antibiotics and their mode of action. Drug resistances– Mechanism of drug resistances.Antimicrobial sensitivity tests- diffusion and dilution techniques.

REFERENCES

1. Ananthanarayan and Panicker's Textbook of Microbiology- ISBN 81 250 2808 0
2. Notes on Medical Bacteriology – J.Douglas SleighMorag C.Timbury
3. Parasitology –B.Dasgupta
4. Medical Mycology – Rippon
5. Principles of Bacteriology Virology and immunity Vol 4 Lopka and Wilson
6. Fundamentals of medical Virology by Kucera and Myrvik

SEMESTER VI

CODE: IM1672

VOCATIONAL COURSE –XI Microbiology Practical

Total Hrs 108 CREDITS-4

(6hrs/week)

Part I (54 Hrs)

1. Antibiotic sensitivity testing- Kirby-Bauer method

2. Determination of MIC and MBC of antibiotics

3. Identification of common bacterial pathogens by using morphological, cultural and biochemical characters.

a) *Staphylococcus,*
b) *Streptococcus*
c) *Escherichia coli,*
d) *Pseudomonas*
e) *Klebsiella*

4. Tube agglutination test: WIDAL test.

5. RPR card test for syphilis.

Part II (54 Hrs)

6. ASO latex agglutination test

7. RA latex agglutination test

8. HBs Ag detection by using immunochromatographic technique

9. Urine culture and its microbiological analysis.

10. Isolation of Enteric pathogens from stool by direct plating methods.

REFERENCES

1. Lab manual in Biochemistry, Immunology and biotechnology-Arti Nigam, Archana Ayyagari (ISBN 13:978-0-07-061767-4)
2. Medical Laboratory technology –*Methods and interpretation* (ISBN 81-8448-449-6)
3. Mackie & McCartney Practical Medical Microbiology (ISBN 0 443 04906 8)

ELECTIVE COURSE

CODE: IM1661

ELECTIVE COURSE- IMMUNOLOGY

Total Hrs 36 CREDITS-2

(2 Hrs /week)

MODULE 1 **(6 Hrs)**

Infections, Source of infection, Epidemic, Pandemic and Endemic diseases. Determinants of microbial pathogenicity. Immunity, types of immunity -Innate immunity and acquired immunity- (natural and artificial active, natural and artificial passive), immune response-primary and secondary immune response. Mechanism of immune response.

MODULE 1I **(6 Hrs)**

Antigens, structure and types of antigens-endogenous and exogenous, & super antigens. Antigenicity and immunogenicity. Haptens, adjuvants and its types. Structure and functions of different classes of immunoglobulins (IgG, IgM, IgA, IgD& IgE)

MODULE III **(10 Hrs)**

Cells of immune system (Lymphocytes, Mononuclear cells, granulocytes, dendritic cells), Phagocytosis, Organs of immune system (primary and secondary lymphoid organs), Complement system and activation pathways (classical, alternate and lectin pathways), Membrane attack complex. Structure, and function of Major Histo compatability complex (MHC class 1 and Class II) –brief introduction only.

MODULE IV **(8 Hrs)**

Brief introduction to antigen and antibody reactions- complement fixation, neutralization, agglutination reactions, precipitation reactions and its types. Immunoassays of diagnostic importance-ELISA, RIA, VDRL and WIDAL test. Western Blotting, Production of monoclonal and poly clonal antibodies, and its applications.

MODULE V **(6 Hrs)**

Brief account on Immunodeficiency disorders, Hypersensitivity reactions, Immunohaematology (Blood groups and Rh incompatibilities), Autoimmunity, Vaccines, Immunology of organ and tissue transplantation and Immunology of malignancy

REFERENCES

1. Immunology: An Introduction by Ian R Tizard (2006) Publisher: Cengage Learning
2. Immunology and Immunotechnology by Chakravarty (2006)
3. Kuby Immunology by Thomas J. Kindt (2006) Publisher: W H Freeman & Co
4. Elements of Immunology (2009) by Khan Publisher: Dorling Kindersley (India) Pvt
5. Immunology by K.R. Joshi **(**2007) Publisher: Agrobios (India)
6. Basic Immunology, 3ed by: Abbas Publisher: Elsevier
7. Immunology by P.R. Yadav **(**2004) Publisher: Discovery Publishing House
8. Immunology by David A. Marcus, Richard A. Goldsby, Barbara A. Osborne **(**2003) Publisher: WH. Freeman & Company

UNIVERSITY OF KERALA

COURSE STRUCTURE AND SYLLABUS

For

CAREER RELATED FIRST DEGREE PROGRAMME IN

BIOCHEMISTRY (CORE) & INDUSTRIAL MICROBIOLOGY (VOCATIONAL)

Under

CHOICE BASED CREDIT & SEMESTER SYSTEM

Revised Syllabus 2019

w.e.f 2020 admission (1st Semester onwards)

Syllabus for Career related First Degree Programme in Biochemistry under CBCS System for B.Sc. Biochemistry and Industrial microbiology

Distribution of hours and credits

Semester	Course Title	L	P	C	T
Semester I	English-I	5	-	3	16
	Additional language-I	5	-	3	
	IM1121: Foundation course-I Bomolecules (Core)	**3**	**-**	**3**	
	Practicals for IM1121 (Core) - P1	**-**	**2**	**-**	
	IM1171-Vocational Course-I- Fundamentals of Microbiology	3	2	4	
	CH 1131.7: Complementary course-I	3	2	3	
Semester II	English-II	5	-	3	20
	Additional language-I	5	-	3	
	IM1241: Environmental Studies (Core course I)	**3**		**4**	
	IM1242: Practicals-Qualitative analysis of Biomolecules (Core course II) - P2		**2**	**2**	
	IM1221-Foundation Course-II-(Microbial Taxonomy and Physiology (Vocational)	3	-	2	
	IM1271-Vocational Course-II (practicals)	-	2	3	
	CH1231.7 Complementary course-II	3	2	3	
Semester III	English-III	5	-	3	16
	IM1341: Analytical Biochemistry and Biophysical Chemistry (Core course-III)	**3**	**-**	**4**	
	Practicals for IM1341 (Core) - P3	**-**	**3**	**-**	
	IM1371: Cell Biology (Vocational course-III)	4	-	3	
	IM1372- Microbial genetics and biotechnology (Vocational Course-IV)	3	2	3	
	CH1331.7 Complementary course-III	3	2	3	
Semester IV	English-IV	5	-	3	24
	IM1441: Physiological aspects of Biochemistry and Enzymology (Core course-IV)	**3**	**-**	**3**	
	IM1442: Practicals-Quantitative analysis of Biomolecules (Core course-V) -P4	**-**	**3**	**3**	
	IM1471- Environmental Microbiology (Vocational Course-V)	3	-	3	
	IM1472 – Food Microbiology (Vocational course-VI)	3	-	2	
	IM1473 – Practicals (Vocational course-VII)	-	3	3	
	CH1431.7 Complementary course-IV	3	-	3	
	CH1432.7 Complementary course-V	-	2	4	

Semester V	**IM1541: Molecular Biology (Core course-VI)**	**2**	**-**	**3**	18
	IM1542: Food Science (Core course-VII)	**2**	**-**	**3**	
	IM1543: Practicals- Serum and Food analysis (Core course-VIII) - P5	**-**	**6**	**3**	
	IM1571- Fermentation Technology (Vocational Course-VIII)	4	-	3	
	IM1572: Microbiology practicals (Vocational course-IX)	-	6	4	
	IM1551/1552: Clinical approach to life/Lifestyle diseases -Open course (Core) #	**3**	**-**	**2**	
	IM1645 Project (Core/Vocational)		**2***	**-**	
Semester VI	**IM1641: Clinical Biochemistry (Core course-IX)**	**3**	**-**	**3**	26
	IM1642: Metabolism (Core course-X)	**3**	**-**	**4**	
	IM1643: Advanced Biochemistry (Core course-XI)	**3**	**-**	**3**	
	IM1643: Practicals-Urine analysis & Hematology (Core course-XII) – P6	**-**	**5**	**3**	
	IM1671: Medical Microbiology (Vocational course-X)	3	-	3	
	IM1672: Microbiology practicals (Vocational course-XI)	-	6	4	
	IM1661: Immunology –Elective course (Vocational)	2	-	2	
	IM1645: Project (Core/Vocational)		**-**	**4**	

Total credits: 120

***1hr- Core Biochemistry, 1hr- Vocational microbiology**

L-Lecture, P- Practical, C- Credit, TC-Total Credit

Open course is to be studied by students from other departments of the college and will be handled by core (biochemistry) faculty. The department can choose any one of the open course available in the scheme- either Clinical approach to life or Life style diseases.

Summary of courses and credits of various study components included in the programme

Study components	Number of courses	Total credits	Total
1. English	4	12	120
2. Additional Language	2	6	
Foundation courses	2	5	
Core courses	12	38	
Vocational courses	11	35	
Complementary courses	5	16	
Open courses	1	2	
Elective courses	1	2	
Project	1	4	

Accumulated Total Minimum Credits required for Programmes of study-120 Credits. Minimum Credits for Social Services/Extension Activity-1 Credit. Minimum Duration -6 Semesters

Scheme of Examination and Evaluation

- Each theory examinations are of 3hours (for core, elective and open).
- Practical examination is of six hours duration.
- Evaluation and grading are in accordance with the general guidelines given by the university.
- Evaluation of each course shall be done in percentage score.
- Evaluation shall involve Continuous Evaluation (CE) and End Semester Evaluation (ESE)
- The CE and ESE ratio shall be 1:4 for both Courses with or without practical.
- There shall be a maximum of 80 marks for ESE and maximum of 20 marks for CE.

I. Attendance (Max. marks 5)

II Assignments or Seminars: (Max. Marks 5): Each student shall be required to do one assignment or one seminar for each Course. Valued assignments shall be returned to the students. The seminars shall be organized by the teacher/teachers in charge of CE and the same shall be assessed by a group of teachers including the teacher/ teachers in charge of that Course. Assignments/Seminars shall be evaluated on the basis of their quality. The teacher shall define the expected quality of an assignment in terms of structure, content, presentation etc. and inform the same to the students. Due weight shall be given for punctuality in submission. Seminar shall be similarly evaluated in terms of structure, content, presentation, interaction etc.

III Tests: (Max. marks 10: For each Course there shall be one class test during a semester. Valued answer scripts shall be made available to the students for perusal within 10 working days from the date of the test. The marks of CE shall be consolidated by adding the marks of Attendance, Assignment/ Seminar and Test paper respectively for a particular Course.

The marks for the components of Practical for Continuous Evaluation shall be as shown below.

a. Attendance	5 marks
b. Record	5 marks
c. Regularity/consistency	5 marks
d. Performance	5 marks

Scheme for the Evaluation of Practical Examination
Weightage may be assigned for various components as follows

A. For Qualitative Analysis
Step1.Result & Conclusion
Step2.Confirmatory test 1
Step3.Confirmatory test 2
Step4.Neatly written scheme of experiments used for arriving at the final conclusion

B. For Quantitative Experiments
Step1.Result of the reported value (minimum error)
Step2.Calculation, presentation of the result Graph)
Step3.Procedure
Step4.Skill

PROJECT
Components required:-
(a) Institutional visit (compulsory) + report
(b) Project work (lab work)
(c) Report of the project work done
(d) Viva voce of the work

Scheme for the Evaluation of Project

Weightage may be assigned for various components as follows
1. Rationale of the study
   General background of the study
   Relevance of the study
2. Objective & scope of the study
3. Methodology-Appropriateness & Accuracy
4. Results &Discussion
   Presentation (figures, graphs, legends etc) Analysis
   Relevance/importance
5. References/literature upto latest reports & documentation
6. Conclusions
7. General presentation
   - Free of typographic errors
   - Free of redundant material

Semester I

IM1121: Foundation course I- Core related
Course title: Biomolecules

No. of Credits: 3 **No. of contact hours: 54**
Hours/week: 3

Objectives: This course emphasizes on various bio-molecules and its significance and enables the students to learn the basic functions, structures and biological importance of lifeless chemical compounds. On successful completion of the course the students should have understood the significance of the complex bio-molecules, polysaccharides, lipids, proteins, nucleic acids.

Course Outcome: Student will be able to

- List out the contributions of popular scientists in the field of biochemistry.
- Describe the classification, structure and chemical properties of biomolecules including carbohydrates, lipids, proteins, amino acids and nucleic acids.

Course Outline

Module I **(3 hrs)**

History of biochemistry

Molecular logic of life. Contributions of several scientists to biochemistry: Francis Crick, James Watson, Frederick Sanger and Arthur Kornberg- their discoveries and the classical experiments associated with them (brief concept).

Module II **(13 hrs)**

Carbohydrates

Occurrence, Classification of carbohydrates, ketoses and aldoses (C3 to C6 series) exemplified by one in each group (structure only), Monosaccharides: structure, configuration, isomerism (all 5 types), mutarotation. General reactions of carbohydrates-copper reduction, osazone formation, oxidation, reduction, sugar acids, sugar alcohols, amino sugars, deoxy sugars, esters, derived monosaccharides and glycosides. Disaccharides: maltose, lactose, sucrose, isomaltose, cellobiose (structure, occurrence and function), oligosaccharides. Haworth projection formula- ring formationPolysaccharides: classification as homo and heteropolysacharides. Homopolysaccharides: storage polysaccharides (starch, dextrin, glycogen- structure, reaction, properties), structural polysaccharides (cellulose and chitin-structure, properties), Mucopolysacharides (Outline study): Hyaluronic acid, chondroitin sulphates and heparin. Glycoproteins, proteoglycans, lipopolysaccharides.

Module III **(8 hrs)**

Lipids

Classification and functions of lipids. Fatty acids - classification, nomenclature and structure of saturated and unsaturated fatty acids, Essential fatty acids. Classification of lipids- simple lipids, compound lipids and derived lipids. Simple lipids: nomenclature, physical properties and chemical properties. Purity of fats and oils: saponification number, acid number, iodine number, ReichertMeissel number. Rancidity of fat, reactions of glycerol, biological significance of fats. Complex lipids: glycerophospholipids, shingophospholipids and glycolipids (structure, properties and function), lipoproteins. Derived lipids: cholesterol- structure, functions and two colour reactions.

Outline study of - bile acids, ergosterol, sitosterol, prostaglandins, thromboxanes and leukotriens, Isoprenoids- carotenoids.

Module IV **(8 hrs)**

Amino acids

Amino acids-Occurrence classification, abbreviated names (one letter, three letters) structure and important reactions - ninhydrin reaction, formol titration and van slyke method, colour reactions of aminoacids, properties: optical activity, UV absorption, ionisation property of aminoacids, Zwitter ion, isoelectric point and titration of aminoacids. Essential and non essential amino acids. Non protein aminoacids-outline study.

Module V **(12 hrs)**

Protein chemistry

Peptide- properties, polypeptide, N & C terminal of polypeptide, polypeptide conformation- Ramachandran plot (brief ouline). Structure of proteins- primary, secondary, tertiary and quaternary- forces stabilizing each level of structure.

Proteins: classification, physical properties, solubility, isoelectric point, protein denaturation, isoelectric precipitation, salt effect, heavy metal precipitation. Colour reactions of proteins. Determination of primary structure- N-terminal and C-terminal residues (one method each). Sequencing of amino acids in polypeptide, digestion by enzyme (chymotrypsin &trypsin), oligopeptide separation and overlapping of amino acid. Peptides: Peptide nomenclature, properties of the peptide bond, hydrolysis of proteins and separation of amino acids.

Module VI **(10hrs)**

Nucleic acids

Structure of purines, pyrimidines, ribose, deoxyribose, nucleosides, nucleotides and polynucleotides. Structure of nucleic acids- Watson & Crick DNA double helix, chromosome organization and composition, introduction to circular DNA, helix to random coil transition - denaturation of nucleic acids, hyper chromic effect, Tm-values, cot curves and their significance. Types of RNA, unusual bases in nucleic acids. Action of DNAases and RNAases.

References

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- Principles of Biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN81-239-0295-6.
- Lehninger Principles of Biochemistry, Fourth Edition by David L. Nelson Michael MCox Publisher: W. H. Freeman; Fourth Edition edition (April 23, 2004) ISBN-10:0716743396 ISBN-13: 978-0716743392
- Biochemistry- Sixth edition by Mary K. Campbell, Shawn O. Farrell. Thomson Brooks/Cole
- Principles Of Biochemistry (1995) by Geoffrey L Zubay, William W Parson, Dennis E Vance Publisher: Mcgraw-hill Book Company – Koga ISBN:0697142752 ISBN-13: 9780697142757, 978-0697142757
- Biochemistry (2008) by Rastogi Publisher: Mcgraw Hill ISBN:0070527954 ISBN-13:9780070527959, 978-0070527959
- Fundamentals of Biochemistry by J.L.Jain, Sanju Jain & Nitin Jain (2008) Publishers Chand and Co Ltd ISBN81-219-2453-7P 73,91,100,114

Semester I

Practicals for IM1121 P1 (Core)
Familiarization with biochemistry laboratory

Hours/week: 2 **No. of Contact hours: 36**

Course Outline

1. Introduction to Safety and Security at Workplace

- Different types of occupational health hazards, knowledge of chemical substances, characteristics & safety measures, use of safety gears, masks, gloves & accessories, evacuation procedures for workers & visitors. Health, safety & security issues – types (illness, fire accidents), company policies and procedures, When and how to report, summon medical assistance & emergency services.

2. General reactions of Carbohydrates and Lipids

- **Test for Carbohydrates** – Solubility test, Molisch's test, Fehling's test, Benedict's test, Barfoed's test, Bial's test, Seliwanoff's test, Phloroglucinol test, Iodine test, hydrolysis of sucrose and starch, ozazone test.
- **Test for Lipids**- Solubility test, translucent spot tests, test for unsaturation, Salkowski reaction, Liebermann-Burchard reaction
- **Test for Amino acids**- Solubility test, ninhydrin reaction, Xanthoproteic reaction, Millons test, glyoxylic acid test, Ehrlich's test, nitroprusside test, lead acetate, test for Methionine, aldehyde test, isatin test.
- **Test for Proteins**- Solubility test, ninhydrin reaction, Xanthoproteic reaction, Folin's, Lowry, heat denaturation, TCA precipitation, metal precipitation, alcohol precipitation

Semester II

IM1241: Core Course-I
Course title: Environmental Studies

No. of Credits: 4 **No. of contact hrs: 54**
Hours/week: 3

Objectives: The need for sustainable development is a key to the future of mankind. This course is designed to give a clear understanding of environmental concerns and to follow sustainable development practices.

Course Outline

Module I **(10 hrs)**

Natural resources

The multidisciplinary nature of environmental studies. Definition, Scope and importance, Need for public awareness.

Natural Resources: Renewable resources and non renewable sources.

Natural resources and associated problems-

- Forest resources; Use and over exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- Water resources- use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam benefits and problems.
- Mineral resources: Use and exploitation environmental effects of extracting and using mineral resources, case studies.
- Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity. Case studies.
- Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
- Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

Module II **(10 hrs)**

Ecosystems

Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers and decomposes. Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids.

Introduction types, characteristic features, structure and function of the following ecosystem- (a) Forest ecosystem, (b) grassland ecosystem, (c) desert ecosystem and (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Module III **(10 hrs)**

Biodiversity and its conservation

- Introduction- Definition: genetic, species and ecosystem diversity.
- Biogeographical classification of India.
- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.
- Biodiversity at global, national and local levels.
- India is a mega-diversity nation.
- Hot-spots of biodiversity.
- Threats to biodiversity: habitat less, poaching of wildlife, man wildlife conflicts.
- Endangered and endemic species of India.
- Conservation of biodiversity; In-situ and ex-situ conservation of biodiversity.

Module IV **(8 hrs)**

Environmental pollution

Definition

- Causes, effects and control measures of air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution, nuclear hazards.
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster management: floods earthquake, cyclone and landslides.

Module V **(8 hrs)**

Social issues and the environment

- From unsustainable to sustainable development.
- Urban problems related to energy.
- Water conservation, rain water harvesting, watershed management.
- Resettlement and rehabilitation of people, its problems and concerns. Case studies
- Environmental ethics issues and possible solutions.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Waste land reclamation.
- Consumerism and waste products.
- Environment protection act.
- Air (Prevention and control of pollution) Act
- Water (Prevention and control of pollution) Act
- Wildlife Protection Act.
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Public awareness.

Module VI **(8 hrs)**

Human population and environment (3 hrs)

- Population growth variation among nations.
- Population explosion –Family welfare Programme.
- Environment and human health.
- Human Rights.
- Value education.
- HIV/AIDS.
- Women and child welfare.
- Role of Information Technology on Environment and human health.
- Case Studies.

Field work (5 hrs)

- Visit to a local area to document environmental assets- river/forest/grassland/hill/mountain.
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes etc.(Field work equal to 5 lecture hours)

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- Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
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- Gleick, H.P. 1993. Water in crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p

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- Survey of the Environment, The Hindu (M)
- Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science (TB)
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- Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
- Wanger K.D., 1998 Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p

Semester II

IM1242: Core course II (Practicals) P2
Course title: Qualitative Analysis of biomolecules

No. of credits: 2 **No. of contact hrs: 36**
Hours/week: 2

Course Outline

1. **Qualitative analysis of Carbohydrates.**
    - Carbohydrates- Glucose, fructose, xylose, sucrose, maltose, lactose, starch
    - Tests- Molisch's test, Fehling's test, Benedict's test, Barfoed's test, Bial's test, Seliwanoff's test, phloroglucinol test, Iodine test, hydrolysis of Sucrose and starch, osazone test.

2. **Qualitative analysis of Lipids**
    - Fatty acids: Stearic acid, oleic acid.
    - Tests- Solubility, translucent spot tests, test for unsaturation
    - Glycerol
    - Tests- Acrolein, solubility.
    - Triglycerides
    - Tests-Solubility, saponification, translucent spot test
    - Cholesterol
    - Tests- Solubility, Salkowski reaction, Liebermann-Burchard reaction.

3. **Qualitative analysis of Amino acids and Proteins**
    - Amino acids: Tyrosine, Tryptophan, Cysteine, Cystine, Proline, Methionine (single components only need be given)

- Tests- Solubility, Ninhydrin reaction, Xanthoproteic reaction, Millons test, Morners test, Glyoxylic acid test, Ehrlich's test, Nitroprusside test, Lead acetate, Test for Methionine, Aldehyde test, Isatin test
- Proteins: Ovalbumin and Casein
- Tests-Solubility, Ninhydrin reaction, Xanthoproteic reaction, Folin's test, Lowry's test, Biuret test, Heat denaturation, TCA precipitation, Metal precipitation, Alcohol precipitation.

References:

- Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.
- Analytical Techniques in Biochemistry and Molecular Biology- By Rajan Katoch. Springer Publishers
- Standard Methods of Biochemical Analysis, S. K. Thimmaiah (ed), Kalyani Publishers, Ludhiana ISBN81-7663-067-5.
- Experimental Biochemistry: A Student Companion, Beedu Sasidhar Rao & Vijay Despande (ed). I.K International Pvt. LTD, New Delhi. ISBN 81-88237-41-8.

Semester III

IM1341: Core Course-III
Course Title: Analytical Biochemistry and Biophysical Chemistry

No. of Credits: 4 **No. of contact hours: 54**
Hours/week: 3

Objectives: Advances in biochemistry are based on the careful design execution and data analysis of experiments designed to address specific questions or hypotheses. Biochemical experiments usually have much experimental detail in common. The aim of this course is to address many of these common experimental techniques.

Course outcome: Student will be able to
- Discuss about various concepts in research methodology
- Explain the principle, working and application of different separation techniques like chromatography, electrophoresis and centrifugation.
- Describe the principle, working and application of colorimeter and spectrophotometer
- List out the application of information technology and statistical methods in biology

Course Outline

Module I **(8 hrs)**
Methods in Science
Types of knowledge: Practical, Theoretical and Scientific Knowledge. What is Science; laws of science, basis of scientific laws and factual truths. Hypotheses: Formulation of hypothesis; hypothetico-deductive model, inductive model.

Academic search techniques, plagiarism - Overview of information technology: Overview of operating system and major applications of software. Introduction to use of IT in teaching and learning. Power point features and slide preparation.

Module II **(12 hrs)**

Chromatographic and Electrophoretic techniques

Chromatography-Principle, procedure (only elementary details) and applications of Paper chromatography, TLC, ion exchange chromatography, gel filtration, affinity chromatography. *Electrophoresis*-PAGE, SDS-PAGE, agarose gel electrophoresis-separation of proteins and nucleic acids, staining and molecular weight determination. Blotting techniques-Southern, Western and Northern.

Module III **(6 hrs)**

Centrifugation and photometry

Centrifugation-principle of sedimentation technique. Principle, procedure (only elementary details) and application of differential centrifugation, density gradient centrifugation, ultra centrifugation.Cell disruption techniques. Subcellular fractionation.

Photometry: Colorimetre-Principles and applications. Spectrophotometry-Beer Lamberts law-limitations- calculation of molar extinction co-efficient.

Module IV **(8 hrs)**

Bioinformatics

Introduction, importance and scope of bioinformatics, internet concepts (PubMed). Introduction to data mining and data analysis methods. Applications of sequence searching tools- BLAST, Clustal X, RASMOL-Elementary study of databanks-Genbank, EMBL, PDB.

Module V **(10 hrs)**

Statistics

Significance of statistical methods in biological investigations, probability theory, random variables, Data presentation- tables, graphs, histograms and pi diagrams. Testing of significance: Student's t-test, Chi-square test, basic idea about regression and correlation analysis, correlation coefficient, introduction to statistical software SPSS.

(Study of the statistical terms and methods expected only in the biological perspective.

Module VI **(10 hrs)**

Biophysical chemistry

Physical aspects of biochemistry: Dissociation of water, ionic product of water, concepts of pH, pOH, determination of pH using indicators, pH meter and theoretical calculations. Dissociation of weak acids and electrolytes. Bronsted theory of acids and bases, titration curves, Ka and pKa values, Buffers: buffer action, buffers in biological system, Henderson-Hasselbach equation – derivation

Solutions: Normality, molarity, molality, percentage solutions, mole fractions (simple numerical problems relating to them). Fundamentals of diffusion, osmosis, osmotic pressure, types of solutions (isotonic, hypotonic and hypertonic). Biological significance of osmosis. Relationship of osmotic pressure to gas laws. General equations for dilute solutions, influence of ionization and molecular size on osmotic pressure

Colloids: True solution, colloids, coarse suspension, distinction between lyophilic and lyophobic colloids, fundamentals of Donnan-membrane equilibrium-biological applications, properties of colloids, applications, emulsions and emulsifying agents

References

- Alexis and Mathews Leon, Fundamentals and Information and Technology. LeonVikasISBN0812590780.
- An Introduction to Biostatistics: A Manual for Students in Health Sciences by P. Sundar Rao, J. Richard publishers: Prentice-Hall Pvt. Ltd. ISBN 81-203-1008-X.
- Introduction to Biophysics by Pranab Kumar Banerjee (2008) Publishers: S. Chand & Company ltd ISBN:81-219-3016-2 p197.
- Bioinformatics: A Beginner's Guide. By Jean-Michel Claverie and Cedric Notredame; Wiley Publishing, Inc.2003.
- Bioinformatics: A Practical approach. K. Mani and N. Vijayaraj, Aparna Publication, 2004.
- Fundamentals of Biochemistry by J.L. Jain, Sanju Jain & Nitin Jain (2008) Publishers Chand and Co Ltd ISBN81- 219-2453-7 P132,204,214.
- Principles and techniques of biochemistry and molecular biology-Keith Wilson and JohnWalker.6thedition, Cambridge University Press.
- Analytical Techniques in Biochemistry and Molecular Biology-By Rajan Katoch. Springer Publishers.
- Instrumental Methods of analysis- Chatwal, Anand.
- Manuals of biochemistry-Satyanarayana.
- Principles and techniques of practical biochemistry- Bryan L.Williams and Keith Wilson.
- A biochemical guide to principles and techniques of practical biochemistry- Keith Wilson and Kenneth H.Gouldin.
- Basic Techniques In Biochemistry And Molecular Biology By R.K.Sharma,S.P.S. Sangha.

Semester III

Practicals for IM1341 (Core) P3

Hours/week: 3 **No. of contact hours: 54**

Course Outline

1. Introduction to laboratory and lab equipments

- Use of balances-common, analytical and electronic balances.
- Preparation of solutions:
- Percentage, molar, normal, dilution of stock solutions, standard solution
- Standardization of pH meter.
- Determination of pH of unknown solution using pH meter.
- Preparation of Buffer. (application of Henderson-Hasselbalch equation)
- Preparation of colloidal solutions
    - Preparation of colloidal ferric hydroxide by hydrolysis
    - Preparation of emulsion
    - Precipitation of colloids by salts

2. Chromatographic Techniques

- Demonstration of different types of paper chromatography.
- Separation and identification of aminoacid mixture by paper chromatography

- Thin layer chromatography
- Extraction and quantification of total lipids.
- Separation of lipids by TLC

References:

- Basic Techniques In Biochemistry And Molecular Biology By R. K. Sharma, S. P. S. Sangha-I.K. International Publishers Pvt. Ltd.
- Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.
- Principles and techniques of biochemistry and molecular biology- Keith Wilson and John Walker. 6th edition, Cambridge University Press.

Semester IV

IM1441: Core course IV
Course Title: Physiological aspects of Biochemistry and Enzymology

No. of Credits: 3 **No. of contact hours: 54**
Hours/week: 3

Objectives: Science of Physiology is the study of functions in living organisms. More recently, this field has proceeded apace, and biochemists have been really successful in learning the impeccable working of the body systems at a finer level. A thorough learning of Physiological Biochemistry will help the students to understand themselves more, and to build up their own living standards.

Course Outcome: Student will be able to

- Describe the mechanism of food digestion, hemopoeisis, hemostasis, kidney functions and respiration.
- Detail on the physiological events in nephron, muscle, nerve and bone.
- Explain the classification, functions and regulation of hormones and hormonal control of reproduction.
- Depict mechanism of enzyme action, enzyme kinetics and inhibition.

Course Outline

Module I **(9 hrs)**

Digestion and absorption

Digestion and absorption of carbohydrates, proteins and lipids. Salivary, Gastric and Biliary Secretions- composition and functions. Role of bile in lipid digestion and absorption. Intestinal hormones, movements in gastro intestinal tract, secretion, digestion and absorption in the small intestine. Absorption in the large intestine. Peptic ulcer, Sprue, celiac disease, regurgitation, diarrhoea and constipation.

Module II **(9 hrs)**

Biochemistry of Blood

Constituents of Blood, types of blood cells, components of plasma, types of plasma proteins and functions. Mechanism of blood clotting (Extrinsic and Intrinsic pathway). Structure of hemoglobin-

types of hemoglobin, sickle cell anemia, thalasemias. Hemopoiesis: blood forming organs, erythropoeisis, leukopoiesis. Blood group classification (ABO).

Module III **(9 hrs)**

Biochemistry of respiration and renal function

Transport of oxygen and carbon dioxide in blood, oxygen dissociation curve and Bohr effect, Hill plot, carbonic anhydrase, chloride shift. Structure of nephron, mechanism of formation of urine. Basic principles of acidosis and alkalosis- metabolic and respiratory. Role of lungs and kidney in acid-base balance.

Module IV **(9 hrs)**

Biochemistry of specialized tissue

Muscle proteins, organization of contractile proteins and mechanism of muscle contraction in striated and non-striated muscle- sliding filament theory. Sources of energy for muscle contraction.

Nerve: Structure of neuron, neurotransmitters, mechanism of nerve impulse transmission, synaptic transmission, reflex action and neurotransmitters.

Bone: Structure and composition, role of Ca, P and Vitamin D in bone formation

Module V **(9 hrs)**

Endocrinology and Reproductive physiology

Classification of hormones, important functions of the following hormones: thyroxin, GH, TSH, LH, FSH, ADH and oxytocin, cortisol, cortisone, corticosterone (mineralocorticoids), aldosterone (glucocorticoid), epinephrine and nor-epinephrine (structures of hormones not expected). Salient features and the endocrine defects associated with the following disorders- Addisons disease, Cushings syndrome, diabetes mellitus, goitre, hypothyroidism and hyperthyroidism, Hashimotos thyroiditis, diabetes insipidius, acromegaly. Male and female sex hormones: testosterone, estrone and estrasdiol. Interplay of hormones during reproductive cycle, pregnancy, parturition and lactation. Hormone based contraception.

Module VI **(9 hrs)**

Enzymes

Introduction to enzymes, apoenzyme, holoenzyme, prosthetic group, classification of enzymes, lock and key model, induced fit model, features of active site, enzyme specificity and types. Enzyme kinetics, factors affecting the velocity of enzyme action- enzyme concentration, temperature, pH, substrate concentration- derivation of Michaelis Menten equation and Km value determination, its significance. Lineweaver Burk plot. Enzyme inhibition- irreversible and reversible (competitive, non-competitive and uncompetitive inhibition), allosteric enzymes. Isoenzymes, zymogen form of enzyme and its activation.

References:

- Textbook of Medical Physiology,11/e WithStudent Consult Access (2005) by Arthur C Guyton, John E Hall Publisher**:** Else ISBN: 8181479203ISBN-13:9788181479204.
- Principles of Biochemistry, 6e (1959) byAbraham White, Philip Handler Publisher: Tata McGraw- hill Publishing Company Limited ISBN: 0070590494ISBN-13:9780070590496, 978-0070590496.
- Biochemistry by U. Satyanarayana, U. Chakrapani , third edition, ISBN 81-87134-80-1Enzymes-M.DixonandECWebb.LongmanPublication.

- Textbook of Medical Biochemistry for Medical Students by DM Vasudevan and Sreekumari S. 5th edition, Japee Brothers, Medical Publishers, ISBN 81-8448-124-1:9788184481242.
- Mammalian Biochemistry – White A, Handler P and Smith P.L (McGraw Hill)
- Review of Medical physiology – G. William, McGraw Hill Karan Books.
- Principles of Anatomy and Physiology – Gerald J Tortora, Bryan Derrickson. John villey and sons, INC

Semester IV

IM1442: Core course V (Practicals) P4
Course title: Quantitative analysis of Biomolecules

No. of Credits: 3 **No. of contact hours: 54**
Hours/week: 3

Course Outline

1. Quantitative analysis of carbohydrates
- Estimation of glucose by Nelson-Somogyi method
- Estimation of reducing sugar by anthrone method.
- Estimation of reducing sugar phenol-sulphuric acid.
- Estimation of pentose by Orcinol method.
- Estimation of ketose by Roe-Papadopoulos method.

2. Quantitative Analysis of Lipids
- Estimation of Cholesterol by Zak's method.
- Determination of Acid Value.
- Determination of Saponification value.

3. Quantitative Analysis of Aminoacids and Proteins
- Estimation of Tyrosine by Folin-Lowry method.
- Estimation of Protein by Biuret method.
- Estimation of Protein by Folin-Lowry method.

4. Quantitative Analysis of Nucleic Acids
- Estimation of DNA by diphenylamine method.
- Estimation of RNA by Orcinol method

References:

- Experimental Biochemistry: A Student Companion, Beedu Sasidhar Rao & Vijay Deshpande (ed), I.K International Pvt. LTD, New Delhi ISBN 81-88237-41-8.
- Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.
- Standard Methods of Biochemical Analysis, S. K. Thimmaiah (Ed), Kalyani Publishers, Ludhiana ISBN 81-7663-067-5.
- Hawks Physiological Chemistry, Bernard L.Oser (ed).TATA McGRAW Hill Publishing Company LTD, New Delhi.

- ES West, WR Todd, HS Mason and JT van Bruggen. A text Book of Biochemistry, Oxford and IBH Publishing Co., New Delhi, 1974.

(Students should be trained to perform estimation of at least two carbohydrates, one lipid, two amino acids and protein and one nucleic acid. Minimum of 7 experiments should be recorded)

Semester V

IM1541: Core course VI
Course Title: Molecular Biology

No. of Credits: 3 **No. of contact hours: 36**
Hours/week: 2

Objectives: To generate understanding about the molecular details of the biological system and to describe the events including the central dogma of molecular biology

Course Outcome: The student will be able to

- Explain about the genome organization.
- Detail on gene expression and regulation of gene expression in prokaryotes.
- Describe the various mutations and repair pathways in prokaryotes.

Course Outline

Module I **(6 hrs)**

Introduction to Molecular Biology

Identification of genetic material, chemical nature of gene, chromatin organization. Definition of gene, cistron, recon and muton. Concept of split genes-introns and exons. One gene-one enzyme hypothesis and one gene-one polypeptide hypothesis. Central dogma of molecular biology. C-value paradox. Classical experiments for the search of genetic material-transformation experiments by Griffith and Avery, Hershey and Chase's bacteriophage experiment.

Brief study about variations in chromosome structure and number-duplications, inversions, translocations, aneuploidy and polyploidy (details not expected).

Module II **(8 hrs)**

Replication

Replication- semi conservative replication, Messelson-Stahl experiment. DNA polymerase and other proteins required for replication, replication fork- continuous and discontinuous replication- Okazaki fragments. Mutation- point and frame shift mutations. Mutagens- physical and chemical and their mode of action. Fundamental study about DNA repair- photo reactivation, excision repair and mismatch repair mechanisms (detailed pathways not needed).

Module III **(8 hrs)**

Transcription

Different forms of RNA- mRNA, tRNA, rRNA. Prokaryotic transcription- initiation, elongation and termination. Prokaryotic RNA polymerase- promoters and enhancers. Post transcriptional modification in eukaryotes.

Module IV **(8 hrs)**

Genetic code and translation

Genetic code-deciphering the code (elementary study only). Major features of genetic code. Codon-anticodon interaction, wobble in pairing. Translation in prokaryotes-adaptor role of t-RNA, activation of amino acids and enzyme involved in activation. Initiation process-role of ribosomes and different r-RNAs, Shine-Dalgarno sequence. Elongation-roles of EF-Tu, EF-Ts and EF-G. Termination process and role of release factors. Inhibitors of protein synthesis. Eukaryotic protein synthesis (elementary study only). Major post translational modifications. Protein folding and chaperones.

Module V **(6 hrs)**

Regulation of gene expression in prokaryotes

Constitutive and inducible enzymes, concept of operon by Jacob and Monod-regulator gene, operator site, structural gene. Inducible operon- lac operon, role of lac repressor, regulation by CAP protein, catabolite repression. Repressible operon-tryptophan operon, control by repressor protein and attenuation. Protein-DNA interaction in transcriptional regulation-role of specific factors and regulatory proteins.

References:

- Cell and molecular biology- concepts and experiments by Gerald Karp, Wiley1807-2007, ISBN 978-0-470-16961-2
- Cell biology, Genetics, Molecular Biology, Evolution and Ecology by P.S.Verma and V. K. Agarwal (2008) Publisher: S. Chand & Company Ltd ISBN: 81-219-2442-.
- Molecular Biology of The Gene 5/e(s) by James D Watson, Tania A Baker, Stephen P Bell (2008) Publisher: Dorling Kindersley (India) Pvt Ltd ISBN: 8177581813, ISBN-13:9788177581812, 978-8177581812.
- Cell and Molecular Biology, 3e (2003) by Karp Publisher: Jw ISBN: 0471268909ISBN-13:9780471268901, 978-0471268901.
- Molecular Cell Biology (2002) by H.S. Bhamrah Publisher: Anmol Publications ISBN: 8126111429ISBN-13: 9788126111428, 978-8126111428.
- Cell and Molecular Biology by S. Sundara Rajan (2003) Publisher: Anmol Publications ISBN: 8126113553ISBN-13: 9788126113552, 978-8126113552.

Semester V

IM1542: Core course VII
Course Title: Food Science

No. of Credits: 3 **No. of contact hours: 36**
Hours/week: 2

Objectives: This course aims at offering an idea of nutrition, food composition, food preservation, adulteration, food safety and management.

Course outcome: The student will be able to

- Explain about the basic aspects of human nutrition and chemical composition of food consumed by human.

- List out the techniques of preservation of food and the common methods of adulteration.
- Enumerate food safety and management processes.

Course Outline

Module I **(8 hrs)**

Nutrition

Calorific value of food, determination of calorific value –Bomb calorimeter, Basal metabolic rate, factors affecting BMR, Specific Dynamic Action of food (SDA).

Nutritional significance of carbohydrates, proteins and fat. Essential fatty acids, essential amino acids, limiting amino acids and significance of dietary fibre. Balanced diet and Recommended Daily Allowance (RDA). Terms related to protein evaluation-protein efficiency ratio (PER), digestibility coefficient, biological value, net protein utilization, net protein ratio and chemical score (definitions only). Nitrogen balance-positive and negative nitrogen balance. Protein-calorie malnutrition-kwashiorkor and marasmus. Functions of minerals- Ca, P, Mg, Na, K, Cl, Iodine, Cu, Zn, Mn and Fe. Vitamins-Fat and water soluble vitamins- Functions and deficiency diseases.

Module II **(7 hrs)**

Foods

Outline of chemical composition of: cereals, pulses, tubers, milk, egg, fish, meat, fruits, alcoholic beverages, soft drinks, coffee, tea, coconut, molasses, jaggery, honey, spices, edible oils and fats. Brief mention about the different antinutritional factors in food- phytic acid, lectins, tannins, saponins, amylase inhibitors and protease inhibitors. Food borne diseases: Lathyrism, Favism, Ergotism and Epidemic dropsy. Analysis of moisture content-evaporation method, distillation method (Dean and Stark method), chemical reaction method (Karl-Fischer titration and gas production method), physical method (basics of Hydrometry and Refractometry) and spectroscopic method (basics principal of microwave and IR). Determination of total solid ash, total carbohydrates, crude fibre, crude protein and fat.

Module III **(7 hrs)**

Food preservation and adulteration

Preservation of foods: Low temperature (chilling and freezing), high temperature (boiling, pasteurization, autoclaving, canning-steps involved in canning), dehydration, high osmotic pressure, chemical preservatives, cold sterilization and anaerobic conditions. Food additives: Permitted colors, permitted food preservatives, emulsifying agents, flavoring agents, artificial sweeteners (saccharine). Food adulteration: FSSA definition of an adulterant. Common adulterants in milk, coffee powder, mustard seeds, curry powders, butter, honey, rice, wheat, black pepper and vegetable oils. Health hazards due to adulteration. Elementary study on qualitative detection of adulteration in milk, edible oils and detection of saccharine.

Module IV **(7 hrs)**

Fortified Foods and neutraceuticals

Types of food fortification (Biofortification, microbial biofortification, industrial/commercial, home fortification). Common vehicles for food fortification (common salt, whole wheat flour, rice, vegetable oils, milk and dairy products). Criteria, advantages and disadvantages of food fortification. Basic concepts of neutraceuticals -sources of neutraceuticals (probiotics, dietary fibers, antioxidants, phytochemicals, curcuminoids, flax seed, spirulina, soy protein, garlic, lycopene and fenugreek).

Module V **(7 hrs)**

Food safety and quality management

Food safety: definition and basic concepts of food toxicity and food hazards (physical, chemical and biological). Food safety management systems: Good Manufacturing Practices (GMP), Good Handling Practices (GHP), Hazard Analysis Critical Control Points (HACCP). Product certification/grading – BIS and AGMARK (basic approach only). Food standards: Codex Alimentarius, ISO and Codex India. Brief study of the following: FSSAI, PFA 1954, FSSA 2006, FPO and essential commodities act.

References:

- Advanced Text Book on Food and Nutrition, Vol I and II, Dr. M Swaminathan.2nd edition. The Bangalore Printing and Publishing Co Ltd.
- Foods-Facts and Principles-N Shakuntala Manay and M Shadaksharaswamy. New Age International Publishers, ISBN-81-224-1325-0.

Semester V

IM1551: Open Course (Core)
Course Title: Clinical Approach to Life

No. of Credits: 2 **No. of Contact Hours: 54**

Hours/week: 3

Note: Open courses are offered to students of various other disciplines like arts, humanities and languages. Hence the approach to open course should be made only at a peripheral level. In depth approach is not expected in this course.

Objectives: To provide layman knowledge to the students of common stream about the various biochemical tests done to determine disease conditions, and a general interpretation of lab results.

Course outcome: The student will be able to

- Give the normal values of biochemical parameters of clinical significance.
- Explain the significance of the parameters in diagnosis of diseases.
- Interpret the results and relate it with various disorders.

Course Outline

Module I **(8hrs)**

Blood

Components of blood and their function- difference between plasma and serum. Blood groups, Rh factor, hemolytic disease of the newborn, basic idea about blood transfusion.

Module II **(10hrs)**

Routine Blood Analysis

Clinical significance and normal values of glucose- (fasting blood sugar, random blood sugar, postprandial blood sugar, Hb1Ac, total protein, albumin, urea, bilirubin, cholesterol- HDL and LDL (determination methods of these parameters not needed).

Module III **(9hrs)**

Hematology

Normal values and clinical significance of the routine hematological tests- RBC count, WBC count, ESR, PCV, hemoglobin concentration, platelet count, bleeding time, clotting time (Detailed procedures not needed).

Module IV **(9hrs)**

Urine analysis

Routine examination of urine- names of the normal constituents- names and clinical significance of the abnormal constituents- glucose, ketone bodies, blood, protein, bile pigments. Microbiological examination- casts, crystals, detection of infection.

Module V **(18hrs)**

Organ function tests

Liver function tests- functions of liver. Serum bilirubin, jaundice- enzymes used for diagnosis of liver diseases- AST/ALT.

Renal function test- functions of kidney. Renal threshold. Clearance tests- urea and creatinine clearance, dilution and concentration test.

Thyroid function test- significance of T3, T4 and TSH values. Definition of hypo- and hyper-thyroidism.

References:

- Medical Laboratory Technology Volume I, Kanai.L.Mukharjee,
- Medical Laboratory Technology- Ramnik Sood.
- Textbook of Biochemistry for Medical Students, 6th Edition- By D.M. Vasudevan, Sreekumari S, Kannan Vaidyanathan.

Suggested Readings:

- A procedure for routine diagnostic tests, Tata Mc.Graw- Hill Publishing Company Ltd., New Delhi,12th reprint,1988)
- Fundamentals of Biochemistry for Medical students Dr. Mrs. Ambika Shanmugam, Published by12, III-Cross street, West C.I.T.Nagar, Madras; IIIEdition,1977)
- Bauer J.D. Clinical LaboratoryMethods,C.V.Mosby,St.Louis1982.
- MollisonP.L. Blood Transfusionin Clinical Medicine, 6th Ed, Blackwell Scientific Publications, Oxford; 1979.
- Bowley C.C., K.L.G. Goldsmith & Wd'A Maycock, Blood Transfusion: A guide to the formation & operation of a transfusion service, World Health Organisation, 1971.
- Bishop M.L. J.L. Dlaufer & E.P.Fody, Clinical Chemistry, Lippincott Company, Philadelphia, 1985.
- LambergS.L., Laboratory Manual of Haematology and Analysis, A VI publishing Co. Inc.,Westport, Connecticut, 1978.

Semester V

IM1552: Open Course (Core)
Course Title: Lifestyle Diseases

No. of Credits: 2 **No. of Contact Hours: 54**
Hours/week: 3

Note: Open courses are offered to students of various other disciplines like arts, humanities and languages. Hence the approach to open course should be made only at a peripheral level. In depth approach is not expected in this course.

Objectives: To create awareness among students about the various life style diseases and methods of prevention and management.

Course outcome: The student will be able to

- List out the common diseases caused by improper lifestyle.
- Describe the methods of diagnosis of the diseases.
- Explain the ways of treatment and management of these diseases.

Course Outline

Module I **(8 hrs)**

Concept of lifestyle diseases

Definition of lifestyle diseases/non communicable diseases - four major types of diseases-CVD, Diabetes, Cancer and Respiratory diseases. Other types of lifestyle diseases/non communicable diseases- Obesity. Sedentary life style. Importance of life style factors in preventing disease development diet, exercise, smoking, alcohol etc.

Module II **(10 hrs)**

Cardiovascular diseases

Definition of the terms- Coronary heart disease, angina, myocardial infarction, congestive heart failure, ischemic diseases, stroke. Cardiovascular diseases/atherosclerosis –symptoms, causes, diagnosis and management. Arterial plaque, hypertension (elementary knowledge). Normal value of cholesterol, life style changes to reduce cholesterol and risk of heart attack, drugs to lower cholesterol level (names only).

Module III **(9 hrs)**

Diabetes

Four types of diabetes: Type 1, Type 2, Gestational, and Pre-Diabetes. Modifiable and non-modifiable risk factors. Definition of fasting blood sugar, post prandial blood sugar, random blood sugar and their normal values. Significance of glucose tolerance test, characteristics, symptoms and causes. Diagnosis of Type 1 and Type 2 diabetes, importance of lifestyle factors in preventing its development and management. Drugs lowering blood glucose level (names only).

Module IV **(10 hrs)**

Cancer

Definition of the terms- Cancer, metastasis, sarcoma. Different types of cancer. Risk factors for cancer (carcinogens). Difference between primary and secondary tumor. Difference between benign

and malignant tumor. Characteristics of cancer cell, causes, diagnostic methods (name of methods only). Treatment modalities (surgery, chemotherapy, immunotherapy, hormonal therapy- basic concepts alone). Biochemical markers for detecting cancer, prevention and management of cancer- role of antioxidants in preventing carcinogenesis.

Module V **(8 hrs)**

Chronic respiratory disease

Effect of smoking to lungs. Modifiable and Non modifiable risk factors. Prevention and management of the disease.

Module VI **(9 hrs)**

Importance of diet and exercise in health

Definition- Balanced diet, Basal Metabolic Rate and Calorific value. Obesity (definition), symptoms and signs associated with obesity-Body mass index, determination and significance of obesity. Risk factors, prevention and management.

Role of fibre containing food- PUFA- impact of junk foods.

Role of exercise for control and prevention of life style diseases. Importance of regular walking in managing lifestyle disorders. Use of lifestyle medicine to treat disorders.

References:

Guide to prevention of lifestyle diseases- M.N. Kumar, R.Kumar, Deep & Deep Publications, ISBN: 817629518.

Semester V

IM1543: Core course VIII (Practicals) P5
Course Title: Serum and Food analysis

No. of Credits: 3 **No. of contact hours: 108**
Hours/week: 6

Course Outline

1. Estimations in Serum

- Estimation of blood glucose by Nelson–Somogyi Method
- Estimation of serum Cholesterol by Zak's Method
- Estimation of blood Urea by Diacetylmonoxime Method
- Estimation of total Protein in serum by Biuret Method
- Estimation of total protein in serum by Folin-Lowrymethod

2. Clinical Enzymology (only demonstration)

- Assay of Serum alanineamino transferases (ALT/SGPT)
- Assay of serum aspartate amino transferases (AST/SGOT)

3. Food Analysis

- Isolation of protein from milk.

- Estimation of cholesterol in egg.
- Estimation of reducing sugar in honey.
- Estimation of Sucrose in jaggery.
- Estimation of starch from potato

References:

- Experimental Biochemistry: A Student Companion, Beedu Sasidhar Rao & Vijay Deshpande (ed), I.K International Pvt. LTD, New Delhi ISBN 81-88237-41-8.
- Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.
- Standard Methods of Biochemical Analysis, S. K. Thimmaiah (ed), Kalyani Publishers, Ludhiana ISBN 81-7663-067-5.
- Practical Clinical Chemistry, Harold Varley, CBS Publishers and Distributors, New Delhi.

Semester VI

IM1641: Core course IX
Course Title: Clinical Biochemistry

No. of Credits: 3 **No. of contact hours: 54**
Hours/week: 3

Objectives: This course aims at providing an understanding of clinical significance of biochemical parameters and to introduce the students to basics of pharmacology.

Course outcome: The student will be able to

- Clinically assess the laboratory indicators of physiological conditions and diseases.
- Describe the basic concepts of pharmacology and mechanism of action of drugs.

Course Outline

Module I **(6 hrs)**

Specimen collection and preservation methods

Collection and preservation procedures of blood, plasma, serum, and urine, preparation of swabs. Automation in clinical biochemistry: precision, reliability, reproducibility and other factors in quality control.

Module II **(12 hrs)**

Blood &Urine analysis

Analysis of blood: Principles of estimation, normal values and clinical significance of Hb and uric acid, lipid profile: total cholesterol, triglycerides, LDL, HDL, serum electrolytes: Na^+, K^+ and Cl^-, cardiac markers: creatine kinase- MB, acid phosphatase glucose levels : random, fasting and post prandial, GTT- Significance, preparation of patient, interpretation of results with special reference to normal, impaired glucose tolerance

Urine analysis: Urine physical characteristics: colour, volume, pH, specific gravity names of normal constituents. Abnormal constituents: ketone bodies, protein, glucose, blood, bile pigments (procedures of qualitative analysis and their clinical significance).

Module III **(6 hrs)**

Hematology

Principle of determination and clinical significance of the following parameters- total count, differential count, erythrocyte sedimentation rate, packed cell volume, prothrombin time, bleeding time and clotting time. Brief study of blood groups, anticoagulants, storage and transfusion of blood, hemolytic disease of the newborn.

Module IV **(12 hrs)**

Organ function test

Liver function tests: Principle of estimation, normal value and clinical significance of serum Bilirubin -Total and conjugated (test for excretory function), AST, ALT, alkaline phosphatase (marker enzymes of liver injury), Total protein, albumin, globulin, albumin/globulin ratio (test for synthetic function).

Thyroid function test-Assay of T3, T4, TSH normal value and clinical significance (hypo- and hyperthyroidism- primary and secondary).

Renal function tests- Principle of estimation of urea and clearance tests (urea & creatinine) normal value and clinical significance.

Module V **(9 hrs)**

Life style disorders

Introduction to life style disorders- definition, lifestyle factors in the development and management of diseases. Diabetes: classification and etiology, glycosylated hemoglobin. Atherosclerosis: ischemia, myocardial infarction, hypertension and stroke. Obesity: classification according to BMI (brief description). Cancer: causes, types, metastasis, management- surgery, chemotherapy and radiation.

Module VI **(9 hrs)**

Pharmacology

Introduction to pharmacology, drugs, dosage forms (definitions only), sources of drugs, routes of administration, absorption, distribution. Mechanism of action: mention the target site, types of receptors and their mode of action. General mode of action of Antibiotics- penicillin, streptomycin, tetracycline, chloramphenicol (outline only).

References:

- R. Ashwood, David E. Bruns (6TH Eds), Elsevier (Saunders) 2006 ISBN: 8131213749, ISBN-13: 9788131212742, 978-8131213742.
- Tietz Text book of Clinical chemistry and Molecular Diagnostics. Carl A. Burtis, Edward
- Basic & Clinical Pharmacology by Bertram G. Katzung (2006) Publisher: Mcgraw-hill Medical Publishing ISBN: 0071451536 ISBN-13: 9780071451536, 978-0071451536
- Notes on Clinical Biochemistry by John K. Candlish (1992) Publisher: World Scientific
- Publishing Company ISBN: 9810210663 ISBN-13: 9789810210663, 978-9810210663
- Clinical Biochemistry: Metabolic And Clinical Aspects by William J. Marshall, Stephen
- K. Bangert, Elizabeth S.m. Ed. S.m. Ed. Marshall (2008) Publisher: \Elsevier Science
- Health Science Div ISBN: 0443101868 ISBN-13: 9780443101861, 978-0443101861
- Basic Medical Biochemistry: A Clinical Approach by Dawn B., PH.D. Marks, Allan D.
- Marks Colleen M. Smith (1996) Publisher: Lippincott Williams & Wilkins; illustrated
- edition ISBN-10: 068305595X ISBN-13: 978-0683055955
- Clinical Chemistry, 6/e Ie by William J Marshall, Stephen K Bangert (2008) Publisher:
- Else ISBN: 0723434603, ISBN-13: 9780723434603, 978-0723434603

- Tietz Fundamentals of Clinical Chemistry, 6/e by Carl A Burtis, Edward R Ashwood
- (2008) Publisher: Else ISBN: 8131213749, ISBN-13: 9788131213742, 978-8131213742
- Preventive and social medicine By K. Park
- Text book of medical Biochemistry by Sreekumari and Vasudevan

Semester VI

IM1642: Core course X
Course Title: Metabolism

No. of Credits: 4 **No. of contact hours: 54**
Hours/week: 3

Objectives: Life is a biochemical process involving thousands of reactions occurring in an organized manner. These reactions are collectively called metabolism. The major objective of learning this course is the complete understanding of all the metabolic reactions at a molecular level.

Course outcomes: Student will be able to

- Write the reactions involved in metabolism of carbohydrates, lipids, amino acids & nucleic acids.
- List out the inborn errors of metabolism and the defective enzymes associated with it.
- Describe the regulatory mechanisms and bioenergetics of the metabolic pathways.
- Explain the process involved in photosynthesis.

Course Outline

Module I **(10 hrs)**

Carbohydrate metabolism

Reactions and energetics of glycolysis (aerobic and anaerobic), Oxidative decarboxylation- TCA cycle, Anaplerotic reaction, Gluconeogenesis, HMP shunt. Metabolism of fructose and galactose. Galactosemia, Fructosuria, Essential pentosuria. Glycogen Metabolism: Glycogenesis, Glycogenolysis, regulation of glycogen metabolism. Cori cycle, brief study of the Glycogen storage diseases (Von Gierke, Pompes, Cori's or Forbe's, Anderson, Her's, McArdle, Tarui's).

Module II **(9 hrs)**

Lipid Metabolism

Fatty acid biosynthesis- saturated. Biosynthesis of triacylgycerol, phospholipid and cholesterol. Fatty acid oxidation- beta oxidation, alpha and omega oxidation. Ketone bodies: formation, utilization and excretion.

Module III **(8 hrs)**

Aminoacid metabolism

Aminoacid pool, glucogenic and ketogenic amino acids. Biosynthesis and degradation of tyrosine and lysine. Transamination, deamination and decarboxylation,.Urea cycle and regulation. Alkaptonuria, phenylketonuria.

Module IV **(8 hrs)**

Nucleic acid metabolism

ources of atoms of purines and pyrimidines, Biosynthesis and Degradation of purines and pyrimidines- de novo and salvage pathways with regulation, Gout, Lesch Nyhan syndrome.

ModuleV **(10 hrs)**

Bioenergetics

Laws of thermodynamics-Role of high energy phosphates in energy transfer, concept of free energy. Biological oxidation, redox potential, coupled reactions. Enzymes involved in oxidation and reduction-oxidases, dehydrogenases, hydroperoxides, oxygenases.

Electron Transport Chain: Structure of Mitochondria, Sequence of electron carriers: NADH dehydrogenase, Succinate dehydrogenase, Cytochrome reductase and Cytochrome oxidase (outline of electron transport chain), Sites of ATP synthesis, Inhibitors of electron transport chain.

Oxidative phosphorylation: Sites of ATP production, Hypothesis of mitochondrial oxidative Phosphorylation-Chemiosmotic theory, P/O ratio, Inhibitors and Uncouplers, Transport of reducing potentials into mitochondria-Malate aspartate and Glycerol-3-phosphate shuttle.

Module VI **(9 hrs)**

Photosynthesis

Structure of Chloroplast, light reaction - cyclic and noncyclic photophoshorylation. Chlorophyll (structure only), dark reaction, fixation of CO_2 and formation of carbohydrate (brief treatment only), C3 and C4 plants, photorespiration, CAM pathway- Calvin cycle, Hatch-Slack pathway

Secondary metabolites- Flavanoids, alkaloids, terpenoids, functions and applications.

References:

- Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.
- Principles of Biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN81-239-0295-6.

- Biochemistry by Lubert Stryer, W.H Freeman and Company, New York ISBN 0-7167-2009-4, 4th Edition.
- Principles of Biochemistry, by Albert Lehninger, David L Nelson, Michael M Cox, CBS Publishers & Distributors Delhi ISBN81-239-0295-6.

Semester VI

IM1643: Core course XI
Advanced Biochemistry

No. of Credits: 3 **No. of contact hours: 54**

Hours/week: 3

Objectives: This course will give a professional approach to the field of new techniques in life science. After the delivery of the course, student will have an idea of the concepts and applications of gene cloning, analysis of genes and genome by DNA sequence analysis, critical description of Nano science and Nano biotechnology and basic idea about Omics.

Course outcomes: Student will be able to

- Write the principle of rDNA technology, PCR, cloning, RFLP, RAPD, AFLP and STR.
- List out techniques for characterization of nanomaterials and its functionalization.
- Explain nanotechnology and its applications in medicine and developing nano-biosensors.
- Describe applications of virtual techniques in life science.

Course Outline

Module I **(10 hrs)**

Principles of Gene Cloning

Introduction, history, the advent and importance of gene cloning PCR, real time PCR. Outline study of recombinant DNA technology. DNA manipulating enzymes, palindromes. Cloning vectors in prokaryotes and eukaryotes (pBR 322, pUC18, M13, Cosmids, Phagemids, yeast vectors, animal viral vectors, plant viral vectors, Ti plasmids). Construction of genomic library and c-DNA library.

Module II **(12 hrs)**

DNA technology

Isolation and purification of total cell DNA. DNA sequencing methods (Maxam Gilbert sequencing, Sanger's method). Principle and applications of In situ hybridization, DNA fingerprinting, DNA foot printing, RFLP, RAPD, AFLP, and STR analysis-. Outline study of Site- directed mutagenesis, DNA-protein interaction Assays.

Module III **(12 hrs)**

Elements of Nanoscience

Basics and scale of nanotechnology, different classes of nanomaterials: Liposomes, quantum dots shell structures, metal oxides and semiconductors (Definition &Physico-chemical properties and applicationonly). Synthesis of nanomaterials- Physical & Chemical Methods.Characterization of nanostructures: DLS, FTIR & X-ray diffraction (Basic idea). Types of nanostructure: one dimensional, two dimensional and three dimensional nano-structured materials.

Module IV **(10 hrs)**

Nanobiotechnology

Nanobiomaterials, Structural & functional principles of bionanotechnology: Size, zeta potential, bioavailability and excretion. Protein and DNA based nanostructures (Definition and examples only), nano bio-analytics, nanotechnology in food, medicine and health science application.

Module V **(10 hrs)**

Omics

Basic concepts and tools of proteomics, quantitative and targeted proteomics, proteogenomics, metabolomics, metabolomic data analysis, genomics, next generation sequencing (NGS) technology, gene expression and gene regulation networks, basic idea of molecular diagnostics.

References:

- Gene Cloning and DNA Analysis: An Introduction, 6th Edition, T. A. Brown, Wiley-Blackwel.
- Principles of Gene Manipulation & Genomics – 7th Edition – Sandy B. Primrose, Richard Twyman– Blackwell

- Chemistry of nanomaterials: Synthesis, properties and applications by CNR Rao et.al.
- Nanoparticles: From theory to applications – G. Schmidt, Wiley Weinheim 2004.
- Instrument E L Principe, P Gnauck and P Hoffrogge, Microscopy and Microanalysis (2005), 11: 830- 831, Cambridge University Press.
- Processing & properties of structural naonmaterials- Leon L. Shaw, Nanochemistry: A Chemical Approach to Nanomaterials, Royal Society of Chemistry, Cambridge UK 2005.
- Bernhard O.Palsson,SangeetaN.Bhatia,"Tissue Engineering" Pearson Publishers 2009.
- Meyer, U.; Meyer, Th.; Handschel, J.; Wiesmann, H.P. Fundamentals of Tissue Engineering and Regenerative Medicine.2009.

Semester VI

IM1643: Core course XII (Practicals) P6
Course Title: Urine Analysis and Hematology

No. of Credits: 3 **No. of contact hours: 90**
Hours/week: 5

Course outline

I. Urine analysis and Hematology

Qualitative tests of urine: Abnormal constituents

- Proteins (Coagulation test, sulfo salicylic acid test,)
- Sugars (Benedicts test)
- Hemoglobin (Benzidine test)
- Ketonebodies (Rothera's test, Gerhardt's test)
- Bile pigments (Fouchet's test, Gmelin's test)
- Bile salts (Hay'stest)

II. Hematology

ESR, PCV, TC/DC count, Blood grouping, hemoglobin

The student should have done a minimum of five abnormal constituents in urine analysis and four hematology experiments. The core practical exam will be of three hours duration and involves identification of an abnormal constituent in the given urine sample and a hematology experiment from the above list.

References:

- Experimental Biochemistry: A Student Companion, Beedu Sasidhar Rao & Vijay Deshpande (ed), I.K International Pvt. LTD, New Delhi ISBN 81-88237-41-8.
- Introductory Practical biochemistry, S. K. Sawhney & Randhir Singh (eds) Narosa Publishing House, New Delhi, ISBN 81-7319-302-9.

- Standard Methods of Biochemical Analysis, S. K.Thimmaiah (Ed), Kalyani Publishers, Ludhiana ISBN81-7663-067-5.
- Hawks Physiological Chemistry, Bernard L.Oser (ed).TATA Mc GRAW Hill Publishing Company LTD, New Delhi.

IM1645: Project

No. of Credits: 4 **No. of Contact hours: 36**
Hours/week: 2
1hr/wk for core and 1hr/wk for vocational

Total number of students will be divided into two batches with equal number. One of the batches will carry out the project work in core subject and the other batch in the vocational subject. Supervising faculty for the each batch will be decided by drawing lots. The project report should be based on a mini-project work done by the students. This should include original laboratory work, analysis of results and should be presented along with relevant and current literature review. The evaluation of dissertation should be done on the basis of evaluation of the project report and a viva-voce examination of the student. (Project work will be carried out in fifth semester and report will be evaluated in sixth semester).

A report of the industrial visit carried out to any industries/institutions relevant to the subject should accompany the project report.

Scheme for evaluation of project

Total weightage: 30
Project: 20
Industrial Visit: 10 (6 for visit and 4 for visit report)

MODEL QUESTION PAPER FOR FIRST SEMESTER EXAM
2(A): BIOCHEMISTRY & INDUSTRIAL MICROBIOLOGY
IM1121 FUNDAMENTALS OF BIOCHEMISTRY

Time: 3Hours Max marks: 80

SECTION- A

Answer **all** questions. Answer in a word to a maximum of two sentences.
Each question carries **one** mark

1. Define carbohydrates.
2. Explain inversion of sugars.
3. Give the structure of tyrosine.
4. Name the mucoploysaccharide which has anticoagulant activity.
5. Give the significance of iodine value.
6. Name the most abundant class of RNA in a cell.
7. Forces that contributes to the stability of protein structure.
8. Name aminoacids having sulphur in it.
9. Name the oxidation product of galactose.
10. Explain protein denaturation.

(10x1=10 Marks)

SECTION- B

Answer any **8** questions. Answer not to exceed 1 paragraph. Each question carries **two** marks:

11. Explain formol titration.
12. Explain understand by chirality.
13. Give the deamination product of alanine.
14. Describe an alpha and beta glyosidic linkage.
15. Give the features of a peptide bond.
16. Define mean, median and mode.
17. Give the structures of the nucleotide in RNA.
18. Give the structures of basic aminoacids.
19. Differentiate between starch and glycogen.
20. Enumerate the contributions of Arthur Kornberg.
21. Give the structure of lecithin.
22. Brief on isoelectric precipitation.

(8x2=16marks)

SECTION-C

Answer any **6** questions. Each question carries **4** marks

23. Write a short note on salting in and salting out precipitation.
24. Differentiate essential and non- essential aminoacids.
25. Enumerate the differences between DNA and RNA.
26. Describe the significance of chymotrypsin in sequencing aminoacids.
27. Short note on hydrolysis of protein.

28. Describe with structural features of cellulose, why it cannot be digested in human gut.
29. Describe the structure and colour reactions of cholesterol.
30. Describe the structure of tRNA.
31. Write briefly on isomerism in sugars.

(6x4=24marks)

SECTION-D

Answer any **2** questions. Each question carries **15** marks

32. Describe classification of lipids.
33. Write in detail the various colour reactions of aminoacids.
34. Describe the classical experiment and contributions of any two scientists in Biochemistry.
35. Describe in details, the structure and functions of glycosaminoglycans.

(2x15=30marks)

MODEL QUESTION PAPER FOR SECOND SEMESTER EXAM
2(A): BIOCHEMISTRY & INDUSTRIAL MICROBIOLOGY
IM1241 ENVIRONMENTAL STUDIES

Time: 3 Hours Max marks: 80

SECTION- A

Answer **all** questions. Answer in a word to a maximum of two sentences.
Each question carries **one** mark

1. Explain Timber extraction.
2. Comment on genetic diversity.
3. Name any 2 endangered species in India.
4. Explain sustainable development.
5. Discus on value education.
6. Mention any 2 environmental pollutant
7. Comment on wildlife protection act.
8. Name any 2 Hot spot diversity in India
9. Define ecosystem.
10. Define renewable resources.

(10x1=10 Marks)

SECTION- B

Answer any **8** questions. Answer not to exceed 1 paragraph. Each question carries **two** marks

11. Explain deforestion and its impact on animals and plants?
12. Comment on soil erosion?
13. Explain producers?
14. Describe what are ecological pyramids
15. Enumerate the causes of thermal pollution
16. Comment on consumerism?

17. Explain *insitu* conservation of biodiversity?
18. Distinguish between ethical and aesthetic value of diversity
19. Write a short note on water logging
20. Explain causes of man induced land slides
21. Define poaching
22. Discus about changes caused due to overgrazing?

(8x2=16marks)

SECTION-C

Answer any **6** questions. Each question carries **four** marks

23. Write a short note on use and over exploitation of forest resources
24. Short note on role of individual in conservation of natural resources
25. Enumerate the differences between forest and aquatic ecosystem
26. Describe the use of alternative energy resources
27. Write a note on noise pollution
28. Describe waste land reclamation
29. Describe the public awareness on social issues and ennivorment
30. Describe the resettlement and rehabilitation of people
31. Write briefly urban problem related to energy

(6x4=24marks)

SECTION-D

Answer any **2**questions. Each question carries **fifteen** marks:

32. Describe the energy flow in ecosystem? Explain the characteristics, structure and function of different types of ecosystem
33. Write in detail on causes, effects and control measures of air and water pollution and nuclear hazards
34. Describe the disaster management of flood, earthquake cyclone and landslides
35. Describe in details on population explosion and family welfare programme.

(2x15=30marks)

MODEL QUESTION PAPER FOR THIRD SEMESTER EXAM
2(A): BIOCHEMISTRY & INDUSTRIAL MICROBIOLOGY
IM 1341 ANALYTICAL BIOCHEMISTRY AND BIOPHYSICAL CHEMISTRY

Time: 3Hours Max marks: 80

SECTION-A

Answer **all** questions. Each question carries **one** mark

1. Write about SDS PAGE
2. Name any two anion exchanger
3. Write about TLC.
4. Explain Beer Lamberts law.
5. Write about Buffers.
6. Write about BLAST.

7. Write about SPSS.
8. Comment on centrifugal force.
9. Explain PUBMED.
10. Explain normality.

(1x10=10 marks)

SECTION-B

Answer any **8** questions. Each question carries **two** marks

11. Write about differential centrifugation.
12. Write down the principle of DNA separation by agarose gel electrophoresis.
13. Write down two cell disruption techniques.
14. List out the applications of ion exchange chromatography.
15. Define data mining.
16. Explain hypothesis.
17. Define knowledge.
18. Discuss about science.
19. Write a note on the principle of electrophoresis.
20. Comment on pH.
21. Short note on Bronsted acid and bases.
22. Write a short note on TCA cycle.

(8x2=16 marks)

SECTION-C

Answer any **6** questions. Each question carries **four** marks

23. Explain dissociation of water.
24. Explain Henderson Hasselbalch equation.
25. Describe Biological significance of osmosis.
26. Write a short note on distinction between lyophilic and lyophobic.
27. Explain emulsions and emulsifying agents.
28. Explain the hypothetico-deductive model and inductive model.
29. Briefly explain plagiarism and publication.
30. Short note on affinity and gel chromatography.
31. Enumerate the different ways to present data.

(6x4=24 marks)

SECTION-D

Answer any **2** questions. Each question carries **fifteen** marks

32. Give a detailed account on use of IT in teaching and learning
33. Describe the Significance of statistical methods in biological investigations? Differentiate students t test and chi square
34. Discuss donnan membrane equilibrium and is biological application
35. Explain what is centrifugation and discuss subcellular fractionation

(2x15=30 marks)

MODEL QUESTION PAPER FOR FOURTH SEMESTER EXAM
2(A): BIOCHEMISTRY & INDUSTRIAL MICROBIOLOGY
IM 1441 PHYSIOLOGICAL ASPECTS OF BIOCHEMISTRY AND ENZYMOLOGY

Time: 3Hours Max. Marks: 80

SECTION- A

Answer **all** questions. Each question carries **one** mark

1. Define Calorific value.
2. Comment on neurotransmitters.
3. Explain erythropoeisis.
4. State Bohr effect.
5. List out the functions of adrenalin.
6. Mention any two functions of oxytocin.
7. How is apoenzyme different from enzyme.
8. Give two functions of vitamin K.
9. Give two examples for protein deficiency diseases.
10. List out constituents of blood.

(10x1=10marks)

SECTION- B

Answer any **8** questions. Each question carries **two** marks

11. Draw the structure of nephron.
12. Give a short note on carbonic anhydrase.
13. Explain oxygen dissociation curve.
14. Comment on the composition of ORS in connection with glucose absorption.
15. Write a note on the composition of bile.
16. State MM Equation.
17. Explain the coenzyme form of vitamins.
18. Define regurgitation and give its significance.
19. Differentiate Cushing syndrome and Addison's disease.
20. Name two female sex hormones.
21. Mention the enzymes involved in carbohydrate digestion.
22. Significance of Km and Vmax.

(8x2=16marks)

SECTION- C

Answer any **6** questions. Each question carries **four** marks

23. Write the physiological functions of thyroxine in the body.
24. Explain the ionic balance in the RBC during respiration.
25. Bring out the role of bile salts in lipid digestion and absorption.
26. Give an account on enzyme inhibition.
27. Explain the sliding filament theory.
28. Describe the process of hemopoeisis.
29. Write a short note on minerelocorticoids.

30. Detail the various processes involved in the contraction of muscles.
31. Give brief note on reflex action

(6x4=24marks)

SECTION-D

Answer any **2** questions. Each question carries **fifteen** marks

32. Explain the mechanism of urine formation with structure of nephron.
33. Derive MM equation and give a note on LB plot.
34. Detail on the transport of gases in blood.
35. Discuss the lipid digestion and absorption process with schematic representation.

(2x15=30marks)

MODEL QUESTION PAPER FOR FIFTH SEMESTER EXAM
2(A): BIOCHEMISTRY & INDUSTRIAL MICROBIOLOGY
IM1541 MOLECULAR BIOLOGY

Time: 3Hours Max marks: 80

SECTION-A

Answer **all** questions. Each question carries **one** mark

1. Define C-value paradox
2. Outline the concept of split genes?
3. List out the enzymes required for DNA replication.
4. Mention the function of helicases?
5. How DNA alkylating agents can induce mutations?
6. Give the role of promoter sequences in transcription.
7. Why genetic code is said to be degenerate?
8. Distinguish between point mutation and frameshift mutation.
9. Mention the role of CAP in the regulation of lac operon.
10. Define attenuation.

(1x10=10 marks)

SECTION-B

Answer any **8** questions. Each question carries **two** marks

11. Describe rolling circle replication?
12. Discuss the central dogma of molecular biology.
13. Define replication fork? Give the names of enzymes involved in its formation.
14. Give an account of prokaryotic RNA Polymerases.
15. Comment on reverse transcriptase.

16. Write a note on activation of amino acids for protein synthesis.
17. Distinguish between constitutive and inducible enzymes.
18. How is transcription regulated in prokarotes?
19. How chaperones assist in protein folding?
20. Give the significance of attenuator structure in trp operon.
21. Comment on wobble hypothesis.
22. Give the role of different types of rRNAs in translation.

(8x2=16 marks)

SECTION-C

Answer any **6** questions. Each question carries **four** marks

23. Write in detail on different types of mutation.
24. Why DNA replication is said to be semi-discontinuous?
25. Explain catabolite repression in lac operon.
26. Describe what are chemical mutagens? Give an account of their mode of action.
27. Write a note on the post transcriptional modifications in eukaryotes.
28. The Watson and crick model of DNA suggested a possible copying mechanism for the replication of genetic materials. Justify the statement.
29. Explain the elongation cycle in translation.
30. Briefly describe Jacob and Monod operon concept.
31. Explain the different modes in which biosynthesis of tryptophan is regulated.

(6x4=24 marks)

SECTION-D

Answer any **2** questions. Each question carries **fifteen** marks

32. Give a detailed account on structure and functions of mRNA, tRNA and rRNA.
33. Describe the process of DNA replication with suitable diagrams
34. Discuss the process of prokaryotic translation and its regulation with suitable diagrams
35. Write in detail about Classical experiments proving DNA as the genetic material.

(2x15=30 marks)

MODEL QUESTION PAPER FOR FIFTH SEMESTER EXAM
2(A): BIOCHEMISTRY & INDUSTRIAL MICROBIOLOGY
IM1542 FOOD SCIENCE

Time: 3Hours Max marks: 80

SECTION-A

Answer **all** questions. Each question carries **one** mark

1. Define Calorific value of food
2. Discuss on AGMARK

3. Comment on BMR
4. Mention any two permitted colors in food
5. Explain neutraceuticals
6. Expand PER
7. Define food toxicity
8. Discuss on emulsifying agents
9. Explain Food adulteration
10. Comment on SDA

(1x10=10 marks)

SECTION-B

Answer any **8** questions. Each question carries **two** marks

11. Describe the term obesity.
12. Differentiate between positive and negative nitrogen balance.
13. Explain crude proteins.
14. Give an account of digestibility coefficient.
15. Comment on evaporation method.
16. Explain Ergotism.
17. Differentiate between pasteurization and autoclaving.
18. Name any two artificial sweeteners.
19. Comment on Common adulterants in milk.
20. Discuss on the health hazards due to adulteration.
21. Short note on Biofortification.
22. Write short note on Fat soluble vitamins.

(8x2=16 marks)

SECTION-C

Answer any **6** questions. Each question carries **four** marks

23. Write in detail on flavoring agents.
24. Explain food borne diseases.
25. Explain the sources of neutraceuticals.
26. Describe some qualitative detection of food adulterants.
27. Write a short note on analysis of moisture content by spectroscopic method.
28. Explain how the functions of minerals.
29. Briefly describe bomb calorimeter.
30. Short note on anti-nutritional factors in food.
31. Briefly explain Product certification/grading.

(6x4=24 marks)

SECTION-D

Answer any **2** questions. Each question carries **fifteen** marks

32. Give a detailed account on vitamins and its function and deficiency diseases.
33. Describe the Food standards.
34. Discuss the Food safety management systems.
35. Write in detail about chemical composition of cereals and pulses, edible oils and fats and alcoholic beverages and soft drinks.

(2x15=30 marks)

MODEL QUESTION PAPER FOR FIFTH SEMESTER EXAM
2(A): BIOCHEMISTRY & INDUSTRIAL MICROBIOLOGY OPEN COURSE
IM1552 LIFE STYLE DISEASES

Time: 3Hours Max marks: 80

SECTION- A

Answer **all** questions. Answer in a word to a maximum of two sentences.
Each question carries **one** mark

1. Mention any two drugs that lower cholesterol in the blood.
2. Write the significance of BMI.
3. List out the diseases associated with CVD.
4. Name the chemical present in cigarette.
5. Comment on risk factors of cancer.
6. Mention the symptoms of diabetes.
7. Give the normal value of cholesterol in blood.
8. Write the normal fasting blood sugar.
9. Differentiate random blood sugar and fasting blood sugar.
10. Define life style disease.

(10x1=10 Marks)

SECTION- B

Answer any **8** questions. Answer not to exceed 1 paragraph. Each question carries **two** marks

11. Explain obesity
12. Write note on characteristics of cancer cell.
13. Define balanced diet.
14. Describe gestational diabetes.
15. List out different types of non communicable diseases.
16. Define polyuria.
17. Give the details of arterial plaque.
18. Give a note on junk food.
19. Difference between primary tumor and secondary tumor.
20. Name any two heart-healthy foods.
21. Short note on modifiable risk factors of respiratory diseases.

22. Detailed note on antioxidants in preventing life style diseases

(8x2=16marks)

SECTION-C

Answer any **6** questions. Each question carries **four** marks

23. Write a short note on metastasis
24. Explain the role of insulin and glucagon in maintaining blood glucose levels.
25. Give an account of the diet to be followed by a person with hyperlipedemia
26. Describe the causes and symptoms of ischemic diseases
27. Short note on PUFA. Give any two examples
28. Give a note on importance of diet control in preventing the development of diabetes mellitus
29. Comment on the importance of dietary fibers in the management of lifestyle disorders
30. How BMI is determined? Explain the significance of BMI
31. Write briefly the risk factors of hypertension.

(6x4=24marks)

SECTION-D

Answer any **2**questions. Each question carries **fifteen** marks

32. Give an account of cancer with special emphasis to its management by changing life style.
33. Write in detail the causes, diagnosis and management of atherosclerosis
34. Discuss on the development, prevention and management of obesity
35. Describe the causes and major risk factors of non insulin dependent diabetes mellitus. Briefly explain the importance of lifestyle factors in preventing its development and management.

(2x15=30marks)

MODEL QUESTION PAPER FOR SIXTH SEMESTER EXAM
2(A): BIOCHEMISTRY & INDUSTRIAL MICROBIOLOGY
IM 1641 CLINICAL BIOCHEMISTRY

Time: 3Hours Max marks: 80

SECTION-A

Answer **all** questions. Each question carries **one** mark

1. Define oncogenes.
2. Give the significance of creatine phosphokinase determination.
3. Name two anticoagulants with function.
4. Explain diabetes mellitus.
5. How liver function is assessed.
6. Give the functions of TSH.
7. How kidney function is monitored.
8. Give the clinical significance of ESR
9. Clinical relevance of glycosuria.

10. Distinguish AST and ALT.

(1x10=10 marks)

SECTION-B

Answer any **8** questions. Each question carries **two** marks

11. Write down the difference between bleeding time and clotting time.
12. Name the enzymes which are elevated after acute MI.
13. Explain random and post prandial blood sugar level.
14. How will you determine the uric acid in serum.
15. What is the significance of ESR determination.
16. Short note on obstructive jaundice.
17. Comment on the etiological factors behind life style disorders.
18. Differentiate between plasma and serum.
19. How hypo and hyperthyroidism determined.
20. Give the reason for polyuria in diabetes.
21. Give the clinical significance of albuminuria.
22. Define Icteric Index and state its significance.

(8x2=16 marks)

SECTION-C

Answer any **6** questions. Each question carries **four** marks

23. Write a note on plasma proteins.
24. Describe the components and functions of blood.
25. Elaborate the pathological states of liver and liver function test.
26. Give an account of routine hematological tests.
27. Write a short note on clinical significance of urea and its normal values.
28. Write notes on i) SGPT ii) SGOT iii) LDH iv) CK (CPK).
29. Write a short note on the analysis of Ketone bodies and Bile salts in urine?
30. Write short note on the types of Jaundice.
31. Short note on indications of glucose tolerance test.

(6x4=24 marks)

SECTION-D

Answer any **2** questions. Each question carries **fifteen** marks

32. Give a detailed account on different treatment modalities of cancer.
33. Enumerate the liver function test and describe any one of them with clinical significance.
34. Explain GTT and its clinical relevance in detail.
35. Discuss on the abnormal constituents of urine and the pathological conditions associated with them.

(2x15=30 marks)

MODEL QUESTION PAPER FOR SIXTH SEMESTER EXAM
2(A): BIOCHEMISTRY & INDUSTRIAL MICROBIOLOGY
IM1642 METABOLISM

Time: 3Hours Max marks: 80

SECTION-A

Answer **all** questions. Each question carries one mark

1. List the sources of acetyl CoA for fatty acid synthesis
2. Name the enzyme absent in Pompe's disease
3. Identify the ring structure present in cholesterol
4. Write about Essential pentosuria
5. State the significance of carnitine in fatty acid oxidation
6. State the names of any two ketone bodies
7. Mention the role of glycogenin in glycogenesis
8. Name the disease caused by deficiency of sphingomyelinase
9. Define gluconeogenesis
10. Name the activated form of glycogen phosphorylase

(1x10=10 marks)

SECTION-B

Answer any **8** questions. Each question carries two marks

11. Write a brief outline on α-oxidation of fatty acid
12. State the term ketoacidosis
13. Write down two irreversible reactions of glycolysis
14. Distingush between glucogenic and ketogenic amino acids
15. Mention briefly the clinical condition fructosuria
16. Comment on Refsum disease
17. Describe cori cycle
18. Define anaplerotic reactions
19. Give a brief idea about glycogen storage diseases
20. Comment on the inherited disorder Lesch Nyhan syndrome
21. Write the significance of HMPshunt
22. Distingush between Pastuer's effect& Bohr's effect

(8x2=16 marks)

SECTION-C

Answer any **6** questions. Each question carries **four** marks

23. Write the difference between inhibitors and uncouplers
24. Explain galactose metabolosm
25. Explain the synthesis of purines

26. Describe TCA cycle and its regulation
27. Write a short note on biosynthesis of triglycerides
28. Compare &contrast Chloroplasts and Mitochondria
29. Explain the synthesis of cholesterol
30. Briefly describe action of lipases and phospholipases
31. Write notes on Alkaptonuria and phenylketonuria

6x4=24 marks)

SECTION-D

Answer any **2** questions. Each question carries **fifteen** marks

32. Give a detailed account on secondary metabolites
33. Describe the reactions of glycolysis, energy stoichiometry and regulation
34. Discuss the beta oxidation of fatty acid and their regulations
35. Explain the Electron Transport Chain

(2x15=30 marks)

MODEL QUESTION PAPER FOR SIXTH SEMESTER EXAM
2(A): BIOCHEMISTRY & INDUSTRIAL MICROBIOLOGY
IM1643 ADVANCED BIOCHEMISTRY

Time: 3Hours Max marks: 80

SECTION-A

Answer **all** questions. Each question carries **one** mark

1. Define cosmid.
2. C-DNA library.
3. Give the role of reverse transcriptase enzyme in molecular biology.
4. Define the term nanotechnology.
5. Define metabolomics
6. Mention any two 2-D nanostructure materials.
7. Elaborate RFLP.
8. Mention any two vectors for cloning.
9. State a function of quantum dots
10. What is qPCR?

(1x10=10 marks)

SECTION-B

Answer any **8** questions. Each question carries **two** marks

11. Comment on bacteriophages and their application in recombinant DNA technology.
12. Mention any one application of PCR in biotechnology.

13. Give the application of restriction endonucleases.
14. Give the role of plasmids in rDNA technology.
15. How is DNA libraries formed?
16. Describe snRNAs.
17. Mention the biological sources and application of taq polymerase.
18. How does crossing linking allow genetic recombination?
19. Give the significance of palindromes.
20. Mention any three methods for characterization of nanostructures.
21. Short note on principles of bio nanotechnology.
22. What is nano bio-analytics?

(8x2=16 marks)

SECTION-C

Answer any **6** questions. Each question carries **four** marks

23. Differentiate between one dimensional and three dimensional nano structured materials.
24. Explain cloning vectors for eukaryotes.
25. Explain DNA-protein interaction assays.
26. Describe the purification of DNA from living cells.
27. Write a short note on biocompatibility of nanomaterials.
28. Describe next generation sequencing
29. Applications of nanotechnology in medicine.
30. Briefly describe DNA foot printing.
31. Short note on construction of genomic library.

(6x4=24 marks)

SECTION-D

Answer any **2** questions. Each question carries **fifteen** marks

32. Give a detailed account on DNA sequencing.
33. Describe the applications and techniques of Gene Cloning.
34. Discuss different classes of nanomaterials and its biological applications.
35. Explain omics and its applications

(2x15=30 marks)

Scheme and syllabus of Industrial Microbiology for

Career related First Degree programme in

"BIOCHEMISTRY AND INDUSTRIAL MICROBIOLOGY"

Under CBCS

EXAMINATION FOR VOCATIONAL MICROBIOLOGY

Semester	Course code	Paper	Duration
I	IM 1171	Vocational course- I Fundamental Microbiology	3 Hours
II	IM1222	FOUNDATION COURSE II- Microbial Taxonomy and Physiology	3 Hours
	IM 1271	Vocational course- II Microbiology Practicals	6 Hours X 2 days
III	IM1371	Vocational course- III Cell Biology	3 Hours
	IM1372	Vocational course- IV Microbial Genetics & Biotechnology	3 Hours
IV	IM 1471	Vocational course- V Environmental Microbiology	3 Hours
	IM 1472	Vocational course- VI Food Microbiology	3 Hours
	IM 1473	Vocational course- VII Microbiology Practical	6 Hours X 2 days
V	IM 1571	Vocational course- VIII Fermentation Technology	3 Hours
	IM 1572	Vocational course- IX Microbiology Practical	6 Hours X 2 days
VI	IM 1671	Vocational course- X Medical Microbiology	3 Hours
	IM 1681	Elective course- Immunology- Elective	3 Hours
	IM 1672	Vocational course- XI Microbiology Practical	6 Hours X 2 days

SEMESTER I CODE: IM1171

VOCATIONAL COURSE I Fundamentals of Microbiology

Total Hrs-54 CREDITS-4 (3Hrs/week)

MODULE I (9Hrs)

Introduction and history of Microbiology-contribution of Louis Pasteur, Robert Koch, Alexander Fleming, Anton Van Leeuwenhoek, Joseph Lister, & Needham. Concepts of origin of life-abiogenesis and biogenesis, Spontaneous generation theory. Scope of Microbiology.

MODULE II (9 Hrs)

Microscopy- Principles & uses of bright field, dark field, phase contrast, fluorescent, electron microscopy (TEM&SEM). Principles of staining of bacteria- simple staining, Negative staining, Gram's staining, Acid fast staining (Ziehl Neelsen staining), spore staining & staining of metachromatic granules.

MODULE III (9 Hrs)

Morphology and anatomy of bacterial cell-Cell size, shape, arrangement. Structure of Prokaryotic plasma membrane, cell wall, capsule, slime layer, S-layer, flagella, pili, nucleoid, inclusion bodies, endospore.

MODULE IV (9 Hrs)

Culture media- Nutritional requirements of bacteria, classification of media. Methods of isolation pure cultures - Serial dilution technique, streak plate method, pour plate method, spread plate method. Anaerobic culture methods. Preservation of cultures- refrigeration, deep-freezing, freeze drying (lyophilization).

MODULE V (9Hrs)

Sterilization (physical and chemical methods)-Sterilization by heat (Moist heat, dry heat and incineration), radiation (ionizing radiations and Ultraviolet rays), aldehydes and disinfectants. Factors influencing sterilization

MODULE VI (9Hrs)

Distinguishing characters of bacteria, fungi, algae and protozoa. General structure of Fungi, Algae and Protozoa, General characters of viruses, structure, classification, multiplication and cultivation. Structure and replication of bacteriophages.

REFERENCES

1. Microbiology - Pelczar, Chan and Kraig (ISBN 0-07-462320-6)
2. Microbiology -Prescott, Harley and Klein (ISBN 0-07-111217-0)
3. Microbiology-Bemard D Davis
4. Foundations in Microbiology-Talaro and Talaro
5. Essentials of Microbiology (Sixth edition) - Purohit and Singh (ISBN 81-85031 -67-3)

SEMESTER I

VOCATIONAL PRACTICAL

Total Hrs-36 CREDIT-0 (2Hrs /week) Part I (18 Hrs)

1. Laboratory precautions- General rules and regulations.
2. Common instruments in Microbiology laboratory.
3. Cleaning and sterilization of glass wares.
4. Preparation of media.
5. Isolation of pure culture - Isolation of bacteria by pour plate, streak plate and spread plate methods.
6. Cultural characteristics of Microorganisms - Colony morphology on culture plate.

Part II (18 Hrs)

7. Study of the various components of the microscope, its handling and maintenance.
8. Preparation of bacterial smear
9. Staining of bacteria:
    a) Simple staining of bacteria
    b) Gram staining
    c) Negative staining
    d) Spore staining
    e) Volutin granule staining
10. Motility of bacteria by hanging drop method.
11. Lactophenol cotton blue mounting of fungi and study of fungal microscopic characteristics.

REFERENCES

1. Dubey R C and Maheswari, D K (2002). Practical Microbiology. S. Chand & Co Ltd. (ISBN 81- 219 - 2153 - 8)
2. Micobiology A Laboratory Manual-James G Cappucino Natalie Sherman (ISBN 81-297-0265-7)
3. Experiments in Microbiology Plant Pathology and Biotechnology- K. R. Aneja

SEMESTER II

CODE: IM 1222

FOUNDATION COURSE II

Microbial Taxonomy and Physiology

TOTAL Hrs- 54 CREDITS-3 (3Hrs/week)

MODULE I (12 Hrs)

Classification of microorganisms- Objectives and practical value of taxonomy. Criteria for classification-morphological, Nutritional, ecological, molecular. Numerical taxonomy, matching coefficients, dendrogram, phylogenetic tree. Phylogenetic relationship. Major systems of classification. Three-kingdom and Five kingdom classification. Bergy's manual.

MODULE II (10Hrs)

Classification of fungi- with examples (brief account only). Classification of algae- green algae, brown algae and diatoms with examples. Classification of protozoa- flagellates, Amoebas, sporozoa and ciliates-(brief account) with examples.

MODULE III (10Hrs)

Bacterial growth – Binary fission, Bacterial growth curve, factors affecting bacterial growth. Significance of various phases of growth. Batch, continuous culture, Fed batch, Synchronous growth.

MODULE IV (12Hrs)

Bacterial Photosynthesis -: oxygenic and anoxygenic types, Nitrogen fixation: Symbiotic and non- symbiotic types.

MODULE V (10 Hrs)

Uptake of nutrients by bacteria- Passive diffusion, facilitated diffusion, active transport, group translocation, Iron uptake. Biosynthesis of cell wall peptidoglycan. Utilization of energy by halo bacteria. Bioluminescence and its Applications.

REFERENCES

1. Microbiology - Pelczar, Chan and Kraig (ISBN 0-07-462320-6)
2. Microbiology - Prescott, Harley and Klein (ISBN 0-07-111217-0)
3. Essentials of Microbiology-Purohit and Singh
4. Brock's Biology of Microorganisms-Mardigon Martinko And Parker
5. Microbial Genetics-Frifielder
6. Microbiology-Zins

SEMESTER II

CODE: IM1271

VOCATIONAL COURSE II

Microbiology Practical

Total Hrs-36 CREDITS-3 (2Hrs/week)

Part I (18 Hrs)

1. Isolation and enumeration of bacteria from soil.
2. Isolation and enumeration of bacteria from Water.
3. Isolation and enumeration of bacteria from Air.
4. Biochemical tests-
   - (a) IMViC
   - (b) Sugar fermentation
   - (c) Urease test
   - (d) TS1
   - (e) Catalase and Oxidase

Part II (18 Hrs)

5. Candle jar method for cultivation of anaerobic bacteria.
6. Slide culture technique for fungi
7. Measurement of fungal growth by colony diameter method.
8. Germicidal effect of ultra violet light on bacterial growth.
9. Effect of different disinfectants and antiseptics on bacteria.

REFERENCES

1. Dubey R C and Maheswari, D K (2002). Practical Microbiology. S. Chand & Co Ltd. (ISBN 81-219-2153-8)
2. Microbiology A Laboratory Manual - James G Cappucino Natalie Sherman
3. Experiments In Microbiology Plant Pathology And Biotechnology- K.R Aneja

SEMESTER III

CODE: IM1371

VOCATIONAL COURSE III CELL BIOLOGY

Total Hrs-72 CREDITS -3 (4Hrs/week)

MODULE I (12 Hrs)

Introduction to cell biology: Early conditions on earth, Origin of life on earth. Spontaneous generation theory, Damn's concept about the origin of life, Haldane and Oparin theory of the origin of life, Urey-Milk experiment, Fox's experiments. Preliminary idea about speciation, natural selection and genetic drift. Robert Hooke- Discovery of cells and the cell theory.

MODULE II

Fundamentals of cell biology: ultrastructure of cell- prokaryotic and eukaryotic cell, Structure and functions of subcellular organelles- nucleus, mitochondria, chloroplast, ribosomes, Endoplasmic reticulum, Golgi bodies, lysosomes, microfilaments, microtubules, glyoxysomes and peroxisomes.

MODULE III (12 Hrs)

Cell-cell interactions, cell-matrix interactions, cell-cell adhesion, cell-cell signaling, Role of bacterial cell-cell signaling in virulence and pathogenesis.

MODULE IV (12 Hrs)

Apoptosis- definition, mechanism- difference between apoptosis and necrosis.Cell cycle- check points and arrest. Regulation of cell cycle. Analysis of cell cycle by flow cytometry. Cell division- mitosis and meiosis- different stages. Cell differentiation.

MODULE V (12 Hrs)

Chromosomal changes and cytogenetics: Euploidy, Aneuploidy, Chromosomal aberrations: structural alterations, gene mutations- complementation test, molecular changes, intra and interchromosomal aberrations, chromosome preparation, G-Banding, FISH. Disorders associated with chromosomal aberrations-Philadelphia chromosome.

MODULE VI (12 Hrs)

Genetic organization- chromatin and nucleoid structure, chromosomes-nucleosomes, plectonemic and solenoidal supercoiling, m'icrosatellites. DNA binding protein families- Helix-loop-Helix, Helix loop Turn and Leucine zipper. Oncogenes and tumor suppressor genes- role in malignant transformation.

REFERENCES

1. Cell and Molecular Biology by Gerald Karp, John Wiley & Son, Inc. New York
2. Principles of Genetics by D. Peter Snustad and Michael J Simmons, John Wiley & Son,
3. Biochemistry by Lubert Stryer, W.H Freeman and Company, New York
4. Cell and Molecular Biology by De Robertis & De Robertis, jr.

SEMESTER III

CODE: IM1372

VOCATIONAL COURSE IV

Microbial Genetics and Biotechnology

Total Hrs-54 CREDITS -3 (3 Hrs /week)

Module I (9 Hrs)

Introduction to history of genetics, Mendel's laws of genetics, alleles, multiple alleles, Test cross and back cross. Basic idea about linkage and crossing over, Mapping, Sex linked inheritance, (simple numerical problems to be worked out). A brief idea about population genetics- Hardy Weinberg Law.

Module II.

Prokaryotic replication *&* its types: o- Theta mode and o-sigma mode or rolling circle model of replications. Different method used for introducing foreign DNA into the cell: DNA direct transformation, electroporation. Microinjection and biolistic methods.

Module III (9 Hrs)

Gene transfer mechanisms- Transformation, conjugation and transduction- generalized and specialized transduction. Ames test & its significance

Module IV (9 Hrs)

Animal cell tissue culture- Preparation of culture media, primary culture, cell lines & its types. Maintenance of cell lines. Genetically modified organisms. Transgenic animals -- engineering embryos (brief account only).

Module V (9 Hrs)

Plant cell tissue culture- Media composition. Plant tissue culture techniques- callus culture, cell suspension culture, protoplast culture and somatic hybridization. Applications of plant tissue culture, Transgenic plants- improving crops and foods (brief account only).

Module VI (9 Hrs)

Ethical problems associated with the use of rDNA technology. Intellectual property: Intellectual property rights- patents, trade secrets, copyrights & trademarks). Patenting of transgenic organisms and isolated genes.

Reference:

1. Molecular Biology of the Gene by Watson, JD, Hopkins NH, Roberts JW, Steitz JA, Weiner AAM.
2. Genes V by Tewin B, 1994. Oxford University press.
3. Molecular Cell Biology by Lodish, H, Baltimore D, Berk A, Zipursky ST, Matsudaira P, Darnell J.
4. Molecular Biology by FreifelderD., 1991 Narosa Publishing Home.
5. Principles of Gene Manipulation, 4th Ed., by R.S.Old and S.B.Primrose.
6. Principles of Genetics by Gardner EJ, Simmons MJ, Snustad DP.
7. Genes and Genomes by Singer M, Berg P, 1991 University Science Books.

SEMESTER III

VOCATIONAL PRACTICAL

Total Hrs 36 CREDITS-0 (2 Hrs /week)

Part I (18 Hrs)

1. Isolation of antibiotic resistant bacterial population by gradient plate method.
2. Isolation of streptomycin resistant mutant by replica plate technique.
3. Isolation of plasmid DNA.
4. Preparation of genomic DNA from bacteria.
5. Principle and application of agarose gel electrophoresis

Part II (18 Hrs)

6. Plant regeneration from callus or plant tissue.
7. Mushroom cultivation
8. Bioassay for evaluating the mutagen or carcinogen-by Ames test.
9. Demonstration of genetic recombination in bacteria by conjugation.
10. Demonstration of Bacterial transformation.

REFERENCES

1. Lab manual in Biochemistry, Immunology and Biotechnology-Arti Nigam, Archana Ayyagari (ISBN 13:978-0-07-061767-4)
2. Dubey R C and Maheswari, D K (2002). Practical Microbiology. S. Chand & Co Ltd. (ISBN 81-219-2153-8)
3. Experiments in Microbiology plant pathology and Biotechnology- K.R.Aneja
4. Molecular Cloning: A Laboratory Manual, Volume 1 & 2: Joseph Sambrook, David William Russell.

SEMESTER IV CODE: IM1471

VOCATIONAL COURSE V

Environmental Microbiology

Total Hrs 54 CREDITS-3 (3 Hrs /week)

MODULE I (9 Hrs)

Microbial ecology-interactions. Microorganisms as components of ecosystem-as producers and decomposers. Bacterial life in extreme environments & effect of temperature, pH, pressure, salt and heavy metals.

MODULE II (9 Hrs)

Waste - types; Solid waste - treatment of solid waste - composting, incineration, land filling. Liquid waste - Conventional methods of treatment of liquid waste. House hold sewage treatment - septic tank, imhoff tank, cess pool. Municipal sewage treatment-primary, secondary and tertiary, disinfection.

MODULE III (9 Hrs)

Bioremediation: Degradation of pesticides, detergents, degradation of lignin, xenobiotic compounds, petroleum and hydrocarbon compounds. Microbes in mining. Bacterial leaching.

MODULE IV (9 Hrs)

Microorganisms in soil processes-carbon cycle-organic matter decomposition, humus formation. Nitrogen cycle-nitrogen fixation -symbiotic, non-symbiotic, associative symbiotic nitrogen fixing organisms. Microbial transformation of phosphorous, iron, sulfur micronutrients in soil.

MODULE V (9 Hrs)

Rhizosphere concept. Rhizosphere microorganisms-their importance in plant growth. Mycorrhizae - brief account of ectomycorrihizae ,endo mycorrhizae and ecto-endo mycorrhizae. Applications of mycorrhizal fungi. Biofertilizers: microbial inoculants-definition and perspectives of agriculturally useful inoculants; brief account of production and application of *Rhizobium, Azotobacter, Azospirillum and cyanobacteria.*

MODULE VI

Plant pathology- Symptoms, etiology, epidemiology and management of the following plant diseases: mosaic disease of tobacco, bunchy top of banana, bacterial blight of paddy, damping off of tobacco, blight of maize/sorghum, leaf spot of paddy and citrus canker.

REFERENCES

1. Microbial Ecology Fundamentals and applications - Atlas and Bartha (ISBN 981 -405-344-9)
2. Environmental Microbiology- K. Vijaya Ramesh (ISBN 81 -8094-003-9)
3. Agricultural Microbiology- Rangaswamy G, D J. Bhagyaraj (ISBN-81 -203-0668-6)
4. Soil Microbiology an exploratory approach - Mark S.Coyne (ISBN 981 -240-203-9)
5. Introduction to Soil Microbiology -Alexander
6. Soil Microbiology-Waksman
7. Soil Microorganisms And Its Growth-N.S. Subba Rao
8. Biofertilizers in Agriculture- Subha Rao

SEMESTER IV

CODE: IM1472

VOCATIONAL COURSE VI

Food Microbiology

Total Hrs 54 CREDITS-2 (3 Hrs /week)

Module I (10 Hrs)

Introduction: Importance of food and dairy Microbiology - Types of microorganisms in food - Source of contamination (primary sources) - Factors influencing microbial growth in foods (extrinsic and intrinsic)

Module II (10 Hrs)

Fermented food: Cheese, bread, wine, fermented vegetables - methods and organisms used. Food and enzymes from microorganisms -single cell protein, production of enzymes.

Module III (10 Hrs)

General principles underlying spoilage, Spoilage of different kinds of foods, cereals and cereal products - sugar and sugar products - vegetables and fruits - meat and meat products -fish and other sea foods - eggs and poultry - dairy and fermentative products (ice cream/milk/bread/wine).

Module IV (12 Hrs)

Food Poisoning: food borne infections and intoxications: Source, symptoms and Management of the following- (a) Bacterial (Staphylococcal, Brucella, Clostridium, Escherichia, Salmonella) (b) Fungal: Mycotoxins (c) Viral: Hepatitis, (d) Protozoa-Amoebiasis. Management

Module V (12 Hrs)

Food preservation: Principles of food preservation - methods of preservation. Physical (irradiation, drying, heat processing, chilling and freezing, high pressure and modification of atmosphere). Chemical preservation- (Sodium benzoate Class I & II). Food Sanitation: Good manufacturing practices - HACCP, Personal hygiene.

REFERENCES

1. Food Microbiology by Adams, M.R. and Moss, M.0.1995. The Royal Society of Chemistry, Cambridge.
2. Food Microbiology by Frazier, W.C. and WesthofF, D.C. 1988. TATAMcGraw Hill Publishing company ltd., New Delhi.
3. Modem Food Microbiology by Jay, J.M. 1987. CBS Publishers and distributors, New Delhi.
4. A Modem Introduction to Food Microbiology by Board, R.C. 1983. Blackwell Scientific Publications, Oxford.
5. Dairy Microbiology by Robinson, R.K. 1990. Elsevier Applied Science, London.
6. Food Poisoning and Food Hygiene, Hobbs, B.C. and Roberts, D. 1993. Edward Arnold. London.

SEMESTER IV

CODE: IM 1473

VOCATIONAL COURSE VII Microbiology Practical

Total Hrs 54 CREDITS-3 (3 Hrs/week)

Part I (27 Hrs)

1. Determination of Biochemical oxygen Demand (BOD) of water.
2. Determination of Chemical oxygen Demand (COD) of water.
3. Bacteriological examination of water by multiple tube fermentation test.
   (a. Presumptive coliform test, b. Confirmed coliform test,
   c. Completed coliform test)
4. Isolation & culturing of *Rhizobium* from root nodules of higher plants.
5. Study of the following diseases

(a) Tobacco mosaic disease, (b) Bacterial blight of paddy, (c) Leaf spot of mulberry, paddy, (d) Bunchy top of banana, (e) Citrus canker

Part II (27 Hrs)

6. Determination of number of bacteria in milk by standard plate count.
7. Determination of quality of a milk sample by MBRT, phosphatase test.
8. Determination of TDT and TDP
9. Effect of pH on bacterial growth.
10. Effect of salt concentrations on bacterial growth.
11. Microbiological examination of foods-
    (a) Isolation and enumeration of bacteria and fungi from spoiled vegetables,
    (b) Isolation and enumeration of bacteria and fungi from spoiled fruits
    (c) Isolation and enumeration of bacteria and fungi from Spoiled fish or meat.
    (d) Isolation and enumeration of bacteria and fungi from soft drinks.

REFERENCES

1. Experiments in Microbiology, Plant pathology and Biotechnology- K. R. Aneja
2. Practical Microbiology- R C Dubey and D K Maheswari.

SEMESTER V

CODE: IM1571

VOCATIONAL COURSE VIII Fermentation Technology

Total Hrs 72 CREDITS-3 (4 Hrs /week)

MODULE I (12 Hrs)

Fermentation technology-isolation, screening and strain improvement of industrially important microorganisms. Introduction to fermentation processes- media for industrial fermentation, sterilization, inoculum preparation.

MODULE II (12 Hrs)

Design and parts of fermenter - agitation, aeration, pH, temperature, dissolved oxygen-control and monitoring, difference in fermentation process of biomass, chemicals and conversion products-comparative brief account. Cell and enzyme immobilization.

MODULE III (12 Hrs)

Recovery of fermentation product (Down-stream processing) - Methods for cell lysis, Physical separation, liquid extraction, Precipitation, chromatography, drying.

MODULE IV (12 Hrs)

Microbial products- raw materials, organism and industrial process involved in the production of penicillin, streptomycin, ethanol, butanol, acetone, vitamin B12, riboflavin, alpha lysine, amylase, protease, pectinase, citric acid. Biopesticide production.

MODULE V (12 Hrs)

Microbes in food industry-bacteria (lactics, acetics, proteolytic and lipolytic bacteria, Thermophillic anc thermoduric bacteria, pigmented bacteria and coliform bacteria), molds (Mucor, rhizopus, penicillium, Aspergillus and yeasts (Genus Saccharomyces, zygosaccharomyces, Genus Candida & salt tolerant yeast). Production of SCP

MODULE VI (12 Hrs)

Fermentation -Bacteria grouped according to major products of glucose, dissimilation-Lactic acid fermentation, Homolactic fermentation, Heterolactic fermentation, Ethanolic fermentation, and propionic acid fermentation, mixed acid, fermentation, Butanediol fermentation and butyric acid fermentation. Amino acid fermentation (stickland reaction). Pasteur effect.

REFERENCES

1. Industrial Microbiology - L.E. Casida,JR (ISBN 0 85226 1012)
2. Industrial Microbiology-A.H.Patel (ISBN 0333 90842 2)
3. Prescott & Dunn's Industrial Microbiology Reed G (Ed) ISBN 81-239-1001-0) (Fourth Edition'
4. Food Microbiology-William C.Frazier Dennis .C Westhoff (ISBN 0-07-46210147)
5. Fermented foods Economic Microbiology Vol 7 rose A (ed)
6. Manual Of Industrial Microbiology And Biotechnology, Demin & Davis
7. Applied Microbiology- Musharraffudde

SEMESTER V

CODE: IM1572

VOCATIONAL COURSE IX Microbiology Practical

Total Hrs 108 CREDITS-4 (6Hrs/week)

Part I (54 Hrs)

1. Yeast Cell immobilization
2. Isolation of amylase producers.
3. Demonstration of microbial antibiosis by crowded plate technique.
4. Production of wine from grapes.
5. Isolation of lipolytic microbes.
6. Isolation of protease producers.
7. Bioassay of antibiotic.

Part II (54 Hrs)

8. Citric acid production by Aspergillus sp.
9. Amylase production by SSF.
10. Enrichment of coir pith degraders.
11. Analysis of Mycotoxin (Aflatoxin) in fungus- contaminated food materials.
12. Demonstration of fermentation by yeast.

REFERENCES

1. Experiments in Microbiology plant pathology and Biotechnology - K. R. Aneja
2. Practical Microbiology-R C Dubey and D K Maheswari.

SEMESTER VI

CODE: IM1671

VOCATIONAL COURSE X Medical Microbiology

Total Hrs 54 CREDITS-3 (3 Hrs /week)

MODULE I (9 Hrs)

Normal Microbial flora- Resident flora and transient flora, Beneficial and harmful effects of normal flora. Brief account on normal flora of skin, conjunctiva, upper respiratory tract, mouth, teeth, stomach, upper and lower intestine, genitourinary tract. Nosocomial infection

MODULE II (9 Hrs)

Bacteriology: Pathogenicity, laboratory diagnosis, prevention and control of the diseases caused by (brief account only): Staphylococcus aureus, Streptococcus pyogenes, Neisseria gonorrhoeae, Escherichia coli, Salmonella typhi, Vibrio cholera, Corynebacterium diptheriae, Clostridium tetani, Mycobacterium . tuberculosis, Treponema pallidum, Mycoplasma pneumoniae & Chlamydia trachomatis.

MODULE III (9 Hrs)

Mycology: Brief account on the following fungal diseases: **Superficial mycoses-** Pityriasis versicolor, Tinea nigra. **Cutanaceous mycoses-** Dermatophytes, Candidiasis. **Subcutanaceous mycoses-** Mycotic mycetoma, Rhinosporidiosis. **Systemic mycoses-** Cryptococcosis, Histoplasmosis and **Opportunistic mycoses-** Aspergillosis, Penicilliosis.

MODULE IV (9 Hrs)

Virology: Airborne viral disease (Influenza, measles, mumps, rubella, small pox). Insect borne (yellow fever, dengue fever) food and water borne disease (polio). Direct contact diseases - Hepatitis B. rabies, AIDS.

MODULE V (9 Hrs)

Protozoology: Disease caused by Protozoa (Pathogenic mechanisms, Disease transmission and life cycle) - Plasmodia, Toxoplasma, Entamoeba histolytica, Trypanosoma.

MODULE VI (9 Hrs)

Antimicrobial chemo therapy: Antibiotics and their mode of action. Drug resistances- Mechanism of drug resistances. Antimicrobial sensitivity tests- diffusion and dilution techniques.

REFERENCES

1. Ananthanarayan and Panicker's Textbook of Microbiology- ISBN 81 250 2808 0
2. Notes on Medical Bacteriology - J.Douglas SleighMorag C.Timbury
3. Parasitology-B.Dasgupta
4. Medical Mycology - Rippon
5. Principles of Bacteriology Virology and immunity Vol 4 Lopka and Wilson
6. Fundamentals of medical Virology by Kucera and Myrvik

SEMESTER VI

CODE: IM1672

VOCATIONAL COURSE -XI Microbiology Practical

Total Hrs 108 CREDITS-4 (6hrs/week)

Part I (54 Hrs)

1. Antibiotic sensitivity testing- Kirby-Bauer method
2. Determination of MIC and MBC of antibiotics
3. Identification of common bacterial pathogens by using morphological, cultural and biochemical characters,

   a) Staphylococcus b) Streptococcus

   c) Escherichia coli, d) Pseudomonas

   e) Klebsiella

4. Tube agglutination test: WIDAL test.
5. RPR card test for syphilis.

Part II (54 Hrs)

6. ASO latex agglutination test
7. RA latex agglutination test
8. HBs Ag detection by using immunochromatographic technique
9. Urine culture and its microbiological analysis.
10. Isolation of Enteric pathogens from stool by direct plating methods

REFERENCES

1. Lab manual in Biochemistry, Immunology and biotechnology-Arti Nigam, Archana Ayyagari (ISBN 13:978-0-07-061767-4)
2. Medical Laboratory technology Methods and interpretation (ISBN 81-8448-449-6)
3. Mackie &McCartney Practical Medical Microbiology (ISBN 0443 04906 8)

ELECTIVE COURSE

CODE: IM1661

ELECTIVE COURSE - IMMUNOLOGY

Total Hrs 36 CREDITS-2 (2 Hrs /week)

MODULE 1 (6 Hrs)

Infections, Source of infection, Epidemic, Pandemic and Endemic diseases. Determinants of microbial pathogenicity. Immunity, types of immunity-Innate immunity and acquired immunity-(natural and artificial active, natural and artificial passive), immune response- primary and secondary immune response. Mechanism of immune response

MODULE II (6 Hrs)

Antigens, structure and types of antigens-endogenous and exogenous & super antigens. Antigenicity and immunogenicity. Haptens, adjuvants and its types. Structure and functions of different classes of immunoglobulins (IgG, IgM, IgA, IgD & Ig E)

MODULE III

Cells of immune system (Lymphocytes, Mononuclear cells, granulocytes, dendritic cells), Phagocytosis, Organs of immune system (primary and secondary lymphoid organs), Complement system and activation pathways (classical, alternate and lectin pathways), Membrane attack complex. Structure and function of Major Histocompatability complex (MHC class 1 and Class II) - brief introduction only.

MODULE IV

Brief introduction to antigen and antibody reactions- complement fixation, neutralization, agglutination reactions, precipitation reactions and its types. Immunoassays of diagnostic importance-ELISA, R1A, VDRL and WIDAL test. Western Blotting, Production of monoclonal and polyclonal antibodies, and its applications.

MODULE V

Brief account on Immunodeficiency disorders, Hypersensitivity reactions, Immunohaematology (Blood groups and Rh incompatibilities), Autoimmunity, Vaccines, Immunology of organ and tissue transplantation , and Immunology of malignancy

REFERENCES

1. Immunology: An Introduction by Ian R Tizard (2006) Publisher: Cengage Learning
2. Immunology and Immuno technology by Chakravarty (2006)
3. Kuby Immunology by Thomas J. Kindt (2006) Publisher: W H Freeman & Co
4. Elements of Immunology (2009) by Khan Publisher: Dorling Kindersley (India) Pvt
5. Immunology by K.R. Joshi (2007) Publisher: Agrobios (India)
6. Basic Immunology, 3ed by: Abbas Publisher: Elsevier
7. Immunology by P.R. Yadav (2004) Publisher: Discovery Publishing House
8. Immunology by David A. Marcus, Richard A. Goldsby, Barbara A. Osborne (2003) Publisher: WH. Freeman & Company

UNIVERSITY OF KERALA

THIRUVANANTHAPURAM

COURSE STRUCTURE AND SYLLABUS

For

FIRST DEGREE PROGRAMME

IN

BOTANY

UNDER

CHOICE BASED CREDIT- SEMESTER SYSTEM

(w.e.f. 2019 admission onwards)

OBJECTIVES OF THE PROGRAMME

- To impart knowledge of Science is the basic objective of education.
- To develop scientific attitude is the major objective to make the students open minded, critical,curious.
- To develop skill in practical work, experiments and laboratory materials and equipments along with the collection and interpretation of scientific data to contribute the science.
- To understand scientific terms, concepts, facts, phenomenon and their relationships.
- To make the students aware of natural resources and environment.
- To provide practical experience to the students as a part of the course to develop scientific ability to work in the field of research and other fields of their own interest and to make them fit for society.
- The students are expected to acquire knowledge of plant and related subjects so as to understand natural phenomenon, manipulation of nature and environment for the benefit of human beings.
- To develop ability for the application of the acquired knowledge to improve agriculture and other related fields to make the country self reliant and sufficient.
- Understand and appreciate the role of biology in societal issues, such as the environment and biological resources, biodiversity, ethics and human health and diseases.
- To enrich the students with the latest developments in the field of Information technology, Biotechnology, Bio informatics and other related fields of research and development.
- To create enthusiasm to understand more about the beautiful planet Earth and to give awareness to the public the need to protect the planet from all kinds of exploitation.
- To keep the scientific temper which the student acquired from school level and to develop a research culture.

Table 1. General Structure of the First Degree Programme in Botany

Sem No.	Course Code	Course Title	Instructional hours/ week		Credits	Uty Exam Duration	Evaluation		Total credits
			T	P			Internal	University exam	
I	EN1111	English Language I Additional	5	-	4	3hrs	20%	80%	16
	1111	Additional Language I	4	-	3	,,			
	EN1121	Foundation Course I	4	-	2	,,			
	BO1141	Core Course I	2	2	3	,,			
	CH/BC1131	Compl. Course I (CH/BC)	2	2	2	,,			
	ZO1131	Complementary Course II (ZO)	2	2	2	,,			
II	EN1211	English Language II	5	-	4	,,	20%	80%	17
	EN1212	English Language III	4	-	3	,,			
	1211	Additional Language II	4	-	3	,,			
	BO1221	Foundation Course II	2	2	3	,,			
	CH/BC1231	Compl. Course III(CH/BC)	2	2	2	,,			
	ZO1231	Compl. Course IV(ZO)	2	2	2	,,			
III	EN1311	English Language IV	5	-	4	,,	20%	80%	17
	1311	Additional Language III	5	-	4	,,			
	BO1341	Core Course II	3	2	3	,,			
	CH/BC1331	Compl. Course V(CH/BC)	3	2	3	,,			
	ZO1331	Compl. Course VI(ZO)	3	2	3	,,			
IV	EN1411	English Language V	5	--	4	,,	20%	80%	25
	1411	Additional Language IV	5	-	4	,,			
	BO1441	Core Course III	3	2	3	,,			
	CH/BC1431	Compl.CourseVII(CH/BC)	3	2	3	,,			
	ZO1431	Compl. courseVIII(ZO)	3	2	3	,,			
	CH/BC1432	Compl IX (Practical CH/BC)	-	(8)*	4	,,			
	ZO1432	Compl X (Practical ZO)	-	(8)*	4				
V	BO1541	Core Course IV	4	3	4	,,	20%	80%	20
	BO1542	Core Course V	5	2	4	,,			
	BO1543	Core Course VI	4	2	3	,,			
	BO1544	Core (Practical-1) VII	-	(4)*	3	,,			
	BO1545	Core (Practical-2)VIII	-	(4)*	4	,,			
		Open Course I	3	-	2	,,			
	BO1551.1	Horticulture							
	BO1551.2	Mushroom cultivation & Marketing							
	BO1551.3	Forestry							
		Project	-	2					
VI	BO1641	Core Course IX	5	2	4	,,	20%	80%	25
	BO1642	Core Course X	4	2	4	,,			
	BO1643	Core Course XI	4	2	4	,,			
	BO1644	Core (Practical-3)XII	-	(5)*	3	,,			
	BO1645	Core (Practical-4)XIII	-	(8)*	4	,,			
	BO1651	Elective Course II	3	-	2	,,			
	BO1646	Project		3	4				
									120

L = Lecture P = Practical ()*Practical hour already distributed in the semester concerned

Table 2. SEMESTER – I

Sem No.	Course Code	Course Title	Instructional hours/week		Credits	Uty Exam Duration	Evaluation		Total credits
			T	P			Internal	University exam	
I	EN1111	English Language I	5	-	4	3hrs	20%	80%	16
	1111	Additional Language I	4	-	3	,,			
	EN1121	Foundation Course I	4	-	2	,,			
	BO1141	Core Course I -Angiosperm Anatomy Reproductive Botany & Palynology	2	2	3	,,			
	CH/BC1131	Compl. Course I (CH/BC)	2	2	2	,,			
	ZO1131	Compl. Course II(ZO)	2	2	2	,,			

Table 3. SEMESTER – II

Sem No.	Course Code	Course Title	Instructional hours/week		Credits	Uty Exam Duration	Evaluation		Total credits
			T	P			Internal	University exam	
II	EN1211	English Language II	5	-	4	3hrs	20%	80%	17
	EN1212	English Language III	4	-	3	,,			
	1211	Additional Language II	4	-	3	,,			
	BO1221	Foundation Course II- Methodology & Perspectives in Plant Science	2	2	3	,,			
	CH/BC1231	Compl. Course III(CH/BC)	2	2	2	,,			
	ZO1231	Compl. Course IV(ZO)	2	2	2	,,			

Table 4. SEMESTER – III

Sem No.	Course Code	Course Title	Instructional hours/week		Credits	Uty. Exam Duration	Evaluation		Total credits
			T	P			Internal	University exam	
III	EN1311	English Language IV	5	-	4	3hrs	20%	80%	17
	1311	Additional Language III Core	5	-	4	,,			
	BO1341	Course II- Microbiology, Phycology, Mycology, Lichenology & Plant Pathology	3	2	3	,,			
	CH/BC1331	Compl. Course V(CH/BC)	3	2	3	,,			
	ZO1331	Compl. Course VI(ZO)	3	2	3	,,			

Table 5. SEMESTER –IV

Sem No.	Course Code	Course Title	Instructional hours/week		Credits	Uty. Exam Duration	Evaluation		Total credit
			T	P			Internal	University exam	
IV	EN1411	English Language V	5	-	4	3 hrs	20%	80%	25
	1411	Additional Language IV	5	-	4	,,			
	BO1441	Core Course III- Bryology, Pteridology, Gymnosperms & Paleobotany	3	2	3	,,			
	CH/BC1431	Compl. Course VII(CH/BC)	3	2	3	,,			
	ZO1431	Complementary Course VIII (ZO)	3	2	3	,,			
	CH/BC1432	Compl IX (Practical CH/BC)	-	(8)*	4	,,			
	ZO1432	Compl X (Practical ZO)	-	(8)*	4	,,			

Table 6. SEMESTER - V

Sem No.	Course Code	Course Title	Instructional hours/week		Credits	Uty. Exam Duration	Evaluation		Total credits
			T	P			Internal	University exam	
V	BO1541	Core Course IV - Angiosperm Morphology, Systematic botany, Economic botany, Ethno botany & Pharmacognosy	4	3	4	3hrs	20%	80%	20
	BO1542	Core Course V- Environmental Studies & Phytogeography	5	2	4	,,			
	BO1543	Core Course VI- Cell Biology, Genetics & Evolutionary Biology	4	2	3	,,			
	BO1544	Core (Practical-1) VII (BO1141, BO1221)	-	(4)*	3	,,			
	BO1545	Core (Practical-2) VIII (BO1341 & BO1441)	-	(4)*	4	,,			
		Open Course I	3	-	2	,,			
	BO1551.1	Horticulture							
	BO1551.2	Mushroom cultivation							
		& Marketing							
	BO1551.3	Forestry							
		Project	-	2	-				

( )*Practical hour already distributed in the semester concerned

Table 7. SEMESTER – VI

Sem No.	Course Code	Course Title	Instructional hours/week		Credits	Uty. Exam Duration	Evaluation		Total credits
			T	P			Internal	University exam	
VI	BO1641	Core Course IX Plant physiology &Biochemistry	5	2	4	3hrs	20%	80%	25
	BO1642	Core Course X- Molecular Biology, General informatics and Bioinformatics	4	2	4	,,			
	BO1643	Core Course XI- Plant Breeding, Horticulture& Research methodology	4	2	4	"			
	BO1644	Core (Practical-3)XII (BO1541 & BO1542)	-	(5)*	3	,,			
	BO1645	Core (Practical-4) XIII IV (BO1543, BO1641, BO1642, 1643)	-	(8)*	4	,,			
	BO1651	Open Course II- Elective- Biotechnology & Nano Biotechnology	3	-	2	,,			
	BO1646	Project	-	3	4				

Table 8. Distribution of Contact Hours and Credits

(CORE, FOUNDATION & OPEN COURSES, PROJECT/DISSERTATION)

Course Code	Course Title	Semester I			Semester II			Semester III			Semester IV			Semester V			Semester VI			Total	
		Contact hours		Credit	Contact hours		Credit	Contact hours		Credit	Contact hours		Credit	Contact hours		Credit	Contact hours		Credit	Contact hours	Credit
		T	P		T	P		T	P		T	P		T	P		T	P			
BO1141	Angiosperm anatomy, Reproductive Botany & Palynology	2	2	3																4	3
BO1221	Methodology & Perspectives in Plant Science				2	2	3													4	3
BO1341	Microbiology, Phycology, Mycology Lichenology & Plant Pathology							3	2	3										5	3
BO1441	Bryology, Pteridology, Gymnosperms & Paleobotany										3	2	3							5	3
BO1541	Angiosperm Morphology Systematic botany, Economic botany Ethno botany & Pharmacognosy													4	3	4				7	4
BO1542	Environmental Studies & Phytogeography													5	2	4				7	4
BO1543	Cell Biology, Genetics & Evolutionary Biology													4	2	3				6	3
BO1544	Practical-I (BO1141, BO1221)		2*			2*														4	3
BO1545	Practical-II (BO1341 & BO1441)								*2			2*								4	4
BO1551.1 BO1551.2 BO1551.3	Horticulture, Mushroom cultivation & Marketing Forestry													3						3	2
BO1641	Plant Physiology & Biochemistry																5	2	4	7	4
BO1642	Molecular Biology, General informatics and Bioinformatics																4	2	4	6	4
BO1643	Plant breeding, Horticulture& Research methodology																4	2	4	6	4
BO1644	Practical-III (BO1541 & BO1542)														5*						3
BO1645	Practical-IV (BO1543, BO1641, BO1642, 1643)																	8*			4
BO1651	Biotechnology & Nano biotechnology																3			3	2
BO1646	Project report, Tour Diary, Viva-Voce														2			3		5	4
	Total																				57

L = Lecture P = Practical *Practical hour already distributed in the semester concerned

Table 9. Scheme of Evaluation of Foundation Course II, Core Courses, Open Courses & Project

Semester	Course Code	Course Title	Marks		Duration of University Exam.
			CE	ESE	
I	BO1141	Angiosperm anatomy, Reproductive Botany & Palynology	20	80	3 hrs
II	BO1221	Methodology & Perspectives in Plant Science	20	80	3 hrs
III	BO1341	Microbiology, Phycology, Mycology, Lichenology & Plant Pathology	20	80	3 hrs
IV	BO1441	Bryology, Pteridology, Gymnosperms &Paleobotany	20	80	3 hrs
V	BO1541	Angiosperm Morphology, Systematic botany, Economic botany, Ethnobotany & Pharmacognosy	20	80	3 hrs
	BO1542	Environmental Studies & Phytogeography	20	80	3 hrs
	BO1543	Cell biology, Genetics & Evolutionary Biology	20	80	3 hrs
	BO1544	Practical-I (BO1141, BO1221)	20	80	3 hrs
	BO1545	Practical-II (BO1341 & BO1441)	20	80	3 hrs
	BO1551.1 BO1551.2 BO1551.3	Horticulture, Mushroom cultivation & Marketing, Forestry	20	80	3 hrs
VI	BO1641	Plant Physiology & Biochemistry	20	80	3 hrs
	BO1642	Molecular Biology, General informatics and Bioinformatics	20	80	3 hrs
	BO1643	Plant breeding, Horticulture& Research Methodology	20	80	3 hrs
	BO1644	Practical-III (BO1541 & BO1542)	20	80	3 hrs
	BO1645	Practical-IV (BO1543, BO1641, BO1642,1643)	20	80	3 hrs
	BO1651	Biotechnology & Nano biotechnology	20	80	3 hrs
	BO1646	Project report, Tour Diary, Viva-Voce	20	80	-

END SEMESTER ASSESSMENT (ESA)

The University shall conduct the external examinations for all semesters. There will not be any supplementary exams. The practical examinations for **Core courses** shall be conducted after 4th, 5th and 6th semesters and **Complementary** courses at the end of 4th semester according to the common calendar and questions set up by the University. The Board of Examiners constituted by the University will have the right to make necessary changes in the pattern of practical examination as and when needed with the prior sanction of the Chairman, Board of Studies Botany (Pass). The practicals mentioned in the syllabus under various branches of Botany Core and Complementary Courses should be incorporated in the Practical record.

ELIGIBILITY TO APPEAR FOR PRACTICAL EXAMINATION

Submission of the following

- Certified and bonafide practical record
- Certified herbarium sheets
- Certified field Book
- Certified Tour Report
- Project report/Dissertation (certified and bonafide)

PROJECT

Project work/Dissertation is compulsory. Students have to begin the project in the 5 th Semester and submit the project report for valuation at the end of 6 th Semester. Viva-Voce may be conducted for each student at the time of Project evaluation. Project can be carried out either individually or by a group not exceeding 15 students ensuring direct and active participation of each student in the group. The topics shall either be allotted by the supervising teacher or be selected by the student in consultation with the supervising teacher. The project report/dissertation duly attested by the Supervising teacher and Certified by the Head of the Department, has to be submitted on the day of examination of **Practical - III (Core)**. The project shall be evaluated by an external examiner. The project report/ Dissertation (not less than 30 pages) shall be prepared in Times New Roman fond size 12 with 1.5 spacing as per the format given below.

1. Title page /Front page (Certified by the **HOD**)
2. Declaration by the candidate
3. Certificate attested by the Supervising Teacher
4. Acknowledgement, if any
5. Table of contents
6. Abbreviation, if any
7. Introduction & Review of Literature
8. Material and Methods
9. Results and Discussion (Not less than 10 pages)
10. Summary and Conclusion
11. References

Tables, Graphs, Photographs etc. can be used to present the data. Topics selected once should not be repeated and plagiarism should be avoided.

STUDY TOUR

- Field trip to a place of plant diversity within or outside Kerala with a minimum duration of 3 days is compulsory. (Field trips are to be conducted for three days either as continuous or one day trips).
- A brief report of the trip has to be submitted at the time of Practical Examination

CORE COURSES

Semester	Course Code	Course Title	Contact hrs/ week		Credits
			L	P	
I	BO1141	Angiosperm anatomy Reproductive Botany & Palynology	2	2	3
III	BO1341	Microbiology, Phycology, Mycology Lichenology & Plant Pathology	3	2	3
IV	BO1441	Bryology, Pteridology, Gymnosperms & Paleobotany	3	2	3
V	BO1541	Angiosperm Morphology Systematic botany, Economic botany Ethno botany & Pharmacognosy	4	3	4
	BO1542	Environmental Studies & Phytogeography	5	2	4
	BO1543	Cell Biology, Genetics & Evolutionary Biology	4	2	3
	BO1544	Practical-I (BO1141, BO1221)	-	4	3
	BO1545	Practical-II (BO1341 & BO1441)	-	4	4
VI	BO1641	Plant Physiology &Biochemistry	5	2	4
	BO1642	Molecular Biology, General informatics and Bioinformatics	4	2	4
	BO1643	Plant breeding, Horticulture & Research methodology	4	2	4
	BO1644	Practical-III (BO1541 & BO1542)	-	5	3
	BO1645	Practical-IV (BO 1543, BO1642, BO1642 & BO1643)	-	8	4

SEMESTER-I

ANGIOSPERM ANATOMY, REPRODUCTIVE BOTANY AND PALYNOLOGY

Course code BO 1141, Number of credits: 3

Number of contact hours: Lecture: 36 hrs; Practical: 36 hrs; Total: 72 hrs

Distribution of Hours	Theory	Practical
Angiosperm Anatomy	27 hrs	27 hrs
Reproductive Botany & Palynology	09 hrs	09 hrs
Total	36 hrs	36 hrs

Aim of the course: To generate awareness about anatomical features of Angiosperms &Reproductive biology.

Objectives:

- To develop skills for identification of microscopic structures
- To distinguish various tissue systems and internal structure
- To acquire basic knowledge about embryo development and pollen grains

ANGIOSPERM ANATOMY

MODULE – 1 **04 hrs**

1. Objective and scope of plant anatomy
2. Cell wall organisation – Gross structure- Primary and secondary wall, pits-plasmodesmata-microscopic and submicroscopic structures- Extra cell wall material (lignin, suberin), Non living inclusions of the cell [Reserve food (carbohydrates, proteins, fats and oil), secretory products (colouring matter, enzymes, nectar), excretory products (nitrogenous and non nitrogenous including resins, tannins, organic acids, latex, essential oils, glycosides, gums and mineral crystals)].

MODULE - II **11 hrs**

1. Tissues-Meristems: Definition, Classification based on origin, position, growth patterns, functions
2. Apical meristem & theories on apical organisation- Apical cell theory, Histogen theory, Tunica-Corpus theory. Organisation of shoot apex in dicots and monocots (Korper Kappe theory)
3. Permanent tissues – Definition, classification – simple, complex and secretory tissues (glandular tissue, laticifers).
4. Tissue systems- Epidermal tissue system, Ground tissue system and vascular tissue systems. Stomata – structure and functions, types- anomocytic, anisocytic, paracytic, diacytic, graminaceous. Different types of vascular arrangements.

MODULE- III **12 hrs**

1. Primary structure – Root, stem and leaf (Dicot & Monocot)
2. Secondary growth- Root and stem- cambium (structure and function), annual rings, heart wood and sap wood, hard wood and soft wood, tyloses, ring porous wood and diffuse porous wood, periderm formation – phellum, phellogen and phelloderm; lenticels
3. Anomalous secondary growth – *Bignonia, Boerhaavia, Dracaena.*

Practicals **27 hrs**

1. Non-living inclusions – Cystolith, Raphide, Sphaero- raphide (Druses), Aleurone grains
2. Starch grains (Eccentric, Concentric, compound)
3. Simple permanent tissue- Parenchyma, Chlorenchyma, Aerenchyma, Collenchyma, Sclerenchyma
4. Primary structure- Dicot stem- *Centella, Chromolaena*
5. Monocot stem- Grass and *Asparagus*
6. Dicot root- Pea/ *Limnanthemum*
7. Monocot root- Colocasia or any other monocot root
8. Secondary structure – Stem (Normal type) – *Vernonia*
9. Secondary structure – Root (Normal type)- *Carica papaya,* Aerial root- *Tinospora* and *Ficus*
10. Epidermal structures- Stomata (Anomocytic, anisocytic, paracytic, diacytic)
11. Anomalous secondary thickening – *Bignonia, Boerhaavia, Dracaena*

REPRODUCTIVE BOTANY AND PALYNOLOGY

MODULE – IV **09 hrs**

1. Introduction to angiosperm embryology, Contribution of Indian embryologists
2. P. Maheswary
3. Microsporogenesis- Structure and functions of wall layers
4. Development of male gametophyte- Dehiscence of anther
5. Megasporogenensis – Development of female gametophyte – Embryo sac- Development and types – Monosporic – *Polygonum* type, Bisporic – *Allium* type, Tetrasporic – *Adoxa* type
6. Pollination- Germination of pollen grains, Fertilization, double fertilization, Barriers of fertilization
7. Structure of embryo – Dicot (*Capsella*). Monocot (*Sagittaria*), Endosperm types (Cellular, nuclear and helobial – Brief account only)
8. Palynology: Pollen structure, aperture morphology, pollen allergy. Economic and taxonomic importance (Brief account only)

Practical **09 hrs**

1. Pollen morphoforms (Colpate, porate and colporate- Photographs/permanent slides. SEM images not needed)
2. Students should be familiar with the structure of anther and embryo (Permanent slides can be used)

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EXPECTED OUTCOME

- Students are able to understand the complexities of cell wall organization, microscopic and sub microscopic structures.
- Students can distinguish various anatomical features of monocots and dicots (stem and root) with respect to permanent tissues and tissue systems.
- Identify and differentiate male and female gametophyte development in angiosperms.
- Distinguish monocot and dicot embryo and the basic features of pollen grains.

SEMESTER-II

FOUNDATION COURSE

METHODOLOGY AND PERSPECTIVES IN PLANT SCIENCES

Course code : BO 1221, Number of credits : 3

Number of contact hours: 36 hrs (Lecture); 36hrs (Practical) Total= 72 hours

Distribution of Hours	Theory	Practical
Scientific Studies	08 hrs	0 hrs
Data handling in science	12 hrs	16 hrs
Microtechnique	06 hrs	08 hrs
Biophysics	10 hrs	12 hrs
Total	36 hrs	36 hrs

Aim of the course: To introduce the methodology and perspectives of Science in general so as to enable the students to systematically pursue his particular discipline in science in relation to other disciplines that come under the rubric of sciences.

Objectives:

- To familiarize the students with the fundamental characteristics of science and significance of scientific studies
- To apply scientific methods independently and familiarize instruments in biological labs
- To interpret scientific data using basic statistical methods
- To develop skills for microscopic specimen preparation.

MODULE-I

Scientific Studies **08hrs**

1. Types of knowledge: Practical, theoretical and scientific knowledge
2. Information: What is science; what is not science; laws of science; basis of scientific laws and factual truths.
3. Science as a human activity: scientific temper and empiricism, Science disciplines
4. Revolution in Science and Technology
5. Ethics in Science: Transparency and Honesty; danger of pre conceived ideas.
6. Scientific information: Depositories of scientific information, Primary, secondary and digital sources; sharing of knowledge.
7. Methods and tools in science: Steps in scientific method. Null hypothesis and alternative hypothesis. Inductive and deductive reasoning.

MODULE- II

Data handling in science **12hrs**

1. Nature and types of data - Typical examples, Data collection, Data presentation-

Classification and tabulation, diagrammatic presentation (bar & pie diagrams) and graphic presentation (Histogram, frequency polygon, frequency curve & Ogives).
2. Samples and sampling techniques.
3. Statistical treatment of data: Statistical terms and symbols. Measures of central tendencies (mean, median, mode), Measures of dispersion (range, mean deviation, variance, standard deviation, coefficient of variation), Significance tests (chi-square test).

Practicals **16hrs**

1. Workout problems on frequency distribution
2. Represent data using bar diagram and histogram
3. Measures of central tendencies (Mean, Median,Mode)
4. Workout problems on measures of dispersion (range, mean deviation, variance, standard deviation, coefficient of variation)
5. Workout problems on chi-square test.

MODULE-I11

Microtechnique **06hrs**

1. Introduction - microscopy - simple and compound – phase contrast; dark field illumination and electron microscopes (SEM and TEM).
2. Micrometry, Camera lucida
3. Sectioning - hand and microtome– rotary and sledge
4. Killing and fixation agents – Carnoy's formula, Farmers formula, F .A.A
5. Dehydration - reagents
6. Stains and staining techniques - double staining. General account; Stains: safranin, haematoxylin, acetocarmine.
7. Mounting media - D. P. X and Canadabalsam
8. Whole mounts - cytological methods: maceration, smear and squash preparation.

Practical **08hrs**

1. Familiarize stains, fixatives and mounting media
2. General awareness of Micro technique - maceration, smears &squash
3. Demonstration of microtome sectioning and hand sectioning
4. Measurement of specimens using micrometer (Demonstration only).
5. Photomicrography and Camera lucida drawings (Demonstration only).

MODULE-IV

Biophysics **10hrs**

1. Principles and applications of Colorimeter, Spectrophotometer (UV-Visible) and Centrifuge- centrifugation, types of rotors (swinging bucket, fixed angle), Density gradient and Differential centrifugation.
2. Basic knowledge of the separation methods: - Chromatography (Column chromatography, paper chromatography and TLC), Electrophoresis (PAGE and AGE).
3. Buffers -their functions in biological systems - Uses of buffers in biological research, pH meter.
4. Cryobiology – cryopreservation, freeze drying (lyophilisation) and its applications.

Practical **12hrs**

1. Separation of plant pigments by paper chromatography/TLC.
2. Preparation of buffer
3. Measurement of pH
4. Construct the absorption spectrum of any sample.

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EXPECTED OUTCOME

- Students will be familiarized with the fundamental characteristics of Science.
- Develops an idea about involvement of science in improvement of human life.
- Create awareness of scientific approach towards life and learns the values of ethics in science.
- Develops skills to interpret scientific data using basic statistical methods.
- Create skills to prepare specimens for microscopic and gross anatomical studies and familiarize with different microscopic methods for sample analysis.
- Students become able to prepare buffers, measure pH, separate plant pigments and construct absorption spectrum of a sample.

SEMESTER-III

MICROBIOLOGY, PHYCOLOGY, MYCOLOGY, LICHENOLOGY AND PLANT PATHOLOGY

Course code : BO 1341, Number of credits : 3

Number of contact hours: Lecture: 54 hrs; Practical: 36 hrs; Total: 90 hrs

Distribution of Hours	Theory	Practical
Microbiology	08 hrs	07 hrs
Phycology	20hrs	15 hrs
Mycology & Lichenology	20 hrs	10 hrs
Plant Pathology	06 hrs	04 hrs
Total	54 hrs	36 hrs

Aim of the course: To create awareness about the world of microbes and lower groups of plants.

Objectives:

- To familiarize characteristic features of microbes and their significance
- To create awareness about importance of microbes in environment
- To generate idea about types of algae, fungi, lichen and their economic as well as evolutionary significance

MODULE-I

Microbiology **08hrs**

1. History & scope of microbiology.
2. Bacterial classification: Morphological classification, classification based on staining reaction: Ultra structure of bacteria, Reproduction, Economic importance.
3. Mycoplasma & Actinomycetes –General account.
4. Virus-General characteristics,Nomenclature,classification,structure, Chemical composition,properties and reproduction of bacteriophages and T. M. V.

Economic importance

5. Soil microbiology – Soil microorganisms, the rhizosphere
6. Aquatic microbiology - Microbiology of sewage or waste water. Methods of waste water treatment (Brief account only)
7. Food microbiology - Food spoilage and preservation methods [General account].
8. Agricultural microbiology - Role of microbes in soil fertility, Nitrogen fixation, Biofertilizers

Practical **07hrs**

1. Gram staining ofbacteria.
2. Test for the Coli form bacteria in contaminated water.

3. Isolation of *Rhizobium* from root nodules of leguminous plants (Demonstration)
4. Examination of different forms of bacteria (Demonstration)

MODULE - II

Phycology 20hrs

1. Introduction – Range of thallus structure – Phylogenic trends – Pigments –Reproduction
2. Life cycle – Classification proposed by F.E. Fritsch
3. Salient features of the following major groups with reference to the structure, reproduction and life cycle of the types given below **(Excluding the developmental details)**
   a. Cyanophyceae –*Nostoc*
   b. Chlorophyceae - *Chlorella*, *Volvox, Oedogonium* and *Chara*
   c. Xanthophyceae –*Vaucheria*
   d. Bacillariophyceae –*Pinnularia*
   e. Phaeophyceae –*Sargassum*
   f. Rhodophyceae –*Polysiphonia*

Economic importance of algae

a. Commercial products of algae – Agar, Alginates, Carrageenin, Diatomaceous earth
b. Algae - medicinal aspects, algal blooms and red tide

Practical 15hrs

1. Make micro preparations of vegetative and reproductive structures of the types mentioned in the syllabus.
2. Identify the algal specimens up to the generic level and make labeled sketches of the specimens observed.

MODULE-III

Mycology & Lichenology 20hrs

1. Introduction, structure, reproduction, life cycle, evolutionary trends, Classification based on Ainsworth (1972)
2. Distinguishing characters of different classes of fungi representing the following genera (Excluding Developmental details)
   a. Myxomycotina –General characters.
   b. Zygomycotina -*Rhizopus*
   c. Ascomycotina
      - Hemiascomycetes -*Saccharomyces*
      - Plectomycetes -*Penicillium*
      - Pyrenomycetes -*Xylaria*
      - Discomycetes –*Peziza*
   d. Basidiomycotina
      - Teliomycetes - *Puccinia*
      - Hymenomycetes -*Agaricus*
   e. Deuteromycotina -*Cercospora*.

3. Economic importance of Fungi
   Lichenology: General account and economic importance; the structure, reproduction and life cycle of *Usnea*

Practicals **10hrs**

- A detailed study of structure and reproductive structures of types given in the syllabus and submission of record
- *Rhizopus, Saccharomyces, Penicillium, Xylaria, Peziza. Puccinia. Agaricus, Cercospora* and *Usnea.*

MODULE-IV

Plant Pathology **06hrs**

1. Classification of plant diseases on the basis of causative organisms and symptoms – Hostparasite interaction, phytoalexins.
2. Study of the following diseases with emphasis on symptoms, disease cycle and control measures - Leaf mosaic of Tapioca, Citrus Canker, Blast disease of Paddy, Root wilt of Coconut
3. Brief account of the following fungicides- Bordeaux mixture, Lime sulphur, Tobacco decoction, Neem cake & oil.

Practical **04hrs**

1. Identify the Diseases mentioned with respect to causal organism and symptoms- Leafmosaic of Tapioca, Citrus Canker, Blast disease of Paddy.
2. Students should be trained to prepare the fungicide Bordeaux mixture &Tobacco decoction.

REFERENCE

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EXPECTED OUTCOME

- The student can prepare micro preparations and identify the thallus and reproductive structures of lower plant groups like algae, fungi and lichen
- An awareness created among students about various microbes, structure and economic importance
- Students can use effectively the methodology to isolate and identify bacteria present in curd and root nodules
- Can identify various plant diseases, etiology of pathogens and control measures
- Able to prepare fungisides like tobacco decoction and Bordeaux mixture

SEMESTER-IV

BRYOLOGY, PTERIDOLOGY, GYMNOSPERMS AND PALAEOBOTANY

Course code : BO 1441, Number of credits : 3

Number of Contact Hours: Lecture- 54 Hours; Practicals-36 Hours Total- 90 Hrs

Distribution of Hours	Theory	Practical
Bryology	18 hrs	09 hrs
Pteridology	18 hrs	14 hrs
Gymnosperms	14 hrs	12 hrs
Paleobotany	04 hrs	01 hr
Total	54 hrs	36 hrs

Aim of the course: To create awareness about non flowering plant groups like Bryophytes, Pteridophytes and Gymnosperms.

Objectives:

- To familiarize the students characteristic features and evolutionary significance of Bryophytes, Pteridophytes and Gymnosperms.
- To generate awareness about lifecycle of Bryophytes, Pteridophytes and Gymnosperms.
- To impart knowledge about fossil formation and its significance

MODULE-1

Bryology **18hrs**

1. Introduction and general characters, classification- Proskauer (1957)
2. Study of habit, thallus organization, vegetative and sexual reproduction and alternation of generation of the following types (Developmental details are not required) *Riccia, Marchantia, Anthoceros, Funaria*
3. Economic importance of Bryophytes

Practical **09Hrs**

1. *Riccia*- Habit- Internal structure of thallus- V.S.of thallus through archegonia, antheridia and sporophyte
2. *Marchantia*- Habit- thallus with Archegonial receptacle, Male receptacle V.S, Female receptacle V.S. T.S of thallus through gemma, Sporophyte V.S
3. *Anthoceros* – Habit with sporophyte, Sporophyte V S
4. *Funaria*- Habit V.S. of archegonial cluster, V.S of Antheridial cluster, Sporophyte V.S

MODULE -11

Pteridology **18hrs**

1. Introduction: General characters morphological and phylogenetic classification

(Smith, 1955; Bold, 1957 and Zimmerman, 1959).

2. Study of the habitat habit, internal structure, reproduction and life cycle of the following types (Developmental details not required). *Psilotum*, *Selaginella*, *Pteris* and *Marselia*
3. General topics- Stelar evolution in Pteridophytes - Economic importance of Pteridophytes

Practical **14hrs**

1. *Psilotum* -External features, Stem T.S., SynangiumT.S
2. *Selaginella* - Habit , stem and rhizophore, T.S, V.S of strobilus, Megasporophyll and Microsporophylls
3. *Pteris* - Habit , Rachis T.S Sporophyll T.S, Prothallus
4. *Marselia* - Habit, Rhizome and Petiole T.S, Sporocarp T.S ,V.S

MODULE-III

Gymnosperms **14hrs**

1. Introduction –General characters and classification of Gymnosperms (Sporne, 1965)
2. Study of the habit, anatomy, reproduction and life cycle of the following types (Developmental details are not required) *Cycas, Pinus* and *Gnetum*
3. Evolutionary trends in gymnosperms, Economic importance of Gymnosperms

Practical **12hrs**

1. *Cycas*- T.S of leaf, T.S. of coralloid root. Micro and megasporophyll, V S of ovule
2. *Pinus*- T.S. of stem, T.S. of needle, male and female cone, V.S.
3. *Gnetum*-Habit, stem T.S (young and mature), leaf T.S, male and female strobilus,V.S of male and female cone, ovule V.S and seed.

MODULE –IV

Palaeobotany **04hrs**

1. Geological time scale, Fossil formation, types of fossils.
2. Fossil Pteridophytes- *Rhynia, Lepidodendron, Lepidocarpon*. Fossil gymnosperms- *Lyginopteris*.

Practical **01hr**

1. Fossil Pteridophytes- *Rhynia* stem, *Lepidodendron, Lepidocarpon.*
2. Gymnosperm-*Lyginopteris*

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EXPECTED OUTCOME

- Students are able to make micropreparations of thallus and reproductive structures of as well as better understanding of the life cycle of selected members of Bryophytes, Pteridophytes and Gymnosperms
- Can understand the economic and ecologic importance of lower groups of plant kingdom
- Better understanding of fossilization and importance of Palaeobotany
- Identify various parts of fossil plants through micro slides

SEMESTER-V

ANGIOSPERM MORPHOLOGY, SYSTEMATIC BOTANY, ECONOMIC BOTANY, ETHNO BOTANY AND PHARMACOGNOSY

Course Code :BO1541, Number of Credits :4

Number of contact hours : Lecture: 72 hrs; Practical: 54 hrs; Total: 126 hrs

Distribution of Hours	Theory	Practical
Morphology	14 hr	9 hr
Systematic Botany	40 hr	36 hr
Economic Botany	12 hr	06 hr
Ethnobotany &Pharmacognosy	06 hr	03 hr
Total	72 hr	54 hr

Aim of the course: To understand classification, identification and preservation of angiosperms along with ethnobotanical importance.

Objectives:

- To introduce importance of morphological characters in classification and plant identification.
- To develop skill for herbarium preparation.
- To acquire knowledge about economic, ethnobotanical significance and pharmacognosy of plants

MODULE-I

Morphology **14hrs**

1. Morphological description of a flowering plant: Plant habit, Stem (brief account), Leaf – morphotypes, phyllotaxy, Venation.
2. Various types of inflorescence including special types (Cyathium, Verticillaster, Hypanthodium, Coenanthium and Thyrsus) with examples;
3. Floral morphology- Flower-as a modified shoot, Flower parts, their arrangements, relative position, numeric- plan, cohesion, adhesion, symmetry of flower, aestivation types, placentation types. Description of a plant in technical terms, Floral diagram and floral formula
4. Fruit types: simple, aggregate and multiple. Seeds: albuminous and exalbuminous.

MODULE-II

Systematic Botany **05hrs**

Definition, scope and significance of Taxonomy, Historical development of the systems of classification:

1. Artificial- sexual system of Linnaeus

2. Natural - Bentham and Hooker (detailed account)
3. Phylogenetic- Engler and Prantl (Brief account only)
4. APG system- Brief account only

MODULE-III **04hrs**

1. Basic rules of Binomial Nomenclature and International Code of Botanical Nomenclature (ICBN).
2. Importance of herbarium, Herbarium techniques and Botanical gardens. Brief account on the Modern trends in taxonomy; Chemotaxonomy and Molecular taxonomy

MODULE-IV **31 hr**

A study of the following families with emphasis on the morphological peculiarities and economic importance of its members (based on Bentham & Hooker's system)

1. Annonaceae
2. Nymphaeaceae
3. Malvaceae
4. Rutaceae
5. Anacardiaceae
6. Leguminosae
7. Combretaceae
8. Myrtaceae
9. Cucurbitaceae
10. Apiaceae
11. Rubiaceae
12. Asteraceae
13. Sapotaceae
14. Apocynaceae
15. Asclepiadaceae
16. Solanaceae
17. Acanthaceae
18. Verbenaceae
19. Lamiaceae
20. Nyctaginaceae
21. Euphorbiaceae
22. Orchidaceae
23. Scitaminae
24. Liliaceae
25. Arecaceae
26. Poaceae

Practical **45hrs**

1. Study on various types of inflorescences, Flowers and fruits with vivid record of practical work.
2. Students must be able to identify the angiosperm members included in the syllabus up to the level of families. Draw labeled diagram of the habit, floral parts, L S of flower, T S of ovary, floral diagram, floral formula and describe the salient features of the member in technical terms. (Minimum two plants from each dicot family and one from monocot family).
3. Students must submit practical records, Herbarium sheets (25 Nos: representing one sheet from each family) and Field book at the time of practical examination.
4. Field trips are to be conducted for three days either as continuous or one daytrips.

MODULE-V

a. Economic Botany **12hrs**

1. Study of the major crops in Kerala with special reference to their Botanical description, morphology of the useful part and economic importance—
   i. Coconut & Paddy
   ii. Cereals– Wheat & Maize
   iii. Millets- Ragi & Fox tail millet

iv. Pulses – Black gram, Green gram, Bengal gram
v. Sugar yielding plants – Sugar Cane
vi. Spices- pepper, cloves, cardamom
vii. Beverages – Coffee, Tea
viii. Fibre yielding plants – Cotton
ix. Dye Yielding plants - Henna and *Bixa Orellana*
x. Resins- Asafoetida
xi. Tuber crops – Tapioca, Potato
xii. Oil yielding plants- Sesame, ground nut
xiii. Latex yielding plants- Rubber
xiv. Medicinal plants - *Sida, Zingiber officinalis, Aloe vera* and *Vinca rosea*
xv. Insecticide- Neem

Practical **06hrs**

Identify the economic products obtained from the plants mentioned under Economic Botany

b. Ethnobotany **03hrs**

1. Definition — importance, scope, categories and significance.
2. Study of various methods to collect Ethno botanical data.
3. Plant parts used by tribes in their daily life as food, clothing, shelter, agriculture and medicine.
4. Study of common plants used by tribes. *Aegle marmelos*, *Ficus religiosa*, *Cynadondactylon,Ocimum sanctum* and *Trichopus zeylanicus*

c. Pharmacognosy **03hrs**

1. Definition and scope of Pharmacognosy
2. Sources of crude drugs – roots, rhizome, bulb, corm, leaves, stems, flowers, fruits and seeds

Practical **03hrs**

1. Visit to a tribal area and collection of information on their traditional method of treatment using crude drugs
2. Observe the plants of ethno botanical importance

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EXPECTED OUTCOME

- Ability to identify different types of inflorescences, flowers and fruits, their arrangement and relative position.
- Familiarization of basic rules of Angiosperm classification and different types of classification.
- Preparation and maintenance of Herbarium.
- Identification of plants to their respective families.
- Understanding of ethnobotanical and pharmacological significance of plants.

SEMESTER-V

ENVIRONMENTAL STUDIES AND PHYTOGEOGRAPHY

Course code: BO 1542 Number of Credits : 4

Number of contact hours : Lecture: 90 hrs; Practical: 36 hrs; Total: 126 hrs

Distribution of Hours	Theory	Practical
Environmental Studies	72 hrs	36 hrs
Disaster Management	09 hrs	00 hrs
Phytogeography	09 hrs	00 hrs
Total	90 hrs	36 hrs

Aim of the course: To inculcate environmental awareness among students for protecting the Nature.

Objectives:

1. To create awareness about ecosystem and Natural resources.
2. To generate knowledge about importance of Biodiversity conservation
3. To understand the need to mitigate pollution and strategies for disaster management
4. To impart knowledge about phytogeographical regions

MODULE-I

Natural resources and its conservation **12hrs**

5. Natural Resources - Renewable and Non-renewable - Land & Soil, Water, Energy, Minerals, Food and agriculture, Forests, Plants & Wild life resources. Degradation of natural resources - Land degradation, degradation of water resources, Loss of flora and fauna; Causes – population explosion, over exploitation, deforestation, agriculture mismanagement, desertification, overgrazing, soil erosion, mining, urbanization and industrialization- change in land use, depletion of water resources.
6. Conservation of Natural resources and sustainable life styles.
   Land and soil- Afforestation, regeneration of wasteland
   Water - Rain water harvesting, ground water dams
   Energy - Promoting use of renewable resources-solar, tidal and wind; biodiesel, biofuels.
   Forests- Reforestation, Community forestry programmes

MODULE- II

Ecosystems **22 hr**

1. Ecosystems - Concept, definition, structure and function; components- biotic and abiotic; energy flow
2. Food chains -Food web & ecological Pyramids, biogeochemical cycles - Carbon and Phosphorous cycle
3. Ecological succession-Definition, primary and secondary succession, climax

concept, hydrosere and xerosere.
4. Plant adaptations- Morphological, anatomical& physiological adaptations of – Hydrophytes, Xerophytes, Halophytes, Epiphytes, Parasites
5. Introduction- types, characteristic features, structure and functions of the following ecosystems.
6. Forest ecosystem, 2. Grassland ecosystem, 3. Desert ecosystem, 4. Aquatic ecosystems- Ponds, Streams, Rivers, Oceans, Estuaries (brief account only)

MODULE-III

Biodiversity and its conservation **18hrs**

1. Introduction, Definition- genetic, species and ecosystem diversity; biodiversity index (Shannon index)
2. Hot-spots of biodiversity; India as mega-diversity nation.
3. Threats to biodiversity: land use changes & habitat destruction, poaching of wild life- hunting & export, Overuse of pesticides, invasive species.
4. IUCN, Red data Book; Extinct and Threatened species- endangered & Rare; Endemic species of Western Ghats.
5. Conservation of biodiversity: In-situ (National parks and Wild life sanctuaries) and Ex-situ conservation (botanical gardens); Biosphere Reserves & World Heritage Sites in India-Ramsar sites, Chilka lake.
6. Global initiatives in biodiversity conservation- Stockholm Conference, Montreal Protocol, Convention on Biological diversity Regional initiatives- Chipko movement, National Biodiversity Authority (NBA), Access and Benefit sharing (ABS),A brief account on conservation efforts in Kerala- Kerala State Biodiversity Board (KSBB), People Biodiversity Register.

MODULE-IV

Environmental pollution **20hrs**

1. Definition, causes, effects and control measures of – 1. Air pollution, 2. Water pollution, 3. Soil pollution, 4. Marine pollution, 5. Noise pollution, 6. Thermal pollution.
2. Solid Waste Management- waste minimization, Recycling and Reuse, Consuming environment friendly products. E-waste management.
3. Environmental Legislations - Environment protection Act (1986); Air [prevention and control of pollution] Act (1981; Amended 1987); Water [prevention and control of pollution] Act (1974; Amended 1988); Wildlife Protection Act (1972); Forest conservation Act (1980). (Scope and relevance only)
4. Environmental Organisations –UNEP, IPCC, WWF, Central Pollution Control Board

MODULE-V

Disaster management **09hrs**

1. Introduction, Definition and terminologies; scope and concept of disaster management.
2. Natural and Environmental disasters-a brief description of the following disasters-

earth quake, flood, coastal disasters, landslides, tsunami(role of mangroves in controlling tsunami disaster), cyclone, dam collapse, nuclear disaster, chemical disaster, biological disaster.

3. Environmental Issues - Global warming and sea level rise, Acid rain, Ozone layer depletion- causes and effects.
4. Disaster management – four phases – mitigation, preparedness, responses, recovery. Emergency procedures and warning systems, application of GIS (brief account only).

MODULE-VI

Phytogeography **9 hrs**

1. Concept & definition, species distribution- continental drift, continuous and discontinuous distribution.
2. Vegetation in India – Forests- tropical, temperate, sholas, sub alpine, alpine, mangroves & Grass lands.
3. Phytogeographical regions of India - Western and eastern Himalayas, Desert, Western Ghats, Deccan Peninsula, Gangetic Plain, North East India, Coasts & Islands

Practical **36hrs**

1. Visit a local polluted site and report major pollutants.
2. Visit a mangrove vegetation and report diversity
3. Study of ecological and anatomical modifications of Xerophytes, Hydrophytes,
4. Halophytes, Epiphytes and Parasites.
5. Observation and study of different ecosystems mentioned in the syllabus.
6. Phytogeographical regions of India- Photos/Diagrams

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EXPECTED OUTCOME

- Develops awareness about natural resources, its conservation and importance of sustainable lifestyles.

SEMESTER-V

- Understands and identify different ecosystems and ecosystem processes.
- Develops deep understanding about biodiversity and importance of its conservation
- Develops skills to identify polluted sites, its major pollutants and recognize the need to mitigate environmental pollution
- Awareness about different types of disasters and to adopt strategies to overcome and reduce the impact
- Identify the importance of phytogeographical sites in India

SEMESTER-V

CELL BIOLOGY, GENETICS AND EVOLUTIONARY BIOLOGY

Course Code : BO 1543, Number of credits : 3

Number of contact hours : Lecture: 72 hrs; Practical: 36 hrs; Total: 108 hrs

Distribution of Hours	Theory	Practical
Cell biology	25 hrs	12 hrs
Genetics	36 hrs	24 hrs
Evolutionary biology	11 hrs	00 hrs
Total	72 hrs	36 hrs

Aim of the course: To familiarize cellular organelles, Classical Genetics and importance of Evolution.

Objectives:

- To create awareness about cellular organelles.
- To develop skills to identify cell stages and workout problems in classical genetics.
- To introduce different theories of evolution

MODULE-I

Cell Biology **25hrs**

1. History and progress of cell biology
2. Ultra structure and functions of the cell components and organelles Cell wall; The cell membrane, Endoplasmic reticulum, Ribosomes, Golgi apparatus, Lysosomes, Peroxisomes, Vacuole, Mitochondria, Chloroplast &Nucleus.
3. The chromosomes- Chromosome morphology- Eukaryotic chromosomes and its organization. Chromatin - composition and structure; hetero chromatin and euchromatin; Chemical organization. Nucleoproteins – histones and non – histones. Nucleosome model of DNA organization.
4. Special types of chromosomes- Salivary gland, Lamp brush and Bchromosomes
5. Variation in Chromosome number (Numerical aberrations)- anueploidy and Euploidy- haploidy, polyploidy- significance
6. Variation in Chromosome structure (Structural aberrations) - deletion, duplication, inversion and translocation;significance
7. Mitosis and Meiosis. cell cycle : Significance of mitosis and meiosis

Practical **12hrs**

1. Make acetocarmine squash preparation of onion root tip and to identify different stages of mitosis.
2. Make squash preparation of the flower buds of any of the following plants. *Rhoeo,Capsicum* (To identify Meiosis) Demonstration only

MODULE-II

ClassicalGenetics **36hrs**

1. Mendelian Genetics- Mendel and his experiments, Mendel's success, Mendelian principles, Mendelian ratios, monohybrid and dihybrid crosses, back cross and testcross
2. Genetics after Mendel- Modified Mendelian ratios; Incomplete dominance – Flower color in *Mirabilis* ; Interaction of genes- Comb pattern in poultry. 9:3:3:1. Epistasis - Recessive. Coat color in mice. 9:3:4; Dominant epistasis. Fruit colour in summer squash. 12:3:1; Complementary genes. Flower color in *Lathyrus* 9:7; Duplicate gene with cumulative effect. Fruit shape in summer squash. 9:6:1; Duplicate dominant genes in shepherd's purse. 15:1; Inhibitory factor. Leaf color in Paddy. 13:3
3. Multiple alleles-General account. ABO blood group in man. Rhfactor.
4. Quantitative characters- General characters of quantitative inheritance, polygenic inheritance; Skin color in man, ear size in Maize.
5. Linkage and crossing over- Linkage and its importance, linkage and independent assortment. Complete and incomplete linkage. Crossing over – a general account, two point, three point cross. Determination of gene sequence. Interference and coincidence. Mapping of chromosomes.
6. Sex determination- Sex chromosomes, chromosomal basis of sex determination XX- XY, XX-XO mechanism. Sex determination in higher plants (*Melandrium album*) Sex chromosomal abnormalities in man. Klinefelter's syndrome, Turner's syndrome. Sex linked inheritance. Eye colour in *Drosophila*, Hemophilia in man.
7. Extra nuclear inheritance General account, maternal influence. Plastid inheritance in *Mirabilis*. Shell coiling in snails, kappa particle in *Paramecium*.

Practical **24hrs**

Work out problems in

1. Monohybrid cross (Dominance and incomplete dominance)
2. Dihybrid cross (Dominance and incomplete dominance)
3. Gene interactions (All types of gene interactions mentioned in the syllabus)
   a. Recessive epistasis 9: 3: 4.
   b. Dominant epistasis 12: 3:1
   c. Complementary genes 9:7
   d. Duplicate genes with cumulative effect 9: 6:1
   e. Inhibitory genes 13:3
   f. Duplicate dominant gene 15: 1
   g. Comb pattern in poultry 9:3:3:1
4. Linkage and crossing over
5. Two point and three point crosses
6. Construction of genetic map.

MODULE-III

Evolutionary Biology **11hrs**

1. Progressive and Retrogressive evolution.
2. Parallel and Convergent evolution.

3. Micro and Macro evolution.
4. Theory of Lamarck, Wiesman and De Vries, Darwinism, Neo-Darwinism
5. Isolation, Mutation, Genetic drift,Speciation
6. Variation and Evolution – Hybridization and Evolution – Polyploidy and evolution– Mutation and Evolution.

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22. Taylor (2008) Biological Sciences. Cambridge University Press India Pvt. Ltd
23. Veer Bala Rastogi (2008), Fundamentals of Molecular Biology Ane Books Pvt. Ltd
24. Verma & Agarwal (2004) Cell Biology, Genetics, Molecular Biology, Evolution & Ecology, S Chand & Co.

EXPECTED OUTCOME

- Students have a better understanding of cell structure and cell organelles
- Can prepare microslides of cell divisions and identify various stages of mitosis and meiosis
- Able to workout problems in classical genetics, modified mendelian ratios and population genetics
- Able to understand genetic diseases and their inheritance
- Understand evolutionary principles, theories and methods of speciation

SEMESTER-VI

PLANT PHYSIOLOGY AND BIOCHEMISTRY

Course code : BO 1641 Number of Credits : 4

Number of contact hours: Lecture: 90 hrs; Practical: 36 hrs; Total: 126 hrs

Distribution of Hours	Theory	Practical
Plant Physiology	60 hrs	20 hrs
Biochemistry	30 hrs	16 hrs
Total	90 hrs	36 hrs

Aim of the course: To create awareness about physiological and biochemical aspects of growth & metabolism

Objectives:

- To understand physiology of absorption, photosynthesis and respiration.
- To study physiological responses in growth, movements and flowering of plants
- To generate awareness about biomolecules.
- To develop skill for testing of biomolecules

MODULE-I **20hrs**

1. General introduction: physiological processes, their significance and applications.
2. Water relations of plants: Importance of water to plant life.
   a. Absorption of water- organs of absorption, root and root hair. Physical aspects of absorption- imbibition, diffusion and osmosis. Plant cell as an osmotic system; water potential and osmotic potential. Plasmolysis and its significance, practical applications. Mechanism of water absorption – active and passive absorption, root pressure. Pathway of water across root cells.
   b. Ascent of sap- vital and physical theories.
   c. Loss of water from plants : transpiration-cuticular, lenticular and stomatal mechanism
   Theories – starch sugar hypothesis, potassium - ion theory. Significance of transpiration - guttation, anti-transpirants, factors affecting transpiration.
3. Mineral nutrition: Gross chemical analysis of the plant body, ash analysis, criteria for essentiality of elements, macro and micro elements, role of essential elements and their deficiency symptoms. Culture methods - sand culture, hydroponics and aeroponics. Mechanism of mineral absorption (a) passive absorption- ion exchange and Donnan equilibrium (b) active absorption- carrier concept, Lundegardh hypothesis.

MODULE-II **20hrs**

1. Photosynthesis: Introduction, significance and general equation; Photosynthetic apparatus, structure and function of chloroplast, quantasomes - solar spectrum and its importance - Fluorescence and phosphorescence; Red drop, Emerson effect; Two pigment systems; raw material for photosynthesis; Mechanism of

photosynthesis- Light reaction - cyclic and non cyclic photophosphorylation; Hill reaction - Dark reaction: Calvin cycle; Comparative study of C3, C4 and CAM plants; Photorespiration Bacterial photosynthesis and chemosynthesis (Brief account only)

2. Factors affecting photosynthesis - Law of limiting factor.
3. Respiration: Introduction, definition and significance and general equation. Respiratory substrate, types of respiration- aerobic and anaerobic. Aerobic respiration - glycolysis, Krebs's cycle, terminal oxidation. Anaerobic respiration – fermentation: alcoholic and lactic acid fermentation. Energy relation of respiration - R .Q and its significance - Factors affecting respiration.

MODULE-III **20hrs**

1. Translocation of solutes: Path way of movement, phloem transport, mechanism of transport - Munch hypothesis, protoplasmic streaming theory - activated diffusion hypothesis, electro osmotic theory.
2. Nitrogen metabolism: Source of nitrogen - Biological nitrogen fixation – symbiotic and asymbiotic. Nitrogen fixation by blue green algae - rotation of crops. Nif genes - Leghaemoglobin.
3. Growth: Phases of growth - vegetative and reproductive growth - growth curve - plant growth regulators - Auxins, Gibberellins, Cytokinins, Ethylene, Abscissic acid - synthetic plant hormones - practical applications. Senescence and abscission, Photoperiodism
4. Vernalization - phytochrome and its significance. Physiology of bud and seed dormancy, germination.
5. Plant movements: Tropic and nastic movements. Circadian rhythm and biological clock.
6. Stress physiology: water stress, salt stress.

Practical **20hrs**

1. Water potential of onion peel / *Rhoeo* peel by plasmolytic method.
2. Imbibition of water by different types of seeds.
3. Effect of temperature on permeability.
4. Papaya petiole osmoscope.
5. Determination of stomatal index.
6. Determination of water absorption and transpiration ratio.
7. Measurement of rate of transpiration using Ganong's potometer or Farmer's potometer.
8. Evolution of oxygen during photosynthesis.
9. Light screen experiment
10. Measurement of photosynthesis by Wilmott'sbubbler.
11. Evolution of CO_2 during respiration.
12. Ganong's respirometer and measurement of R.Q
13. Alcoholic fermentation using Kuhn's fermentation vessel
14. Geotropism using clinostat
15. Measurement of growth using Arc auxanometer.

SEMESTER-VI

MODULE-IV

Biochemistry **15hrs**

1. Molecules and life.
2. Carbohydrates - Classification, occurrence, structure and functions of monosaccharides (glucose and fructose), oligosaccharides (sucrose and maltose), polysaccharides (starch and cellulose), synthesis of glycosidic bonds – Enzymatic hydrolysis of glycosidic bonds – amylases and invertases.
3. Amino acids- classification based on polarity, structure - Amphoteric property of Amino acids
4. Peptide formation – Amino acid metabolism – reductive amination and transamination
5. Proteins – Structure, classification, properties and function; Role of bonds in stabilizing protein structure - hydrolysis of proteins.

MODULE-V **15hrs**

1. Lipids- classification – Simple lipids- fats & oils, waxes; Compound lipids- phospholipids, sphingo lipids and glycolipids; Derived lipids- Cholesterol and terpenes; Fatty acids – Alpha- oxidation and Beta-oxidation; Synthesis of ester bonds.
2. Enzymes - general account - structure, classification and nomenclature (recommended by Commission on Enzymes); Mechanism of enzyme action - inhibition of enzymes - regulation of enzymes - allosteric inhibition - Isoenzymes, coenzymes and cofactors
3. Secondary Plant Products – Introduction – classification and function [General account]
4. Phytochemicals- Alkaloids, terpenoids, phenolics, flavonoids

Practical **16hrs**

1. Qualitative test for carbohydrates - Molisch's test, Benedict's test (for reducing sugar)
2. Iodine test for starch
3. Test for proteins – Biuret test

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8. Kumar & Purohit (1996). Plant Physiology - Fundamentals and Applications Agrobotanical Publications

9. Lehninger (2012). Principles of Biochemistry 6th Edition,W H Freeman & Co.
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Expected outcome of the Course

- Students get a clear understanding of the basic concepts of Physiology and Biochemistry.
- Understands photosynthesis, respiration, plant growth regulators, nitrogen metabolism and stress physiology
- Familiarization of basic physiological practical procedures.
- Students get the basic knowledge about the macromolecules and their overall role in cell metabolism; and secondary plant products.
- Identification of protein, reducing and non reducing sugar by qualitative tests.

SEMESTER-VI

MOLECULAR BIOLOGY, GENERAL INFORMATICS & BIOINFORMATICS

Course code : BO 1642, Number of credits : 4

Number of contact hours: Lecture: 72 hrs; Practical: 36 hrs; Total: 108 hrs

Distribution of Hours	Theory	Practical
Molecular Biology	36 hrs	9 hrs
General informatics	18 hrs	9 hrs
Bioinformatics	18 hrs	18 hrs
Total	72 hrs	36 hrs

Aim of the course: To develop knowledge about molecular biology of genetic material and gene expression along with information technology and biological databases

Objectives:

- To generate awareness of genetic material and gene expression.
- To get an overview of information technology
- To develop skill for using internet, biological databases and molecular visualization tools

MODULE-I

Molecular Biology **36hrs**

1. DNA as genetic material- experimental evidence- Griffith's experiment on Bacterial transformation, Avery's experiment, Hershey-Chase Experiment.
2. DNA- Chemical Composition, Chargaff's rules, molecular structure of DNA- Watson & Crick's Double Helical Model of DNA, Salient features of double helix, Biological Significance of Double Helical Model of DNA; Forms of DNA - A, B and Z forms; Satellite and repetitive DNA
3. Replication of DNA in prokaryotes- An overview, General principles and features, Semi conservative model- Meselson and Stahl experiment; Leading strand and lagging strand synthesis, Okazaki fragments, replication fork and origin of replication; Unidirectional and Bidirectional replication; Replisome. Enzymology of replication: topoisomerase, helicase, primase, polymerase and ligase; DNA repairing mechanism-photoreactivation. Replication of DNA in eukaryotes (brief account only).
4. RNA structure- Structure, Properties and functions of tRNA, mRNA and rRNA; Genetic code.
5. Synthesis of protein: Transcription; RNA modifications- introns, exons, removal of introns, spliceosome; Translation -Central dogma-reverse transcription
6. Regulation of gene expression in prokaryotes and eukaryotes-lac operon;

transcriptional gene regulation in eukaryotes-promoters, enhancers, transcription factors; RNA interference.

7. Concept of gene-Units of a gene, cistron, recon, muton; Types of genes- House keeping genes (constitutive genes), Luxury genes (non constitutive genes), overlapping genes.
8. Transposable genetic elements- General account, Characteristic, Transposons (jumping genes), Cellular oncogenes (general account only).

Practical **9hrs**

1. Study of semi-conservative replication of DNA through micrographs/ schematic representations.
2. Practice problems in molecular biology based on DNA structure and replication

MODULE-II

General Informatics **18hrs**

1. Overview of Information Technology: Features of the modern personal Computer and peripherals, computer network and internet, overview of operating systems- Windows & Linux, and major application software's - Excel, Power point, MSword.
2. Knowledge skill for Higher Education**:** Data information and knowledge, knowledge management- Internet as a knowledge repository, academic search techniques, creating your cyber presence, open access initiatives, open access publishing models, basic concepts of IPR, copy rights and patents, plagiarism, introduction to use of IT in teaching and learning, case study of educational software, Academic services- INFLIBNET, NICNET and BRNET.
3. Social Informatics**:** IT and Society- issues and concerns- digital divide, IT and development, new opportunities and new threats, Cyber ethics, Cyber crime, Security, privacy issues, cyber addictions, Information overload, Health issues, guidelines for proper usage of computers, internet and mobile phones. Localization issues-IT and Regional languages-IT for the disabled, the free software debate.

Practical **9hrs**

1. Create, Copy and Save a document with Header, Footer, Page Number, Date and Time using Word processing software.
2. Insert a table in the above Document
3. Prepare the mark list of students in a class using Excel
4. Prepare five slides each using power point with different design templates

MODULE-III

Bioinformatics **18hrs**

1. Introduction: Definition, Origin of concept of Bioinformatics; Brief history, Importance of bioinformatics, Wet lab and Weblab.
2. Basics of Genomics, Proteomics & Comparative genomics
3. Biological databases:

- Nucleic acid databases (Eg: EMBL, Gen Bank, DDBJ)
- Protein sequence databases. Eg: PIR, SWISS PROT, UNIPROT
- Brief account on Model/organism databases, Biodiversity data bases
- Protein structure databank- PDB

4. Gene sequence, Sequence analysis and alignment (brief account only), Pair wise sequence alignment, multiple sequence alignment, Sequence Alignment Tools: BLAST, CLUSTAL X
5. Bioinformatics in relation to Biomolecular structure.
6. Molecular visualization- use of Rasmol
7. Molecular Phylogeny and Phylogenetic trees- Advantages of Molecular phylogeny and phylogenetic analysis- PHYLIP

Practical **18 hrs**

1. Molecular visualization using Rasmol
2. Blast Search
3. Students should access Gene databases, download and take a print out of any one of gene sequences
4. Students are expected to work with at least any one of the commercial / scientific packages, to explore the WEB and able to find, recognize, download, install and use software in various areas useful to the research in Biology.

REFERENCE

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4. David Mount (2004) Bioinformatics: Sequence and Genome Analysis, 2nd Edition Cold spring harbor press
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9. Higgs, (2005). Bioinformatics and Molecular evolution. Ane Books India Pvt. Ltd
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Prentice Hall of India Pvt. Ltd.
15. Niel C Jones and Pavela Pevzner, (2009). An introduction to Bioinformatics Algorithms. Ane Books India Pvt. Ltd
16. Robert Tamarin (2010) Principles of Genetics. Tata Mc Graw Hill
17. Selzer P.M., Marhöfer R.J. and Rohwer A. (2008). Applied Bioinformatics: An Introduction, Springer
18. Selzer PM, Marhofer RJ, Rohwer A (2009) Applied Bioinformatics. Springer-Verlag Berlin Heidelberg, Germany
19. Teresa Attwood and David Parry-Smith (1999) Introduction to Bioinformatics Prentice Hall
20. Twymann, R.M. (1998) Advanced molecular biology, Viva books NewDelhi.

WEB RESOURCES

- www.fgcu.edu/support/office2000
- www.openoffice.org *Open office officialwebsite*
- www.microsoft.com/office *MS Officewebsite*
- www.lgta.org *Office onlinelessons*
- www.learntheneth.com *WebPrimer*
- www.computer.org/history/timeline
- www.computerhistory.org
- http://computer.howstuffworks.com
- http://vmoc.museophile.org *Computerhistory*
- www.dell.com *DellComputers*
- www.intel.com*Intel*
- www.ibm.com*IBM*
- www.keralaitmission.org *Kerala Govt. ITDept.*
- www.technopark.org
- www.studentworkzone.com/question.php?ID=139

Expected outcome

- Understands DNA as genetic material, develops awareness about chemical composition and different types of DNA including their replication method.
- Students understand various molecular aspects of gene expression and regulation of genes
- Develops awareness about various academic services applied for their studies
- Awareness about features of a computer, different application and system software.
- Recognizes the need for safe use of internet and also become aware about health issues related to over usage of computers and mobile phones as well as cyber crimes and cyber laws.
- Students will be familiarized to molecular phylogeney, Biological Databases, Sequence analysis, Genomics, Proteomics & Comparative genomics

SEMESTER-VI

HORTICULTURE, PLANT BREEDING & RESEARCH METHODOLOGY

Course code : BO 1643, Number of credits : 4

Number of contact hours: Lecture: 72 hrs; Practical: 36 hrs; Total: 108 hrs

Distribution of Hours	Theory	Practical
Horticulture	35 hrs	20 hrs
Plant breeding	20 hrs	16 hrs
Research methodology	17 hrs	00 hrs
Total	72 hrs	36 hrs

Aim of the course: To introduce horticultural techniques and plant breeding along with awareness in research methodology

Objectives:

- To get an awareness in principles and methods of gardening
- To understand plant breeding techniques and develop skill for hybridization.
- To get knowledge about research methodology and preparation of projects

MODULE- I

Horticulture **18hrs**

1. Introduction - Divisions of horticulture- Importance and scope of horticulture.
2. Principles of garden making- types of pots and containers- Potting mixture and potting media – soil, sand, peat, sphagnum moss, vermiculite- Soil types, Soil preparation- Irrigation methods
3. Propagation methods- Cuttings, Layering – Air layering, Ground layering (Tip, Trench and Compound), Budding – T- budding, Grafting – Approach grafting, Bridge grafting, whip and tongue grafting.
4. Garden tools and implements- Lawn mower, hand trowel, nursery spade, spade fork, garden hoe, weeder,tillers
5. Manures and fertilizers- Farmyard manure, compost, vermi compost and biofertilizers; Chemical fertilizers – NPK; Time and application of manures and fertilizers- Foliar sprays
6. Irrigation Methods–Surface, Drip irrigation, Sprinkler irrigation

MODULE- II **17hrs**

1. Components of Garden- Landscaping principles; Lawns, Trees, shrubs and shrubberies, climbers and creepers, Flower beds and borders, ornamental hedges, edges, Drives, roads, walks and paths, Carpet beds, topiary, trophy, rockery, Conservatory or greenhouses
2. Indoor garden, Roof garden (Brief account only)

3. Bonsai
4. Flower Arrangement- Containers and requirements for flower arrangements- Free style, Shallow and Mass arrangement- Japanese- Ikebana. Dry flower arrangement

Practical **20hrs**

1. Familiarise the garden tools and implements mentioned in the syllabus
2. Students must be trained to do Cutting/ layering/ grafting/budding.
3. Visit to a Botanical garden under the guidance of the teacher is recommended

MODULE-III **20hrs**

Plant breeding

1. Introduction, objectives in plant breeding- - Important national and international plant breeding Institutes
2. Plant introduction. Agencies of plant introduction in India, Procedure of introduction - Acclimatization -Achievements.
3. Selection - mass selection, pure line selection and clonal selection. Genetic basis of selection and methods.
4. Hybridization: Procedure of hybridisation, inter generic, inter specific, inter varietal hybridisation with examples. Composite and synthetic varieties.
5. Heterosis and inbreeding depression- genetic basis; male sterility
6. Mutation breeding – method – achievements in India.
7. Polyploidy breeding
8. Breeding techniques and achievements with reference to the following crops in India:
   (a) Rice (b) Wheat (c) Potato (d) Coconut

Practical **16hrs**

1. Techniques of emasculation and hybridization of any bisexual flower.

MODULE-IV **17hrs**

Research Methodology

1. Introduction; Need for research; Stages of Research – Definition of problem, execution of the problem, interpretation of results
2. Characteristics of Research, Types of research- Qualitative & quantitative.
3. Experimental design, components of experimental designs- Randomized blocks, completely randomized designs.
4. Preparation of a project report : Data analysis and consolidation of photographs, illustrations, tables and graphs, Title, introduction, review of literature, materials and methods, results, discussions, summary, references, acknowledgements; Bibliography – Method of citing and arrangement of references.

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2. Allard RW (1999). Principles of Plant Breeding (2nd Edition), John Wiley and Sons.

3. Arora J.S (1990). Introductory Ornamental Horticulture, Kalyani Publications
4. Bailey L.H (1901). The Standard Cyclopaedia of Horticulture Volume 1,2 and 3, Macmillan Publications.
5. Bose T.K and Mukerjee D (1987). Gardening in India, Oxford Book House
6. Chauhan V.S (1972). Vegetable Production in India, Ram Prasad &Sons
7. Gupta S N (2010) Instant Horticulture, Jain Brothers publishing
8. Gurumani N. (2006) Research Methodology For Biological Sciences, MJP Publ.
9. Kothari C R & Garg C (2014) Research methodology methods and techniques, New Age international publishers
10. Kumar N (1989). lntroduction to Horticulture, Rajalakshmi Publications
11. Manibhushan Rao K (2005). Text Book of Horticulture, Macmillan Publications
12. Shujnrnoto, (1982). The Essentials of Bonsai, David & Charles ,Newton
13. Singh B D (2015).Plant Breeding, Kalyni publishers

Expected outcome

- Students able to identify and use various horticultural implements
- Can propagate plants through grafting, budding and layering &can prepare manures, fungicides etc
- Can effectively do plant breeding methods and understands ttheir practical application in betterment of food crops
- Can devise an experimental design and carry out a project
- Students trained about various steps for the conduct of a research project and write a project report

OPEN COURSES

OPEN COURSE – I

Offered to the students of other disciplines choosing Botany open course

Semester	Course Code	Title of the Course	Contact hrs/week	Credits
V	BO1551.1	Horticulture	3	2
	BO1551.2	Mushroom Cultivation and Marketing		
	BO1551.3	Forestry		

OPEN COURSE –II

Offered to the students of Botany

Semester	Course Code	Title of the Course	Contact hrs/week	Credits
VI	BO 1651	Biotechnology & Nanobiotechnology	3	2

OPEN COURSE –I (A)

HORTICULTURE

Course code : BO1551.1, Number of credits : 2

Number of contact hours : Lecture: 54 hrs

Aim of the course: To develop knowledge about principles of gardening, propagation and flower arrangement

Objectives:

- To introduce horticultural methods
- To familiarize propagation methods in plants.
- To study types of gardens and flower arrangements

MODULE–I **10hrs**

1. Introduction
2. Divisions of horticulture
3. Importance and scope of horticulture.
4. Principles of garden making
5. Types of pots and containers
6. Potting mixture and potting media – soil, sand, peat, sphagnum moss, vermiculite
7. Soil types, Soil preparation
8. Irrigation methods- drip irrigation and sprinkler irrigation
9. Hydroponics

MODULE–II **12hrs**

I Propagation methods

1. Cuttings- root, stem, leaf
2. Layering – Air layering, Ground layering (Tip, Trench and Compound)
3. Budding – T-budding
4. Grafting – Approach grafting, Bridge grafting, whip and tongue grafting.
5. Garden tools and implements
6. Manures and fertilizers
7. Farmyard manure, compost, vermi compost and biofertilizers.
8. Chemical fertilizers –NPK.
9. Time and application of manures and fertilizers.
10. Foliar sprays

MODULE- III **12hrs**

1. Components of Garden
2. Lawns and landscaping Trees, shrubs and shrubberies, climbers and creepers
3. Flower beds and borders,ornamental hedges,edges, Drives, roads, walks and paths , Carpet beds, topiary, trophy,rockery
4. Conservatory or green houses, Indoor garden, Roof garden
5. Bonsai

MODULE- IV **12hrs**

1. Flower Arrangement
2. Containers and requirements for flower arrangements Free style, Shallow and Mass arrangement
3. Japanese –Ikebana
4. Bouquet and garland making
5. Dry flower arrangement
6. Harvesting Methods- Anthurium and Orchid &Storage
7. Marketing of Fruits, vegetables and flowers
8. Preservation and processing of fruits and vegetables

MODULE- V **8hrs**

1. Growth regulators in horticulture
2. Rooting hormones , Growth promoters , Flower induction, Parthenocarpy
3. Common diseases of Mango and Tomato
4. Plant protection- Weedicides, Fungicides, Pesticides
   Field Study: Visit to a Botanical garden under the guidance of the teacher is encouraged.

REFERENCES

1. Arora J.S (1990). Introductory Ornamental Horticulture, Kalyani Publications
2. Bailey L.H (1901). The Standard Cyclopaedia of Horticulture Volume 1,2 and 3, Macmillan Publications.
3. Bose T.K and Mukerjee D (1987). Gardening in India, Oxford Book House
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6. Kumar N (1989). lntroduction to Horticulture, Rajalakshmi Publications
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Expected outcome

- Students are familiarized in horticulture implements and methods of gardening
- Better understanding of commercial horticulture, flower arrangement, cut flowers
- Can understand about land scaping, fertilizers and Plant protection

OPEN COURSE -I (B)

MUSHROOM CULTIVATION AND MARKETING

Course code : BO1551.2, Number of credits : 2

Number of contact hours : Lecture: 54 hrs

Aim of the course: To create awareness about cultivation methods for mushroom and its economic aspects

Objectives:

- To get knowledge about nutritional and medicinal values of mushrooms
- To understand methods of mushroom cultivation.
- To give insight into the economic significance of mushroom cultivation

MODULE- I **12hrs**

- History and introduction: Edible mushrooms and Poisonous mushrooms.
- Systematic position, morphology, distribution, structure of *Agaricus* and *Pleurotus.*

MODULE- II **08hrs**

- Nutritional value, medicinal value and advantages- types- milky, straw, button and poisonous mushrooms

MODULE- III **12hrs**

1. Cultivation: Paddy straw mushroom – substrate, spawn making. Methods – bed method, polythene bag method, field cultivation.
2. Oyster mushroom cultivation –Substrate, spawning, pre-treatment of substrate. Maintenance of mushroom.
3. Cultivation of white button mushroom – Spawn, composting, spawning, harvesting.

MODULE- IV **12hrs**

1. Diseases- Common pests, disease prevention and control measures- *Agaricus, Pleurotus* and *Volverilla*.
2. Processing - Blanching, steeping, sun drying, canning, pickling, freeze drying.
3. Storage – short term and long term storage.

MODULE–V **10hrs**

1. Common Indian mushrooms.
2. Production level, economic return, Foreign exchange from Mushroom cultivating countries and international trade.
   Field Study: Visit to a mushroom cultivating Laboratory

REFERENCES

1. Harander Singh. (1991). Mushrooms- The Art of Cultivation- Sterling Publishers.
2. Indian Journal of Mushrooms. Published by I.M.G.A. Mushroom Research Laboratory. College Agriculture,Solan

3. Kaul T N (2001). Biology and conservation of mushrooms. Oxford and IBH publishing company N.Delhi
4. Pandey B P (1996). A textbook of fungi. Chand and Company NewDelhi.
5. Pavel Kalc (2016) Edible mushrooms, Chemical composition and nutritional value, Elseveir book aid international

Expected outcome

- Identify mushrooms, structure and mode of propagation
- Understand commercial mushroom cultivation, marketing and their nutritional value
- Better understanding of methods of processing and storage of mushrooms

OPEN COURSE -I (C)

FORESTRY

Course code : BO1551.3, Number of credits : 2

Number of contact hours : Lecture; 54 hrs

Aim of the course: To enlighten students about forest types and forest produce

Objectives:

- To get a knowledge about types of forest and sylviculture
- To get knowledge about forest produce
- To understand agroforestry

MODULE - I **10hrs**

1. General introduction to forests- Types of Forest- Natural and Manmade; Tropical, temperate, evergreen semi- evergreen, deciduous; Monoculture, multipurpose, social and industrial. Forest and gene conservation.

MODULE - II **16hrs**

1. Silviculture- concept and scope of study of natural and artificial regeneration of forests. Clear felling, uniform shelter, wood selection, coppice and conservation systems. Silviculture of some of the economically important species in India such as *Azadirachta indica, Tectona grandis, Eucalyptus indica, Mahagoni mahagoni, Dalbergia sisso* and *Santalum album*, *Artocarpus heterophyllus*, *Hevea brasiliensis*.
2. Wood: Homogenous and heterogenous- spring and autumn wood- Porous and non porous wood- Heart and sap wood.
3. Relevance of wood anatomical studies in Kerala- Identification of wood- preparation of key and their uses.

MODULE - III **10hrs**

1. Social and agro forestry. Selection of species and role of multipurpose trees. Food, fodder and energy.
2. Social forest- Avenue plantation. Sacred plants- definition, importance of sacred trees like *Ficus religiosa, Emblica officinalis, Aegle marmelos.*

MODULE - IV **09hrs**

1. Seed orchards, seed dormancy- Types of dormancy, physical and chemical methods to overcome seed dormancy.
2. Forest laws- necessity, General principles, Indian forest act 1927 and their amendment.

MODULE - V **09hrs**

1. Forest resources and utilization. Forest products- timber, pulp wood, secondary timbers, non timber forest products (NTFPs).
2. Definition and scope (brief outline) - Gums, resins, fibers, oil seeds, nuts, rubber, canes and bamboos, medicinal plants, charcoal. Lac collection and marketing.

Field Study

1. Identification of wood using key: Teak, Jack wood, Mahogany, Rubber, *Azadirachta*, Eucalyptus.
2. Visit to a plywood factory to have knowledge of wood based industry.

REFERENCES

1. A Hand book of Kerala Timbers- KFRI, Trichur.
2. Anil Kumar Dhiman. (2003). Sacred plants and their medicinal uses. Daya publishing house, NewDelhi
3. B.S. Chundawat and S.K.Gautham. (1996). Text book of Agro forestry. Oxford and IBH Publishing House, NewDelhi
4. Kollmann and Cote (1988). Wood science and Technology. Vol.I & II Springer verlag.
5. Parthiban K T (2016) Forestry, Competition Tutor publishers
6. Praveen Dhar T.(2018). Introduction to Forestry Narendra Publishing House, New Delhi
7. Sagreiya, K.P. (1994). Forests and Forestry (Revised by S.S. Negi). National book trust. NewDelhi.
8. Sharma P.D. (2004). Ecology and Environment. Rastogi publications, Meerut
9. Singh M.P. and Vinita Vishwakarma.(1997). Forest environment and Biodiversity. Daya publishing house, NewDelhi.
10. Tiwari K.M. (1983). Social forestry in India.
11. Tribhawan Mehta, (1981). A handbook of forest utilization. Periodical Expert Book Agency, NewDelhi.

Expected outcome

- Identification of forest types,Forest products and their utilisation and common forest trees of Kerala
- Understanding timber yielding plants and methods of identification of timber
- Understanding of germination of seeds of forest trees, methods to break dormancy of seeds, forest act and methods of preserving forests
- Get knowledge about silviculture and Social forestry

SEMESTER-VI

OPEN COURSE-II - ELECTIVE BIOTECHNOLOGY AND NANO BIOTECHNOLOGY

Course code : BO1651, Number of credits : 2

Number of contact hours : Lecture: 54 hrs

Aim of the course: To impart knowledge about Biotechnology and Nanobiotechnology

Objectives:

- To introduce plant biotechnology, tissue culture and rDNA technology
- To give insight into applications in industrial biotechnology and nano biotechnology

MODULE-I **12hrs**

Biotechnology

1. Introduction – History- major achievements-Biotechnology in India.
2. Plant Tissue culture – Totipotency- definition and importance – dedifferentiation, redifferentiation and Cytodifferentiation.
3. Equipments and other requirements in tissue culture laboratory – instruments, tools, glass wares
4. Sterilization- Explants, equipments and medium
5. Culture media-MS Medium, composition and preparation
6. Innoculation – Subculture, Callus and suspension culture, meristem culture
7. Somaclonal variation- Somatic embryogenesis and organogenesis.
8. Production of haploids – pollen culture, anther culture – protoplast culture – somatic hybrids – cybrids - Synthetic seeds

MODULE-II **10hrs**

1. Recombinant DNA technology:
2. General account of cloning vehicles – plasmid, bacteriophages, cosmids and phagemids. Cutting and joining of DNA molecules – restriction endonucleases, ligases – Gene library.
3. Brief account of gene transfer techniques – Direct DNA uptake by protoplast – vector method Agrobacterium mediated, physical method- electroporation- shot gun method –microinjection.

MODULE- III **14hrs**

1. Methods in Biotechnology.
   a. Isolation and purification of DNA from plant cells.
   b. Agarose gel electrophoresis
   c. PCR, RFLP, DNA sequencing-Sanger's method, Southern blotting, ELISA.
2. Application of biotechnology in
   a. Medicine – edible vaccines from plants, gene therapy.

b. Agriculture – *nif* genes, Genetically modified crops
c. Industry and environment (brief account only)

3. Biosafety and ethical issues, Intellectual Property Rights (IPR)

MODULE- IV **10hrs**

Microbial and Industrial Biotechnology

1. Microbes in Biotechnology.
2. Microbial culture methods of culturing, media and composition (LB and PDA)
3. Application of recombinant microbes.
4. Industrial microbiology: Production of alcohol, vinegar, bread, dairy products & single cell protein (brief account only)

MODULE- V **08hrs**

Nanobiotechnology

1. Introduction-background and definition of nanotechnology
2. Nanosystems in nature - Subcellular components
3. Nanoscaled biomolecules (nucleic acids and proteins)
4. Technologies for visualization of biological structures at the nano scale-atomic force microscope
5. Nanoparticles- Quantum dots, Paramagnetic iron Oxide Crystals, Dendrimers, Carbon nanotubes.
6. Application of nanotechnology in life sciences; Biosensors

Field Study

1. Visit to a well equipped biotechnology laboratory to familiar with the use of equipments and glasswares. Petri dishes, conical flasks, culture tubes, Pasteur pipettes, forceps, scalpels, hot air oven, autoclave, platform shaker, pH meter and laminar air flow system.
2. Preparation of media, sterilization, inoculation and callus induction (demonstration only).

REFERENCES

1. Abhilasha S Muthuriya (2009) Industrial Biotechnology. Ane Books Pvt. Ltd
2. Benjamin Lewin (2004). Gene VIII Pearson Education International
3. Bharat Bhushan (2004) Hand book of nanotechnology. Springer- verlag,Berlin
4. Balasubramoniun D, CFA Bryce, K Dharmalingam, J Green and Kunthala
5. Jayaraman (2007), Concepts in Biotechnology, Universities Press
6. Channarayappa (2008), Molecular Biotechnology, Universities Press
7. Colin Ratledge (2006) Basic Biotechnology, Cambridge University Press India Pvt. Ltd
8. Gayathri M C (2015), Plant Tissue Culture: Protocols in Plant Biotechnology, Narosa Publishers Pvt Ltd
9. Gupta P. K. (2010). Elements of Biotechnology, Rastogi Publications.
10. Ignacimuthu S. J. (1996)Applied Plant Biotechnology, Tata Mc GrawHill

11. Janardhanan S and Vincent S (2007) Practical Biotechnology, Universities Press
12. Kesavachandran K and KV Peter (2008), Plant Biotechnology, Universities Press
13. Kumar H .D. (1983) . Molecular Biology & Biotechnology, Vikas publishing
14. Misra SP (2009) Plant Tissue Culture. Ane Books Pvt. Ltd
15. Pamela Peters (1993). Biotechnology: A guide to genetic engineering, WC Brown Publishers
16. Ramawat K. G. (2011). Plant Biotechnology, S. Chand & Company
17. Razdan M. K. (2016) An introduction to Plant Tissue Culture ,Oxford and I B H publishers
18. Reinert J. and Bajaj Y. P. S (1982). Plant cell, Tissue and Organ Culture, WC Brown publishers.
19. Smith (2008) Biotechnology, 5th Edition, Cambridge University Press India Pvt.Ltd
20. Sobti RC and Suparna S Pachauri (2009), Essentials of Biotechnology, Ane Books Pvt. Ltd
21. Subbiah Balaji (2010) Nanobiotechnology, MJP Publishers, Chennai
22. Timir Baran Jha and Biswajit Ghosh (2007), Plant Tissue Culture, Universities Press
23. Victoriano Valpuesta 2004, Fruit and Vegetable Biotechnology, CRC Press. NewYork. Ane Books Pvt. Ltd

Expected outcome

1. Students are familiarized in preparation of culture solutions, sterilization, inoculation of explants, induction of callus and morphogenesis
2. They are familiarized in biotechnological tools like RFLP, RAPD and PCR techniques
3. Use of equipments and tools in biotechnology
4. Understanding of ethical and legal issues in biotechnology and basic knowledge about IPR
5. Better understanding of nanosystems, biosensors and application of nanotechnology in biological systems

MODEL QUESTION PAPER

FIRST SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

BOTANY CORE COURSE I
BO1141 : Angiosperm Anatomy, Reproductive Botany and Palynology
(2019 Admission Onwards)

Time :3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions. Each question carries 1 mark

Write short notes on

1. What is Primary wall
2. In which plant Bulliform cells are present?
3. What is Endodermis
4. Define Endarch condition
5. What is a Conjunctive tissue
6. Define Raphides
7. What are Tyloses
8. Amoeboid Tapetum
9. Comment on Anatropous ovule
10. Define Porogamy

(10 x 1 =10 marks)

SECTION B

II. Answer any Eight questions. Each question carries 2 mark

11. Write a note on Bordered pits
12. Comment on periderm and its function.
13. Mention different types of Stomata
14. Give an account of Lacticifers
15. Differentiate Heart wood and sap wood
16. Give an account of Quiscent centre
17. Explain Guttation
18. Write a note on Fibers
19. Explain Polyembryony
20. Draw a neat labelled diagram of Dicot embryo with cellular divisions.
21. Write about Pollen kitt
22. Explain Kopper Kappe theory

(8 x 2 =16 marks)

SECTION C

III. Answer any six questions. Each question carries 4 marks

23. Write an account on Meristems and its classification
24. Enumerate Different types of vascular arrangement seen in Angiosperms
25. Differentiate dicot stem with that of monocot Stem.
26. With the help of diagram describe the internal structure of young anther
27. Explain different types of Endosperm formation found among Angiosperm
28. Differentiate dicot and monocot root.
29. Briefly describe the theories on apical organization of stem apex.
30. Describe the structure and function of Cambium.
31. Explain about the Non living inclusions of a cell.

(6 x4 =24 Marks)

SECTION D

IV. Answer any two questions. Each carries 15 marks.

32. What are permanent tissues? Explain different types.
33. With suitable diagrams describe normal secondary growth in Dicot stem.
34. Write an account on the process of secondary growth in Bignonia stem with diagrams
35. Explain Megasporogenesis and the *Allium* type of Embryosac development with the help of diagrams.

(2x 15=30 Marks)

MODEL QUESTION PAPER

SECOND SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

BOTANY :FOUNDATION COURSE II
BO1221: Methodology and Perspective in Plant Sciences

(2019 Admission Onwards)

Time: 3 Hours **Max. Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one or two sentences. Each question carries 1 mark.

Write short notes on

1. Primary data
2. Empirical knowledge
3. Range
4. Pictogram
5. Buffer
6. Median
7. Null hypothesis
8. PAGE
9. DPX
10. A killing agent

(10x1=10 marks)

SECTION B

II. Answer any 8 of the following. Each question carries 2 marks.

11. Differentiate primary and secondary source of information.
12. Comment on transparency and honesty in science.
13. Why sharing of knowledge is essential?
14. What is standard deviation?
15. Differentiate hypothesis and null hypothesis.
16. Write notes on Camera Lucida
17. Give the principle of Beer Lamberts Law.
18. What are the steps involved in maceration?
19. Write notes on double staining
20. What is range? How it is calculated?
21. Write different sources of secondary data
22. Describe parts of a table

(8x2=16 marks)

SECTION C

III. Answer any six of the following. Each question carries 4 marks.

23. What is the significance of ethics in science?
24. Differentiate inductive and deductive reasoning.
25. Briefly describe about the working of a phase contrast microscope.
26. What are the applications of SEM and TEM
27. Write brief notes on different types of stains
28. Differentiate PAGE and AGE.
29. Write brief notes on Chi square test.
30. Briefly explain the uses and applications of cryobiology.
31. Write notes on centrifugation and different types of rotors.

(6x4=24 marks)

SECTION D

IV. Write essay on any two of the following. Each question carries 15 marks.

32. Write notes on the process of killing and fixing and briefly describe the process of microtome sectioning.
33. Explain the methods of data collection and possible ways of its representation.
34. Explain different separation methods for biological molecules.
35. Discuss science as a human activity. Add notes on major revolutions in science and technology.

(2x15=30 marks)

MODEL QUESTION PAPER

THIRD SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

BOTANY : CORE COURSE II
BO1341 Microbiology, Phycology, Mycology, Lichenology & Plant Pathology
(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences. Each question carries one mark.

1. Name the causative organism of Citrus canker
2. Write down the male and female sex organs in the fungal partner of *Usnea*
3. What are aflatoxins?
4. Define rhizosphere
5. What is annulus
6. Define coprophilous fungi.
7. Comment on synzoospore
8. What are prions?
9. Which algae is known as stone wort?
10. Name the algal source of carageenin

(10x1 = 10 marks)

SECTION B

II. Answer any eightquestionsin a paragraph : Each question carries two marks

11. Write down four characteristic features of retroviruses.
12. Describe Hormogonia as a method of reproduction.
13. What is the plakea stage in *Volvox?*
14. Differentiate auxospore and autospore.
15. What are conceptacles?
16. Explain the thallus structure of *Polysiphonia*.
17. Describe the asexual reproduction in *Rhizopus.*
18. Briefly explain the asexual reproduction in yeast.
19. Explain the cleistothecium type of ascocarp in *Penicillium*.
20. Comment on ectomycorrhiza.
21. Differentiate fruticose and foliose lichen with examples.
22. Write a short note on preparation of lime sulphur

(8x2 = 16 marks)

SECTION C

III. Answer any six questions; not to exceed 120 words. Each question carries four marks.

23. Write the causative organism, symptoms and control measures of following diseases
    a. Blast disease of paddy
    b. Leaf moasic disease of tapioca
24. Explain the fruiting body and sexual reproduction of *Agaricus*
25. Briefly explain the economic importance of Fungi
26. Describe the asexual and sexual reproduction in *Vaucheria*
27. Give a detailed account on classification of algae by F.E Fritsch.
28. Detail the gene transfer methods in bacteria.
29. With suitable diagrams explain the multiplication cycle of a bacteriophage.
30. Explain the thallus structure and reproduction of *Nostoc.*
31. Describe the apothecium of *Peziza* with a neat labeled diagram

(6x4 = 24 marks)

SECTION D

IV. Write an essay on any two of the following(not more than three pages)

Each question carries **15** marks.

32. With the help of neat and labelled diagrams describe the life cycle of *Puccinia*
33. What is diplontic life cycle? Explain the thallus structure, and sexual reproduction of *Sargassum*
34. Compare the nannandrous and macrandrous life cycle of *Oedogonium*
35. Describe the asexual and sexual reproductive methods in *Volvox*.

(2x15 = 30 marks)

MODEL QUESTION PAPER

FOURTH SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

Botany: Core course III
BO1441: Bryology, Pteridology, Gymnosperms & Palaeobotany
(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences;Each question carries one mark.

1. What is carbon dating?
2. What are amphibious plants?
3. What is calyptras?
4. Who is the father of palaeobotany?
5. What is a ligule?
6. What is gemma?
7. Name two types of rhizoids in Riccia.
8. What is ramenta?
9. Name a genus with winged pollen.
10. What is parthenocarpy?

(10x1=10 Marks)

SECTION B

II. Answer any eight of the following; Each question carries two marks

11. Write a short note on Peristome teeth.
12. Comment on Geological timescale
13. What are hydrophytic characters of *Marsilea*?
14. What is alternation of generation?
15. Enumerate the salient features of coralloid root.
16. Differentiate homospory and heterospory with examples.
17. What are the angiosperm characters of *Gnetum*?
18. Write a short note on Rhizophore of *Selaginella*.
19. Briefly explain the thallus structure of *Anthoceros*
20. Write a note on Eusporangiate ferns.
21. Explain circinate vernation with example.
22. Write a short note on transfusion tissue.

(8x2=16 marks)

SECTION C

III. Answer any six of the following; Each question carries four marks

23. What is the role of Palaeobotany in relation to the exploration of fossil fuels?
24. With a labelled diagram, explain the internal structure of Pinus needle.
25. Narrate the economic importance of Gymnosperms.
26. Draw the L. S. of *Cycas* ovule and discuss.
27. Enumerate the dissimilarities of bryophytes with pteridophytes.
28. Explain the structure of rachis of *Cycas*.
29. What are the economic importances of bryophytes?
30. Write down the structure of *Lepidodendron*.
31. Discuss the spore dispersal mechanism in *Pteris*.

(6x4=24 marks)

SECTION D

IV. Write an essay on any two of the following; Each question carries fifteen marks

32. Describe the stelar evolution in Pteridophytes.
33. What are fossils? Discuss various methods of fossilization.
34. Compare the sporophytes of bryophytes that you have studied.
35. Give an account of sexual reproduction in *Gnetum*. Mention the advanced characters.

(2x15=30 marks)

MODEL QUESTION PAPER

FIFTH SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

BOTANY : CORE COURSE IV
BO 1541- Angiosperm Morphology, Systematic Botany, Economic Botany, Ethnobotany & Pharmacognosy

(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences. Each question carries one mark.

1. What is Regma ?
2. Name the inflorescence mostly found among Euphorbiaceae members.
3. What is a Legume?
4. Define Phyllotaxy.
5. What is a Floral diagram ?
6. Name the fruit of Asteraceae.
7. Define epigyny
8. Which is the source of Quinine ?
9. Morphology of cotton
10. Name two plant derived drugs used in tribal medicine

(10x1= 10 marks)

SECTION B

II. Answer any eight questions. Each question carries 2 marks. (Answer not to exceed one paragraph).

11. What is aestivation? Mention different types.
12. Differentiate between actinomorphic and zygomorphic flowers.
13. Give an account of different types of Schizocarpic fruits.
14. Write a note on Binomial nomenclature.
15. Distinguish between syngenesious and synandrous condition
16. Give the binomial and family of two dye yielding plants.
17. Explain the role of BSI in taxonomy.
18. Name an Indian ethno botanist and mention his/her major contributions
19. Narrate the salient features of Malvaceae.
20. What are the advanced features of Lamiaceae ?
21. Enlist diagnostic characters of Verbenaceae
22. 22. Explain the morphology of tendrils in Cucurbitaceae

(8x2 = 16 marks)

SECTION C

III. Answer any six questions. Each question carries 4 marks. (Answer should not exceed 120 words).

23. What is placentation? Explain different types with examples.
24. Compare the salient features of Apocynaceae and Asclepiadaceae.
25. Explain the Principles of ICBN.
26. Write an account of Herbarium techniques.
27. "Flower is a modified shoot".Comment on the statement.
28. Give an account of cereals and millets you have studied.
29. Give a brief account on APG.
30. What is Chemotaxonomy? Write down its applications
31. Explain the advanced characters of Orchidaceae?

(6x4 = 24 marks)

SECTION D

IV. Answer any two questions. Each question carries 15 marks. (Answer not to exceed three pages).

32. Describe Benthem and Hooker's system of classification. Comment on its merits and demerits.
33. Discuss the floral variations in Leguminosae
34. Discuss the advanced features of Asteraceae. Add a note on the reason for the wide distribution of Asteraceae members.
35. Give an account of different types of inflorescences you have studied.

(2x15= 30 marks)

MODEL QUESTION PAPER

FIFTH SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

BOTANY : CORE COURSE V
BO 1542 : Environmental Studies and Phytogeography

(2019 Admission Onwards)

Time-3 Hours **Total marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in a word or sentence, each question carries 1 mark

Write short notes on

1. A Natural Hazard
2. Halophyte
3. Food web
4. Red data book
5. Acid rain
6. Edaphic factors
7. Deforestation
8. Mitigation
9. Social forestry
10. Xerophytes

(10x1=10 marks)

SECTION B

II. Answer any 8 of the following in a paragraph. Each question carries 2 marks.

11. What are ecological pyramids?
12. Define succession
13. Briefly describe energy flow in an ecosystem
14. Write note on Ramsar sites
15. Write about impact of land slides
16. Explain 'Hot spots'
17. Enlist effects of earthquakes
18. Explain role of decomposers in an ecosystem
19. Write about Forest conservation Act
20. What is Green house effect?
21. Define Synecology
22. Explain MAB

(8x2=16 marks)

SECTION C

III. Answer any 6 of the following. Each question carries 4 marks each

23. Explain different components of an ecosystem.
24. Write about anatomical, morphological and physiological adaptations of hydrophytes
25. Explain nuclear hazards
26. Explain different stages of succession in a hydrosere
27. Give an account on adaptations of mangroves
28. Explain the process of waste water treatment
29. Explain the causes of soil degradation.
30. Explain anthropogenic effect on flood and drought
31. Explain sustainable development. Add a note on its significance

(6x4=24marks)

SECTION D

IV. Answer any two questions. Each question carries 15 marks each

32. Explain Phytogeographical regions of India.
33. Give an account of natural resources and their conservation.
34. Explain various phases of disaster management.
35. Explain different types of pollution**.**

(2 x 15= 30 marks)

MODEL QUESTION PAPER

FIFTH SEMESTERB. SC. DEGREE (CBCSS) EXAMINATION

BOTANY CORE COURSE VI
BO1543: Cell Biology, Genetics and Evolutionary Biology

(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences; Each question carries one mark.

1. What is a test cross?
2. What is heredity?
3. What is telomeric chromosome?
4. Who were the rediscoverers of Mendel's work?
5. Name one characteristic each in plant and man, which show polygenic inheritance?
6. Explain genetic drift?
7. Explain aneuploidy?
8. What is SAT chromosome?
9. What is parallel evolution?
10. According to Mendel how recombinants are formed?

(10x1=10 marks)

SECTION B

II. Answer any eight of the following; Each question carries two marks

11. Briefly describe Ribosome and its major functions?
12. People with AB blood groups are called 'Universal acceptors'. Why?
13. Explain holandric genes with suitable examples?
14. Explain Lamarck's theory of evolution?
15. Why colour blindness more frequent in males than in females?
16. Mutation is the basic necessity in the origin of species. Justify the statement?
17. What are salivary gland chromosomes? Give examples?
18. What are nucleoproteins? Differentiate histones and non histones?
19. Explain Neo Darwinism?
20. Describe the role of polyploidy in evolution?
21. What do you mean by criss-cross inheritance?
22. Write notes on Triple X chromosome?

(8x2=16 marks)

SECTION C

III. Answer any six of the following; Each question carries four marks

23. Differentiate lysosome and peroxisome?
24. How can isolation of a population leads to speciation?
25. Describe the ultra structure of cell membrane?
26. Write an account on XX-XO system of sex determination?
27. Explain the genetic basis of ABO blood group in man ?
28. Describe the different types of structural chromosomal aberrations?
29. What is meant by Evolution? Give three arguments to convince a layman that evolution has takes place
30. State reasons for Mendels' success in formulating the law of heredity?
31. Are acquired characters inherited? Explain.

(6x4=24 marks)

SECTION D

IV. Write an essay on any two of the following; Each question carries fifteen marks

32. What are giant chromosomes? Briefly describe the structure and organization of any two types of giant chromosomes?
33. 'Only the first nuclear division is really meiotic and not the second division'. Explain it with the help of a diagrammatic representation of different stages of meiosis?
34. Explain various sex determination mechanisms in plants?
35. Explain linkage and crossing over? Describe its importance.

(2x15=30 marks)

MODEL QUESTION PAPER

FIFTH SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

OPEN COURSE I
B01551.1 : Horticulture

(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences. Each question carries one mark.

1. What is Air layering?
2. Define Hydroponics
3. What are the uses of Weedicides
4. Define Parthenocarpy
5. Write two examples for rooting hormone
6. What are Fertilizers?
7. Write common uses of Vermiculite
8. What are foliar sprays?
9. Explain NPK?
10. Define Pomology

(10x1=10 marks)

SECTION B

II. Answer any eight of the following; not to exceed one paragraph. Each question carries two marks

11. Write four principles of garden making?
12. Explain approach grafting
13. Write two examples of garden tools and its uses?
14. What are the advantages of Vermi compost
15. Explain potting mixture
16. What is carpet beds*?*.
17. What is sphagnum moss*?*
18. Write four uses indoor garden
19. What is Bouquet*?*
20. What is the purpose of storage of flowers?
21. Write uses and examples of fungicide
22. Briefly explain different types cutting

(8x2=16 marks)

SECTION C

III. Answer any six of the following; not to exceed 120 words; Each question carries four marks

23. Explain flower arrangements
24. What is the relevance of conservatory and green house in a garden?
25. Explain different types of layering
26. Briefly explain different types of soil
27. Describe different types of irrigation methods
28. What are the components of a garden?
29. Write an account on Bonsai
30. Explain T-budding
31. Explain Methods of Dry flower arrangements

(6x4=24 marks)

SECTION D

IV. Write an essay on any two of the following; Each question carries fifteen marks

32. Write an essay on common diseases of fruits and vegetable crops
33. Explain various types of grafting methods
34. Briefly explain different types processing and preservation of fruits and vegetables
35. Give an account of Manures and fertilizers

(2x15=30 marks)

MODEL QUESTION PAPER

FIFTH SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

OPEN COURSE I
BO1551.2: Mushroom Cultivation and Marketing

(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences. Each question carries one mark.

1. Give the name of any two edible mushrooms.
2. What is Spawn?
3. Name any one field mushroom.
4. Give an example of medicinal mushroom.
5. What is blanching?
6. Write the scientific name of white button mushroom.
7. Name any two poisonous mushrooms.
8. What is composting?
9. What is the scientific name of milky mushroom or paddy straw mushroom?
10. What is a substrate?

(10x1=10 Marks)

SECTION B

II. Answer any eight of the following; not to exceed one paragraph. Each question carries two marks.

11. What are the advantages of mushroom cultivation?
12. Write a note on common Indian mushrooms.
13. Write a short note on field cultivation of mushroom.
14. Give an account of poisonous mushrooms.
15. Write a note on the nutritional value of mushrooms.
16. Comment on the medicinal value of mushrooms.
17. Which are the bacterial diseases that affect mushrooms?
18. Write a note on freeze drying.
19. Narrate the harvesting of mushrooms.
20. Write a note on pickling.
21. Write the systematic position of *Agaricus*.
22. Write any two binomial of *Pleurotus*.

(8x2=16 Marks)

SECTION C

III. Answer any six of the following; not to exceed 120 words. Each question carries four marks

23. Explain the Spawn preparation?
24. What are the common diseases and pests found in mushrooms?
25. Describe the various measures and methods adopted to prevent and control diseases in mushrooms.
26. Differentiate edible and poisonous mushrooms.
27. Explain pre-treatment of substrate.
28. Which are the steps involved in bed preparation.
29. Briefly explain the cultivation of white button mushroom.
30. Write a note on foreign exchange from mushroom cultivation.
31. Explain the economic importance of mushrooms.

(6x4=24 marks)

SECTION D

IV. Write an essay on any two of the following. Each question carries fifteen marks

32. Explain the distribution, structure and morphology of *Agaricus*.
33. What is the scientific name of *Oyster* mushroom? Discuss about the various steps in the cultivation of *Oyster* mushroom.
34. How mushrooms are stored? Explain the various steps in the processing of mushrooms.
35. Explain different substratum and their processing methods used in the cultivation of mushrooms.

(2x15=30 marks)

MODEL QUESTION PAPER

FIFTH SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

OPEN COURSE I
B01551.3 : Forestry

(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences. Each question carries one mark.

1. What are Multipurpose trees?
2. What is Shellac?
3. Define Silviculture.
4. What are Tropical Forests?
5. Define Sacred plants.
6. Differentiate Homogenous and Heterogenous wood
7. Explain Avenue plantation.
8. What is NTFPs?
9. Define Seed dormancy
10. Describe Dendro chronology.

(10x1=10 Marks)

SECTION B

II. Answer any eight of the following; not to exceed one paragraph. Each question carries two marks.

11. What is gene conservation?
12. What are Gums and resins?
13. What is the sacredness of *Aeglemarmelous*?
14. Explain different types of seed dormancy
15. What do you mean by regeneration of forests?
16. Describe the types of seed dormancy.
17. Define Seed Orchard
18. Write uses of Medicinal plants
19. What are Sacred Groves*?*
20. Explain porous and non-porous wood
21. Write the importance of Charcoal

(8x2=16 Marks)

SECTION C

III. Answer any six of the following; not to exceed 120 words. Each question carries four marks.

22. Briefly explain types of seed dormancy
23. Pint out importance of Evergreen and deciduous forest in forest ecosystem
24. What is the relevance of wood anatomical studies in Kerala?
25. Give an account of Timber Forest Products
26. Write about Silviculture of *Azadirachtaindica*
27. Explain coppice and conservation systems
28. What are the uses of canes and bamboos*?*
29. Write an account of Trees in Sacred groove
30. Write about Lac collection and marketing
31. Explain methods to overcome seed Dormancy

(6x4=24 Marks)

SECTION D

IV. Write an essay on any two of the following. Each question carries fifteen marks.

32. Write an essay on Silviculture methods
33. Explain various types of Forest in Kerala
34. Briefly explain different types of wood
35. Explain Indian forest act 1927 and their amendment

(2x15=30 Marks)

MODEL QUESTION PAPER

SIXTH SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

BOTANY : CORE COURSE IX

BO 1641 - Plant Physiology and Biochemistry

(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences. Each question carries one mark

1. What is Kranz anatomy?
2. What are epimers?
3. Why cytochrome a_3 is called terminal oxidase?
4. Represent the overall equation of photosynthesis.
5. What are isoenzymes?
6. What is meant by thigmotropic movement?
7. What is tonicity?
8. Define red drop.
9. What is incipient plasmolysis?
10. How the stomata of CAM plants differ from that of C3 plants?

(10 x 1 = 10 marks)

SECTION B

II. Answer any 8 questions. Each question carries 2 marks.

11. Give an account on raw materials of photosynthesis.
12. Briefly describe the physiological role of Abscisic acid in plants.
13. Differentiate apoplast and symplast.
14. How root pressure influences water movement in plants?
15. What are derived lipids? Give examples
16. Explain the physiology of senescence.
17. Discuss the amphoteric nature of aminoacids
18. Briefly describe the relation between OP, TP and WP in plants.
19. Comment on hydroponics.
20. Differentiate absorption spectrum and action spectrum.
21. Why fluorescent radiation has higher wavelength than phosphorescent radiation?
22. Point out the differences between photosynthesis in bacteria and higher plants.

(8 x 2 = 16 marks)

SECTION C

III. Answer any six of the following. Each question carries 4 marks

23. Describe the vital and physical theories explaining ascent of sap.
24. How the principle of Limiting factors apply in photosynthesis?
25. Give an account on coenzymes and co-factors.
26. Explain beta oxidation of fatty acids.
27. Describe the classification and function of secondary plant products.
28. Explain the mechanisms of mineral absorption in plants.
29. How anaerobic respiration differs from aerobic in terms of ATP yield?
30. Discuss the mechanism of photorespiration. Enumerate its advantages and disadvantages
31. Explain biological nitrogen fixation.

(6 x 4 = 24 marks)

SECTION D

IV. Answer any 2 questions. Each question carries 15 marks.

32. Discuss the mechanisms and theories on translocation of organic substances in plants.
33. Explain dark reaction and compare the photosynthetic mechanisms in C3 and CAM plants.
34. Discuss various types of movements exhibited by plants.
35. What are carbohydrates? How are they classified? Mention its function

(2x15 = 30 marks)

MODEL QUESTION PAPER

SIXTH SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

BOTANY : CORE COURSE X
BO-1642-Molecular Biology, General Informatics and Bioinformatics

(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences. Each question carries one mark

1. Define cistron.
2. How is wet lab different from a web lab?
3. Expand NICNET
4. Name two operating systems used in computers.
5. Mention role of helicases.
6. Explain PIR
7. What are okazaki fragments?
8. Name two nucleic acid databases.
9. What are introns?
10. Write about importance of Reverse transcriptase

(10x1=10 marks)

SECTION B

II. Answer any eight of the following: Each question carries two marks

11. Give any four differences between DNA and RNA.
12. What is Kornberg enzyme.
13. What is plagiarism?
14. What are stop codons? Give their sequence
15. What are replisomes?
16. Describe the health issues faced by regular users of computer.
17. What is SWISS-PROT? Mention any two important features.
18. What you mean by the statement “the genetic code is degenerate”?
19. Write a note on the main objectives of INFLIBNET.
20. Differentiate between Global and Local alignment
21. What are the parts of a typical rooted phylogenetic tree?
22. How CLUSTAL becomes an indispensable tool in Bioinformatics?

(8x2= 16 marks)

SECTION C

III. Answer any six of the following: Each question carries four marks

23. Give an account on sequence analysis and alignment in bioinformatics.
24. Write the salient features of Watson and Crick double helical model of DNA.
25. Comment on intellectual property rights.
26. Give an account on operon concept with reference to *lac* operon.
27. What is a phylogram? Describe the various tools used in phylogenetic analysis.
28. Give an account of the different types of RNA
29. Practicing good cyber ethics is a present day necessity. Comment.
30. Describe the experiment of Meselson and Stahl
31. How is Rasmol used in molecular visualization?

(6x4=24 marks)

SECTION D

IV. Write essay on any two of the following. Each question carries fifteen marks

32. What are the advantages of molecular phylogenetic analysis? Explain the technique
33. Describe the various experiments conducted by scientists to prove that DNA is the genetic material in living organisms.
34. Give a detailed account on different biological databases.
35. What is central dogma in molecular biology? Elucidate the process by which genetic information is transferred from DNA to RNA in a prokaryotic cell.

(2x15 = 30 marks)

MODEL QUESTION PAPER

SIXTH SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

BOTANY : CORE COURSE XI
BO1643: Horticulture, Plant Breeding & Research Methodology

(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences. Each question carries one mark.

1. What is turf culture?
2. What are mutagens?
3. Define Pomology.
4. What is pure research?
5. What is urkund?
6. What is floriculture?
7. What is NPK?
8. What is heterosis?
9. What is the application of peat moss?
10. Define acclimatization.

(10x1= 10 marks)

SECTION B

II. Answer any eight of the following; Each question carries two marks.

11. Give an account on biofertilizers used in horticulture.
12. Write a short note on quarantine.
13. What is foliar spray?
14. Explain the advantages of organic manures.
15. Differentiate horizontal resistance from vertical resistance.
16. What is null hypothesis?
17. Describe backcross method.
18. Explain air layering.
19. Make a short note on author citation.
20. What is bonsai?
21. Write short notes on plagiarism.
22. Mention the types of grafting.

(8x 2= 16 Marks)

SECTION C

III. Answer any six of the following; Each question carries four marks.

23. Differentiate pureline selection from mass selection.
24. Describe polyploidy breeding.
25. Describe the method of vermi-composting.
26. Make an account on project report presentation.
27. Explain inter-varietal hybridization.
28. Describe the procedure involved in data collection.
29. Explain the steps to be taken for weed control.
30. Write an account on types of flower arrangement.
31. Explain indoor gardening.

(6x4=24 marks)

SECTION D

IV. Answer any two of the following;Each question carries fifteen marks.

32. Explain various grafting techniques in plant propagation.
33. Method and application of mutation breeding.
34. Write a detailed account on various garden implements and their uses.
35. Explain scientific method in biological research.

(2x15 = 30 Marks)

MODEL QUESTION PAPER

SIXTH SEMESTER B SC DEGREE (CBCSS) EXAMINATION

OPEN COURSE –II – ELECTIVE
BO 1651: Biotechnology and Nano Biotechnology

(2019 Admission Onwards)

Time. 3 Hrs **Total Marks: 80**

(Draw diagrams wherever necessary)

SECTION A

I. Answer all questions in one word or two sentences. Each question carries one mark

1. Define totipotency
2. Define callus
3. What is meant by surface sterilization?
4. What are cybrids
5. What are edible vaccines
6. Define cosmids
7. Define quantum dots
8. What are single cell proteins?
9. Define gene library
10. Define patent

(10x1=10 marks)

SECTION B

II. Answer any eight of the following. Each question carries two marks

11. Differentiate between redifferentiation and redifferentiation
12. What are synthetic seed? Mention the uses
13. What are nif genes? Mention the features of nif genes
14. What is meant by somaclonal variation?
15. What are genetically modified crops? Mention any two GMC you have studied.
16. What is meristem culture? Mention its advantages.
17. Define plant growth regulators? Give examples
18. What is meant by Cryo preservation?
19. Give a brief account on Somatic embryogenesis
20. What is protoplast culture?
21. What is Ti Plasmid?
22. Explain the composition and preparation of PDA medium

(8x2=16 marks)

SECTION –C

III. Answer any six of the following;Each question carries four marks

23. Give an account on Somatic hybridization.
24. Discuss the classification of Nanoparticles in detail.
25. Give an account on suspension culture and its applications
26. Give a brief account on various gene transfer mechanisms in plants
27. Write about Southern blotting
28. Write a note on recombinant microbes and its applications.
29. Define nanoparticle. Explain the structure and properties of nanoparticles.
30. Define sterilization. Give an account on various sterilization techniques used in plant tissue culture.
31. Explain the technique of electrophoresis.

(6x4=24 marks)

SECTION -D

IV. Write essay on any two of the following; Each question carries fifteen marks

32. Explain the composition and preparation of MS medium
33. Define Protoplast culture. Explain the steps involved in protoplast culture and its application.
34. Briefly explain Recombinant DNA Technology
35. What is PCR? Explain the basic steps and its application

(2x15=30 marks)

MODEL QUESTION PAPER

FIRST DEGREE PROGRAMME IN BOTANY (CBCSS)
PRACTICAL EXAMINATION

Botany Core (Practical I) VII-Course Code: BO1544
Angiosperm Anatomy, Reproductive Botany, Palynology, Methodology and Perspectives in Plant Science

(2019 Admission Onwards)

Time: 3 Hours **Max. Marks: 80**

1. Make suitable micropreparation of **A**, identify giving reasons and describe its structure with the help of labelled diagrams. Leave the preparation for valuation. (Preparation-3,Labelled diagram-3, Reasons-3, Identification-1) **10 Marks**
2. Construct a frequency table (Discrete/Continuous) from the given data **B** **4 Marks**
3. Construct histogram/Bar diagram from the data **C**. **4 Marks**
4. Workout the problem **D**
   (Calculation- 3, Result-1) **4 Marks**
5. Identify the instrument **E**. Comment on its working principle.
   (Identification-1, Aim-1, Working Principle-2) **4 Marks**
6. Identify the separation technique **F**. Comment on its procedure.
   (Identification-1, Aim-1, Procedure-2) **4 Marks**
7. Comment on **G**
   (Major group-1, Notes-2) **3 Marks**
8. Write critical notes on **H**
   (Identification -1,Notes-2) **3 Marks**
9. Make suitable micropreparations of **I,** identify giving reasons and describe its structure with the help of labelled diagrams. Leave the preparation for valuation. (Preparation-3, Labelled diagram-3, Reasons-3, Identification-1) **10 Marks**
10. Identify the type of stomata in specimen **J**
    (Identification-1, Labelled Diagram-1, Reasons-1) **3 Marks**
11. Identify and describe the type of cellular inclusions in specimen **K**
    (Identification-1, Description-2, Labelled Diagram-1) **4 Marks**
12. Identify **L** and draw a neat labelled diagram
    (Identification-1, Labelled Diagram-3) **4 Marks**
13. Comment on **M**
    (Identification-1, Notes-2) **3 Marks**

Record (Content-15, Neatness-5) **20 Marks**

KEY TO SPECIMENS

A. Primary/Normal Secondary Root/Stem

B. Numerical data

C. Frequency table data

D. Frequency table/Numerical Data

E. Instruments from Biophysics

F. Biophysics- Chromatography

G. Fixatives/ Stains/ Mounting media

H. Dissection/Compound microscope/Microtome/Camera lucida/Micrometer mentioned in the syllabus

I. Stem with anomalous secondary structure (*Bignonia, Boerhaavia, Dracaena*)

J. Stomatal type-

K. Cell inclusions mentioned in the syllabus

L. Anther T. S /Dicot embryo L. S/ Monocot embryo L.S. Embryosac (*Polygonum* type) Ovule (Orthotropous/ Anatropus) (*Permanent slides /diagrams*)

M. Pollen Aperture type mentioned in the syllabus

MODEL QUESTION PAPER

FIRST DEGREE PROGRAMME IN BOTANY (CBCSS)
PRACTICAL EXAMINATION

Botany Core (Practical II) VIII-Course Code: BO1545
Microbiology, Phycology, Mycology, Lichenology & Plant Pathology
Bryology, Pteridology, Gymnosperms & Paleobotany

(2019 Admission Onwards)

Time: 3 Hours **Max. Marks: 80**

1. Make suitable micro preparations to bring out the structure of **A, B, C** and **D**. Draw a cellular diagram of each and label the parts. Identify giving reasons and leave the preparation for valuation.
   (Preparation-2, Labelled diagram-2, Reasons, 2, Identification-1)
   4 x 7= 28 Marks
2. Identify any two algal specimens from the mixture **E**, giving reasons
   (Diagram-1, Reasons-1, Identification-1) **2 x 3 = 6 Marks**
3. Observe **F** under microscope, identify and write down its procedure.
   (Procedure-3, Identification -1) **4 Marks**
4. Identify the disease in plant specimen **G** and give the name of the causative organism along with important symptoms associated with it.
   (Disease-1, Pathogen-1, Symptoms-2) **4 Marks**
5. Spot at sight **H, I, J, K, L** and **M**
   (Genus name-1, Part of the plant-1, Major group-1) **6 x 3 = 18 Marks**

   Record (Content-15, Neatness-5) **20 Marks**

KEY TO SPECIMEN

A. Fungus mentioned in the syllabus
B. Bryophyte mentioned in the syllabus
C. Pteridophyte mentioned in the syllabus
D. Gymnosperm mentioned in the syllabus
E. Algal Mixture (Mixture of different algae (at least four members) mentioned in the syllabus.
F. Bacterial Smear (Gram positive/ Gram negative)
G. Plant disease mentioned in the syllabus
H. Alga (Macroscopic)
I. Fossil form mentioned in the syllabus(Permanent slide /Photograph)
J. Fungus/Lichen
K. Bryophyte
L. Pteridophyte
M. Gymnosperm

MODEL QUESTION PAPER

FIRST DEGREE PROGRAMME IN BOTANY (CBCSS)
PRACTICAL EXAMINATION

Botany Core (Practical III)XII-Course Code: BO1644
Angiosperm Morphology, Systematic Botany, Economic Botany, Ethnobotany, Pharmacognosy and Environmental Studies

(2019 Admission Onwards)

Time: 3 Hours **Max. Marks: 80**

1. Identify and write notes on **A** with a labelled diagram.
   (Notes-2, Labelled diagram-1) **(3 Marks)**

2. Comment on **B**
   (Notes 2, Diagram-1) **(3 Marks)**

3. Describe **C** in technical terms. Draw a labelled sketch of the L. S. of the flower **C**. Construct a floral diagram and write the floral formula.
   (Description-2, Labelled sketch-2, Floral diagram-1, Floral formula-1) **(6 Marks)**

4. Refer **D** and **E** to their respective families, pointing out the class, subclass and series with reasons. (Reasons upto series-2, Description of plant in technical terms- 2, Family characters-2, Identification of family-1) **(7 x 2 = 14 Marks)**

5. Write the generic name and family of **F** and **G**
   (Generic name-1, Family-1) **(2 x 2 = 4 Marks)**

6. Spot at sight **H** and **I**
   (Binomial-1, Family-1, Morphology of the useful part-1) **(3 x2 = 6 Marks)**

7. Identify and write critical notes on **J**
   (Binomial -1, Family-1, Notes-2) **(4 Marks)**

8. Make a suitable micropreparation of **K**. Write the anatomical adaptations and identify the ecological group.
   (Preparation-1, Adaptations-2, Ecological group-1) **(4 Marks)**

9. Identify the ecological group **L** and write its morphological adaptations.
   (Ecological group-1, Adaptations-2) **(3 Marks)**

10. Identify and write notes on **M**
    (Identification-1, Notes-2) **(3 Marks)**

- Herbarium submission -7; Field Note & Tour Report-3 **(10 Marks)**
- Record (Content-15 Marks. Neatness-5 Marks) **(20 Marks)**

KEY TO SPECIMEN

A. Inflorescence (*Mentioned in the syllabus*)

B. Fruits (*Mentioned in the syllabus*)

C. Systematic Botany – Flowering twigs (along with floral buds) from **Polypetalae / Gamopetalae**

D. Any Dicot family mentioned in the syllabus (Flowering twigs from **Polypetalae/ Monochlamydeae**)

E. Any Dicot family mentioned in the syllabus (Flowering twigs from **Gamopetalae**)

F & G**.** Herbarium sheets

H & I. Economic Botany (*Mentioned in the syllabus*)

J. Ethnobotany (*Plants mentioned in the syllabus only*)

K & L. Ecological groups mentioned in the syllabus

M. Ecosystems (*Photographs, Pictures or Diagrams of ecosystems mentioned in the syllabus*)

MODEL QUESTION PAPER

FIRST DEGREE PROGRAMME IN BOTANY (CBCSS)
PRACTICAL EXAMINATION

BOTANY CORE (PRACTICAL IV) XIII-COURSE CODE: BO1645

Cell Biology ,Genetics, Plant Physiology , Biochemistry,Molecular Biology, Plant Breeding and Horticulture

(2019 Admission Onwards)

Time: 3 Hours **Max. Marks: 80**

1. Make acetocarmine squash preparation of material **A**. Identify metaphase and anaphase stages of cell division and draw labelled sketches of identified stages.
   [Preparation-4, Identification-4 (2x2), labelled diagram- 4 (2x2)] **12 Marks**

2. Work out Problems **B, C, D**
   (B-3 marks, C-4 Marks, D-5 Marks) **12 Marks**

3. With the help of a labelled diagram, explain the working of the experiment **E.**
   (Aim-1, Labelled diagram-2, Working-3,Inference-1) **7 Marks**

4. Comment on **F** with a labelled diagram
   (Aim-1, Comment-3, Labelled diagram-2) **6 Marks**

5. Detect the presence of proteins/reducing sugar/non reducing sugar/starch in **G**. Write down the procedure.
   (Conduct of experiment-1, Procedure-3, Identification-1) **5 Marks**

6. Workout Problem **H** **4 Marks**

7. Write down the procedure and demonstrate emasculation using material **I**. Submit for valuation.
   (Demonstration-3, Procedure-2) **5 Marks**

8. Write down the procedure and demonstrate T-Budding/Air layering/Grafting (Wedge/Whip) using **J**. Submit for valuation.
   (Procedure-3, Demonstration-3) **6 Marks**

9. Identify and write notes on **K**.
   (Identification-1, Notes-2) **3 Marks**

Record (Content- 15, Neatness-5) **20 Marks**

KEY TO SPECIMENS

A. Onion Root tips
B. Genetic Problem (*Monohybrid/ Incomplete Dominance*)
C. Genetic problem (*Dihybrid*)
D. Genetic Problem (*Interaction of Genes*)
E. Physiology experiments
F. Physiology experiments
G. Biochemistry (proteins/ reducing sugar/non reducing sugar/starch)
H. Molecular biology (Problems on Chargaff's rule)
I. Plant Breeding: Inflorescence coming under *Fabaceae/Caesalpiniaceae*
J. Horticulture
K. Garden tools mentioned in the syllabus

BO1646: PROJECT

- The project work/ Dissertation can be carried out individually or group of students. Project report, duly attested by the Supervising teacher and certified by Head of the Department, has to be submitted on the day of Core Practical III examination. Viva voce has to be conducted individually.

Project Report- 80 Marks Viva voce - 20 marks Total – 100 Marks

UNIVERSITY OF KERALA

THIRUVANANTHAPURAM

COMPLEMENTARY COURSE

BOTANY

For

FIRST DEGREE PROGRAMME IN

ZOOLOGY/ HOME SCIENCE/BIOCHEMISTRY

UNDER

CHOICE BASED CREDIT- SEMESTER SYSTEM

(w.e.f. 2019 admission onwards)

SEMESTER-I

MICROTECHNIQUE, ANGIOSPERM ANATOMY AND REPRODUCTIVE BOTANY

SEMESTER-II

PHYCOLOGY, MYCOLOGY, LICHENOLOGY, BRYOLOGY, PTERIDOLOGY,GYMNOSPERMS AND PLANT PATHOLOGY

SEMESTER-III

SYSTEMATIC BOTANY, ECONOMIC BOTANY, ETHNO BOTANY AND PLANT BREEDING

SEMESTER-IV

PLANT PHYSIOLOGY, PLANT ECOLOGY, HORTICULTURE AND PLANT BIOTECHNOLOGY

Course code	Course title	Semester I			Semester II			Semester III			Semester IV			Total	
		Contact hours		Credit	Contact hours		Credit	Contact hours		Credit	Contact hours		Credit	Contact hours	Credit
BO1131	Microtechnique, Angiosperm Anatomy and Reproductive Botany	2		2										4	2
BO1231	Phycology, Mycology, Lichenology, Bryology, Pteridology, Gymnosperms and Plant Pathology				2		2							4	2
BO1331	Systematic botany, Economic botany, Ethno botany and Plant Breeding							3		3				5	3
BO1431	Plant Physiology, Ecology, Plant Biotechnology and Horticulture										3		3	5	3
BO1432	Practical BO1131, BO1231, BO1331 & BO1431		2			2			2			2		8	4
															14

SEMESTER-I

MICROTECHNIQUE, ANGIOSPERM ANATOMY AND REPRODUCTIVE BOTANY

Course code : BO 1131, Number of credits : 2

Number of contact hours: (Lecture -36 hrs : Practical- 36 hrs) Total -72 hrs

Distribution of Hours	Theory	Practical
Microtechnique	06 hrs	02hrs
Angiosperm anatomy	20 hrs	30hrs
Reproductive Botany	10 hrs	04 hrs
Total	36 hrs	36 hrs

Aim of the course: To generate awareness about anatomical features of Angiosperms & reproductive biology as well as to learn techniques for micro preparations.

Objectives:

- To develop skills for preparation and identification of microscopic structures
- To distinguish various tissue systems and internal structure
- To acquire basic knowledge about embryo development and pollen grains

MODULE-I

Microtechnique **6 hrs**

1. Killing and Fixing agents – Carnoy's formula, FAA.
2. Stains and Staining techniques- Double staining. General account; Stains: Saffranin, Haematoxylin, Acetocarmine.

MODULE-II

Angiosperm Anatomy **10 hrs**

1. Objective and scope of plant anatomy
2. Tissues – Meristems, Definition, Classification based on origin, position, growth patterns, functions.
3. Apical meristems & theories on apical organization - Apical cell theory, Histogen theory, Tunica -Corpus theory. Organization of root apex in dicots & monocots (Kopper-Kappe theory).
4. Permanent tissues – Definition, classification - simple, complex and secretory.
5. Tissue systems – Epidermal tissue systems, Ground tissue systems & vascular tissue systems. Different types of vascular arrangements

MODULE-III **10 hrs**

1. Primary structure – Root, stem and leaf [Dicot & Monocot]. Secondary growth (Stelar and extra stelar)- Root and stem- cambium (structure and function) annual rings, heart wood and sap wood, tyloses, ring porous wood and diffuse porous wood, Periderm formation-Phellum, Phellogen and Phelloderm ; Lenticels
2. Anomalous secondary growth –*Boerhaavia*.

Practical **32 hrs**

1. Familiarize Killing and Fixing agents, Stains
2. Simple permanent tissue – Parenchyma, Chlorenchyma, Aerenchyma, Collenchyma and Sclerenchyma
3. Primary structure – Dicot stem: *Centella.*
4. Monocot stem: Grass.
5. Dicot root: Pea or *Limnanthemum*
6. Monocot root: *Colocasia*.
7. Secondary structure - Stem [Normal type]-*Vernonia.*
8. Secondary structure - Root [Normal type]- *Carica papaya;* Aerial root -*Tinospora/ Ficus*.
9. Anomalous secondary thickening – *Boerhaavia*

MODULE- IV

Reproductive Botany **10 hrs**

1. Micro sporogenesis - structure and functions of wall layers.
2. Development of male gametophyte - Dehiscence of anther.
3. Megasporogenesis - Development of female gametophyte - Embryo sac development andtype - Monosporic – *Polygonum* type.
4. Pollination - Fertilization - Double fertilization. Structure of Embryo- Dicot [*Capsella*]

Practical **4 hrs**

- Students should be familiar with the structure of anther and embryo,
- (Permanent slides can be used)

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SEMESTER-II

PHYCOLOGY, MYCOLOGY, LICHENOLOGY, BRYOLOGY, PTERIDOLOGY, GYMNOSPERMS AND PLANT PATHOLOGY

Course code : BO 1231, Number of credits : 2

Number of contact hours : 36 hrs (Lecture); 36 hrs (Practical) Total- 72 hours

Distribution of Hours	Theory	Practical
Phycology	09 hrs	08 hrs
Mycology	09 hrs	08 hrs
Plant Pathology	03 hrs	04 hrs
Bryology	06 hrs	06 hrs
Pteridology	06 hrs	06 hrs
Gymnosperms	03 hrs	04 hrs
Total	36 hrs	36 hrs

Aim of the course: To create awareness about the world of microbes and non flowering plants.

Objectives:

- To familiarize characteristic features of microbes and their significance in environment
- To generate idea about types of algae, fungi, lichen and their economic as well as evolutionary significance
- To familiarize the students the characteristic features, life cycle and evolutionary significance of Bryophytes, Pteridophytes and Gymnosperms.
- To impart knowledge about diseases in plants

MODULE-I

Phycology **9 hrs**

1. Salient features of the following major groups with reference to the structure, reproduction and life cycle of the types given below (Excluding the developmental details):
   a. Cyanophyceae - *Nostoc*
   b. Chlorophyceae - *Chlorella*, *Oedogonium* and *Chara*
   c. Phaeophyceae - *Sargassum*
   d. Rhodophyceae - *Polysiphonia*

Practical **8 hrs**

1. Make micro preparations of vegetative and reproductive structures of the types mentioned in the syllabus.
2. Identify the algal specimens up to the generic level and make labeled sketches of the specimens observed

MODULE-II

Mycology **9 hrs**

1. Characteristic features of the following major groups with reference to the structure, reproduction and life cycle of the types given below (Excluding the developmental details)–
   a. Zygomycotina-*Rhizopus*
   b. Ascomycotina
      i. Discomycetes-*Peziza*
   c. Basidiomycotina
      i. Teliomycetes -*Puccinia*
   d. Economic importance of Fungi

Lichenology

General account and economic importance; structure, reproduction and life cycle of *Usnea*

Practicals **8 hrs**

A detailed study of structure and reproductive structures of types given in the syllabus and submission of record.

Rhizopus, Peziza. Puccinia. And *Usnea.*

PlantPathology **3 hrs**

1. A brief account on the following plant diseases with reference to the symptoms, causative organism, spread of the disease and effective control measures.
   a. Brown spot disease of Paddy
   b. Powdery mildew of Rubber
   c. Tapioca Mosaic Virus
   d. Quick wilt of Pepper
5. Method of preparation and mode of action of the following fungicides- Bordeaux mixture, Tobacco decoction.

Practical **4 hrs**

Students are expected to observe the symptoms and causal organisms of all plant diseases mentioned above.

MODULE-IV **6 hrs**

Bryology

1. Introduction and Classification
2. Study of the habit, thallus organization, vegetative and sexual reproduction and alternation of generation of the following types (Developmental details are not required).
   Riccia, Funaria
3. Economic Importance of Bryophytes.

Practical **6 hrs**

1. *Riccia*– Habit - Internal structure of thallus – V. S. of thallus through archegonia, antheridia and sporophyte
2. *Funaria*– Habit, V. S. of archegonial cluster, V .S. of antheridial cluster, Sporophyte V.S.

Pteridology **6 hrs**

1. Introduction: General characters morphological and phylogenetic classification.
2. Study of the habitat, habit, internal structure, reproduction and life cycle of the following types (Developmental details not required). *Selaginella* and *Pteris*

Practical **6 hrs**

1. *Selaginella*: Habit , stem and rhizophore T. S , V .S. of strobilus, Megasporophyll and microsporophyll.
2. *Pteris*- Habit, Rhizome and petiole T. S., sporophyll T.S

MODULE-V

Gymnosperms **3 hrs**

1. Introduction and classification of gymnosperms.
2. Study of the Habit, Anatomy, Reproduction and life cycle of -*Pinus*

(Developmental details are not required*)*

Practical **4 hrs**

Pinus- Branch of indefinite growth, spur shoot, T. S of old stem and needle, male and female cone, V .S. of male and female cone.

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SEMESTER-III

SYSTEMATIC BOTANY, ECONOMIC BOTANY, ETHNO BOTANY, PLANT BREEDING

Course code :BO 1331, Number of credits : 3

Number of contact hours: (Lecture 54& Practical 36) Total-90 hrs

Distribution of Hours	Theory	Practical
Systematic Botany	33hrs	32 hrs
Economic botany	08hrs	04 hrs
Ethnobotany	02hrs	00 hrs
Plant Breeding	11hrs	00 hrs
Total	54 hrs	36 hrs

Aim of the course: To understand classification, identification and ethnobotanical importance of angiosperms along with plant breeding techniques.

Objectives:

- To introduce importance of morphological characters in classification and plant identification.
- To develop skill in identification of plants.
- To acquire knowledge about economic, ethnobotanical significance and pharmacognosy of plants
- To get knowledge about plant breeding techniques

MODULE- I

Systematic Botany **11 hrs**

1. Floral morphology**:** Parts of a flower, types of inflorescence – Cymose (Simple, monochasial & Dichasial), Racemose- (Simple raceme, Corymb, Spike, Head), Special type- Cyathium (Brief account only) aestivation and placentation, Types of Fruits - Simple fruits - dry (Pea), Fleshy (Mango), Aggregate fruits (*Polyalthia*), Multiple fruits (Jack fruit) - Floral diagram and Floral formula.
2. Definition, scope and significance of Taxonomy.
3. Systems of classification:
   a. Artificial
   b. Natural - Bentham and Hooker (detailed account)
   c. Phylogenetic
4. Basic rules of Binomial Nomenclature. Definition and importance of Herbarium.

MODULE-II **22 hrs**

A study of the following families with emphasis on the morphological peculiarities and economic importance of its members. (Based on Bentham and Hooker's System)

1. Annonaceae
2. Malvaceae
3. Rutaceae
4. Leguminosae
5. Rubiaceae
6. Asteraceae
7. Apocynaceae
8. Solanaceae
9. Verbenaceae
10. Euphorbiaceac
11. Liliaceae
12. Poaceae

Practical /fieldwork **32 hrs**

1. Students must be able to identify the angiosperm members included in the syllabus. Draw labeled diagram of the habit, floral parts, L.S of flower, T.S of ovary, floral diagram, floral formula and describe the salient features of the member in technical terms.
2. Students must submit the practical records at the time of practical examination.

MODULE-III

Economic Botany **8 hrs**

Study of the Botanical name, Family, Morphology of useful parts, and utility of the following;

- Cereals and Millets – Paddy and Ragi
- Legumes - Ground nut, Blackgram.
- Sugar yielding plants -Sugarcane.
- Spices & condiments - Cumin, Clove, Cardamom and Pepper
- Fibre -Cotton
- Dyes -Henna
- Resins -Asafoetida.
- Tuber crops - Tapioca, Colocasia.
- Tropical Fruits - Banana, JackFruit.
- Oil yielding - Sesame oil, Coconut.
- Medicinal plants - *Ocimum ,Adhatoda, Sida,*Turmeric.

Practical **4 hrs**

Identify the economic products obtained from the plants mentioned under Economic Botany.

MODULE-1V

Ethnobotany **2 hrs**

1. Study of common plants used by tribes-Neem, *Trichopus zeylanicus*

MODULE-V

Plant Breeding **11 hrs**

1. Introduction, objectives in plant breeding.
2. Plant introduction -Agencies of plant introduction in India, Procedure of introduction -
3. Acclimatization -Achievements.
4. Selection - mass selection, pure line selection and clonal selection.
5. Procedure of hybridization, inter generic, inter specific, inter varietal hybridization with examples. Composite and synthetic varieties.
6. Heterosis and its exploitation in plant breeding.
7. Polyploidy breeding (brief account).
8. Breeding for disease resistance (brief account).
9. Mutation breeding (brief account).

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SEMESTER-IV

PLANT PHYSIOLOGY, PLANT ECOLOGY, HORTICULTURE AND PLANT BIOTECHNOLOGY

Course Code : 1431, Number of credits : 3

Number of contact hours: 54 hrs (Lecture); 36 hrs (Practical) Total-90 hrs

Distribution of Hours	Theory	Practical
Plant Physiology	30hrs	15hrs
Plant Ecology	08hrs	13hrs
Horticulture	06hrs	02hrs
Plant Biotechnology	10hrs	06hrs
Total	54 hrs	36 hrs

Aim of the course: To create awareness about physiological aspects of growth & metabolism along with knowledge about Ecology, horticulture and Biotechnology

Objectives:

- To understand physiology of absorption, photosynthesis and respiration.
- To study ecosystem and ecological modifications
- To generate awareness about horticultural techniques.
- To familiarize plant tissue culture techniques

MODULE-I

Plant Physiology **10 hrs**

1. General introduction :physiological processes, their significance and applications.
2. Water relations of plants: Importance of water to plant life.
   a. Absorption of water- organs of absorption, root and root hair. Physical aspects of absorption- imbibition, diffusion and osmosis. Plant cell as an osmotic system; water potential and osmotic potential. Plasmolysis and its significance, practical applications. Mechanism of water absorption – active and passive absorption, root pressure. Pathway of water across root cells.
   b. Ascent of sap- vital and physical theories.
   c. Loss of water from plants: transpiration - cuticular, lenticular and stomatal mechanism - theories – starch sugar hypothesis, potassium - ion theory. Significance of transpiration - guttation, anti - transpirants, factors affecting transpiration.
3. Mineral nutrition: macro and micro elements, role of essential elements and their deficiency symptoms. Mechanism of mineral absorption (a) passive absorption- ion exchange and Donnan equilibrium (b) active absorption- carrier concept.

MODULE-II **10 hrs**

1. Photosynthesis: Introduction, significance and general equation. Photosynthetic apparatus, structure and function of chloroplast, quantasomes - solar spectrum and its importance - Fluorescence and Two pigment systems- raw material for photosynthesis- Mechanism of photosynthesis- Light reaction - cyclic and non cyclic photophosphorylation. Hill reaction - Dark reaction: Calvin cycle. Comparative study of C3, C4, and CAM plants. Photorespiration
2. Factors affecting photosynthesis - Law of limiting factors.

MODULE-III **10 hrs**

1. Respiration: Introduction, definition and significance and general equation. Respiratory substances, types of respiration- aerobic and anaerobic. Aerobic respiration - glycolysis, Krebs's cycle, terminal oxidation. Anaerobic respiration – fermentation: alcoholic and lactic acid fermentation. Energy relation of respiration
2. R .Q and its significance – Factors affecting respiration.
3. Translocation of solutes: Path way of movement, phloem transport, mechanism of transport - Munch hypothesis, protoplasmic streaming theory - activated diffusion hypothesis, electro osmotic theory.
4. Growth: Phases of growth - vegetative and reproductive growth - growth curve – plant growth regulators - Auxins, Gibberellins, Cytokinins, Ethylene, Abscisic acid – synthetic plant hormones - practical applications. Senescence and abscission. Photoperiodism.

Practical **15 hrs**

1. Water potential of onion peel / *Rhoeo* peel by plasmolytic method
2. Papaya petiole osmoscope.
3. Determination of water absorption and transpiration ratio.
4. Measurement of rate of transpiration using Ganong's potometer or Farmer's potometer.
5. Evolution of oxygen during photosynthesis.
6. Evolution of CO_2 during respiration.
7. Ganong's respirometer and measurement of R.Q.
8. Alcoholic fermentation using Kuhne's fermentation vessel.
9. Measurement of growth using Arc auxanometer.

MODULE-IV

Plant Ecology **8 hrs**

1. Definition-Scope and relevance to society and human environment. Need for public awareness
2. Ecosystems-Concept of an ecosystem- structure and function of an ecosystem-
3. Biotic and abiotic components- Energy flow in an ecosystem.
4. Ecological succession-Definition- primary, secondary- hydrosere.
5. Food chains -Food web & ecological Pyramids.
6. Introduction- types, characteristic features, structure and functions of the following ecosystems.

a. 1. Forest ecosystem 2. Grass land ecosystem 3. Desert ecosystem 4 . Aquatic ecosystems - Ponds, Estuaries.
b. Morphological, anatomical & physiological adaptations of – Hydrophytes, Xerophytes, Halophytes, Epiphytes, Parasites.

Practical **13 hrs**

1. Study of ecological and anatomical modifications of Xerophytes, Hydrophytes, Halophytes, Epiphytes and Parasites.
2. Observation and study of different ecosystems mentioned in the syllabus.

MODULE-V

Horticulture **6 hrs**

1. Introduction to Horticulure
2. Garden tools and implements - Lawn mower, hand trowel, nursery spade, spade fork, garden hoe, weeder, tillers
3. Methods of vegetative propagation: Cutting, grafting, budding, layering, special methods of propagation,
4. propagation by seeds.
5. Media for propagation of plants — soil, sand, peat, sphagnum moss, vermiculture, soil mixture,
6. Nursery beds
7. Manures – organic and inorganic

Practical **2 hrs**

1. Methods of vegetative propagation: Cutting, grafting, budding, layering, special methods of propagation - propagation by seeds.

MODULE - VI

Biotechnology **10 hrs**

1. Introduction – History – major achievements – Biotechnology in India
2. Plant Tissue culture - Culture media; composition, preparation and sterilization – Totipotency: definition and importance - Dedifferentiation and redifferentiation – Callus and suspension culture, meristem culture - Somatic embryogenesis, Anther culture and production of haploids.

Practical **6 hrs**

1. Preparation of media, sterilization, inoculation and callus induction (Demonstration only).

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MODEL QUESTION PAPER

FIRST SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

Complementary Botany for Zoology, Home Science and Biochemistry

BO1131- Microtechnique, Angiosperm Anatomy and Reproductive Botany
(2019 Admission Onwards)

Time : 3 Hours **Max.Marks : 80**

(Draw Diagrams wherever necessary)

SECTION- A

I. Answer all Questions, each carries one mark.

1. Name a killing and Fixing fluid
2. What are Tyloses?
3. What is middle lamella?
4. Define exarch condition
5. What is Dendrochronology?
6. Comment on closed vascular bundle
7. Write a note on Orthotropous ovule
8. What is Coleoptile?
9. What is palynology?
10. Name a complex tissue

(10x1 = 10 marks)

SECTION –B

II. Answer any eight of the following. Each carry two marks.

11. Comment on FAA
12. What is Histogen Theory
13. What are Annual rings
14. Explain Lenticels and their function
15. Give an account of laticiferous tissue
16. Write a note on Tapetum
17. Distinguish between endothecium and endothelium
18. Write down the structure of monocot embryo
19. Draw a labelled diagram of a bicollateral vascular bundle
20. Describe mesophyll tissue
21. What is double fertilization?
22. Describe glandular tissue

(8x2=16 marks)

SECTION –C

III. Answer any six of the following not more than 120 words. Each carry four marks.

23. Describe with labelled diagram the structure of Dicot leaf
24. Explain the salient features of periderm.
25. Distinguish between monocot and dicot root
26. Describe phloem and its function
27. Describe microsporogenesis
28. Describe different types of endosperm
29. Write an account heartwood and sapwood
30. Describe anomalous secondary thickening in *Boerhaavia* stem
31. Explain Hydathodes and the phenomenon of guttation

(6x4=24 marks)

SECTION –D

IV. Write an essay on any two of the following, each carry 15 marks.

32. Explain meristematic tissues and various theories of apical organization of stem
33. Give an account of normal secondary thickening in a dicot stem with labelled diagrams
34. Describe megasporogenisis and development and structure of *Polygonum* type of embryosac
35. Write an essay on permanent tissues with suitable diagrams

(2x15=30)

MODEL QUESTION PAPER

SECOND SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

Complementary Botany for Zoology, Home Science and Biochemistry
BO1231-Phycology, Mycology, Lichenology, Bryology, Pteridology, Gymnosperms and Plant Pathology

(2019 Admission Onwards)

Time : 3 Hours **Max.Marks : 80**

(Draw Diagrams wherever necessary)

SECTION- A

I. Answer all Questions, each carries one mark.

1. Pigment which give red colour to Rhodophyceae.
2. Name a unicellular algae.
3. Reserve food material of Phaeophyceae.
4. Name the Causative organism of Quick Wilt of Rubber.
5. Name a coprophilous Fungus.
6. What is Peristome?
7. Write a note on Cup Fungi.
8. Give an example for fungicide.
9. What is Yellow Shower?
10. Give an example for heterosporous pteridophyte.

(10x1=10 marks)

SECTION –B

II. Answer any eight of the following.Each carry two marks.

11. Why the endosperm of *Pinus* is haploid?
12. What are Pyrenoids?
13. Structure of the thallus of *Rhizopus.*
14. Write any two economic importance of Lichens.
15. Write short note on heteroecious fungus.
16. Explain Polyembryony
17. Write about any two root characters shown by Rhizophore of *Selaginella*.
18. Describe the receptacle in *Sagassum*.
19. Describe the mode of reproduction in *Chlorella.*
20. Write the difference between teleutospores and uredospores.
21. What are dwarf shoots?
22. What is alternation of generation?

(8x2=16 marks)

SECTION –C

III. Answer any six of the following not more than 120 words. Each carry four marks.

23. Describe with labelled diagram the structure of sporophyte of *Funaria*.
24. Explain the salient features of Phaeophyceae.
25. Ex plain the parts of globule and nucule of *Chara*.
26. Describe the different types of pigments in Algae.
27. Write the ecological and economic importance of *Usnea.*
28. Describe the reproduction in *Pteris.*
29. Write an account on the reproduction in *Oedogonium*.
30. Write the causative organism, symptoms and control measures of Powdery Mildew of Rubber.
31. Explain the xerophytic adaptations found in the anatomy of *Pinus* needle.

(6x4=24)

SECTION –D

IV. Write an essay on any two of the following, each carry 15 marks.

32. Explain with diagrams the structure, reproduction and life cycle of *Polysiphonia.*
33. Give an account of different stages of life cycle of *Puccinia* with suitable Diagrams.
34. Describe the vegetative, sexual reproduction and alternation of generation in *Riccia*.
35. Write an essay on the reproduction and life cycle of *Selaginella*.

(2x15=30)

MODEL QUESTION PAPER

FOURTH SEMESTER B. SC. DEGREE (CBCSS) EXAMINATION

Complementary Botany for Zoology, Home Science and Biochemistry
BO 1431: Plant Physiology, Plant Ecology, Horticulture and Plant Biotechnology

(2019 Admission Onwards)

Time : 3 hours **Max. Marks. 80**

(Draw Diagrams wherever necessary.)

SECTION – A

I. Answer all questions in one word or one sentence. Each question carries one Mark.

1. Define Totipotency
2. What is Imbibition?
3. What is R.Q.?
4. Which are 'turgor operated valves' in plants ?
5. Name any two antitranspirants
6. Which are primary macro nutrients?
7. What is Redifferentiation?
8. Expand RuBP
9. What are Lithophilous halophytes ?
10. What are drought escaping plants?

(10x1=10 Marks)

SECTION – B

II. Answer any eight questions, not to exceed a paragraph. Each question carries two marks.

11. What is substrate level phosphorylation ? Give an example.
12. Write a note on plasmolysis.
13. Distinguish between apoplastic and symplastic pathways.
14. Comment on cohesion and adhesion properties of water.
15. What is Guttation?
16. Mention symptoms of deficiency due to phosphorus.
17. In a non-turgid cell DPD = OP – WP, explain.
18. How wind influence stomatal transpiration?
19. Write four major differences between respiration and photo respiration.
20. Write about organic fertilizers.
21. Write a note on physiological effects of cytokinin.
22. Define food chain.

(8x2=16 Marks)

SECTION – C

III. Answer any six questions, not to exceed 120 words. Each question carries four marks.

23. Explain the different phases of growth.
24. How plant cell act as an osmotic system?
25. Explain the structure of chloroplast with diagram.
26. Explain Red drop and Emerson's enhancement effect.
27. Write is note on water potential and its components.
28. What is grafting? Explain approach and wedge grafting.
29. What are different types of ecological pyramids?
30. Explain the role of Phytrochrome in flowering.
31. Explain cyclic photophosphorylation with illustration

(6x4=24 Marks)

SECTION – D

IV. Write essay on any two of the following, not more than three pages. Each question carries 15 marks.

32. Explain C3 pathway and briefly explain how it differs from C4 pathway?
33. Define callus and how it is produced? Explain somatic embyogenesis
34. What is ecological succession? Describe kinds of succession and mechanisms of succession.
35. Explain Krebs cycle and write a brief note on its significance.

(2x15=30 Marks)

MODEL QUESTION PAPER

B. SC. DEGREE PROGRAMME (CBCSS) PRACTICAL EXAMINATION

Botany Complementary Practical -Course Code: BO1432

1. 1. Make suitable micropreparation of A, identify giving reasons and describe its structure with the help of labelled diagram. Leave the preparation for valuation.
   (Preparation-2, Labelled Diagram-2, Reasons-3, Identification-1) **(8 Marks)**
2. Refer the specimen **B** to its family giving reasons. **(8 Marks)**
   (Identification-1, Reasons upto series-2, Description of plant in technical terms -2, Family characters-2)
3. Make micropreparations of **C** and **D**. Stain and mount in glycerine and leave the preparation for valuation. Draw a cellular diagram and identify giving reasons.
   (Preparation-2, Labelled Diagram-1, Identification-1, Reasons-2)**(2 x 6 =12 Marks)**
4. Make a suitable micropreparation of **E**. Identify the ecological group and write the anatomical adaptations. **(5 Marks)**
   (Ecological group-1, Morphological Adaptations-2, Anatomical Adaptations-2)
5. Identify and draw labelled diagram of **F** **(3 Marks)**
   (Identification-1, Labelled diagram- 2)
6. Identify the disease **G** and name the causative organism. **(2 Marks)**
   (Disease-1, Causative organism-1)
7. With the help of a labelled diagram explain the aim and working of the experiment **H**.
   (Aim-1, Labelled Diagram-1, Working-2) **(4 Marks)**
8. Identify and write notes on **I** **(3 Marks)**
   (Identification-1, Notes-2)
9. Spot at sight specimens, **J**, **K** and **L** **(3 x 3 = 9 Marks)**
   (Major group 1, Genus-1, Part of the plant-1)
10. Write the binomial, family and morphology of the useful part of **M** and **N**
    (Binomial 1, Family-1, Morphology-1) **(3x2=6 Marks)**

Record -20 marks (Content-15, Neatness-5)

KEY TO SPECIMENS

A. Anatomy - Primary Root/Stem
   Normal Secondary Dicot stem/Root (*Vernonia*/Papaya)/Aerial Root (*Ficus/ Tinospora*) Anomalous Secondary Dicot Stem (*Boerhaavia*)
B. Taxonomy
C. Thallophyta/Bryophyta
D. Pteridophyta/Gymnosperm
E. Ecology-Hydrophyte/Xerophyte/Epiphyte
F. Embryology
G. Plant Pathology
H. Plant Physiology
I. Stains/Fixatives
J. Thallophyta
K. Bryophyta/Pteridophyta
L. Gymnosperms
M. Economic Botany
N. Economic Botany

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1) Prepare Model Notice and Minutes for different types of Company Meetings:
   a) Statutory Meeting
   b) Annual General Meeting
   c) Extra-ordinary General Meeting
2) Prepare a record compiling all the essential documents needed at various stages of the formation of a Public Limited Company

3) Visit a company in your locality for which CSR compliance is mandatory under requirements of the Companies Act, 2013. Collect details of their CSR Action Plans and CSR initiatives implemented by them and prepare a report.

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: Free software - meaning uses advantages. LaTeX Introduction – Basic commands of LaTeX, Page Creation, Header-Footer Settings, Exporting, Graph Setting, Picture management, Photo Enlargement etc.(25hrs)

: Word processing - Opening Microsoft Word, Word Adjusting, adding or deleting text, selecting blocks of text, copying text, moving text, search and replace, Saving, editing and designing a document, character formatting and

style, page formatting – headers, footers, page numbers, bullets, margin settings and column, justifying of text, line spacing, tab settings, automating tasks, creating tables – entering text into tables, inserting rows and columns in the table, deleting a row and column from the table formatting the text in the table. (10hrs)

: Advanced uses of MS Word - Mail Merge – creating the main document, creating a mail merge document, modifying the records in the data source, merging the main document with the data, sending the merged document to the printer. Creating documents using templates - Adding and removing digital signatures in documents (15hrs)

: Adobe InDesign – creation and opening, working, setting defaults and preferences, viewing pages, using toolbox, working with text and graphics, moving between pages, adding and deleting pages, naming and saving a file. (20 Hrs)

: Microsoft PowerPoint - Introduction, creating presentations – using auto content wizard, using templates, using blank presentation, formatting background, adding sounds, slide show, slide sorter, setting animation, slide transaction, setting intervals, saving and printing, presentations, adding and playing audio clips in presentations, creating hyperlinks in presentations, converting the presentations into a video clip (an overview only) (20 hrs.)

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No. of instructional hours per week: 5 (1 hour theory and 4 hours practical) No. of credits: 4

: To update and develop theoretical and technical expertise in applying software for data management.

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1. To familiarise the students with the basics of Software for data management.
2. To equip the students to meet the demands of the industry.
3. To develop practical skills in spread sheet application, statistical software and database application.

: Open Source Softwares – Libra Office Calc, Basics. Basics of R (theory only) (10hrs)

: Microsoft Excel - Excel user interface, starting with excel, working with cell and cell addresses, entering and editing data, finding and replacing data, selecting a range, moving, cutting, copying with paste, inserting and deleting cells, freezing cells, cell formatting options, adding, deleting and copying worksheet with in a workbook, renaming a worksheet, Cell reference – relative, absolute - Elements of excel charts – categories, create a chart, choosing chart type, edit chart axis, titles, labels, data series and legend, adding a text box, rotate text in a chart, converting a chart on a web page, saving a chart (10hrs)

: Advanced uses of Microsoft Excel - Commonly used functions: – logical – AND, IF, NOT, OR, TRUE; Financial – DB, FV, IPMT, IRR, NPV, PMT, and PV; statistical –AVERAGE, COUNT, COUNTIF, MAX, MIN; mathematical – PRODUCT, SQRT, SUM, SUMIF - Pivot tables - Macros in excel creating, adding and editing of macros VBA programming in Excel (an overview) forms in excel. Introduction to VBA Programs(25 hrs.)

: Software Package in Social Sciences (SPSS)- Starting SPSS -Terminology –Case, Variables and levels- System missing and user-defined missing values -Identification numbers and case numbers– Procedure- Fundamental definitions– sample, descriptive statistics, nominal scales, ordinal scales, interval scales, ratio scales, quantitative data, categorical or frequency data. Dependent and Independent variables.Parametric and non-parametric data and tests (overview of few tests like chi-square test, ANOVA etc.)(25hrs)

: Microsoft Access - Databases - creating a new database, creating tables, editing tables, entering data into a table, editing data in a table, relationship between tables - Creating a query; types of queries - Creating a report; types of reports, printing reports - Creating a simple form; modifying a form, adding control to a form, searching, sorting, Introduction to Software

development in Access using VBA Code (20hrs)

1. data in Excel sheets, creating payroll, depreciation statements, loan schedule etc. using excel, financial analysis of a company using excel, create charts for presentations using excel. Excel forms
2. SPSS – basic skills to input data and taking statistical values like averages and prepare cross tabs and creating charts using SPSS
3. Familiarise with database, primary field, view, query etc. Create database for your educational institution for the purpose of preparing merit list and waiting list for admission of degree students.

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1. Cox et.al. , 2007. , PHI, New Delhi.
2. Jeremy: , Sage Publications, New Delhi

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1. Mary Millhollon ,et .al , PHI, New Delhi.
2. Nick Vandome . , Dreamtech Publishers,New Delhi.
3. Mike McGrath . , Dreamtech Publishers, New Delhi.,
4.Ramachandran et.al , Green Tech Books, Thiruvananthapuram.
4. NIIT.
5. Millhollon &Castrina . ,PHI, New Delhi.

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UNIVERSITY OF KERALA

Revised Scheme & Syllabus for First Degree Programme in

B A ECONOMICS (CBCS SYSTEM) 2019

Semester I

Credits	Instructional hous	Course Title	Course No	Sem No
4	5	(Language Course I (English I	EN 1111	I
3	4	Language Course II (Addl (LanguageI	1111	
2	4	Foundation Course I	EN 1121	
4	6	Core I Introductory Micro Economics	EC 1141	
2	3	Complementary I	1131	
2	3	Complementary II	1131	
20	25	Total		

Semester II

Credits	Instructional hours	Course Title	Course No	Sem No
4	5	(Language Course III (English II	EN 1211	II
3	4	(Language Course IV (English III	1212	
3	4	(Language Course V (Addl. Lang II	1211	

4	6	Core II Intermediate Microeconomics	EC1241	
3	3	Complementary III	1231	
3	3	Complementary IV	1231	
20	25	Total		

Semester III

Credits	Instructional hours	Course Title	Course No	Sem No
4	5	(Language Course VI (English IV	EN 1311	III
4	5	(Language Course VII (Addl.Lan III	1311	
3	4	Foundation Course II Informatics for Applied Econometrics	EC1321	
4	5	Core III Introductory .Macroeconomics	EC1341	
3	3	Complementary V	1331	
3	3	Complementary VI	1331	
21	25	Total		

Semester IV

Credits	Instructional hours	Course Title	Course No	Sem No
4	5	(Language Course VIII (English V	EN1411	IV
4	5	(Language Course IX (Addl.Lan IV	1411	
4	5	Core IV Mathematical Methods for Economics	EC1441	
3	4	Core V Intermediate Macroeconomics	EC1442	
3	3	Complementary VII	1431	
3	3	Complementary VIII	1431	
21	25	Total		

Semester V

Credits	Instructional hours	Course Title	Course No	Sem No
4	4	Core VI Methodology and Perspectives of Social Science	EC1541	V
4	4	Core VII Statistical Methods for Economics	EC1542	
4	4	Core VIII Readings in Political Economy	EC1543	
2	3	Core IX Economic Growth and Development	EC1544	

3	4	Core X International Economics	EC1545	
2	3	Open Course I – Introductory Economics	EC1551.1	
2	3	Human Resource Management	EC1551.2	
2	3	Indian Economy Since Liberalisation	EC1551.3	
-	3	Project / Dissertation		
20	25	Total		

Semester VI

Credits	Instructional hours	Course Title	Course No	Sem No
4	5	Core XI Indian Economy	EC1641	VI
4	4	Core XII Banking and Finance	EC1642	
4	5	Core XII Public Economics	EC1643	
3	4	Core XII Environment Economics and Disaster Management	EC1644	
2	4	Elective : Kerala Economy	EC1661.1	
2	4	Mathematical Economics	1661.2	
2	4	Introductory Econometrics	1661.3	
2	4	History of Economic Thought	1661.4	
3	3	Project/Dissertation	EC 1645	
21	25			
120	150	Grand Total		

:Complementary Courses Offered

Complementary I

EC 1131 Foundations of Economic Theory

Complementary III

EC 1231 Money and Banking

Complementary V

EC 1331 Introduction to International trade and Public Economics

Complementary VII

EC 1431 Indian Economy Since Independence

:Open Courses Offered
.A college can select one from the three courses given
Introductory Economics EC 1551.1
Human Resource Management EC1551.2
Indian Economy Since Liberalisation EC1551.3
:Elective courses offered
.A college can select one from the four courses given
Kerala Economy EC1661.1
Mathematical Economics EC1661.2
Econometrics EC1661.3
History of Economic Thought EC1661.4

Instructional H

To develop a conceptual foundation and analytical methods used in Microeconomics

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Labour and production – Preferences opportunity costs – The feasible set – Decision making and scarcity – Hours of work and economic growth – Income and substitution effects on hour of work and free time – Explaining our working hours: Changes overtime, Differences between .countries

(# $ %! "

Demand and Supply – Market Mechanism- Elasticities of Demand and Supply - Consumer behaviour: Consumer Preferences – Budget Constraints – Consumer choice – Revealed Preferences, Marginal Utility and Consumer Choice – Individual and Market Demand: Individual Demand - Income and Substitution Effect – Market Demand – Consumer Surplus - Production: Technology of Production – Production with one variable input – Production with Two Variable Inputs – Returns to Scale – The cost of production: Measuring Cost – Cost in the

short - run and Long -run – Short Run and Long Run cost curves - Profit Maximisation and Competitive Supply

(& %! "

Price taking firms - Price setters and price taking firms - Competitive Equilibrium – The model of perfect competition – Perfectly Competitive Markets – Profit Maximisation- Marginal Revenue, Marginal Cost and Profit – Choosing output in the Short Run and Long Run – Competitive firms Short Run supply curve – Industry's Long Run Supply Curve

(' %! "

Monopoly – Average Revenue and Marginal Revenue – Monopolist's Output Decision - Monopoly Power – Price Discrimination – Monopoly Pricing Policies– Monopsony and Monopoly - Monopolistic Competition –Equilibrium in the Short Run and Long Run – Oligopoly – Equilibrium in an Oligopolistic Market – Price Competition – Price Rigidity - . Cartels

Robert S. Pindyck, Daniel L. Rubinfeld & PL Mehta 7th Ed Part V Chapter 9) & 11, Bernheim, Douglas B and Whinston, (Michael D (2011) Chapters 17,18 &19

( )

. by CORE team, Chapter 3

Robert S. Pindyck, Daniel L. Rubinfeld & P L Mehta 7th Ed Part 2 .Chapter 3,4,6,7& 8

by CORE team Chapter 8 and

(S. Pindyck, Daniel L. Rubinfeld & P L Mehta 7th Ed Chapter 7

' Robert S. Pindyck, Daniel L. Rubinfeld & P L Mehta ,chapter 9 &11

Bernheim, Douglas B and Whinston, Michael D (2011)

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Ashok Sanjay Guha " # $ % " & '

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Hal R Varian: Intermediate Microeconomics: A Modern Approach 8th edition, W.W.Norton and .1 Company/Affiliated east-West Press (India), 2011

C. Synder and W Nicholson(S-N): Fundamentals of Microeconomics, Cengage Learning .2 (India), 2010, Indian Edition

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Instructional H

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The course intends to give basic understanding of Micro Economics

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Competitive Factor markets – Equilibrium in factor markets – Investment, time and capital markets: Stocks vs Flows – Present Discounted value – Net Present Value criterion- How are .interest rates determined

((. %/

Risk- Probability – Expected Value – Variability - Preferences towards Risk – Reducing Risk - .The Demand for Risky Assets – Behavioural Economics.. Uncertainty

(# & # 0 %/

Game Theory – Equilibrium in the invisible hand game – The Prisoner's dilemma – Social preferences: Altruism – Public goods, free riding and repeated interactions – Public good contributions and peer punishment – Behavioural experiments in the lab and in the field - co

game – -operation, negotiation, conflicts of interest and social norms – Dividing a pie – Fair Farmers, self interested students – contribution in the ultimatum - Social interactions: Conflicts in the choice among Nash equilibrium. Institutions and power – Evaluating institutions and outcomes: Pareto Criterion – Fairness – A model of choice and conflict – Technically feasible allocations – allocations imposed by force – Economically feasible allocations and the surplus – The Pareto efficiency curve and the distribution of the surplus – Measuring economic inequality – A policy to redistribute the surplus and raise efficiency

(' 1 2)) - %!

General Equilibrium and Economic Efficiency - General Equilibrium analysis - Efficiency in exchange – Efficiency in production – Efficiency in product-mix . The Gains from trade – .Market failure – Externalities – Ways to correct Market failure – Public Goods

:( )

Module I Microeconomics / Robert S. Pindyck, Daniel L. Rubinfeld 7th Edition Part III Chapter .13 & 14

Module II Microeconomics / Robert S. Pindyck, Daniel L. Rubinfeld & P L Mehta7th Edition .Part V Chapter 18

.Module III: The Economy: Economics for a Changing World by CORE team chapter 4 & 5

Module IV: Microeconomics / Robert S. Pindyck, Daniel L. Rubinfeld & P L Mehta 7th Ed , .chapter 15 &16

Ashok Sanjay Guha " # $ % " & '

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Hal R Varian: Intermediate Microeconomics: A Modern Approach 8th edition, W.W.Norton and .1 Company/Affiliated east-West Press (India), 2010

C. Synder and W Nicholson(S-N): Fundamentals of Microeconomics, Cengage Learning .2 (India), 2010, Indian Edition

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Instructional H 3

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This course introduces a plethora of online resources which will help students improve their teaching-learning experience. The students will also be able to utilize these web resources to enhance their career and academics. The course also provides an exposition to econometric concepts and techniques. This is to enable the students to conduct and criticize empirical studies in economics and related fields. It covers estimation and diagnostic testing of simple regression .models using computer software

(%/ " ,4.5 ( ) $

Informatics: Meaning and Scope, Information Networks- INFLIBNET, NICNET. E-Books, .(Audio Books, Blogs, Podcasts, Massive Open Online Courses (MOOCs

(! " 6 &)

What is Econometrics? –Methodology of Econometrics –Structure of Economic data- Cross Sectional, Time Series, Pooled Cross Sectional and Panel Data- Statistical Software for social .science Research

6 This course recommends the use of Gretl (a free software useful for econometric analysis) .for practical exercises

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The concept of Population Regression Function (PRF)- Stochastic specification of PRF- (Significance of the stochastic disturbance term- The Sample Regression Function (SRF

(%/ " ,4.5 ' & 5 (+ $0 '

Estimation of model by method of ordinary least squares—Properties of estimators—Classical Linear Regression Model: The Assumptions Underlying the method of Least Squares--Gauss Markov theorem—Goodness of fit—Interval estimation—Confidence intervals for Regression—Hypothesis testing—Prediction- Computer exercises

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:

V. Rajaraman, Introduction to Information Technology, Third Edition, PHI Learning Pvt. .Ltd

Gammak, Hobbes and Piggot, The Book of Informatics, Cengage Learning

List of Web Resources provided at the end of References

:

D.N.Gujarati and Sangeetha, Basic Econometrics, 4thEdition, McGraw Hill Publishing Company Ltd, New Delhi. Chapter 1

.JeffreyM Wooldridge, Introductory Econometrics, 2nd Edition, chapter 1

:

D.N.Gujarati and Sangeetha, Basic Econometrics, 4thEdition, McGraw Hill Publishing .Company Ltd, New Delhi. Chapter 2

JeffreyM Wooldridge, Introductory Econometrics, 2nd Edition. Chapter 2

: '

D.N.Gujarati and Sangeetha, Basic Econometrics, 4thEdition, McGraw Hill Publishing .Company Ltd, New Delhi. Chapter 3,5& 6

.JeffreyM Wooldridge, Introductory Econometrics, 2nd Edition. Chapter 2

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www.wordpress.com	
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/http://podcasts.ox.ac.uk	
http://www.bbc.co.uk/podcasts	
/http://educationalwikis.wikispaces.com	
/http://wikieducator.org	
http://wikieducator.org/India	
/http://en.wikibooks.org	
' 9 ' 5 9 8) 5 +	
/http://www.learnerstv.com	
/http://webcast.berkeley.edu	
9http://epgp.inflibnet.ac.in	

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/https://www.coursera.org
/https://www.edx.org
/http://ocw.mit.edu

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Instructional H !

Course Objective

This course offers a short introduction to Macroeconomics. After introducing the multiplier and the Keynesian theory of income determination, the course further introduces the student to IS-. LM analysis

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Introduction to Macroeconomics : Concepts-Growth and fluctuations-Output growth and changes in unemployment-Measuring the aggregate economy: The components of GDP-How households cope with fluctuations- Why is consumption smooth-Measuring the economy: Inflation

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Money and wealth- Borrowing: Bringing consumption forward in time- Impatience and the diminishing marginal returns to consumption-Borrowing allows smoothing by bringing consumption to the present- Lending and storing: Smoothing and moving consumption to the future- Investing: Another way to move consumption to the future-Assets, liabilities, and net worth- Banks, money, and the central bank- The central bank, the money market, and interest rates- The business of banking and bank balance sheets-The central bank's policy rate can affect spending- Credit market constraints: A principal-agent problem-Inequality: Lenders, borrowers, .and those excluded from credit markets

(. & - & %/

The transmission of shocks: The multiplier process- The multiplier model-Household target wealth, collateral, and consumption spending-Investment spending- The multiplier model: Including the government and net exports-Fiscal policy: How governments can dampen and amplify fluctuations- The Keynesian model of income determination, Consumption function –

factors affecting consumption-Consumption and Savings-Consumption, AD, and Autonomous Spending-Saving and Investment- multiplier and economic policymaking-The government's finances-Automatic stabilizers-Fiscal policy and the rest of the world- Aggregate demand and unemployment

(' ,6 : 6$ ($ *64 6 , %!

The Goods Market and the IS Curve - The Money Market and the LM Curve - Equilibrium in the Goods and Money Markets -Deriving the Aggregate Demand Schedule - A Formal Treatment of the IS-LM Model . Introduction to Fiscal and monetary policy. Crowding in and crowding out . Liquidity trap. Fiscal and monetary policy multipliers

- References

Module I The Economy: Economics for A Changing World. OUP www.core-econ.org -Chapter-13

Module II

The Economy: Economics for A Changing World. OUP www.core-econ.org -Chapter- 10

Module III

The Economy: Economics for A Changing World. OUP www.core-econ.org -Chapter- 14 .1

Rudiger Dornbusch, Stanley Fischer & Richard Startz-Macro Economics-tenth edition-.2 Chapter-9 Titled Income and Spending

Module IV

Rudiger Dornbusch, Stanley Fischer & Richard Startz-Macro Economics-Eleventh edition Mc .1 GRawHil Irwin-Chapter-10 titled Money, Interest and Prices and Chapter 11titled Monetary and Fiscal Policy

Diulio, Eugene(2004) Schaum's Outlines on Macroeconomics. (for problems on this module) 2 McGrawHill

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Instructional H !

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The key objective of this paper is to provide the students an insight into the importance of mathematical methods in Economics and also to familiarize them with the basic mathematical techniques used in economic analysis

(7 & %/ "

Role of mathematics in Economics- Basic mathematical techniques: Equations (Linear, Quadratic and Simultaneous), Functions (Linear, Quadratic, Polynomial, Rational, Power), Variables (Discrete, Continuous), Constants, Coefficients-Introduction to Co-ordinate Geometry, Graphs, Slopes and Intercept

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Meaning and types of Matrices- Matrix Operations, Addition, Subtraction and Multiplication- Properties of Matrix Multiplication- Determinants and their properties- Minors and Cofactors- .Simultaneous Equations: Inverse Matrix and Cramer's Rule-Rank of a Matrix

4)) %! "

Concept of Limit- Rate of Change and the derivative. Rules of Differentiation - Higher Order Derivatives-Implicit Differentiation-Partial differentiation – Economic applications of Derivatives. Relative Extrema and Optimization. – Marginal Concepts, Marginal Cost, Marginal Utility, Marginal Revenue, Marginal Productivity- Optimising Economic Functions- Constrained optimisation with Lagrange Method- Relationship among total, marginal and average concepts

' + %/ "

Meaning and Rules of Integration – Integration by Substitution-Integration by Parts-Definite and Indefinite Integrals - Economic Applications of Integral Calculus: Total Cost, Total Revenue, .Total Utility, Capital Formation. Consumer Surplus and Producer's Surplus

:( )

Chiang & Wainwright, Fundamental Methods of Mathematical Economics McGraw-Hill -Chapter 1

Dowling, E.T, Introduction to mathematical Economics, Schaum's Outline Series, McGraw Hill, New Delhi. Chapter 1 and 2

Chiang & Wainwright, Fundamental Methods of Mathematical Economics McGraw-Hill -Chapter 4 and 5

Dowling, E.T, Introduction to mathematical Economics, Schaum's Outline Series, McGraw Hill, New Delhi. Chapter 10 and 11

Chiang & Wainwright, Fundamental Methods of Mathematical Economics McGraw-Hill -Chapter 6 - 12

Dowling, E.T, Introduction to mathematical Economics, Schaum's Outline Series, McGraw Hill, New Delhi. Chapter 3 and 6

CORE-The Economy: Economics For a Changing World (Leibnizes 2.2.1, 3.1.3, 3.3.1, 7.3.1, 7.6.1), accessible at http:// www.core-econ.org

'

Chiang & Wainwright, Fundamental Methods of Mathematical Economics McGraw-Hill -Chapter 14

Dowling, E.T, Introduction to mathematical Economics, Schaum's Outline Series, McGraw Hill, New Delhi. Chapter 14 and 15

++ (+

.Allen, R.G.D Mathematical Analysis for Economists, AITBS Publishers, Delhi

.Chiang,A.C, Fundamentals of Mathematical Economics, McGraw Hill, New Delhi

Hoy, Michael, John Livernois, Chris McKenna, Ray Rees and Thanasis Stengos
Mathematics for Economics, Third Edition. PHI Learning
Black. J. and J.F Bradley: Essential Mathematics for Economic, John Wiley and Sons,
.New Delhi

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Instructional H 3

:Course Objective

To introduce students to the micro foundations of macroeconomics, inflation and unemployment, economic growth and fiscal and monetary policies in an open economy

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The Balance of Payments and Exchange Rates - The Exchange Rate in the Long Run- Trade in .Goods, Market Equilibrium, and the Balance of Trade

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The Aggregate Supply Curve - The Aggregate Supply Curve and the Price Adjustment Mechanism - The Aggregate Demand Curve - Aggregate Demand Policy under Alternative Supply-Assumptions - Supply-Side Economics - Putting Aggregate Supply and Demand Together in the Long Run

Inflation and Unemployment - Stagflation, Expected Inflation, and the Inflation-Expectations-Augmented Phillips Curve - The Rational Expectations Revolution - The Wage-Unemployment Relationship: Why Are Wages Sticky? From Phillips Curve to the Aggregate Supply Curve - Supply Shocks

(1 0 !"

The Solow model of growth-steady state-golden rule-convergence-Endogenous growth

(' - %! "

Consumption and Saving.1

The Life-Cycle–Permanent-Income Theory of Consumption and Saving - Consumption under Uncertainty: The Modern Approach- Further Aspects of Consumption Behavior

Investment Spending .2

The Stock Demand for Capital and the Flow of Investment- Investment Subsectors—Business .Fixed, Residential, and Inventory- Investment and Aggregate Supply

The Demand for Money.3

Components of the Money Stock - The Functions of Money- The Demand for Money: Theory - Empirical Evidence - The Income Velocity of Money

:References

Module I

Rudiger Dornbusch, Stanley Fischer & Richard Startz-Macro Economics-Eleventh Edition- .Chapter-12 titled International Linkages

Module II

Rudiger Dornbusch, Stanley Fischer & Richard Startz-Macro Economics-Eleventh edition-.1 .Chapter-5 & 6

Module III

Soumyen Sikdar-Principles of macro economics-second edition-Chapter-10-pages 163-172 (up (to the sub-heading Growth accounting

Module IV

Rudiger Dornbusch, Stanley Fischer & Richard Startz-Macro Economics- Eleventh edition- Chapter-13,14 &15

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Course Objective: The course intends to familiarize the students with the broad contours of Social Sciences, specifically Economics and its methodologies, tools and analysis procedures. The course also aims to create an enthusiasm among students, incorporating various concepts .and issues in economics

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Social science Disciplines - Need for interdisciplinary approach - Objectivity and subjectivity in social Science - Limits to objectivity in social science. Economics as a Social .science subject

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Resources and scarcity- Choice and opportunity cost- The production possibility boundary. Three key issues- what should be produced- Efficient production- Economic growth. Economic systems- Traditional systems, Command systems, Pure market systems and Mixed systems- Role of government in the modern mixed economy. Economic advice: Positive and .normative economics- Economic theorizing-endogenous and exogenous variables

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Capitalism defined: Private property, markets and firms- Capitalism as an economic system- Gains from specialization- Technology, population and growth- Economic models-Basic concepts: Prices, costs and innovation rents- Industrial Revolution and incentives for new .technology

(3/ " ' 1 &

Great Depression- Golden age of high growth and low employment- stagflation and the end of golden age- Global financial crisis..The nation and the world economy- Globalisation and .investment- Globalisation and migration- Trade and Growth

Economic inequality- measuring inequality and living standards- Economics of environment-economy and environment- Innovation process: invention and diffusion- Innovation .systems- Intellectual Property Rights

( )

:

Blaug, M (1998): The Methodology of Economics, Cambridge Surveys of Economic ·
.Literature' New York

Kaufmann, Felix (1958): Methodology of the Social Sciences, The Humanities press, ·
.New York

Hunt, Elgin F (2008): Social Science and its Methods, Social Science and Introduction to ·
.the study of Society, Alyn and Bacon

Lipsey& Chrystal (2009) Economics, Eleventh Edition, Oxford University Press, New .York.Chapter I and II

(The Economy: Economics for a changing world by CORE team Chapter 1 & 2) .http://www.core-econ.org/the-economy/book/text/0-3-contents.html

' > '

.The Economy : Economics for a changing world by CORE team , Chapter 17&18 http://www.core-econ.org/the-economy/book/text/0-3-contents.html

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Instructional H

:Course Objective

The course is intended to familiarize the students with statistical tools and techniques and enable .them to apply these tools in Economics

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Univariate analysis – frequency tables, Measures of central tendency, dispersion, standard deviation, coefficient of variation, Lorenz Curve, Gini Concentration ratio-Geometric mean, Harmonic mean

Correlation--Simple, Partial and Multiple correlation- Scatter diagram-Karl Pearson's coefficient .of correlation-Spearman's rank correlation- probable error- uses of correlation

Simple and multiple linear regression- Method of Least Squares-Lines of regression- Regression coefficient-Relation between regression and correlation coefficients-Uses of regression in .Economics

(,4.5 ; 6 $ * 3/ "

Time series analysis-meaning-components- Measurement of trend-graphic method, semi-average .method, moving average method and method of least squares

Index numbers-Meaning and types of Index numbers – Simple and Weighted index numbers CPI and WPI- Problems in the construction of index numbers – Tests of index numbers- Fishers ideal index numbers- factor reversal test and time reversal test – Deflating – Base shifting – Splicing .– Uses of Index numbers

(,4.5 # 3% "

Probability- Elements of probability theory (sample space, events) –definition of Probability: Classical and Modern , Relative frequency definition and Axiomatic approach – Addition – theorem– multiplication theorem – Conditional Probability

.Random variable- discrete and continuous ,Expectation, Binomial and Normal distribution

References

.Murray R. Spiget (1999), Probability Theory Schaum's Series

,Lipshutz, (2000), Theory of Probability, Schaum 's Series

S P Gupta, Statistical Methods, Sultan Chand and sons

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Instructional H

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Adam smith-Division of Labour, Ricardo-On Rent and Of Machinery, Marx-CMC and MCM' circuit

'Adam smith;Wealth of Nations,Book 1 ,Chapter 1 'of the division of labour.1

'Chapter 3 ' That the division of labour is limited by the extent of market,

http://www.econlib.org/library/Smith/smWN1.html#B.I, Ch.1, Of the Division of Labor

David Ricardo ; On the Principles of Political Economy and Taxation Chapter 2 On Rent.2

http://www.econlib.org/library/Ricardo/ricP1a.html

David Ricardo;On the Principles o Political Economy and Taxation, chapter 31 on Machinery

http://www.econlib.org/library/Ricardo/ricP7.html#Ch.31, On Machinery

Karl Marx –Capital Volume 1.3

Part II The Transformation of money into Capital

Chapter-4 The General formula for Capital

https://www.marxists.org/archive/marx/works/1867-c1/ch04.htm

Robert Heilbroner (1998) Wonderful World of Adamsmith

Worldly Phlosophers, Robert Heilbroner (1998), Updated Seventh Edition ,

.TOUCHSTONE and colophon are registered trademarks of Simon & Schuster Inc. USA

http://starbooksfeaa.weebly.com/uploads/5/4/8/6/54869709/the_wordly_philosophers.pdf

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This section introduces the student to different perspectives of political economy : the

.perspectives of Adam Smith , John Maynard Keynes, Thorstein Veblen, and Joseph Schumpeter

Robert Heilbroner (1998) Wonderful World of Adamsmith

Worldly Phlosophers, Robert Heilbroner (1998), Updated Seventh Edition ,

.TOUCHSTONE and colophon are registered trademarks of Simon & Schuster Inc. USA

http://starbooksfeaa.weebly.com/uploads/5/4/8/6/54869709/the_wordly_philosophers.pdf

The Rise and fall of money- The Mandarin Revolution (Great Depression and the Ideas of .2
(Keynes
Glabraith,John Kenneth,'The age of Uncertainty'Houghton Mifflin Company,Boston,1977.3
http://starbooksfeaa.weebly.com/uploads/5/4/8/6/54869709/the_wordly_philosophers.pdf
The Savage Society of Thorestein Veblen
http://starbooksfeaa.weebly.com/uploads/5/4/8/6/54869709/the_wordly_philosophers.pdf
The Contradictions of Joseph Schumpeter
http://starbooksfeaa.weebly.com/uploads/5/4/8/6/54869709/the_wordly_philosophers.pdf

(1 *) %/

THE Recent Crisis in Global Capitalism : Towards Marxian Understanding

:References
Vamsi Vakulabharanam, EPW Vol.44,Issue No.13,March,2009 .1
www.epw.in/system/files/pdf/2009_44/13/The_Recent_Crisis_in_Global_Capitalism_Towards_a
_Marxian_Understanding.pdf

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Indian Development thinking, Gender equality and Women's empowerment. Social justice
.through affirmative action in India

:References
Chapter 10, handbook of Alernative theories of Economic development,2016 pp 212-227, dward
.Elgar publishing
Naila Kabeer (2005)Gender equality and Women's empowerment Development
http://nailakabeer.net/wp-content/uploads/2005/09/13552070512331332273.pdf
Ashwini Deshpande (2012), Social Justice through Affirmative Action in India
http://research.economics.unsw.edu.au/scho/WEE/papers/Ashwini%20Deshpande1.pdf

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Instructional H 3 %

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To ensure that students begin to understand basic concepts of Economic Growth and Development and thereby enable them to acquire multi dimensional aspects of developmental issues

To convey knowledge about theoretical framework of Growth and Development under .different Schools of economic thought

To impart knowledge about Political institutions, the role of the state in Economic .Development and problems that affect state Governance

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Meaning, Definition and Scope of Economic Growth and Development, Development Gap, Alternative Measures of Development, Comparing Development Trajectories across nations .and within them

(,4.5 $,,5 -,(* .(61 4 ' 5,# 6$! "

Measurement of Poverty – absolute and relative; Head-Count Index and Poverty Gap Indices Sen's Capabilities approach; Measurement of Income inequality – Kuznet's inverted U Hypothesis, Lorenz Curve, Gini Coefficient, Physical Quality Life Index, Human Development .Index, Happiness Index, Gender Development Index

(,4.5 1(, $" ,4 5 %! "

Classical theories of Growth, Adam Smith, David Ricardo and Karl Marx; Neo-Classical ;Model of R.M. Solow; Neo-Keynesian Model of Joan Robinson, Harrod Domar Model

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Rostow's Stages of Growth, The Vicious Circle of Poverty, Nelson's Low Level Equilibrium Trap, Lewis Theory of Unlimited Supply of Labour, Nurk's Theory of Disguised Unemployment, Leibenstein's Critical Minimum Effort Thesis. The Big Push Theory, Balanced .and Unbalanced Growth, Dualistic Theories

:References

Module I Development Economics, chapter 2, Growth and Development Chapter 2 and 3., .Human Development Report 2016, technical note 1

Module II Development EconomicsCahapter 6&8 ()8.1,8.2,8.3 and Appendix for FGT measures)

Amartya Sen " Poverty as Capability of Deprivation ", chapter 4 in Development as freedom , .OUP 2000

Module III Development Economics, ML Taneja & R M Myer

.Module IV Development Economics, Chapter 3&4, Growth and development Chapter 4

:Additional references

.Debraj Ray, Development Economics, Oxford University Press, 2009

(Todaro and Smith, Economic Development, Pearson Education, New Delhi (recent edition

Thirwall (2006), Growth and Development with Special Reference to Developing countries, .Mcmillan, New Delhi

Subrata Ghatakh (2003), Introduction to Development Economics, Routledge

Daron Acemoglu and James Robinson, (1994), Economic Origins of Dictatorship and ,Democracy, Cambidge University Press

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Instructional H 3

Objective of the Course: To understand the basic concepts and theories of international trade and enable students to have a basic understanding of the emerging trends, issues and policies in the .field of international economic system

(Module I Theories of International Trade (23 Hours

International Economics- Subject matter- basis of trade- trade as an engine of growth- pure theory of international trade- Mercantilism and Physiocrats - Classical theory: Absolute and Comparative advantage theories- Modern theory of International trade- Heckscher Ohlin theory- .Leontieff paradox

Terms of trade- offer curve- Community indifference curve- opportunity cost (Concepts only), Gains from trade- Static and Dynamic gains- trade as an engine of growth, Foreign trade .multiplier

(Module II Balance of Payments (20 Hours

Balance of payments,- components- Accounting framework- Current Account deficit, -Disequilibrium- causes- measures to correct disequilibrium, Automatic and deliberate measures- Devaluation- Effects of devaluation- Marshall –Lerner condition- J curve effect- Absorption .approach- FDI ,FII and MNC

(Module III Foreign Exchange (25 Hours

Exchange rate determination- Mint parity theory- Purchasing power parity theory- BOP theory- exchange rate system- fixed and flexible exchange rate, Managed floating system- Nominal, Real and Effective exchange rate, Forward rate, Spot rate, Foreign exchange risks – hedging and speculation- IMF: Functions and International liquidity and Functions of World bank, ADB, and . UNCTAD

(Module IV theory of Commercial Policy (22 Hours

Commercial Policy- Free Trade vs Protection- Tariff barriers, Impact of tariff- Optimum Tariff- Non- tariff barriers- quantitative restrictions, General equilibrium analysis- Small and Large .country case- Stolper Samuelson theorem- Metzler paradox, Lerner Symmetry theorem

References

Carbaugh, R J (2008) - International Economics, (11th Edition) Thomson South Western, .1
New Delhi

Soderstein BO and Geffry Reed, (2006) International Economics, Palgrave, Mc Milan .2

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Krugman P R and Obsfeild M (2009) - International Economics- Theory and Policy, (8th ..4
Edition) Pearson, Dorling Kindersley (India) Pvt. Ltd, New Delhi

Kindleberger, C P -International Economics (1973) Routledge, London.5

Appleyard D. R and Field A J (2014) -International Economics (8th Edition) McGraw Hill, .6
New Delhi

Richard E Caver and Harry G Johnson, Readings in International economics..7

Grimwade Nigel (2001), International Trade, (Second Edition), Routledge, London.8

Haberler G (1961), A Survey of International Trade Theory, International Finance Section, .9
.Department of Economics, Princeton University

Reinert K A (2012), An Introduction to International Economics, Cambridge university .10
Press, New York

Gandolfo, Giancarlo,(2016), International Finance and Open Economy Macro economics, .11
.Springer

.Gandolfo, Giancarlo,(2014), International Trade Theory and Policy, Springer .12

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The purpose of this introductory economics course is to enable a student from the non economics background to gain an understanding and an appreciation of the nature and significance of

economic activities, conditions, institutions and Indian economy. Economics is a course that enlightens all students, but is especially significant to those who plan to pursue careers in .business

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It is expected that on completion of the course, a student will have a working knowledge of the economic system in which he/she is able to make his/her living. Also it will help the student to .apply economic reasoning to the analysis of selected contemporary economic problems

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What is Economics? Definitions – Importance of Economics– Schools of thought The Economic Problem – Scarcity and Choice – Resource allocation – the question of What to produce, How to Produce and How to Distribute Output – its nature and Importance in developing countries- Economic Systems – Basics of Capitalism, Socialism, Mixed Economy, Market Economy and Third World Economies - Distinction between Micro and Macro Economics

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Determinants of individual demand/supply, Demand/Supply schedule and demand/supply curve, Market versus individual demand/supply, Shifts in the demand/supply curve, Demand and Supply together, How Prices allocate resources - Equilibrium - Elasticity - Consumer equilibrium – Marginal utility – Consumer surplus - Production – factors of production, production function – Laws – TR, AR, MR- Costs – TC, AC, MC, OC – Variable Vs Fixed costs – Short Run Vs Long Run costs

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The roots of macroeconomics - macroeconomic concerns - the role of government in the Macro economy - components of the macro economy - methodology of macroeconomics. Concepts of GNP, GDP, NNP, NDP and National Income – Personal Income and Disposable Income – Nominal and Real GDP – Limitations – Black Economy – Definition, functions and value of Money – Banking – credit creation – central bank – Concept of Inflation, Deflation, Methods of calculation

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Meaning of Development – Development Vs Growth, Measuring development - Problems of Growth – lessons and controversies, Developing Countries Vs Developed Countries, differences,

characteristics – International trade and development – role of international institutions like IMF, World Bank, WTO and WIPO in international trade and development - Globalization – Global – Financial Crisis

$; 7

Stephen Dobson and Susan Palfreman, “Introduction to Economics”, Oxford University Press
Samuelson, Paul A and William D Nordhaus “Economics” (18th Edition), Mc Graw Hill
.Nilanjan Banik, “The Indian Economy: A Macroeconomic Perspective”, Sage Publications
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Arvind Subramanian, 2012,“Growth Experience” in K Basu and A Maertens, The New Oxford
.Companion to Economics, Oxford University Press
Chandrasekhar Rao and Mahendra Dev, 2010, Agricultural Price Policy, Farm Profitability and
.Food Security, EPW, June 26
Jean Dreze and Amartya Sen, 2013, India: An Uncertain Glory
Jeemol Unni ( ) Employment and Industrial Development in India , in C P Chandrasekhar (ed)
Economics Vol 1. Indian Industrialisation
Pulapre Balakrishnan, 2007, “The Recovery of India: Economic Growth in the Nehru Era”, Economic and Political Weekly, November
Walter Nicholson, Christopher Snyder Microeconomic Theory: Basic Principles and Extensions
11th Edition

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Keeping in view the broad objective of an open course in providing the basis for life enrichment and career orientation, a course in Human Resource Management is offered.. The course is aimed

at providing basis for understanding the significance of human resource in the growth of our .economy and society and to learn the ways for integrating HRM strategies in organisations

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Human resource management (HRM): evolution of the concept; meaning; scope- Major functional areas of HRM- Organisation of HR Departments -Role of HR managers- Emerging .trends in HRM- Distinction between HRD and HRM –Concept of human capital

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Essential characteristics of human resources Human Resource Planning: meaning; nature; .significance-Levels of HRP- Determinants of HRP- Steps in HRP(Process)- Limitations of HRP

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Recruitment strategies: job analysis; job description; job specification- Selection: Meaning and steps- Training: Objectives and needs-Training process-Methods of training(on- the- job & off- . (the job

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Promotion ; Transfer ;Demotion ; Separation- Employee discipline: concept; features; types; objectives- Disciplinary Action Procedure: basic steps- Industrial Democracy: Meaning ,objectives and forms–Workers' Participation in Management in India – Collective Bargaining ..Framework in post-liberalised India

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Aswathappa, K. 2007. Human Resource and Personnel Management:Text and cases. Tata .1 McGraw- Hill.New Delhi

.Monappa.A (1985): Industrial Relations, Tata McGraw Hill, New Delhi .2

Venkata Ratnam C.S, (2003), Negotiated Change: Collective Bargaining, Liberalization and .3 .Restructuring in India, Response Books, New Delhi

.Bhattacharya,D.K, (2005) Human resource Planning, Excel Books , New Delhi .4

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Indian economy since liberalisation: Factors leading to Liberalisation- Growth trends- National Income, Savings & investments-Demographic features – demographic transition and India, health indicators, literacy status, demographic dividend, Urbanization – rural urban migration, Poverty –poverty line, rural & urban poverty- programmes-Inequality – HDI- Unemployment – types and measures

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Agriculture sector - land use and cropping pattern- food security- agriculture credit- .commercialisation and diversification-New Agriculture policy

Industry – Core Industries -growth of MSMEs- sources of industrial finances

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Services sector - Importance and composition, banking, insurance, transport and communication, education and health, public administration and defence, e-commerce-performance of public sector enterprises -India’s foreign trade – volume, direction and composition- balance of payments

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Fiscal, financial and external sector reforms-Agriculture and industrial sector reforms- planning and economic growth-shifts in planning approach- NITI Ayog

( )

Uma Kapila (2018): Indian Economy since Independence, Academic Foundation, New ·
.Delhi
Prakash, B A (2012): The Indian Economy since 1991: Economic Reforms and ·
.Performance, Pearson Education, New Delhi
.Dhingra, C (2004): Indian Economic Problems, S Chand & Company ·
.Dutt, Ruddar and Sundaram(2018): Indian Economy, S Chand and Company, New Delhi ·
Mishra J K and V K Puri (2018) ' ( ) Himalaya ·
.Publishing House, Mumbai

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Instructional H !

Course Objective

The course intends to provide an understanding about growth process in Indian economy, sectoral aspects of the economy by focusing agriculture, industry and service sectors, relations of .India with external sector and economic reforms

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Indian economy since independence: Growth trends- National Income, Savings & investments, Demographic features – demographic transition and India, optimum population, health indicators, literacy status, demographic dividend, Urbanization – trends and issues, rural urban migration, Poverty –poverty line, rural & urban poverty, measures and programs. Inequality – features, various indices-Employment and Unemployment – trends, types, measures and .programs, inflation – trends, reasons and measures

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Agriculture sector – land use and cropping pattern-Strategies relating to technologies and institutions: food security, land relations and land reforms, agriculture credit, modern farm inputs and marketing - price policy and subsidies; commercialisation and diversification, New .Agriculture policy

Industry - Strategy of industrial development - Core industries -growth of MSMEs- sources of industrial finances (banks, share market, insurance companies, pension funds, non-banking sources, MUDRA loan)-labour market-formal and informal- labour laws in India

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Services sector - Importance and composition, banking, insurance, transport and communication, education and health, public administration and defence, e-commerce-performance of public sector enterprises

India's foreign trade – volume, direction and composition- balance of payments-exchange rate management- Role of international oil and gold prices in Indian economy

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Fiscal, financial and external sector reforms-Agriculture and industrial sector reforms- planning and economic growth-shifts in planning approach- NITI Ayog- Global financial crisis and Indian economy-Impacts of GST and demonetization- Impact of Digital economy

( )

Jean Dreze and Amartya Sen, 2013, India: An Uncertain Glory, Oxford University Press
Pulapre Balakrishnan, 2007, "The Recovery of India: Economic Growth in the Nehru Era", Economic and Political Weekly, November
Arvind Subramanian, 2012,"Growth Experience" in K Basu and A Maertens, The New Oxford .Companion to Economics, Oxford University Press
Nilanjan Banik, "The Indian Economy: A Macroeconomic Perspective", Sage Publications
Chetan Ghate, The Oxford Handbook of Indian Economy", Oxford University Press
Mihir Rakshit(2011)Inflation and Relative Prices in India 2006-10: Some Analytical and Policy IssuesEconomic & Political Weekly EPW april 16, 2011 vol xlvi no 16

Vinoj Abraham (2017)Stagnant Employment Growth Last Three Years May Have Been the WorstVo.52, Issue No.38,23 Sep 2017, EPW

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Hanumantha Rao, Bhattacharya & Siddarthan, ed.(2005)Indian Economy and society in the Era of Globalisation and liberalisation

Chandrasekhar Rao and Mahendra Dev, 2010, Agricultural Price Policy, Farm Profitability and Food Security, EPW, June 26

Jeemol Unni (2015) Employment and Industrial Development in India , in C P Chandrasekhar(ed) Economics Vol 1. Indian Industrialsiation

Jayati Ghosh (2008) The Indian Economy 1970-2003 pp1027-1045 Dharma Kumar(ed) The Camebridge Economic History of India with a new introduction by in Sabyascahi Bhattacharya. Orient Blackswan

Vaidyanathan (2008) The Indian Economy since independence pp945-994 Dharma Kumar(ed) The Camebridge Economic History of India with a new introduction by in Sabyascahi Bhattacharya,Orient Blackswan

3

Rupa Chanda, 2012, Services Led Growth in New Oxford Companion to Economics

K Kanagasabapathy, Vishakha G Tilak, and R Krishnaswamy, 2013, A Rethink on India's .Foreign Trade Policy, EPW August 3

.Biswajit Dhar 2015, India's New Foreign Trade Policy, EPW, May 24

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-.Nilanjan Banik, "The Indian Economy: A Macroeconomic Perspective", Sage Publications

J.B.J. Tilak (2014) Private Higher Education in India, Vol.49, Issue No.40, 04 Oct, 2014, EPW

Years Of Economic Liberalisation, Vol. 52, Issue No. 2, 14 Jan, 2017, EPW 25

Nagaraj, R(2013) Understanding the Boom and Its Aftermath: India's Dream Run Vol. 48, Issue No. 20, 18 May, 2013 http://www.epw.in/journal/2013/20/special-articles/indias-dream-run-2003-08.html

Mihir Rakshit (2018) Some Analytics of Demonetisation, MARCH 31, 2018 No.13 EPW

Kaushik Basu and Annemie Maertens(2010)The Concise Oxford Companion to Economics in India, Oxford

Mihir Rakshit (2011) Macro economics of Post-reform India, OUP

https://cleartax.in/s/gst-analysis-and-opinions

Atul Sood (2017) The New Moral Economy- Demonetisation, Digitalisation and India's Core Economic Problems, Vo.52, Issue No.1, 07, Jan 2017, EPW

Economic Survey, GOI, various years

www.mospi.nic.in

www.censusindia.gov.in

/www.core-econ.org

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The course intends to familiarize the students with the basic concepts in Banking and Finance and develop a comprehensive knowledge on the role of banks in the operation of an economy. It also enables them to know the operation of the Indian Financial System and activities in the .financial markets

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Structure of Financial system - Financial institutions, Financial markets, Financial instruments and Financial services. Financial system and economic development. Indicators of financial .development. Cautionary view of financial system in development-reasons

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Definition and functions of money; measures of money supply (monetary Aggregates).money creation by the banking system.Targets of monetary policy.Instruments of monetary policy-deficit financing.Financial Sector Reform: Changes in Fiscal and Monetary Policy in India. Foreign capital inflow, money supply, and Sterilization in India. An introduction to new .monetary Aggregates

Indian Banking System: Changing role and structure; banking sector reforms-Narasimham (committee report I and II and Basel norms- Capital Adequacy Ratio (concept only

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Meaning of Money market – Constituents of Money market – Call money market – Collateral Loan market, Acceptance market, Bill market – Institutions of Money market –Central Banks,Commercial Banks, Acceptance houses, Non-banking financial intermediaries – mutual .funds-Features of Indian Money market

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Meaning and function – Components of Capital market – Important Financial Instruments – Equity shares, Preference shares, Debentures/Bonds – The Primary market – Methods of Public Issue – IPO – Demat – Stock Exchanges – Meaning and functions – BSE and NSE – Stock .Indices in India – SENSEX and Nifty – DIIs and FIIs – SEBI-Functions. NSDL,CSDL

CAPM :- The capital asset pricing model;use of the CAPM model in investment analysis and as a pricing formula. Options and Derivatives-swaps-futures-forward

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L. M. Bhole and J. Mahukud, Financial Institutions and Markets, Tata McGraw Hill, 5th .1 (edition, 2011.chapter -1 pp (3-29

MODULE : 2

SoumyenSikdar : Principles of Macroeconomics (second edition), Oxford University Press .1 (New Delhi.2011 , Chapter 6 . pp - (88-101

New monetary Aggregates: An introduction. .2

https://www.rbi.org.in/scripts/publicationReportDetails.aspx?ID

M. Y. Khan, Indian Financial System, Tata McGraw Hill, 7th edition, 2011. Chapter-1 .3

F. J. Fabozzi, F. Modigliani, F. J. Jones, M. G. Ferri, Foundations of Financial Markets and .3
Institutions, Pearson Education, 3rd edition, 2009. Chapter-1 pp 1-6, Chapter-2 pp 21-27
MODULE: 3
L. M. Bhole and J. Mahukud, Financial Institutions and Markets, Tata McGraw Hill, 5th .1
.edition, 2011
F.SMishkin AND S.G. Eakins: financial markets and institutions ,Pearson Education ,3rd .2
.Edition:2011

MODULE:4
,Faboozi, J Frank, ModiglaniFranco(2008):Capital Markets-Institution and Instruments
. 4th ed, Pearson Education, New Delhi
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:The course is aimed at

a. Introducing the subject matter and scope of public economics, role of government, types of ;market failures and the concept of public good

.b. Providing a general understanding on the basic fiscal policy instruments

c. Generating awareness on public economics in India, with special focus on budgetary system .and fiscal federalism

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It is expected that this course would connect students to the basic concepts, components and processes of public economics .This would impart the skills essential for understanding and analysing the fiscal policy instruments and budgetary process in India. Students would develop

an interest in unraveling the fiscal issues of India. The basic orientation would mould public .policy makers and analysts of the future

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Public economics: meaning and scope -–Public finance and public economics- Public finance and private finance- Meaning and types of market failure – Concept and types of public goods- .Role of Government in correcting market failure-Principle of maximum social advantage

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Public Revenue: meaning – Sources of public revenue in India- Taxation: principles- Classification of taxes in India - Tax burden: Concepts of impact, incidence and shifting- Types of incidence: specific incidence, differential incidence, balanced budget incidence- Taxable .(capacity: concept- Concept of GST (in India

.Public expenditure; meaning , classification and Canons

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Public debt: meaning and objectives- Classification of public debt- Sources of public debt in India- Monetised deficit- Concept of deficit financing. -India's Public debt. Public debt .management

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Budget: Meaning- Classification of budget- Budgetary procedure in India – Public account- Consolidated and Contingency fund of India. Performance budgeting, Zero based budgeting, .Gender budgeting. Budgetary deficits and its implications

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.Fiscal Policy; Meaning and objectives- Fiscal consolidation: meaning; FRBM Act: objectives

Federal finance: Meaning and principles- Indian fiscal federalism: Revenue sources of the Union Government, State Governments and local governments-Allocation of resources between the

Union and States- Finance Commission: Functions - Fiscal Imbalance :Types (vertical and .(horizontal

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Musgrave,R.E and Musgrave.P (2004).(Fifth edition). Public Finance in Theory and (Practice. Tata Mcgraw- Hill.New Delhi. (for chapters 1,2 and 3

Bagchi,A.(2005). Readings in Public Finance.Oxford University Pess.New Delhi

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Das,Surajit.(2017).Some concerns regarding 1 $; , EPW.04 .(,March,2017. 52(9

Government of India. (latest) (for Chapter IV). /http://mofapp.nic.in:8080/economicsurvey

Ministry of Finance, Govt.of India. . 7 + (for chapter IV). /https://www.indiabudget.gov.in

Department of Economic Affairs, Ministry of Finance.))) 1 7 + . https://dea.gov.in/central-.government-budget

Chakraborty,Lekha. 2016.A Survey of 1 7 + + Efforts.IMF Working Paper 16/150. https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Asia-A-Survey-of-Gender-Budgeting-Efforts-44143

Ministry of Finance,Govt.of India. https://www.indiabudget.gov.in/ (for the topic, +

Dasgupta. C and Surajit Mazumdar.2017.-) since 1991.Infirmities of sound finance paradigm.Economic and Political Weekly. 14 January (2017.52(2

Chakraborty.P. & Lekha Chakraborty. 2018.New -(7 framework: time to recast Union .(Government expenditure needs.EPW.03, March,2018.53(9

Chakraborty,P. 2015. Inter-governmental Fiscal Transfers in India: Emerging Trends .12
and Realities< ICSSR Research Surveys And Explorations: Economics Volume 3.Edited
. by C.P. Chandrasekhar, Jayati Ghosh and Prabhat Patnaik
++ @)
Stiglitz.J.E. & Jay K.Rosengard.2015. Economics of the Public Sector.Fourth
.International Student Edition. W.W. Norton& Co.New York
Lekha.S.Chakraborty.(2016). Fiscal consolidation, Budget deficits and the Macro
.Economy.Sage Publications:New Delhi
Pinaki Chakraborty,Lekha Chakraborty and Anit Mukherjee. 2016.Social sector in a
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(New Delhi.(chapters 1,3 and 4
Suri.M.M. (2010). Finance Commissions and Fiscal Federalism in India. New Century
.Publications. New Delhi
Suri,M.M. (2010).Budgets and Budgetary procedures in India.Indian Tax
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Future Challenges.New Century Publications.New Delhi
Rajaraman,I. 2017.Continuity and change in Indian fiscal federalism.India review. 7
.Jha,Raghbendra .(2009). Modern Public Economics.Routledge . Abingdon .8
Bhatia.H.L. 2017. Public Finace.Vikas Publications.New Delhi .9
Sharma,C.K &Swenden,W. 2017.Continuity and change in contemporary Indian .10
.federalism. (" . 16 (1).pp.1-13
Rangarjan,C & D.K.Srivasatava.2011. Federalism and fiscal transfers in India. .11
.OUP.Oxford

https://dea.gov.in/indian-public-finance-statistics .10
http://www.mospi.gov.in/statistical-year-book-india/2017/174 Ministry of Finance. .11
Government of India. Statistical Year Book of India. (data). 12. http://www.mospi.gov.in/
.Ministry of Statistics and Programme Implementation. Government of India.Fiscal Statistics

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Instructional H 3

, The course intends to create environmental awareness among students and .provide exposure to disaster management

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Basic Concepts of environmental economics – economics and ecology – ecology and eco system

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Market system and environment of externalities – Pareto optimum and Market failure in the presence of Externalities – Property rights and the Coase theorem

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Pigouvian Taxes and Effluent Charges; Tradable Permits – Environmental Valuation – Types of Economic Values – Non Market Valuation Methods – Cost Benefit Analysis – Sensitivity and Risk analysis

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Economics of Climate Change – Agreements and Institutions - Population Growth and the Environment – Trade and Environment – Concept and Measurement of Sustainable Development

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Concept and Definitions (Disaster, Hazard, Vulnerability, resilence, Risk) – Hazard and Vulnerability Profile of India – Institutional Arrangeents (Mitigation, DM Act and Policy, Plans Programmes and Legislation),Disaster management in India

Basic Readings

Hussain, M, Ahmed. 2000. Principles of Environmental Economics, Routledge, London .1 .and New York

Charles Kolstad, Intermediate Environmental Economics, Oxford University Press, 2nd ..2 .edition

Carter, Nick 1991. Disaster Management: Disaster Manager's Handbook, Asiaan .3
.Development Bank, Manila Philippines
Gupta Anil K, Sreeja S Nair, 2011 Environmental Knowledge for Disaster Management, NIDM, New Delhi

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To understand the structural changes, Sector-wise contribution and features of the Kerala Economy since the formation of the state and enable the students to have a basic
. understanding of the emerging trends and issues of Kerala Economy

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Development experience of Kerala: An overview: Kerala's development since the formation of the state-Features of the Economy- Structural composition – Primary, Secondary and Tertiary Sectors – changes over the years NSDP,GSDP and PCI – "Kerala Model of Development" –A comparison with the highest SDP state in India –
. HDI Status

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Demographic Aspects (birth rate, death rate, infant mortality rate, sex ratio, age distribution)- why sex ratio is in favour of women in Kerala –need for women empowerment – Aging problem- Urbanisation, Migration and Emigration-Economic and social Impacts of Migration, return migration and interstate migration - Nature and Magnitude of Urban, Rural and Educated Unemployment - Trends in Urban and Rural
.Poverty in Kerala- Major poverty alleviation schemes

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Agricultural development since 1956- Objectives of Land reforms- Measures of Land reforms - Land Use Pattern and Cropping Pattern - Recent Trends in Agricultural Growth – Need for organic farming – organic farming initiatives- Agricultural Credit and Indebtedness-Traditional and Modern Industries in Kerala, Small Scale Industries and its prospects. Industrial backwardness of Kerala – Status of Public sector industries in Kerala – Role and importance of service sector- Education – Health – Tourism and .IT sector in Kerala

.Oommen, M.A. (1993): Essays on Kerala Economy, Oxford & IBH
Planning Commission (2008): Kerala Development Report, Academic Foundation,New Delhi
Prakash, B.A (ed) (2004): Kerala's economic development: Performance and prospects .in the post liberalization period, Sage Publications, New Delhi
Prakash, B.A (ed) (1999): Kerala's Economic Development: Issues and Problems, Sage .Publication, New Delhi
State Planning Board , Economic Review, Various Issues, Thiruvananthapuram
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Zachariah, K.C. and S. Irudaya Rajan (2012):Kerala's Demographic Future: Issues and Policy Options, Academic Foundation, New Delhi
Zachariah K.C. and S. Irudaya Rajan (2012):Kerala's Gulf Connection !! *+, Economic and Social Impacts of Migration, Orient Black swan, New Delhi
.Zachariah, K C et al (2003): Dynamics of Migration in Kerala, Orient Longman, India
Rajasenan, D. and Gerard De Groot (ed) (2005): Kerala Economy: Trajectories, Challenges
.and Implications, CUSAT, Kochi
M. MeeraBai, (2006), " women and Economic Reforms: Kerala Experience", Serials .Publications, New Delhi

M. Meera Bai (2012) “ Technology for women empowerment: Issues & Challenges”, .Serials Publications, New Delhi

Harilal, -.%. & K.J. Joseph(2000): “Stagnation and revival of Kerala economy: An open
economy perspective,” Centre for Development Studies, Trivandrum Working Papers ,305
.Centre for Development Studies, Trivandrum, India
Rajan, K(ed)(2009): Kerala Economy :Trends during the post reform period, Serials .Publications, New Delhi
Oommen, M.A. (1960): Financing of Small-Scale Industries in Kerala sponsored by the
.Banking Commission, Reserve Bank of India Bombay
Oommen, M.A. (1999): Rethinking Development: Kerala’s Development Experience (in
.two volumes), Concept, New Delhi
Oommen, M.A. (1979): Kerala Economy since Independence (ed.) Oxford & .IBH,New Delhi
Oommen, M.A. (1975): A Study of Land Reforms in Kerala Oxford & IBH, New .Delhi
Oommen, M.A. (1971): Small Industries in Indian Economic Growth: A Case Study of .Kerala, Research Publications, New Delhi
.State Planning Board, Economic Review, Various Issues, Thiruvananthapuram

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Nature and scope of mathematical economics – Mathematical representation of Economic Models- Ingredients of a mathematical model- Variables, constants and parameters- Relations and Functions- ordered pairs- Domain and Range- Types of Functions- constant function, Polynomial function, Rational function, Non algebraic functions – functions of two or more independent variables- Linear function, quadratic function, Explicit and Implicit Functions. Static (or Equilibrium) Analysis – the market equilibrium – Partial market equilibrium- General market equilibrium

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Maximum and Minimum of functions-first derivative test-second derivative test- Concavity and Convexity- Functions of several variables and Partial derivatives- optimization of multivariable functions- necessary versus sufficient conditions – constrained Optimization with equality Lagrange Multiplier – Linear Programming–Basis concepts- General formulation of Linear .Programs – Nature of feasible, basic and optimal solution; Graphic solution

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Cardinal and Ordinal Utility - Mathematical derivation of consumer's equilibrium - Consumer' .surplus-Slutsky Theorem - Income and substitution effect - Method of demand forecasting

:

Henderson, J.M and R.E Quandt, Micro Economic Theory: A mathematical Approach, Mc Graw .Hill, New Delhi

William J. Baumol, Economic Theory and Operations Analysis; Prentice- Hall of India Private , Limited

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Production function—Adding- up theorem—Cobb-Douglas—Derivation of cost function from a production function—Marginal analysis—Equilibrium of a firm—Perfect market equilibrium—Monopoly equilibrium—Discriminating Monopoly—Producer's surplus.

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Henderson, J.M and R.E Quandt, Micro Economic Theory: A mathematical Approach, Mc Graw Hill, New Delhi.

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Henderson, J.M and R.E Quandt, Micro Economic Theory: A mathematical Approach, Mc Graw Hill, New Delhi.

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A. Koutsoyiannis, Modern Microeconomics, Palgrave Macmillan.

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Econometrics intends to integrate economic theory, statistics, mathematics and real-world data. It is a useful tool that allows estimating the magnitude and strength of the relationships that exist between various sets of variables. Econometrics has much practical application in modern world, not only as an academic endeavour, but also in the government and private sectors.

This course introduces students to simple and multiple regression methods for analyzing data in economics and related disciplines. The objective of the course is for the student to learn how to conduct and to critique empirical studies in economics and related fields. Although the emphasis

of the course is on empirical applications, a treatment of traditional econometrics will also be .made

The course covers the foundations of econometrics.This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers estimation and diagnostic testing of simple and multiple regression models

,4.5

Nature and Scope of Econometrics—Methodology of Econometrics – Normal Distribution; Chi-(! " Sq; F and T distribution

(& 5 (+ $0 ' ! " ,4.5

Estimation of model by method of ordinary least squares—Properties of estimators—Gauss Markov theorem—Goodness of fit—Tests of hypotheses— Forecasting

(& 5 (+ %/ " ,4.5

Least Square Estimation —R^2 and adjusted R^2—Partial regression coefficients—Testing of hypotheses—Functional forms of regression models—Qualitative (dummy) independent variables – Forecasting

(,4.5 ' ') * & ! "

Violations of classical assumptions: Consequences, Detection and Remedies—Multicollinearity —Heteroscedasticity—Serial Correlation - specification bias

7 (+ 5

:

D.N.Gujarati and D.C.Porter, Essentials of Econometrics, McGraw Hill, 4thEdition, .1 International Edition, 2009. Chapter 1

GMK Madnani, Introduction to Econometrics: Principles and Applications, Oxford&IBH .2 .Publishing Co, 8thEdition, 2008. Chapter 1

Christopher Dougherty, Introduction to Econometrics, Oxford University Press, 3rd Edition, .3 .Indian Edition, 2007. Chapter 2

Jan Kmenta, Elements of Econometrics, Indian Reprint, Khosla Publishing House, 2ndEdition, .4 2008

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The course intends to familiarize the students with the broad contours of Social Sciences, specifically Economics. The course also aims to create an enthusiasm among students regarding .the origin and evolution of different schools of thought in Economics

($ + (10 hrs

Greek and Roman economic thought - economic ideas of Plato and Aristotle- Mercantilism-meaning-Factors responsible for the rise of mercantilism - Physiocrats-Natural .order-primacy of agriculture-Tableau Economique

($ + (10 hrs

Three Pillars of Classical School: Adam Smith- laissez faire economy-division of labour, theory of value- value in use and value in exchange – diamond-water paradox. David Ricardo- Theory of value-views on distribution-theory of rent - stationary state. Say's law of market. .Thomas R. Malthus-Theory of population, Theory of Glut

(. ; # (10hrs

Karl Marx- Materialistic interpretation of History, Dialectical materialism, Labourtheory of Value-surplus value-organic composition of capital- Industrial reserve Army- Class war- Crisis .of capitalism

(' $ + (10 hrs

Kautilya'sArthasastra - Economic Thoughts of DadabhaiNaoroji – MahadevGovindRanade (M.G.Ranade) -Romesh Chandra Dutt (R.C. Dutt) - B.R. Ambedkar - J.C.Kumarappa –Mahatma Gandhi-Jawaharlal Nehru- AmartyaSen

:( )

Eric Roll (1956): History of Economic Thought, 3rd , Englewood Cliffs, N.J. .PrenticeHall, Inc, 1956

GoddantiOmkarnath(2016):‘Indian Development Thinking’ from Handbook of alternative theories of economic developmentEdited by Erik S. Reinert, JayatiGhosh and Rainer Kattel

Dasgupta, Ajit K. (1993): A History of Indian Economic Thought, Routledge, London

Lokanathan,V(2013): A History of Economic Thought, S.Chand& Company Ltd, New Delhi

Additional Reading

Rangarajan, L.N.(2001):Kautilya – The Arthasastra, Penguin Books India Pvt. Limited, .New Delhi

Singh, V.B. (1975): From Naoroji to Nehru – Six Essays in Indian Economic Thought, .The Macmillan Company of India Limited, New Delhi

.Ajit K.Dasgupta, Gandhi’s Economic Thought, Routledge, London. Year

Blaug, Mark, (1997) Economic Theory in Retrospect, 5th Edition, Cambridge University Press, Cambridge, UK

! #

No of Credits : 4 Instructional Hours : 6 (3 Hours each in V and VI Semester)

As part of the requirements for BA Programme , every student must do a project either individually or as a group under the supervision of a teacher. The project is expected to equip the student to identify an issue or topic and conduct the study in a systematic and scientific way. Students will get the opportunity to apply various tools they have learned and present the report .in a structured manner

Guidelines

Project work may be done individually or as a group (Maximum 5 students). The topic .1 selected should be related to theory or economic issues. The work may use primary or secondary source of data. It should be typed in 35- 60 pages with spiral binding. The printing has to be in .paper A4, with Times New Roman font 12 for content and 14 for titles with a line spacing 1.5

The guidance for doing the project has to be given in the V Semester and VI Semester. Three .2 .instructional hours in each semester have been provided for this purpose

The area of study should be finalized in the V Semester and final report should be submitted at .3
.the end of the VI semester

A pre submission Seminar should be undertaken in the VI Semester for reviewing nature and .4
quality of the project work. The supervising teacher should ensure that the work is not a
.reproduction of any work conducted earlier

Students should be given classes on research methodology before the commencement of the .5
.project work

: The project Work shall contain the following .6

An Acknowledgement of the student and declaration certificate of the Supervising
. teacher

Introduction and Review of literature

Methodology

Analysis

.Conclusions and Suggestions if any

.Bibliography

Evaluation Indicators .7

% - 10 Introduction and Review of Literature

- 20% Methodology

- 40% Analysis

% - 20 Conclusions and Suggestions if any.

- 10% Bibliography.

Study Tour

A compulsory study tour is recommended as part of the paper entitled Economic growth
and Development in the fifth semester. A report of the tour should be submitted to the head of the
.Department after the completion of the tour

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.The main objective is to provide a basic understanding of economic concepts and theories

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Nature and Scope of Economics—Definitions: Wealth, Welfare, Scarcity and Growth definition —Basic Economic Problems—Micro and Macro Economics—Positive and Normative .Economics—Significance of the study of Economics

(,4.5 ,6 . (7 "* ,.(%/

Consumption—The Concept of Utility—Cardinal Utility and Ordinal Utility—The Law of Diminishing Marginal utility—Consumer's Surplus—Demand and Supply and their determinants—Law of demand and law of supply—Changes in demand and supply-Elasticity of Demand-Price elasticity of Demand-Income elasticity of Demand-Cross elasticity of Demand

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Factors of production—Production function—Short run and Long run—Concepts of cost: total cost, Fixed Cost, variable cost, average cost, marginal cost—Concepts of revenue: total .revenue, average revenue and marginal revenue

(,4.5 ' *(D $ $(. $.(/

Market structures–Features of Perfect competition- Imperfect Competition: Monopoly, (Monopolistic competition and oligopoly.(FeaturesOnly

7

.Samuelson. P.A. Nordhaus (2010), ! Tata McGraw Hill ·

( )

Dewett, K.K., M H Navalur (2006), (Reprint edition): , S. ·
.Chand & Co., Delhi
.Salvatore, D: (2008), Microeconomics: Theory and Practice, 5TH Edition, OUP ·

Dwivedi, D.N(2016), Microeconomics: Theory and Applications, 3rd Ed, Vikas Publishing House .

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The course intends to provide a basic understanding about the nature and significance of money and banking in the functioning of an economy.

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Concept and definitions of money—Kinds of money—Functions of money- Measures of money supply-Value of money—Fisher's Quantity theory of Money

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Inflation—Type of inflation—Causes and effects of inflation—Measures to control inflation--Deflation—Concept of trade cycle.

8 & 7

Origin and growth of banks- Structure and Functions of Commercial banks – Role of Commercial Banks in Economic Development – Credit Multiplier-Credit Creation- Structure and functions of co-operative banks

Digital money and Payment system- Virtual money (Crypto currency), RTEGS, NEFT, Net Banking, E-Wallets.

' 7 +

Central banking in India-Functions of RBI - Monetary policy – Objectives and Instruments of Monetary Policy

( )

Hajela N (2009): Money and Banking Theory with Indian Ane Books Pvt Ltd .

RR Paul (2015): Monetary Economics, 11th Edition,Kalyani Publishers .

Partha Ray (2013): Monetary Policy, Oxford University Press .

RBI Bulletins .

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The course inculcates the students about the significance of public finance in the context of increasing role of Government. It also provides the basic theoretical framework of budgetary .mechanism in India, State activities and various aspects of International Trade

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Meaning, Definitions and Scope of Private Finance and Public Finance-Concepts of Public Economics-Concepts in Budget

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Public revenue: Defintions-Sources and Classification— Features of Taxation- Types of Taxes-Impact, Incidence and Shifting of Taxes (concepts only)- Effects of Taxation

Definition - Causes of increasing public expenditure - Effects of public expenditure- Public .expenditure in India

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Meaning and Nature of Public debt—Classification and Trends of public debt in India—Methods of debt redemption

(,4.5 ' 6$ (6*$,6*5 $(*4 !

Concepts and Importance of International Trade—Basis of International trade—Absolute and Comparative advantage theory-Balance of Trade and Balance of Payments—Foreign Exchange market and Exchange Rate (Concepts only)- Devaluation- Depreciation .(and Appreciation (Concept only

( )

Hajela,T N (2010):Public finance (4th Edition), Ane Book Pvt.Ltd .

D Salvatore: (2014) International Economics 11thedition, Wiley Publication .

Mithani: (2017) D M International Economics 8th Edition, Himalaya Publication .

S K Singh (2010) Public Finance Theory and Practice, Revised Edition, S Chand . Publication

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The general objective of the course is to provide basic understanding of the Indian economy and it will familiarises the students about the various concepts of National Income and create awareness about the significance of agriculture, industry and service sector in the Economy

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Features of Indian Economy—Major demographic features—Concept of poverty and Inequality-Extend of Unemployment—Human Development Index and PQLI-Role of agriculture in Indian Economy-Green Revolution-Role of Industry in Indian Economy-Industrial Policy of 1991-Urbanisation-Significance of Service Sector in Indian Economy

(6 ,4.5

Meaning of national income—Aggregate concepts of national income estimation—Methods and difficulties in the measurement of national income—Green Accounting

(,4.5 D

- eatures of Kerala Economy-Structural changes-Trends of SDP in Kerala economy-Impact of migration in Kerala economy- Decentralised planning

( )

Uma Kapila (2013): Indian Economy since Independence, Academic Foundation, New . .Delhi

Prakash, B A, B R Prabakaran Nair: (2009) Kerala's Development Issues in the new . .Millennium. Serials Publications

Mishra S K and V K Puri: (2017) ' ( ) 35th . .Revised Edition, Himalaya Publishing House, Mumbai

Ramesh Singh: (2017) Indian Economy ,7th Ed ,Mac Graw Hill New Delhi ·

G Omkarnath (2016): Economics: A Primer for India, Orient BlackSwan Pvt Ltd, New Delhi ·

Learning Outcomes-based Curriculum Framework

(LOCF) for Post-graduate Programme

Name of the Programme: M.A. Behavioural Economics & Data Science

(Syllabus effective from 2020 Admission)

University of Kerala

MA Behavioural Economics and Data Science

Semester	Paper Code	Title	Hours per semester	Instructor hours per week	ESA	Maximum Marks		
					Hours	CA	ESA	Total
I	**BEDS-CC- 211**	Micro Economic theory	110	6	3	25	75	100
	BEDS-CC- 212	Macro Economic theory	110	6	3	25	75	100
	BEDS-CC- 213	Quantitative Tools for Behavioural Economics	120	7	3	25	75	100
	BEDS-CC- 214	Principles of Cognitive Economics	110	6	3	25	75	100
II	**BEDS-CC- 221**	Foundations in Behavioural Micro-Economics	110	6	3	25	75	100
	BEDS-CC- 222	Foundations in Behavioural Macro-Economics	110	6	3	25	75	100
	BEDS-CC- 223	Foundations of Data Science	110	6	3	25	75	100
	BEDS-CC- 224	Basic Econometrics and Research Methodology	120	7	3	25	75	100
III	**BEDS-CC- 231**	Applied Behavioural Economics	120	7	3	25	75	100
	BEDS-CC- 232	Experimental Economics- Methods and Application	110	6	3	25	75	100
	BEDS-CC- 233	Game Theory	110	6	3	25	75	100
	BEDS-DSE- 234 **or** **BEDS-DSE- 235**	Advanced Econometrics Data Analytics for Business	110 110	6 6	3 3	25 25	75 75	100 100
IV	**BEDS-CC- 241**	Basics of Behavioural Finance	110	6	3	25	75	100
	BEDS-CC- 242	Behavioural Economics and Policy Design	110	6	3	25	75	100
	BEDS-CC- 243	Foundations of Data Analysis Using R and Python	120	7	3	25	75	100
	BEDS-DSE- 244 **or** **BEDS-DSE- 245**	Behaviour Economics and Public Health Behaviour Economics and Tourism	110 110	6 6	3 3	25 25	75 75	100 100
	BEDS-D- 225	Behavioural and Data Science						100

		Project /Internship						
		Viva Voce						100
		Total						1800

Programme Specific Outcomes (PSO) for M.A. Behavioural Economics & Data Science

PSO1 To equip students with Basic and advanced knowledge in economic theories, Behavioural Economics and Data Science

PSO2 To familiarise the students with various aspects of applied econometrics, data management & cognitive economics

PSO3 To make the students capable of addressing and solving the issues in the society and the economy by acquiring greater insight in the behaviour of economic agents and data management they have acquired

PSO 4 To create academic excellence through holistic education.

PSO 5 To develop right skills in students catering to the needs of the industry and policy makers

Terms used

OBE-Outcome Based Education **CC**= Core Course DSC-Discipline Specific Elective **GC**- Generic Course **CL**- Cognitive Level **RE**-Remember **Fa**- Familiarize **Un**- Understand **Ap**- Apply **An**- Analyse **Ev**-Evaluate **Cr**- Create **KC**- Knowledge Category **Fa**- Factual **Co**-Conceptual

Semester I

BEDS-CC- 211 MICRO ECONOMIC THEORY

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	Familiarise with various consumer theories and apply them to analyse and predict the behaviour ofindividuals	PSO1	Fa	Co	Assignment on Substitution effect, elasticity
CO2	Understands the concept of production and cost	PSO1	Un	Co	Assignment on theories of cost
CO3	Familiarise with different market structures – Perfect and imperfectly competitive	PSO1	Fa	Co	Seminar on different market structure
CO4	Understand about general equilibrium and concept of economic welfare.	PSO1	Un	Co	Seminar on general equilibrium
CO5	To have greater insight into market failure and related aspects	PSO1	An	Fa	Assignment on market failure

Course Content

Module 1: Consumer Theory

Laws of preference –Cardinal, ordinal and revealed preference - Budget constraints and consumer equilibrium-elasticity of demand- income and substitution effect- consumer surplus, modern demand theory

Module 2: Theory of Production and Costs

Goals of firm- Theory of production- concept and types production function- theory of cost-modern cost theory

Module 3: Theory of market

Competitive and non-competitive- supply of firms and industry- perfect competition-monopoly- price discrimination- Monopolistic/imperfect competition -Strategic interactions - Duopoly (Cournot and Bertrand- collusive and non-collusive models of oligopoly

Module 4: General Equilibrium and welfare

General and partial equilibrium- Walrasian general equilibrium- tatonnement process-graphical treatment of general equilibrium 2×2×2 model- role of value judgement Pareto welfare economics- Arrow's impossibility theorem - the theory of second best – Scitovsky's double compensation criterion - Rawl's theory of justice- A.K Sen's social welfare function – equity efficiency trade-off.

Module 5 Market failure

Public goods and the free rider problem. Externalities. The Coase Theorem. Imperfect Competition. Asymmetric Information (Moral Hazard and Adverse Selection). Optimal Contracts: Incentives vs Risk

Basic Reading List

Robert H. Frank, 2014, Microeconomics and Behaviour (9th ed., McGraw-Hill).

Hal R. Varian, 2014, Intermediate Microeconomics (9th ed., Norton).

ASSESSMENT

25 % Continuous / Formative Assessment. 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks). Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions out of 5 in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-CC- 212: MACRO ECONOMIC THEORY

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	Familiarise with various schools of macroeconomic thoughts	PSO1	Fa	Co	Assignment on Classical & Keynesian models
CO2	Understands the concept of ISLM approach	PSO3	Un	Co	Seminar on IS LM approach
CO3	Understands the concept ofDemand & supply of money	PSO1	Cn	Co	Seminar on Demand & supply of money
CO4	To analyse the behavioural foundations of macro economics	PSO2	An	Co	Seminar on Consumption functions, Investment functions
CO5	To familiarise with open economy macro economics	PSO4	Fa	Fa	Assignment on Mundell-Fleming model- Fixed and Flexible Exchange Rate–the Impossible Trinity

Course Content

Module 1: Introduction

Competing schools of macroeconomic thought- Determination of output, employment and price level in Classical and Keynesian models

Module 2: ISLM approach

Neo-classical and Keynesian Synthesis- The ISLM model- Keynesian and Neo-Classical Version- Extensions of ISLM model with govt sector- Relative efficiency of fiscal and monetary policies- ISLM model with labour market and flexible prices- Three Sector Macro Model

Module 3: Demand and supply of money

Demand for money: Keynesian, Patinkin's real balance, Tobin, Baumol and Friedman approaches - Supply of money- Financial Intermediation- Mechanistic and behavioural model of money determination- money and credit multiplier-Money supply determination in an open economy- Asset market equilibrium – Fisher Effect-Disequilibrium money and Buffer stock models

Module: 4 Behavioural Foundations of Macro economics

Consumption function: Current Income Theories (views of Keynes, Kuznets's consumption puzzle, Drift hypothesis of Smithies and views of Duesenberry)- Fischer's Intertemporal Choice model- Normal Income Theories (views of Friedman and Modigliani and others)- Endogenous Income Theory – Robert Hall Random Walk Hypothesis- David Laibson Behavioural Hypothesis- Empirical Evidence

Investment function: Neo-classical theory of investment – MEC and Keynesian theory of investment - Cost of capital and MEC- Accelerator theory of investment (simple and flexible)- Capital Stock Adjustment Principle –Interaction of Accelerator and Multiplier – Profit theory of 38 investment- Financial theory of investment – Tobin's q ratio- Modigliani-Miller theory - Investment under Uncertainty, Asymmetric Information and Irreversible Investment.

Module 5: The Open Economy

Balance of payment and Keynesian analysis - Internal and External Equilibrium- Mundel-Fleming model- Fixed and Flexible Exchange Rate with Capital Mobility –the Impossible Trinity – effectiveness of fiscal and monetary police- fiscal sustainability and public debt

Basic Reading List

Gregory Mankiw, Macroeconomics, Ninth Edition (International Edition), Worth Publishers, 2016.

Olivier Blanchard and David Johnson**,** Macroeconomics, Sixth Edition (Global Edition), Pearson, 2012

ASSESSMENT 25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks). Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions out of 5 in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-CC- 213-QUANTITATIVE TOOLS FOR BEHAVIOUR ECONOMICS

Course Outcomes

CO	CO Statement	PSO	CL	KC	Assessment
CO1	Familiarise with averages, dispersion and probability distributions	PSO1	Fa	Co	Assignment on Averages,dispersion measures
CO2	Understands the concept of exponents, polynomials, functions, limits, continuity etc.	PSO3	Un	Co	Seminar on Functions & limits
CO3	Familiarise with optimisation – maxima and minima	PSO1	Fa	Co	Seminar on optimisation
CO4	To understand about linear algebra – vectors – matrix etc.	PSO2/PDO1	Un	Co	Seminar on vectors & metrics
CO5	To familiarise with vectors and quadratic forms	PSO4	Fa	Fa	Assignment on quadratic forms

Course Content

Module 1: Basics – frequency distribution – measures of central tendency and dispersion – moments, skewness and kurtosis – numerical problems

Probability – concept of probability – discrete and continuous random variables – probability and cumulative distribution functions – joint probability and cumulative distribution functions – mathematical expectations and variance – concepts and theorems – moment generating and characteristic functions –Special probability distributions – binomial, poisson, exponential, normal, chi square, t and F distributions – central limit theorem.

Module 2:

Basics – exponents, polynomials, functions, limits, continuity, and derivatives – rules – partial derivatives – differential and total differential – integration – rules –economic applications.

Set theory – convex and concave sets and functions – local and global maximum and minimum.

Module 3:

Optimisation – maxima and minima – constrained – Lagrangian multiplier method – first and second order conditions – solving numerical problems.

Module 4:

Linear algebra – vectors – matrix – definition – types – relations and operations – trace, partitioned matrices – determinants – rank – properties – inverse – properties of inverse – solution to a system of linear equations – existence of uniqueness of solution – Cramer's rule – inversion method.

Module 5:

Characteristic roots and vectors – properties – quadratic forms – definiteness – distribution of quadratic function.

Basic Reading List

David P. Doane and Lori E. Seward: Applied Statistics in Business and Economics, Tata McGraw Hill.

Edward T. Dowling: Introduction to Mathematical Economics, Tata McGraw Hill.

Kultar Singh: Quantitative Social Research Methods, Sage.

P.K.Viswanathan: Business Statistics: An Applied Orientation, Pearson.

G.Hadley: Linear Algebra, Narosa Publishing House.

A.C.Chiang: Fundamental Methods of Mathematical Economics, McGraw-Hill.

M.D.Intriligator: Mathematical Optimization and Economic Theory, Prentice Hall Inc. Chapters 5, 7 and 8 and Appendices A and B.

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-CC- 214: PRINCIPLES OF COGNITIVE ECONOMICS

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	Familiarise with economics of psychology & behavioural mental economics	PSO1/PSO3	Fa	Co	Assignment on economics of psychology
CO2	Understands the concept of motivation & personality	PSO3	Un	Co	Seminar on motivation & personality
CO3	Familiarise with perception & condoning	PSO1	Fa	Co	Seminar on perception & condoning
CO4	To understand about information processing	PSO2	Un	Co	Seminar on information processing

CO5	To familiarise with expectation, emotions & well being	PSO4	Fa	Fa	Assignment on expectation, emotions & well being

Course Content

Module 1: Introduction

Shared interest of economics and psychology- relevance for psychology for economics- economic psychological models of behaviour-mental economics

Module 2: Motivation and personality

Motivation and personality in economic behaviour- need for achievement- locus of control- sensation seeking and risk attitude- altruism- time preference- cognitive style-life style

Module 3: Perception, learning and attitude

Perception-psychophysics- perceptual judgement- price perceptism- perception of money and inflation

Learning- classical conditionality-operand conditioning- conflict model buying behaviour- Attitude and utility- images

Module 4: Limited information processing

Information processing in consumer decision making- information processing capacity- heuristic in information processing- aspiration levels in information process- models of information processing

Module 5: Economic expectation, emotions and wellbeing

Economic expectation – buying intention- consumer confidence- relation between attitude and behaviour

Emotions and utility functions- emotion and consumer choice- subjective wellbeing- wellbeing and income- poverty, unemployment and consumer satisfaction.

Basic Reading List

Psychology in Economics and business, Gerrit Ando Antonides, Springer Science Business Media, 1991

Economic Psychology (ed) Rob Rinyard, Wiley, 2018, chapter 16

Additional Reading List

The Cambridge Handbook ofPsychology and EconomicBehaviour, Alan Lewis (Edt.), Cambridge University Press, 2008

Economics and PsychologyA Promising New CrossDisciplinary Field: Bruno S. Frey and Alois Stutzer (Edt.), CESifo Seminar Series, 2007

Psychological Economics: Development, Tension and Prospect, Peter E Earl (edt), Kluwer Academic Publishers, 1987

Psychologyand theEconomic MindCognitive Processes& Conceptualization, Robert L. Leahy, Springer Publishing Company, 2003

Philosophical Problems ofBehavioural Economics, Stefan Heidl, Routledge, 2016

New directions in Economic Philosophy, Theory, Experiment and Application: Stephan E.G and Others (edt), Edward Elgar, 1992

Handbook of Economic Philosophy, W. FRED VAN RAAIJ and others (edt),Springer-Science+Business Media, B.V, 1982

Social Psychology and Economics, David De Cremer, Marcel Zeelenberg and J. Keith Murnighan (edt), Psychology Press, 2012

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

Semester II

BEDS-CC- 221: FOUNDATIONS IN BEHAVIOURAL MICRO-ECONOMICS

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	Familiarise with the discipline behavioural economics	PSO2/PSO1	Fa	Co	Assignment on economics various aspects of behavioural economics
CO2	Understands the concept preference, risk etc.	PSO3	Un	Co	Assignment on preference & risk
CO3	Familiarise with inter temporal choice	PSO1	Fa	Co	Seminar on perception & condoning
CO4	To understand about strategic interaction& behavioural game theory	PSO2	Un	Co	Seminar on Strategic interaction & behavioural games
CO5	To familiarise with nudges, policy & happiness	PSO 3	Fa	Fa	Assignment on nudges and related aspects

Course Content

Module 1: Introduction

What is behavioural economics? - History and evolution- relation with other disciplines- objectives, and scope- themes and methodology of behavioural economics (theory, evidence, consilience) – application

Module 2: Foundation

Values, preferences and choice- believes- heuristic and biases- state dependent preferences (such as habit formation and addiction)- mis-prediction and projection bias-anticipation and information avoidance-decision making under risk and uncertainty- prospect theory- the role of reference- dependent preference in both risky (loss aversion) and risk free (endowment) choices-mental accounting- applications

Module 3: Inter temporal choice

The discounted utility model (origin, features, methodology, anomalies with discounted utility models)- alternative inter temporal choice models (time preferences, time inconsistent preferences- hyperbolic discounting- modifying the instantaneous functions)- applications

Module 4: Strategic interaction

Behavioural game theory (nature, equilibrium, mixed strategies, bargaining, iterated games, signalling, learning)- application

Modelling of social preferences –nature and factors affecting social preferences- distributional social preferences based on altruism, inequality aversion models- reciprocity models, evidence and policy implications

Module 5: Nudges & Happiness

Nudges, Policy, and Happiness- the application

Basic Reading List

An introduction to behavioural economics by Wilkinson and Klaes, Palgrave McMillan

Behavioural Economics and Finance, by Michelle Beddeley, Rutledge, 2019

Additional Reading List

Behaviour economics and business ethics- interrelation and application by Alexander Rajko, Rutledge, London, 2012

Philosophical problems of behavioural economics by Steffan Heidel, Routlege, 1996

Varieties of modern economic rationality – from Adam Smith to Contemporary Behavioural and evolutionary economists by Michael S Zoubulakis, Routledge, 1997

Behavioural foundations of economics by J.L. Buxter, McMillan Press,

Choice, Behavioural economics and addiction, edited by Ruby E Vachinich and Nick Heather, Pergamon Elsevier, 2003,

Advance in understanding strategic behaviour- game theory experiments and bounded rationality, edited by Steffan Huck, Palgrave, McMillan, 2004

Loewenstein (1987) "Anticipation and the Valuation of Delayed Consumption". Economic Journal, 97(387): 666— 684.

Brunnermeier, Markus, K., and Jonathan A. Parker (2005). "Optimal Expectations." American Economic Review, 95(4): 1092-1118.

Kahneman and Tversky (1979) "Prospect Theory: An Analysis of Decision Under Risk", Econometrica, 47(2): 263– 291.

List (2003) "Does Market Experience Eliminate Market Anomalies?", Quarterly Journal of Economics, 118(1): 41– 71.

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Fehr, E. and Schmidt, K. (1999) "A Theory of Fairness, Competition, and Cooperation" The Quarterly Journal of Economics, 114(3): 817—868.

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Tversky, A. and Kahneman, D. (1974) "Judgment Under Uncertainty: Heuristics and Biases", Science, 185(4): 1124– 1131.

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-CC- 222: FOUNDATIONS IN BEHAVIOURAL MACRO-ECONOMICS

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	Familiarise with the discipline behavioural macro economics	PSO1	Fa	Co	Assignment on foundations of behavioural macro economics
CO2	Understands the new approaches to macro economic modelling	PSO3/PSO3	Un	Co	Assignment on new approaches to macro economic modelling
CO3	To understand about Inertia in macroeconomic variables and non-normality	PSO1	Fa	Co	Assignment on Inertia in macroeconomic variables and non-normality
CO4	To familiarise with transmission of shocks	PSO2	Un	Co	Seminar on Inertia in macroeconomic variables and non-normality
CO5	To familiarise with nudges, policy & happiness	PSO4	Fa	Fa	Seminar on transmission of shocks

Course Content

Module 1: Foundations of behavioural macro economics

Neo-Keynesian Rational Expectation model- role of rational expectation in business cycle and labour market equilibrium- the role of monetary policy and the determination of asset prices- Animal Spirits and economic decisions

Module 2: Need for new approach for macroeconomic modelling

The Canonical Dynamic Stochastic General Equilibrium model (DSGE)- recent development in DSGE model-financial market friction-problems with DSGE model- micro foundation based on utility maximisation- rational expectation and cognitive problems of agents-the assumption of representative agent- the exogenous business cycle model underlying DSGE model-empirical validation- need for new approach

Module 3: Basic behavioural model

Basic behavioural model – three reduced form equations- introducing heuristic in forecasting output-forecasting rules-heuristic and selection mechanism in forecasting inflation-defining animal spirit- result of basic macroeconomic model-stability analysis-chaos and output stabilisation

Module 4: Inertia in macroeconomic variables and non-normality in the output gap

Empirical evidence of serial correlation- empirical correlation in New Keynesian rational expectation models-serial correlation in behavioural macroeconomic model- the sources of autocorrelation and the long lag in behavioural macroeconomic model-factors affecting serial correlation in behavioural macroeconomic model-sensitivity analysis

Non-normality- empirical evidence-Non normality in DSGE models- Non normality in behavioural model- sensitivity analysis- extreme values of animal spirit under different parameters-correlation of output gap and animal spirit under different parameters- the power of output stabilisation

Module 5: Transmission of shocks

Demand, supply and interest rate shocks in New Keynesian Rational Expectation model-Demand, supply and interest rate shocks in behavioural model –factors affecting uncertainty about the transmission of shocks

Basic Reading List

Behavioural Macro Economics -Theory and Policy, Paul De Grauwe and Yeumei Ji, Oxford University Press, 2019

Additional Reading List

Ayala and A. Palacio-Vera (2014) "The Rational Expectations Hypothesis: An assessment from Popper's Philosophy", http://www.levyinstitute.org/pubs/wp_786.pdf

Muth, J.F. 1961. Rational Expectations and the Theory of Price Movements, Econometrica, 29(3), pp. 315-335. - S. Rebelo (2005) "Real Business Cycles Models: Past, Present and Future"

http://www.kellogg.northwestern.edu/faculty/rebelo/htm/rbc.pdf - R. Lucas (1995) "Monetary Neutrality", Nobel Price Lecture

https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1995/lucas-lecture.pdf

A. Lo (2007) "Efficient Markets Hypothesis" in L. Blume and S. Durlauf, The New Palgrave: A Dictionary of Economics.

G. Akerlof, (2001), "Behavioral Macroeconomics and Macroeconomic Behavior", Nobel Prize Lecture.

G. Akerlof and R. Shiller, (2009), Animal Spirits, Princeton University Press.

Lucas, Robert E., Jr. and Thomas J. Sargent, "After Keynesian Macroeconomics," in Federal Reserve Bank of Boston,

After the Phillips Curve: Persistence of High Inflation and High Unemployment, Conference Series, 1979.

Farmer, R., Macroeconomics of Self Fulfilling Prophecies, MIT press.

Blanchard, Olivier J. and Mark W. Watson., 'Bubbles, Rational Expectations and Financial Markets', Crises in the Economic and Financial Structure, Paul Wachtel, editor, pp. 295-316. Lexington, MA: D.C. Heathand Company, (1982).

Akerlof, George and William T. Dickens and George L. Perry, "The Macroeconomics of Low Inflation," Brookings

Papers on Economic Activity, 1996:1, pp. 1–59.

Akerlof, George and William T. Dickens and George L. Perry, "Near-Rational Wage and Price Setting and the Long-Run Phillips Curve," ," Brookings Papers on Economic Activity, 2000.

Akerlof, G. and Janet L. Yellen, "A Near-rational Model of the Business Cycle, with Wage and Price Inertia,"

Quarterly Journal of Economics, 100 (Supp. 1985).

Akerlof, ,G. and Janet L. Yellen, "Can Small Deviations from Rationality Make Significant Differences in Economic

Eqilibria?", American Economic Review (1995).

Mankiw, N. Gregory, "Small Menu Costs and Large Business Cycles: A Macroeconomic Model", Quarterly Journal of Economics, 1985.

Pagel, Michaela, "Expectations-Based Reference-Dependent Life-Cycle Consumption", Review of Economic Studies (forthcoming).

Laibson D., "Golden Eggs and Hyperbolic Discounting", Quarterly Journal of Economics, 1997;112(2):443-477.

Akerlof, George, "Procrastination and Obedience", American Economic Review, Papers and Proceedings 81, (1991).

Labison, David, Andrea Repetto, and Jeremy Tobacman, "Self-Control and Saving for

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time: 3 hours **Maximum Marks: 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-CC- 223: FOUNDATIONS OF DATA SCIENCE

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	Familiarise with the area of Data Science	PSO2	Fa	Co	Assignment on Basics of data science
CO2	Understands about data processing	PSO3	Un	Co	Seminar on data processing
CO3	Familiarise**e**with machine learning	PSO1	Fa	Co	Assignment on machine learning
CO4	To understand about clustering	PSO2	Un	Co	Seminar on clustering
CO5	To familiarize with Data Visualization	PSO4	Fa	Fa	Assignment on data visualization

Course Content

Module 1: Introduction

What is Data Science? Big Data and Data Science – Datafication - Current landscape of perspectives - Skill sets needed; Matrices - Matrices to represent relations between data, and necessary linear algebraic operations on matrices -Approximately representing matrices by decompositions (SVD and PCA); Statistics: Descriptive Statistics: distributions and probability - Statistical Inference: Populations and samples - Statistical modelling - probability distributions - fitting a model - Hypothesis Testing -

Module 2: Data Processing

Data pre-processing: Data cleaning - data integration - Data Reduction Data Transformation and Data Discretization. Evaluation of classification methods – Confusion matrix, Students T-tests and ROC curves-Exploratory Data Analysis - Basic tools (plots, graphs and summary statistics) of EDA, Philosophy of EDA - The Data Science Process.

Module 3: Machine Learning

Basic Machine Learning Algorithms: Association Rule mining - Linear Regression- Logistic Regression - Classifiers - k-Nearest Neighbours (k-NN), k-means -Decision tree - Naive Bayes- Ensemble Methods - Random Forest. Feature Generation and Feature Selection - Feature Selection algorithms - Filters; Wrappers; Decision Trees; Random Forests.

Module 4: Clustering

Clustering: Choosing distance metrics - Different clustering approaches - hierarchical agglomerative clustering, k-means (Lloyd's algorithm), - DBSCAN - Relative merits of each method - clustering tendency and quality.

Module 5: Data Visualization

Data Visualization: Basic principles, ideas and tools for data visualization.

Basic Reading List

Cathy O'Neil and Rachel Schutt, "Doing Data Science, Straight Talk from The Frontline", O'Reilly, 2014.

Jiawei Han, Micheline Kamber and Jian Pei, "Data Mining: Concepts and Techniques", Third Edition. ISBN 0123814790, 2011.

Mohammed J. Zaki and Wagner Miera Jr, "Data Mining and Analysis: Fundamental Concepts and Algorithms", Cambridge University Press, 2014.

Matt Harrison, "Learning the Pandas Library: Python Tools for Data Munging, Analysis, and Visualization , O'Reilly, 2016.

Joel Grus, "Data Science from Scratch: First Principles with Python", O'Reilly Media, 2015.

Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly Media, 2012.

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-CC- 224: BASIC ECONOMETRICS AND RESEARCH METHODOLOGY

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To create an understanding among the students on basic econometric methodology	PSO1	Fa	Co	Assignment on basic concepts of econometrics
CO2	To train the students in applying economic theories to real economic data by means of empirical models,	PSO3	Un	Co	Seminar on Auto-correlation, Heteroscedasticity,
CO3	To train the students in applying economic theories to real economic data by means of empirical models	PSO1/PSO2	Fa	Co	Assignment on Dummy Variable Technique and its Applications
CO4	To Familiarize about time series data	PSO2	Un	Co	Seminar on Stationarity and Non-Stationarity
CO5	To have basic understanding about research methodology	PSO4	Fa	Fa	Seminar on social science

Course Content

Module I: Introduction to Econometrics

Meaning, scope and methodology of Econometrics - Sample Regression Function and Population Regression Function - Simple linear Regression Model – Assumptions, Estimation through Ordinary Least Squares (OLS) Approach - Gauss Markov Theorem – Multiple Regression Model - Testing the Significance of Regression – t, Analysis of variance (ANOVA), F and the concept of R2 and adjusted R2

Module II: Violation of the CLRM Assumptions

Auto-correlation, Heteroscedasticity, Multicollinearity, Specification Errors, Errors of Measurement - Nature, Consequences, Tests and Remedial measures.

Module III: Dummy Variables Regression Models

Dummy Variable Technique and its Applications - Comparing two regressions, interaction effects, seasonal analysis, piece-wise linear regression.

Module IV: Introduction to Time series Econometrics

Basic Concepts: Stationarity and Non-Stationarity – Random Walk Models – Testing Stationarity - Unit Root- Integrated Process - Basic Concepts of ARMA and ARIMA Process.

Module V: Introduction to Research Methodology

Meaning, purpose and scope of Social Science Research - Types of Research - Stages of Research Process - Formulation of research problem, Research Design Setting, Theoretical Frame, Review of Literature, Objectives and Hypothesis, Methods of Data Collection, Analysis of Data, Hypothesis Testing and drawing conclusions, Report Writing and Lay out of the Research Report. – introducing computer software for data analysis- excel, SPSS and Gretl

Basic Reading List

Gujarathi , D.&Sangeetha, N. (2007). Basic Econometrics (4thed) New Delhi: McGraw Hill

Koutsoyianis, A. (1977). Theory of Econometrics (2nded). London .The Macmillian Press Ltd.

Kothari, C. R. (2004). Research Methodology Methods & Techniques, New Age International Publishers, Delhi.

Gerald Guthrie(2012),Basic Research Methods, Sage, New Delhi.

Majumdar, P.K. (2011), Research Methods in Social Sciences, Viva Books, New Delh

Rowena Murray(2010), How to Write a Thesis, Tata McGraw Hill, New Delhi.

Additional Reading List

Cochran, W. G. (1999).Sampling Techniques, John Wiley & Sons (Asia) Ltd.

Greene W. H. (1997). Econometric Analysis, New Delhi, Pearson.

Johnston J. (1991).Econometric Methods, NewYork, McGraw Hill.

Intriligator M. D. (1991) Econometric Methods, Techniques and Applications, Prentice Hall, Englewood Cliffs, New Jersey.

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

Semester III

BEDS-CC- 231 APPLIED BEHAVIOURAL ECONOMICS

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To conceptualising welfare and measuring welfare	PSO1	Fa	Co	Assignment on various measurements of welfare
CO2	To familiarize with behaviour economics and development economics	PSO3	Un	Co	Seminar on behaviour economics and development economics
CO3	To understand about behavioural economics & labour market	PSO1/PSO2	Fa	Co	Assignment on behavioural economics & labour market
CO4	To Familiarize about behavioural economics and health economics	PSO2	Un	Co	Seminar on behavioural economics and health economics
CO5	To have basic understanding behavioural economics and organisational behaviour	PSO4	Fa	Fa	Seminar behavioural economics and organisational behaviour

Course Content

Module 1: Conceptualising Welfare

Behaviour economics on Welfare and Policy Analysis Conceptualising and measuring welfare- saving, addiction and public good

Module 2: Behavioural Economics and Development Eeconomics

Immediate barriers in education- demand for commitment – default settlement and savings- default setting and financial institution- Status Quo Bias and Diffusion of Innovations- Self Serving Bias and Evaluation

Module 3:Behaviour economics and labour market

Wage rigidityFairness, reciprocity and wage rigidity- evidence from surveys by economists- evidence from surveys from experimental economists- evidence from organisational psychology and managerial science

Module 4:Behavioural economics and health economics

Introduction and background- models of physician behaviour- health care demand and insurance

Module 5:Behavioural economics and organisational behaviour

Complicating the single-agent risk-incentive model- workers as members of multi-agent firms- top managers and corporate finance- organisational reactions: sorting, repairs and exploitation.

Basic Reading List

Introduction to Behavioral Economics and Its Applications- Peter Diamond and Hannu Vartiainen (ed.), Princeton University Press, 2012

Handbook of Behavioral Economics-Foundations and Applications - BD Bernheim, S DellaVigna, D Laibson(ed), North Holland ,2019

The foundations of behavioural economics –Sanjit Dhami, Oxford, 2020

Applied Behavioral Economics Research and Trends, Rodica Ianole, IGI Global, 2016

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-CC- 232: EXPERIMENTAL ECONOMICS: METHODS AND APPLICATION

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To familiarize with history and emergence of experiments in economics	PSO1	Fa	Co	Assignment on emergence of experiments in economics
CO2	To understand Need for experiments in economics	PSO3	Un	Co	Seminar on Need for experiments in economics
CO3	To understand how to design an experiment	PSO1	Fa	Co	Assignment on how to design an experiment
CO4	To familiarize with econometrics of experimental data	PSO2	Un	Co	Seminar on econometrics of experimental data
CO5	To understand the external validity of an experiment	PSO4	Fa	Fa	Seminar on external validity of an experiment

Course Content

Module 1:Introduction

History and emergence of experiments in economics- end of impossibility- choice consistency in risky decision- experimental economics and behaviour- experimental economics today- experimental methods – advantages and limitation-type of experiments- procedure and design consideration

Laboratory experiment- an overview- procedure for experiments- role of experimenter- experiment auction- ex-ante and ex-post method- case study

Module 2: Need for experiments in economics

Controlled experiment in empirical economics-Econometric approach to data analysis-content of observational data- treatment-effect parameters- identification based on observational data- inference based on controlled experiments- experimental methods for economic science- theory and reality- case study

Module 3: Designing an experiment

Internal validity issues- link between experiment and internal validity- incentive structure of experiment- parameters and experimental treatment- the pursued experiment- pursued opponent and learning - Conducting an experiment- setting up an experimental laboratory-step by proceeding

Module 4: Econometrics of experimental data

Experimental data-estimation and inferences-testing procedures-case study

Module 5: External validity of experiment

The external validity of the experimental result- testing of external validity- testing theory – case study

Experimental Economics Lab

Basic Reading List

Experimental Economics: Method and Application by Nicholas Jacquemet and Oliver L'Haridon, Cambridge University Press, 2019

Additional reading list

Papers in experimental economics by Vernon L Smith, Cambridge University Press, 1991

Experimental Economics, Douglas Davis, Charles A Holt, Princeton University Press, 1993

Experimental Auctions- methods and applications in Economics and Marketing research, Jaison L Lusk and Jason F Shogren, Cambridge University Press, 2007

The methodology of experimental economics, Franciso Guala, Cambridge University Press, 2005

Economics Lab-an intensive course in experimental economics, Daniel Friedman and Alexssandra Cassar, Routledge, 2004

Kagel, John and Alvin Roth. The Handbook of Experimental Economics. Princeton University Press, 1995.

Friedman, Daniel and Shyam Sunder. Experimental Methods: A Primer for Economists. Cambridge University Press, 1994

Camerer, Colin. Behavioral Game Theory: Experiments in Strategic Interaction. Princeton University Press, 2002.

Bardsley, Nicholas, Robin Cubitt, Graham Loomes, Peter Moffatt, Chris Starmer, and Robert Sugden. Experimental Economics: Rethinking the Rules. Princeton University Press, 2009.

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-CC- 233 GAME THEORY

Course Outcomes Content

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To familiarize the concept of theory of games	PSO1	Fa	Co	Assignment on concept of theory of games
CO2	To understand about strategic games & Nash equilibrium	PSO3	Un	Co	Seminar on strategic games & Nash equilibrium
CO3	To understand about the illustrations of Nash Equilibrium	PSO1	Fa	Co	Assignment on illustrations of Nash Equilibrium
CO4	To Familiarize with mixed Strategy Nash Equilibrium	PSO2	Un	Co	Seminar on mixed Strategy Nash Equilibrium
CO5	To understand about extensive Games and Nash Equilibrium	PSO4/PSO3	Fa	Fa	Seminar on extensive Games and Nash Equilibrium

Course Content

Module 1: Introduction

What is game theory? -Theory of rational choice -interacting decision makers

Module 2: Strategic Games and Nash Equilibrium

Strategic games- examples Nash equilibrium- concept and examples- Best response functions --Dominated Actions -Symmetric games and symmetric equilibria

Module 3: Illustrations of Nash Equilibrium

Cournot's model of duopoly market- Bertrand's model of duopoly -market -Electoral Competition War of Attrition -Auctions -Accident Laws

Module 4: Mixed Strategy Nash Equilibrium

Introduction -Strategic games with randomisation -Mixed strategy Nash equilibrium: concept and examples- Dominated Actions -Formation of Players' beliefs

Module 5: Extensive Games and Nash Equilibrium

Introduction to extensive games -Strategies and outcomes -Nash equilibrium- Subgame perfect Nash equilibrium- Backward induction

Illustrations of Extensive Games and Nash Equilibrium- Stackelberg model of duopoly markets --Ultimatum game

Basic Reading List

Osborne, M.J.An Introduction to Game Theory, Oxford University Press, 2004

Mas-Colell,A., M.D. Whinston and J.R. Green Microeconomic Theory, Oxford University Press, 1995

Gibbons, R.A Primer in Game Theory,Pearson Education, 1992

A course in Game Theory, Martin J Osborne Ariel Rubinstein, The MT Press,1998

Game Theory, Drew Fundenberg and Jean Tirole, MIT Press

Game Theory and Economic Analysis, Christian Schmidt (Edt), Rutledge,2002

Evolution, Games and Economic Behaviour, Fernando Vega-Redondo, Oxford University Press,1996

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-DSE- 234: OPTIONAL -ADVANCED ECONOMETRICS

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To develop analytical skills needed to work successfully with real economic data	PSO1	Fa	Co	Assignment ondynamic econometric models
CO2	To understand about of simultaneous equation models	PSO3	Un	Co	Seminar on simultaneous equation models
CO3	To understand about to non-stationary Time Series	PSO1	Un	Co	Assignment on tonon-stationary Time Series
CO4	To familiarize with Time Series Econometrics: Forecasting	PSO2	Fa	Co	Seminar on Time Series Econometrics: Forecasting
CO5	To understand about panel data models	PSO4	Un	Fa	Seminar onpanel data models

Course Content

Module I: Dynamic Econometric Models

Autoregressive and Distributed Lag Models -Koyck Model, Nerlove's Partial Adjustment Model, Cagan's Adaptive Expectations Model - Instrumental Variables – Detecting Autocorrelation in Autoregressive models - Almon's Approach to Distributed Lag Models.

Module II: Estimation of Simultaneous Equation Models

Simultaneous Equation Models - Structural and Reduced form Equations, Simultaneous Equation Bias, Instrumental Variable Estimation - Identification Problem, The Rank and Order Condition, Methods of estimating simultaneous equation system, Recursive methods and OLS - Indirect Least Squares, 2SLS, 3SLS, FIML estimation techniques - Durbin – Wu – Hausman Test.

Module III: Introduction to Non-Stationary Time Series

Stationarity and Non stationarity - Stationary time series and Non stationary time series Deterministic Trend- Difference Stationary and Trend-Stationary - Spurious Regressions – Tests of Non stationarity - Graphical Tests & Augmented Dickey-Fuller tests - Cointegration& Error Correction Model (ECM).

Module: IV Time Series Econometrics: Forecasting

AR, MA and ARIMA Modelling of Time Series Data - The Box- Jenkins (BJ Methodology - Vector Auto Regressive (VAR) and Causality - Measuring Volatility – The ARCH and GARCH Model

Module V: Introduction to Panel Data Models

Panel Data Set – Example to investigate dynamics - Fixed Effects Regressions – Within groups fixed effects, First differences fixed effects - Random Effects Regressions - Assessing the appropriateness of fixed effects and random effects estimation.

Basic Reading List

Dougherty, Christopher (2011).Introduction to Econometrics, Oxford University Press,

Newyork.

Gujarathi, D, &Sangeetha, N. (2007). Basic Econometrics (4thed) New Delhi: McGraw

Hill

Woolridge, J. M. (2007). Introductory Econometrics: A Modern Approach (3rded.). New

Delhi: Akash Press.

Additional Reading List

Amemiya, T.(1995).Advanced Econometrics, Harvard University Press.

Baltagi, B. H. (1998). Econometric Analysis of Panel Data, New York: Springer.

Enders, Walter (2014). Applied Econometric Time series (4th edition) Wiley E-Text Student Package

Goldberger, A. S. (1998). Introductory Econometrics, Harvard University Press Cambridge Mass

Greene, W. H. (1997). Econometric Analysis, New Delhi, Pearson.

Johnston, J. (1991).Econometric Methods, NewYork, McGraw Hill.

Kennedy, I. (1998). A Guide to Econometrics (4th edition) MLT Press, NewYork

Kmenta, J. (1997).Elements of Econometrics (Reprint Edition), University of Michigan Press, Newyork.

Krishna, K. L. (ed) (1997). Econometric Application in India, Oxford University Press, New Delhi

Maddala (ed) 1993. Econometric Methods and Application Aldershot, U K

Pindyck andRubinfield (1976) Econometric Models and Economic Forecasts, McGraw Hill Kogakus Tokyo

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-DSE- 235: Optional-Data Analytics for Business

Course Content

Module 1: Data analytic thinking and learning methods

Ubiquities of data opportunities- data science- Big data processing-data mining

Supervised versus unsupervised methods-data mining process-business understanding- data understanding -data preparation-modelling- evaluation- regression techniques- machine learning and data mining -

Predictive learning- Models, induction and prediction- supervised segmentation- visualising segmentation- trees as a set of rule- probability estimation

Module 2: Fitting a model to data

Classification versus mathematical function- linear discriminant function- optimising an objective function-linear discriminant function for ranking and scoring- regression via

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To familiarize data analytic thinking and learning methods	PSO1	Fa	Co	Assignment ondata analytic thinking and learning methods
CO2	To understand about fitting a model to data	PSO3/5	Un	Co	Seminar on fitting a model to data
CO3	To understand about similarity-neighbours, clusters and visualising model performance	PSO1/5	Un	Co	Assignment onvisualising model performance
CO4	To familiarize with evidence and probabilities	PSO2/5	Fa	Co	Seminar onevidence and probabilities
CO5	To understand with representing and mining text	PSO4/5	Un	Fa	Seminar on representing and mining text

mathematical function-class probability estimation and logistic regression- nonlinear function-support vector machine and neural network

Over fitting and its avoidance -Fundamental concepts-generalisation, fitting and over fitting-complexity control- exemplary techniques-cross validation-attribute selection- tree pruning-regularisation

Module 3: Similarity- neighbours, clusters and visualising model performance

Nearest neighbour and distance- Nearest neighbour reasoning- nearest neighbour for predictive modelling- methods and issues with nearest neighbour methods-clustering – clustering around centroid

Evaluating classifiers- confusion matrix-evaluation- base line performance and implications

Visualising model performance-ranking instead of classifying- profit curves- ROC graph and curves-cumulative response and lift curves

Module 4: Evidence and probabilities

Evidence and probabilities- combining evidence probabilities- joint probability and independent- Bayes' rule – applying Bayes' rule to data science-a model of evidence 'Lift'

Module 5: Representing and mining text

Representation – bad of words-term frequency- measuring sparseness- beyond bag of words-N-gram sequences- Named entity extraction- application

Basic Reading List

Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking, by Foster Provost and Tom Fawcett, O'Reilly Media; 2013

Data Mining and Business Analytics with R, by Johannes Ledolter; (2013)

Business Analytics, by James Evans, Pearson, 2016

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format Time : 3 hours Maximum Marks : 75

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) . Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

Semester IV

BEDS-CC- 241: BASICS OF BEHAVIOURAL FINANCE

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To familiarize with basic aspects of behavioural finance	PSO1	Fa	Co	Assignment on basic aspects of behavioural finance
CO2	To understand about building block of behavioural finance	PSO2	Un	Co	Seminar on building block of behavioural finance
CO3	To understand about rationality from an economics and evolutionary prospective	PSO1	Un	Co	Assignment on rationality from an economics and evolutionary prospective
CO4	To familiarize with external factors and investor behaviour	PSO2	Fa	Co	Seminar onexternal factors and investor behaviour
CO5	To familiarize with behavioural corporate finance:	PSO3	Fa	Fa	Seminar on behavioural corporate finance:

Course Content

Module 1: Introduction

Behavioural Finance: Nature, Scope, Objectives and Significance & Application-History of Behavioural Finance, Psychology: Concept, Nature, Importance, The psychology of financial markets, The psychology of investor behaviour, Behavioural Finance Market Strategies, Prospect Theory, Loss aversion theory under Prospect Theory & mental accounting—investors Disposition effect .

Module 2: Building block of Behavioural Finance

Cognitive Psychology and limits to arbitrage - Demand by arbitrageurs: Definition of arbitrageur; Long-short trades; Risk vs. Horizon; Transaction costs and short-selling costs; Fundamental risk; Noise-trader risk; Professional arbitrage; Destabilizing informed trading (positive feedback, predation) - Expected utility as a basis for decision-making - The evolution of theories based on expected utility concept.

Module 3: Rationality from an economics and evolutionary prospective

Elsberg's paradoxes, Rationality from an economics and evolutionary prospective- Different ways to define rationality: dependence on time horizon, individual or group rationality - Herbert Simon and bounded rationality - Demand by average investors: Definition of average investor; Belief biases; Limited attention and categorization; Non-traditional preferences – prospect theory and loss aversion; Bubbles and systematic investor sentiment.

Module 4: External factors and investor behaviour:

External factors and investor behaviour: Fear & Greed in Financial Market, emotions and financial markets: geomagnetic storm, Statistical methodology for capturing the effects of external influence onto stock market returns

MODULE 5:BEHAVIORAL CORPORATE FINANCE:

Empirical data on dividend presence or absence, ex-dividend day behaviour - Timing of good and bad corporate news announcement -Systematic approach of using behavioural factors in corporate decision-making -Neurophysiology of risk-taking - Personality traits and risk attitudes in different domains.

Basic Reading List

Finding Financial Wisdom in Unconventional Places (Columbia Business School Publishing)

Bisen,pandey-Learning Behavioural Finance(Excel Books)

A History of Financial Speculation: Edward Chancellor

Forbes- Behavioural Finance (Wiley India)

The Little Book of Behavioral Investing (Montier)

The Psychology of Persuasion (Collins Business Essentials)

Behavioural Finance: Understanding the social, cognitive and economic debates, Edwin Burten and Sunit N Shah, Wiley, 2013

Behavioural Finance, Chandra. Prasanna.Mcgraw Hill

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-CC- 242: BEHAVIOURAL ECONOMICS AND POLICY DESIGN

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To familiarize with basic aspects of behavioural policy design	PSO1	Fa	Co	Assignment on basic aspects of behavioural policy design
CO2	To understand about incentives and norms for public policy	PSO3	Un	Co	Seminar on incentives and norms for public policy
CO3	To understand about nudge and policy design	PSO1	Un	Co	Assignment onnudge and policy design
CO4	To familiarize with government policy –taxation	PSO2	Fa	Co	Seminar on government policy – taxation
CO5	To familiarize with behaviour and environment	PSO4	Fa	Fa	Seminar on behaviour and environment

Course Content

Module 1: Introduction

Behaviour economics –cognition – choice - policy design- bounded rationality- bounded self-control- bounded self-interest- public policy implications and application

Module 2: Incentives and norms for public policy

Incentives, norms and public policy- social forces in markets and collective action problem- social norms versus market incentives- getting incentives and norms right

Module: 3 Nudge and policy design

Behaviour economics and regulatory policy- nudge- policy design- simplification of information and choice-default and convenience- salience and attention- debasing and decision quality- regulatory methods- regulatory delivery

Module 4: Government policy –taxation

Taxation and tax compliance- tax attitude by individual tax payers- regulation- strategies- interaction between tax payers and tax authorities-practical implications

Module 5: Behaviour and environment

Standard economic approach to environment- psychology of environmentally sustainable- image motivation-loss aversion- saliency and availability bias- mental accounting- discounting- psychology of unsustainable consumption

Basic Reading List

Behaviour economics and policy designs, Ed, Donald Low, World Scientific, 2012

Economic Psychology (ed) Rob Rinyard, Wiley, 2018, chapter 16

Bounded Rationality and Public Policy- perspectives from behavioural economics, Alistar Munro, Springler, 2009

Scarcity, Why having too little means so much, Sendhil Mullainathan and Eldar Shafir; Time Books,

Regulatory Policy and Behavioural Economics, by Pete Lunn, OECD, 2014

Thinking Fast and Slow, Daniel, Kahneman,2011

Predictably irrational: the hidden forces that shape our decision; Dan Ariely, HarperCollins, 2008

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) . Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-CC- 243: FOUNDATIONS OF DATA ANALYSIS USING R AND PYTHON

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To familiarize with introduction to Data Science	PSO2	Fa	Co	Assignment onbasic aspects of data science
CO2	To understand about Basics of Coding in Python	PSO3	Un	Co	Seminar on basics of coding in python
CO3	To understand about Basic coding in R	PSO1	Un	Co	Assignment onbasic coding in R
CO4	To familiarize with Exploratory data analysis	PSO3	Fa	Co	Seminar onexploratory data analysis
CO5	To familiarize with Regression modelling	PSO4	Fa	Fa	Seminar on regression modelling

Course Content

Module 1: Introduction to Data Science

Why Data Science? What is Data Science? The Data Science Methodology - Data Science Tasks- Description - Estimation -Classification -Clustering -Prediction –Association

Module 2: Basics of Coding in Python

Downloading Python-Using Comments in Python - Executing Commands in Python - Importing Packages in Python- Getting Data into Python - Saving Output in Python - Accessing Records and Variables in Python - Setting Up Graphics in Python

Module 3: Basic coding in R

Downloading R and RStudio -Basics of Coding in R - Using Comments in R - Executing Commands in R - Importing Packages in R - Getting Data into R- Saving Output in R - Accessing Records and Variables in R

Module 4: Exploratory data analysis

Constructing Bar graphs, contingency tables, histogram using Python and R

Module 5: Regression modelling (simple, multiple and logistic)

The estimation task- performing multiple regression modelling using Python and R – estimation model evaluation using Python and R

Basic Reading List

Data science using Python and R, by Chandal D Larose and Daniel T Larose, Wiley, 2019.

Data Mining and Business Analytics with R, Johannes Ledolte, Wiley, 2013

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) . Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-DSE- 244: OPTIONAL

BEHAVIOURAL ECONOMICS AND PUBLIC HEALTH

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To familiarize link between behavioural economics and public health	PSO3	Fa	Co	Assignment onbehavioural economics and public health
CO2	To understand about health behaviour	PSO3	Un	Co	Seminar on health behaviour
CO3	To understand about social norms, belief and action	PSO1/5	Un	Co	Assignment onsocial norms, belief and action
CO4	To familiarize with nudging individuals	PSO2/5	Fa	Co	Seminar onnudging individuals
CO5	To understand with deciding better health policies	PSO2/5	Un	Fa	Seminar on better health policies

Course Content

Module 1: Link between behavioural economic and public health

Module 2: Health behaviour

Inter-temporal choice for health-maintenance of healthy behaviours- forming and changing habits- emotions and making health decision

Module 3: Social norms, belief and action

Module 4: Nudging individuals

Nudging individuals for selecting healthy foods- incentivising healthy behaviour

Module 5: Deciding better health policies

Deciding health policies- improving the role of government

Basic Reading List

Behavioural Economics and Public Health, by Christina A. Roberto , Ichiro Kawachi, Oxford University Press, 2015

Behavioural Economics and Healthy Behaviours, by Yaniv Hanoch , Andrew Barnes and, Thomas Rice (Eds.), Routledge; 2017

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) . Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS 244- OPTIONAL BEHAVIOURAL ECONOMICS AND TOURISM

Course Outcomes

CO	CO Statement	PO/PSO	CL	KC	Assessment
CO1	To familiarize with tourism and traditional thinking	PSO1	Fa	Co	Assignment on tourism and traditional thinking
CO2	To understand about behavioural perspectives in tourism	PSO3	Un	Co	Seminar on behavioural perspectives in tourism
CO3	To understand about smart thinking for destination	PSO1/5	Un	Co	Assignment on smart thinking for destination
CO4	To familiarize with behaviour of smart thinking for companies	PSO2/5	Fa	Co	Seminar onbehaviour of smart thinking for companies
CO5	To understandbest practices and approach using smart thinking	PSO4/5	Un	Fa	Seminar onbest practices and approach using smart thinking

Course Content

Module 1:Tourism and traditional thinking

Tourism economic thinking-the complexity of a single system-institution and destination management-managing resources-planning and managing growth

Module 2: Tourism of the future

Dynamism in the tourism sector- Behaviour perspectives to the changing system

Module 3: Behaviour- smart thinking for destination

Behaviour-smart thinking for future-Behaviour – smart thinking for now- the behaviouraly optimised destination

Module 4: Behaviour-smart thinking for companies

Aligning with 21st century traveller- new norms for doing business-reverse responsibility

Module 5: Best practices and approach using smart thinking

Basic Reading List

Behaviour economics for tourism- a perspective on business and policy in the travel industry- by Milena S Nikolova, Academic Press, 2020

Economic Psychology of Travel and Tourism, John C. Crotts, W. Fred van Raaij, Psychology Press, 1994

Consumer Behaviour in Tourism, Susan Horner, John Swarbrooke, Routledge, 2016

ASSESSMENT

25 % Continuous / Formative Assessment (see PG Regulations). 75 % End-semester/Summative Assessment: 3 hour written Exam.

Model Question in OBE Format

Time : 3 hours **Maximum Marks : 75**

This question paper has three sections. All questions in Section A to be answered (10*1=10 marks) . Seven questions out of 10 in Section B to be answered in less than 400 words (7*5= 35 marks). Three questions in Section C to be answered in less than 1200 words (3*10= 30 marks)

BEDS-D- 225: Behavioural and Data Science Project/Internship

Course Outcome

The objective of project/Internship is to develop research aptitude and skills among the students. Students produce a well structured dissertation work meeting standard requirements of academic writing.

Dissertation Format

General Guidelines

1. Selection of a Topic
2. Pilot study, if needed
3. Review of Literature
4. Research Gap (Optional for PG)
5. Statement of research Problem
6. Research objectives
7. Hypotheses (Optional for PG)
8. Methodology-Theoretical framework (Optional for PG), Conceptual Framework – precise and specific meaning of the terms / concepts /variables, Coverage (Universe/ Sample & period of study),Data source (Primary/Secondary), Tools of analysis
9. Significance of the Study and its social relevance.
10. **Chapter outlines**
    i. Introductory Chapter ii. Background Chapter
    ii. Analysis Chapters iv. Conclusion Chapter
11. Appendices
12. References

Mark Distribution:

Introduction - 10%

Review of literature and Research Gap - 10%

Statement of the research Problem, Objectives and Methodology-20%

Analysis and establishment of objectives -50%

Conclusion & Bibliography-10%

Structure of the Report

A. Title Page/ Cover Page

a. Title page
b. Title of the project
c. Name of the candidate/candidate code d. Degree for which project is submitted. e. Name of

the college
f. Month and year the project is presented

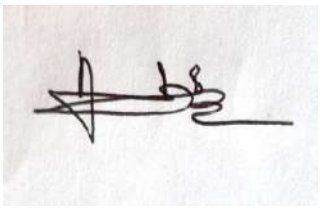
B. Declaration of the student
C. Certificate of the supervising teacher

D. Acknowledgments
E. Table of contents

a. List of Tables
b. List of Figures
c. Glossary
d. List of abbreviations

Length of the Project

1. Report length 50 to 60 pages excluding Appendix and Certificates
2. Alignment : Justify
3. Font :Times New roman
4. Font size : 12
5. Line spacing : 1.5



Kariavattom **Prof.(Dr.) ABDUL SALIM, A**

11/10/2020 **Chairman, Board of Studies In Economics(PG),**

University of Kerala

UNIVERSITY OF KERALA

FIRST DEGREE PROGRAMME IN GEOGRAPHY UNDER CHOICE BASED CREDIT AND SEMESTER SYSTEM

SCHEME AND SYLLABUS
(2014 ADMISSION ONWARDS)

UNIVERSITY OF KERALA
FIRST DEGREE PROGRAMME IN GEOGRAPHY
CHOICE BASED CREDIT AND SEMESTER SYSTEM

Aims and Objectives of the Programme

In this programme, we aim to provide a solid foundation in all aspects of geography and to show a broad spectrum of modern trends in geography and to develop experimental, synthetic and application skills of students. The syllabi are framed in such a way that it bridges the gap between the plus two and post graduate levels of geography by providing a more complete and logical framework in almost all areas of the subject.

The Programme also aims

(i) to provide education in geography of the highest quality at the undergraduate level and produce graduates of the caliber sought by industries and public service as well as academic teachers and researchers of the future.

(ii) toattract outstanding students from all backgrounds.

(iii) to provide an intellectually stimulating environment in which the students have the opportunity to develop their skills and enthusiasms to the best of their potential.

(iv) to maintain the highest academic standards in undergraduate teaching

(v) to impart the skills required to gather information from resources and use them.

(vi) to equip the students in gathering spatial information, analyze, synthesize and to suggest solutions to geographical problems

Objectives:

By the end of the Programme, the students should have

(i) Attained a common level in elementary and basic principles of geography and laid a strong foundation inearth related sciences for their future courses.

(ii) Developed their analytical skills through a wide range of expertise in handling applications of geography by their training acquired through the field work and lab.

KERALA UNIVERSITY

PROGRAMME STRUCTURE FOR FIRST DEGREE IN GEOGRAPHY UNDER CHOICE BASED CREDIT AND SEMESTER SYSTEM

Course Code	Course title	Instructional hours/week L P	Credit	Exam hours	Marks		Total Credit
					Internal	External	
SEMESTER I							
EN 1111	English	5	4				
1111	Addl. Language	4	3				
EN 1121	Foundation course	4	2				
GG 1141	**Principles of Geomorphology**	**2 2**	**4**		**20%**	**80%**	
GL 1131	**Complementary Course 1 (GEOLOGY)**	**2 2**	**2**	**3**			**17**
ST 1131.3	**Complementary Course II (STATISTICS)**	**2 2**	**2**				
		25	17				
SEMESTER II							
EN 1211	English - I	4	3				
EN 1212	English - II	5	4				
1211	Addl. Language	4	3				
GG 1221	**Fundamentals of GIS & Remote Sensing**	**2 2**	**3**		**20%**	**80%**	
GL 1231	**Complementary Course I (GEOLOGY)**	**2 2**	**2**	**3**			**17**
ST 1231/3	**Complementary Course II (STATISTICS)**	**2 2**	**2**				
		25					
			17				
SEMESTER III							
EN 1311	English	**5**	4				
1311	Addl. Language	**5**	4				
GG 1341	**Climatology & Oceanography**	**3**	**3**				
GG 1342	**Practical I**	**2**	*				
GL 1331	**Complementary Course I (GEOLOGY)**	**3 2**	**3**		**20%**	**80%**	
ST 1331.3	**Complementary Course II (STATISTICS)**	**3 2**	**3**	**3**			**17**
		25	**17**				

		SEMESTER IV					
EN 1411	English	5	4				
1411	Addl. Language	5	4				
GG 1441	**Human Geography**	**3**	**3**				
GG 1442	**Practical I**	**2**	**3**				
GL 1431	**Complementary Course (GEOLOGY)**	**3**	**3**		**20%**	**80%**	
GL 1432	**Complementary Course (GEOLOGY) Practical**	**2**	**4**	**3**			**28**
ST 1431.3	**Complementary Course II (STATISTICS)**	**3**	**3**				
ST 1432.3	**Complementary Course II Practical (STATISTICS)**	**2**	**4**				
		25	**28**				
		SEMESTER V					
GG 1541	**Geography of India**	**4**	**4**				
GG 1542	**Geography of Kerala**	**3**	**3**				
GG 1543	**Geography of Resources**	**3**	**3**		**20%**	**80%**	
GG 1544	**World Regional Geography**	**4**	**4**	**3**			**16**
GG 1551.1 GG 1551.2 GG 1551.3 GG 1551.4	Open course **GEOGRAPHY OF TOURISM** **PHYSICAL GEOGRAPHY** **GENERAL GEORAPHY** **BIO GEOGRAPHY**	**3**	**2**				
GG 1545	Practical II	6	*				
	Project*	2	*				
		25	**16**				
		SEMESTER VI					
GG1641	**Cartography**	**4**	**4**				
GG1642	**Environmental Geography**	**4**	**4**				
GG1661	**An Introduction to Disaster Management**	**3**	**2**		**20%**	**80%**	
GG 1643	Practical II		4	**3**			**25**
GG1644	Practical III	6	4				
GG1645	Practical IV	5	3				
GG 1646	**Project***	3	4				
		25	**25**				**120**

*The number of students assigned to do the project work under the guidance of a teacher is fixed as 6 since the project work in geography involves field work.

GG 1141- PRINCIPLES OFGEOMORPHOLOGY

Credit – 4
No. of Contact classes - 72

UNIT-I

Origin of the earth-Theories-Gaseous hypothesis-Nebular hypothesis-Planetesimal hypothesis-Tidal hypothesis-Binary star theory-Interstellar Dust hypothesis-Shape and Size of the earth-Latitudes and Longitudes-Seasons and Time

REFERENCES

http://www.britanica.com
http://www.aboutcivil.org/geological origin of earth-theories-hypothesis.html
http://www.worldatlas.com/atlas/image.html
http://www.time and date.com/calendar/aboutseasons.html
Willem.J.Luyten-A Review of Theories of Origin of Earth- Popular Astronomy

UNIT-II

Distribution of Land and Water-Tetrahydral hypothesis-Major Relief features of the Earth-Mountains-Plains- Plateaus-Lakes- Structure and Composition of the Earth- Isostasy
REFERENCES

http://www.oceanatlas.com
http://www.skwirk.com
http://education.nationalgeographic.com
www.trincoll.edu/isostasy.htm
http://journal-cambridge.org

UNIT –III

Endogenic and exogenic forces-Endogenic forces-Folds-Parts of fold-Types of fold-Symmetrical fold Asymetrical fold -Isoclinal fold-Recumbent fold-Overthrust fold-Faults-Fault types-Normal-Reverse-Strike dip-Volcanoes-Earthquakes-Continental Drift-Plate Tectonics

REFERENCES

www.golearngeo.wordpress.com
epswwww.unm.edu/eps
eqses.geosc.psu.edu/faults.html
www.cotf.edu/ete/modules/plates
www.ucm.berkeleyedu/geology/tectonics.html
earthquakespectra.org

UNIT-IV

Exogenic Forces-Weathering-Factors-Types-Soils-Soil formation-Soil Characteristics-Soil Profile-Soil Classification

REFERENCES
www.uxi.ciu.edu/weathering
forces.si.edu/soils
www.nrcsusta.gov/wps/por
www.landfood.ubc.ca/soil

UNIT-V

Gradation-Agents of Gradation-Erosional and Depositional landforms formed due to the work of Running water-Underground water-Wind-Glaciers-Sea waves-Concept of Normal Cycle of Erosion

REFERENCES
www.oocities.org/geomwl

1. A.N .Strahler and A.N.Strahler; Modern Physical Geography

2. Jeffrey H; The Earth-its origin and physical composition

3. Fairbridge. R.W ; Encyclopedia of Geomorphology

4. Monkhouse F J ;Principles of Physical Geography

5. Sparks. B.W; Geomorphology

6. Woolridge and R.S Morgan; Physical basis of Geography

7. Dayal. P; Textbook of Geomorphology, Rajesh Publications

8. Sharma. H.S; Perspectives in Geomorphology, Concept

9. Singh S; Geomorphology, Prayag Publications

GG 1221- FUNDAMENTALS OF GIS AND REMOTE SENSING

Credit 3
No. of Contact hrs. 72

UNIT1

Remote Sensing: definition and components; Energy sources- types, active and passive remote sensing; Electromagnetic Radiation- Characteristics, Electromagnetic Spectrum, Spectral bands used in remote sensing, atmospheric windows; Atmospheric interactions; Interaction with earth surface features- spectral signature, Spectral Reflectance Profile - Definition and profiles for vegetation, soil and water; Platforms- Definition and types; Sensors – Types (Multispectral Scanner, Hyperspectral Scanner, Thermal Scanners); Scanning- Across track and Along track scanning

UNIT II

Data Products- Aerial Photos and Satellite Imageries; Resolution- Types, Definition and Significance; Aerial Photos – Types and Characteristics, A brief outline of orthophotos and stereoscopy; Satellites- Types based on orbit/ path and altitude and their significance, GPS; Satellite Imageries- Digital, Analog, Path Row and Scale,

UNITIII

Elements of Visual Image interpretation (for aerial photos and satellite imageries); A brief account of satellite remote sensing programmes of India, United States and France. Advantages of Satellite remote sensing and aerial surveys
References for unit I, II AND III:

1. Thomas Lillesand, Ralph W. Kiefer,(any edition) ,Remote Sensing and Image Interpretation, John Wiley and Sons, New York.
2. http://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/earthsciences/pdf/resource/tutor/fundam/pdf/fundamentals_e.pdf
3. http://www.nrcan.gc.ca/earth-sciences/geomatics/satellite-imagery-air-photos/satellite-imagery-products/educational-resources/9309
4. http://www.cdioinstitute.org/papers/Day1/AERIAL%20PHOTOGRAPHY_Abraham_Thomas.pdf

UNIT IV

Data, Information and Knowledge- Definition and Relationship; Information System- Definition and components; GIS- Definition and Components; Data in GIS- Spatial and Attribute; Characteristics of spatial data- co-ordinates, projection, datum; Spatial data sources-field survey, air photos , satellite imageries, GPS; Attribute data sources- census, surveys, air photos, satellite imagery; Data format- Raster and Vector- their structure, advantages and disadvantages

UNIT V

Data Input in GIS – key board entry, scanning, digitization (manual and automatic), raster to vector conversion, electronic data transfer; Data errors in spatial and attribute data entry; Error rectification methods for spatial and attribute data in raster and vector format; Measurement of length, perimeter and area for both raster and vector.

References for Unit IV and V

1. Haywood,Ian, Cornelius,Sarah& Carver, Steve(any edition), 'An Introduction to Geographical Information Systems', Prentice Hall, Pearson Education, U.K
2. http://otec.uoregon.edu/data-wisdom.htm
3. http://www.pasda.psu.edu/tutorials/gisbasics.asp
4. http://catalog.flatworldknowledge.com/bookhub/reader/3798?e=campbell_1.0-ch03_s01
5. Canada Center for Remote Sensing, 'Fundamentals of Remote Sensing, Canada
6. KonecnyGottified, 'Geoinformation: Remote Sensing, Photogrammetry and Geographic Information Systems', Taylor and Francis, London, 2003
7. The GIS Glossary, Environmental System Research Institute, Canada, 1996
8. Longley, Paul A et al. 'Geographic Information Systems and Science, John Wiley, England, 2005
9. Francis Harvey, 'A Primer of GIS: Fundamentals of Geographic and Cartographic Concepts', The Guildford Press New York, 2008
10. De By, Rolf A 'Principles of Geographic Information Systems' ITC Educational Textbook Series 1, ITC, Netherlands, 2001

GG 1341 - CLIMATOLOGY & OCEANOGRAPHY

Credit 3
No. of Contact hrs. 54

UNIT I

Atmosphere – Composition – Structure - Weather and Climate - Insolation and Temperature - Heat balance - Horizontal and vertical distribution of temperature - Global warming – Causes and effects

UNIT II

Atmospheric pressure – Measurement – Major pressure belts – General circulation of the atmosphere – Planetary winds - -Monsoon – local winds.

UNIT III

Humidity and Precipitation – Condensation - Forms – Fog and Cloud – types- Precipitation-Types – Air masses – types - Fronts – Cyclones – Tropical Cyclones – Temperate cyclones – Anticyclones.

UNIT IV
Oceans – Relief of ocean floor – Bottom relief of Atlantic, Pacific and Indian oceans – Temperature – Distribution – Salinity – Factors and distribution.

UNIT V
Waves – Tides – Currents – Currents of Indian, Pacific and Atlantic Oceans – Coral reefs – formation –types- Deposits in ocean floor – Marine resources.

References

1. An Introduction to Climate –Glenn. T. Trewartha Mc GrawHill
2. General Climatology –Howard. J. Critchfield ,Phi Learning Pvt Ltd ,1983
3. Atmosphere, Weather and Climate Barry and Chorley, Routledge, London, 2003
4. Physical Basis of Geography –Wooldridge and Morgan Longman Green
5. Modern Physical Geography-Arthur N Strahler and Allen H Strahler Wiley
6. Physical Geography Majid Husain , Rawat Publications Jaipur,2003
7. Oceanography –D. S .Lal, ShardaPustakBhawan Allahabad,2009
8. Edward Linacre & Bart Geerts- Climate and Weather Explained, Routledge, London, 2003
9. Gabler R. E, Petersen, J. F,Trapasso L. M and Sack D – Physical Geography, Brooks/Cole, Belmont, USA, 2009
10. Craghan M – Physical Geography: A Self Teaching Guide, John Wiley & Sons, Canada, 2003

GG 1441-HUMAN GEOGRAPHY
Credit 3
No. of Contact hrs– 54

UNIT I
Nature of geographic enquiries: Theory and Geography – Ontology, Epistemology, Ideology and Methodology of geographical knowledge: Geography and Human Geography
Definitions of Geography: Immanuel Kant, Alexander von Humboldt, Halford Mackinder, Richard Hartshorne, H.C. Darby, Yi-Fu Tuan, Peter Haggett, Ron Johnston, David Harvey, Edward W. Soja, Doreen Massey, Richard Peet, Neil Smith
Basic concepts: Space: Absolute, relative and relational spaces, Place and Nature, Scale, Location, Direction and Distance

Reading list:

1. Brendan Bartley, Phil Hubbard, Rob Kitchin, "Introducing Theory" in *Thinking Geographically,* Bloomsbury Academic (2005)

2. Derek Gregory, "Geography," in Gregory et al eds., *Dictionary of Human Geography*, (2009)

3. John Agnew and David Livingstone, "Introduction," in Agnew and Livingstone, eds., *The SAGE Handbook of Geographical Knowledge* (2011), 1---17

4. Rob Kitchin and Nigel Thrift, International Encyclopaedia of Human Geography, Elsevier Ltd (2009)

Internet Sources:
1. Margaret Roberts: http://georgiesgeographypage.wikispaces.com/file/view/Enquiry-+roberts.pdf
2. David Harvey: http://frontdeskapparatus.com/files/harvey2004.pdf

UNIT II
Spatial Interaction and Spatial Behavior:
Basis of Interaction: Edward Ullman model; complementarity, transferability, and intervening opportunity.
Measuring Interaction: Distance decay, the gravity model, potential model
Human Spatial Behavior: Mobility, territoriality, space-time prism
Spatial Interaction and the Accumulation of Information: Information Flows, Information and Perception, *Perception* of Environment

Reading list:
1. Fellmann, J., Getis, A. &Getis, J. (2007) Chapter 3 of *Human Geography: Landscapes of Human Activities*. New York, USA: McGraw-Hill.

2. Knox, P.L. & Marston, S.A. (2007) *Places and Regions in Global Context: Human Geography*. Upper Saddle River, New Jersey: Prentice Hall.

UNIT III
Culture: Components of culture; Culture traits; culture complex; culture region; culture realm
Cultural ecology; Environments as controls; Human impacts;
Roots of culture; cultural divergence; origin of agriculture; Neolithic innovations;
Culture hearths; Egypt, Crete, Mesopotamia, Indus Valley, northern China, south-eastern Asia, sub-Saharan Africa, Americas
The structure of culture: ideological, technological and sociological sub-systems
The cultural change: Globalisation and global culture; Folk and Popular culture; Cultural minorities
Reading list:
1. Fellmann, J., Getis, A. &Getis, J. (2007) Chapter 2 of *Human Geography: Landscapes of Human Activities*. New York, USA: McGraw-Hill.

2. Erin H. Fouberg, Alexander B. Murphy, Harm J. de Blij. (2011)*Human Geography: People, Place, and Culture*, 10th Edition, Wiley

UNIT IV
Language and religion:
Classification of languages: language families;
World Pattern of languages: language spread; language change; Dialects
Language, Territoriality, and Identity

Religion and Culture: Classification of Religion;universalizing religions, Ethnic religions, traditional religions
World Pattern of religions; Major religions of the world; Judaism,Christianity, Islam,Hinduism, Buddhism
Secularism

Reading list:

1. Fellmann, J., Getis, A. &Getis, J. (2007) Chapter 5 of *Human Geography: Landscapes of Human Activities*. New York, USA: McGraw-Hill.

2. Erin H. Fouberg, Alexander B. Murphy, Harm J. de Blij. (2011)*Human Geography: People, Place, and Culture*, 10th Edition, Wiley

UNIT V

Human Settlements – Rural – Types and patterns and functions – Urban – Urbanization – Pattern and Functions – Urban morphology – Urban problems

Reading List

1. Mandal, R. B., (2001) Introduction to Rural Settlements, Concept Publishing Company, New Delhi, Second Edition
2. Haggett, Peter, (1979) Geography A Modern Synthesis, Harper International, London

GG 1442 - PRACTICAL PAPER I

SCALES AND MAP PROJECTIONS

Credit - 2
No. of Contact hours: 72

UNIT I

Scales – Construction of plain scale, comparative scale, diagonal scale and time scale

UNIT II

Map Enlargement and Reduction Methods

UNIT III

Datum – Coordinate systems – geographic and projected – Geo-referencing using GPS

UNIT IV

Introduction to Map Projections – Principles - Classification

UNIT V

Graphical Construction, properties, uses and limitations of the following projections (2 exercises each)

- Zenithal – Equidistant and Equal Area – gnomonic, Stereographic and Orhographic (Polar Case Only)

- Conical – Simple conical projection with one standard parallel, conical projection with two standard parallels, Bonne's Projection, Polyconic projection – Sinusoidal projection- International projection (Theory only)
- Cylindrical – Natural cylindrical projection, simple cylindrical projection, cylindrical equal area projection
- Conventional projection – Sinusoidal and Molleweide's projection

References:

1. Monkhouse and Wilkinson: Maps and Diagrams, Methuen and Company
2. Thomas Newton Andrews: A complete and comprehensive course of Scale drawing, University of California
3. Kellaway George P: Map Projections, Bibliobazar, 2011
4. R.L.Singh: Elements of Practical Geography, Kalyani Publishers
5. Gopal Singh: Map work and Practical Geography, Vikas Publishing House Pvt. Limited
6. MZA Khan: Text Book of Practical Geography, Concept Publishing House
7. Lev M. Bugayevskiy and John Snyder: Map Projections – A Reference Manual, Taylor and Francis
8. Eric W. Garfarend and Friedrich W. Krumm: Map Projections – Cartographic Information Systems, Springer
9. *http://nationalatlas.gov* › Articles
10. www.colorado.edu/geography

GG 1541 - GEOGRAPHY OF INDIA

Credits : 4
No. of Contact hours : 72

UNIT I

India in the context of southeast and south Asia; a land of diversities; unity within diversities – Physical features – Major physiographic divisions – Drainage systems – Indian Monsoon; Regional and seasonal variation of climate – rainfall – famines and floods – climatic divisions – Soil types – their characteristics and distribution – vegetation types

UNIT II

Characteristics and problems of Indian Agriculture – Geographical requirements, distribution and production of major crops – rice, wheat, millets, cotton, sugarcane, tea, coffee and oil seeds – Irrigation in India – need types – multipurpose river valley projects – mega power projects

UNIT III

Minerals – iron ore, manganese, bauxite, mica and rare earths – their distribution; Power resources – hydel, thermal and atomic – distribution of coal, petroleum and natural gas – sources of non-conventional energy; marine resources

UNIT IV

Distribution of population – density, growth of population; – Analytical study of social and demographic characteristics of population - population problems and planning

UNIT V

Major industrial regions in India – Locational factors of industries - An examination of relationship of locational factors of iron and steel, cotton textile, sugar and IT industries – Transport – Road, railway, inland waterways and airways – Major ports – India's international trade

References :

1. Deshpande C D – India – A Regional Interpretation , Northern Book Centre, New Delhi. 1992
2. Farmer B H – An Introduction to South Asia, Metheun, London 1983
3. Learmonth ATA et.al (ed) – Man and Land of South Asia, Concept Publishers, New Delhi
4. Mitra A – Levels of Regional Development India, Census of India, Vol. I, Part I-A(i) and (ii) New Delhi, 1967
5. Routray, J.K – Geography of Regional Disparity, Asian Institute of Technology, Bangkok, 1993
6. Shafi M – Geography of South Asia, McMillan & Co, Calcutta, 2000
7. Singh R L (ed) : India – A Regional Geography, National Geographical Society, India, Varanasi, 1971
8. Spate OHK and Learmonth ATA – India and Pakistan – Land, People and Economy, Methuen & Co. London 1967
9. Valdiya KS – Dynamic Himalaya, University Press, Hyderabad, 1998
10. Wadia D N – Geology of India, McMillan & Co. London 1967
11. Khullar, DR, India: A Comprehensive Geography, Kalyani Publishers, New Delhi, 2006

GG 1542: GEOGRAPHY OF KERALA

Credits: 3
No. of Contact hours: 54

UNIT I

Location-Relief features-Geology, Soil-Drainage-Wealth and climate-Annual rainfall-Seasonal
Rainfall-Variability of rainfall-features and effects of monsoon-Biodiversity-Forests-Wild animals-wildlife sanctuaries and National Parks

UNIT II

Agriculture-Cereal and other crops-their area under cultivation-plantation crops-horticulture-problems and prospects of agriculture.

UNIT III

Mineral resources-occurrence-distribution ; rare earths and their distribution ; power resources – hydroelectric projects- capacity and production – thermal power generation ;

marine resources – fisheries ; fishing villages – importance of fishing in the economy of Kerala

UNIT IV

Industries in Kerala: - Major industries - Cottage and small scale industries - tourism industry – potentialities – major tourist centers.

UNIT V

Distribution and growth of population, density, literacy, sex-ratio:Trend of urbanization – major urbanization problems; roads, railways, waterways and airways.

Reference

1. Geography of Kerala – Dr. George Kurian
2. Economy of Kerala – Karunakaran and Sankaranarayanan
3. Resource Atlas of Kerala – Centre for Earth Science Studies
4. Gazetteer of Kerala – Kerala Gazetteer, Govt. of Kerala
5. Geology of Kerala - Dr. K. Soman, Geological Society of India
6. Water Atlas of Kerala – CWRDM, Kozhikkode
7. District Hand books- Dept. of Public Relations, Govt. of Keala

GG 1543: GEOGRAPHY OF RESOURCES

Credits: 3
No. of Contact hours: 54

UNIT I

Concepts of Resource Geography: Definition, Scope, Approaches - Concept and Classification, Types; Forest, Fish, Grassland and Livestock, Mineral, Energy Resources, Approaches of resource utilization; Environmental and Economic.

References:

1. Clark, Gordon L., Feldman, Maryann P., Gertler, Meric S. (2003). (eds.). *The Oxford Handbook of Economic Geography*. Oxford: Oxford University Press.

2. Robert W. Kates, Ian Burton (ed). 1986. Geography, Resources and Environment, Volume 1: Selected Writings of Gilbert F White. University of Chicago Press.

3. Knowles, R. and Wareing, J. (2000). *Economic and Social Geography Made Simple*. New Delhi: Rupa and Company.

4. Leong, G. C. and Morgan, G. C. (1982). *Human and Economic Geography*. Singapore: Oxford University Press.

UNIT II

Resource Utilization and Conservation: Problems of Distribution, Utilisation and Conservation of natural Resources, World Energy Crisis, Measures to overcome the Energy Crisis, Forrester-Meadows model on Limits to Growth, Management, Optimum and Sustainable Use of Natural Resources.

References:

1. Guha, J. S. and Chattoraj, P. R. (2002). *A New Approach to Economic Geography: A Study of Resources.* Kolkata: The World Press Private Limited.

2. Bagchi-Sen, **Saharmistha** and Smith, Helen Lawton. (2006). *Economic geography: past, present and future,* Oxon (United Kingdom): Routledge.

UNIT III

Primary, Secondary and Tertiary Activities: Concept, Classification and Importance - Problems and Trends of Management with special reference to Mining, Forestry, Fishing and Livestock Farming - Typology and World agricultural Regions, L.D Stamp, DerwentWhittlesey's Classification, Von Thunen's Theory of Agricultural Location, Weaver, World food and Nutrition Problems - Structure and Types of Industries, Industrial location theory of Weber – Major industries; Iron and Steel, Cotton and Textile, Ship building - Land, Labour, Capital, Raw Material, Market, Industrial Location and Growth Models regarding Economic Activities: Weber, Losch and Gunner Myrdal - Major industries; iron and steel, textiles, petro-chemical and sugar, Concept of Multinational and Transnational Companies, Software, Technology Parks and Cyber-cities –

UNIT IV

Transport and Trade: Economic Adjustments of Space by Reducing Distance Transport Systems, Flow Theory, Development of network of interchange, Network Analysis, Telecommunications; Determinants, Trade Strategies, Pattern and Current flows of International Trade, Ricardian theory, Major Trading Blocks of the World, Employment Structure, Export and Import (Exim), Trade Balance, Role of GATT and Subsequently WTO with special reference to International Trade with Developing World – Concept of Quaternary and Quinary Activities.

Refereces:

1. Hanink, D. M. (1997). *Principles and Applications of Economic Geography: Economy, Policy, Environment.* New York: John Wiley and Sons, Inc.

2. Floor Brouwer (2008). Sustainable Land Management: Strategies to Cope with the Marginalisation of Agriculture. Edward Elgar Publishing. ISBN: 1782543481, 9781782543480.

UNIT V

Land Use Classification and Patterns: Qualitative and Quantitative Systems of Classification, Land Use Surveys and Techniques, Land capability and Suitability Surveys, Land Acquisition Problems in Developing Countries; Concept of EPZ and SEZ Development; Land Reforms in India

References:

1. Ajit Kumar Singh (1997). Land Use, Environment and Economic Growth in India. M.D. Publications Pvt. Ltd., India.

2. Floor Brouwer, Bruce A. McCarl (2006). Agriculture and Climate Beyond 2015: A New Perspective on Future Land Use Patterns.

GG 1544: WORLD REGIONAL GEOGRAPHY

No. of credits : 4
No. of contact hours : 72

UNIT I

Concept of a region - Types – Naively given region, Instituted regions, Formal region – *natural region, socio cultural region*, Functional regions, Planning regions - **Methods of regionalization -** Identification of formal regions, identification of functional regions

References

1. Darshan Singh Manku (2002) – A regional Geography of the World, Kalyani Publishers
2. David L Clawson (1995) – World Regional Geography, A Developmental Approach, Prentice Hall
3. Johnson, Haarmann, Clawson (2010) World Regional Geography, Prentice Hall
4. Mahesh Chand Puri - Regional Planning in India, Allied Publishers, New Delhi pp.1-11
5. Misra R P – Regional Planning, Concepts, Techniques, Policy and case studies, Concept Publishing Co. Ltd, Delhi
6. Unstead J E – Systematic World Regional Geography

UNIT II

World distribution of Mountains, Plains, Plateaus, Lakes and rivers – their influence on man

References

1. Majid Husian – Fundamentals of Physical Geography, Rawat publications, New Delhi pp.152-171

2. Goh Cheng Leong – Certificate Physical and Human Geography, Oxford University Press New Delhi, pp. 12-19
3. Khanna KK, Gupta VK – Economic and Commercial Geography, Sultan Chand and Sons, Educational Publishers, New Delhi
4. RenuBala – Textobook of Geography, Ankit Publishing House, New Delhi
5. Qazi SA, NavaidShabirQazi – Geography of the world, APH Publishing Corporation, New Delhi

UNIT III

Major Natural Regions of the World - Physical, Cultural and Economic aspects
Tropical and sub-tropical – Equatorial rainforest, Tropical Savannah, Hot deserts, Mediterranean

References

1. AlkaGautam (2007) – World Geography, ShardaPustakBhawan, Allahabad
2. Christopher L Satter, Jospeh J Hobbs – essentials of World Regional Geography, Thompson Books
3. Lal DS – Climatology, ShardaPustakBhawan, Allahabad pp. 340-375
4. Majid Husain (2008) – World Geography, Rawat Publications, New Delhi
5. Khanna KK, Gupta VK – Economic and Commercial Geography, Sultan Chand and Sons, Educational Publishers, New Delhi
6. Robinson H – World Regional Geography
7. Tikkha, Bali, Sekhon (2007) – World Regional Geography, New Academic Publishing Co., Jalandhar

UNIT IV

Major Natural Regions of the World - Physical, Cultural and Economic aspects
Temperate and frigid regions– Temperate grasslands, Taiga, Tundra

References

1. AlkaGautam (2007) – World Geography, ShardaPustakBhawan, Allahabad
2. Khanna KK, Gupta VK – Economic and Commercial Geography, Sultan Chand and Sons, Educational Publishers, New Delhi
3. Majid Husain (2008) – World Geography, Rawat Publications, New Delhi
4. Tikkha, Bali, Sekhon (2007) – World Regional Geography, New Academic Publishing Co., Jalandhar

UNIT V

Modification in environment due to human interference

- **Land degradation –** Definition, causes – Land degradation in Amazon basin
- **Impact of climate change –** Global warming in Artic, Antarctica, African Savannah, Tropical ever green forest
- **Impact of Globalization** on more economically developed and less economically developed countries
- Global pattern of **Food security** and insecurity

Modification in environment due to human interference

- **Land degradation –** Definition, causes – Land degradation in Amazon basin
- **Impact of climate change –** Global warming in Artic, Antarctica, African Savannah, Tropical ever green forest
- **Impact of Globalization** on more economically developed and less economically developed countries
- Global pattern of **Food security** and insecurity

References

1. David Redfern – Climate change, Philip Allan Updates 2010, Hodder Education, Hacheatte, UK, Oxfordshire
2. David Waught – Geography and Integrated Approach, Heleson Thomas Ltd, UK
3. Gautam Kumar – Climate change man and environment, Daya Publishing House, New Delhi
4. Michael Witherick – Food and famine, Philip Allan Updates 2010, Hodder Education, Hacheatte, UK, Oxfordshire
5. Savindra Singh – Enviromental Geography, Kalyani Publishers

Internet Resources

1. bethgaylor.weebly.com/.../**amazon_rainforest**_deforestation-_geog_text...
2. https://sites.google.com/site/.../the-consequences-of-**land-degradation**
3. *en.wikipedia.org/wiki/**Land_degradation***
4. *www.who.int/globalchange/ecosystems/desert/en/*
5. www.preservearticles.com/.../what-are-the-causes-of-**land-degradation**.ht...
6. ***climate**.nasa.gov/**effects***
7. www.epa.gov/climatechange/science/causes.htm
8. www.ncbi.nlm.nih.gov
9. *www.independent.co.uk* › News › Environment › Climate Change
10. *wwf.panda.org* › What We Do › Priority Places › Amazon › Problems
11. www.rainforestfoundationuk.org

OPEN COURSE

GG 1551.1 GEOGRAPHY OF TOURISM

No. of Credits: 2
No. of contact hrs.: 54

UNIT I

Geography and tourism-map- types of maps-Elements of map reading-concept of leisure-Travel and tourism-Travel in ancient, medieval, and modern times.

UNIT II

Elements of tourism-Attraction-classification-Accessibility –Role of transport in tourism Accommodation- types-Travel motivations.

UNIT III

Tourism restrictions-Passport, Visa, Credit card and Foreign exchange. Socio economic and cultural impacts of tourism.

UNIT IV

Role of travel agencies in tourism-concept of package tour-publicity-Tourist organizations-WTO, ITDC & KTDC –functions.

UNIT V
Tourism in Kerala-Major natural and cultural attractions

References

1. Alan .A. Lew, Mitchell Hall, Alan .A. Williams, A Companion to Tourism-edited by, Black well publishing Ltd ,2004.
2. Ratandeep Singh, Dynamics of Modern Tourism-, KanishkaPublications, New Delhi 1998
3. Singh L.R. Fundamentals of Practical Geography,ShardaPustakBhavanAllahabad,2006.
4. Singh, Ratan Deep, Infrastructure of Tourism in India-,KanishkaPublications,NewDelhi ,1998.
5. Bhatia A.K, .International Tourism –Fundamentals and Practices, , Sterling Publishing House.
6. Negi J. M, Tourism and Travel- Concepts and Principles ,GitanjaliPublishing House, Delhi, 1990
7. Cook, A., Laura, Roy .A, Yale, J MarquaJoseph .J, Tourism- The Business of Travel Prentice Hall-2007

OPEN COURSE

GG 1551.2 PHYSICAL GEOGRAPHY

No. of Credits: 2
No. of contact hrs.: 54

UNIT I

General Geography: Geographical locations - latitude, longitude and time zone, Solar System and Planets.

UNIT II

Landforms: Major relief features, External and Internal forces and agents, features formed by running water, wind and glaciers -Normal cycle of Erosion.

UNIT III

Climatology: Atmosphere, Insolation – Temperature, Pressure – Wind– Humidity – Forms of Condensation and Precipitation – types and distribution of rainfall – Air mass – Fronts cyclones

UNIT IV

Oceanography: Land and Sea distribution – Bottom Topography of oceans – temperature, salinity, currents, tides, coral reefs, ocean deposits, resources.

UNIT V

Elements of biogeography: ecosystems, food chain, food web – environment, habitat and plant- animal association; zoogeography; distribution of major animal groupings; elements of plant geography, distribution of forests and major communities

References

1. Dayal, P., (1990) A Text book of Geomorphology, Shukia BookDepot, Patna, India.
2. Lal, D.S., (1996) Climatology, Allahabad, Chaitanya PublishingHouse
3. Strahler. A.H., and Strahler.A.N., (2001) Modern Physical Geography(Fourth Edition), New York; John Wiley and Sons, Inc.
4. Thornbury.W.D., (1954) Principles of Geomorphology, John Wileyand sons, Inc., New York.
5. Worcester, P.G., (1948) A Textbook of Geomorphology, VonNostrand Reinhold, Company, New York.
6. Robinson, H.,Biogeography, ELBS & MacDonald and Evans, London, 1972

OPEN COURSE

GG 1551.3 GENERAL GEOGRAPHY

No. of Credits: 2
No. of contact hrs.: 54

UNIT 1

Physical Geography - Universe and Solar System – Galaxies, Stars, Planetary System, Eclipses, Motions of the Earth, Latitude and Longitude, Time Zones, Greenwich Mean Time, Standard time, Solstice, Equinoxes; **Earth Structure** - ***Composition of Crust*** – Rocks and Minerals; ***Earth Movements*** – Endogenic forces, Exogenic forces – Volcano, Earthquake - Continental Drift, Plate Tectonics theories **Landforms** – Enumeration of deposition and erosional landforms of Fluvial, Glacial, Marine, Karst, Arid - ***General Landforms*** – Mountains, Plateaus and Plains – types and their distribution- ***Weathering –*** *Physical,*

Chemical and Organic – **Atmosphere** – Composition, Structure, Distribution of Pressure belts, Types of Wind; **Hydrosphere –** Major Oceans, Profile of Ocean floor, Islands, Salinity, Coral reefs and Atolls, Ocean currents, Tides.

UNIT II

Human Geography – ***World population***, distribution, growth – factors affecting them – Races -Migration, Settlement – Rural, Urban - Urbanization –Tourism – Globalization – Different levels of development of nations – sustainable development

UNIT III

Environmental Geography – Man and Environment relationship – ***Ecosystem*** – Structure, classification, biomes-food web-food pyramid-nutrient cycles – Bio-diversity - Natural hazards – Environmental degradation – Man's modification of the biosphere – Environmental problems – Pollution - Environment management and planning –Conservation

UNIT IV

Resources of World with special reference to **India -** Resource types – **Agriculture**: Rice, Wheat, Cotton, Tobacco, Sugarcane, Tea, Coffee, Forestry, Fisheries; **Minerals** – Iron ore, Bauxite, Manganese, Mica; **Power resources** – Coal, Petroleum, Thermal, Hydro, Nuclear; **Industries** – Cotton textiles, Sugar, Iron, Steel, Ship building, Automobiles, Engineering,

UNIT V

Geography of India– Location, Physiographic divisions, Drainage System, climate , Soil, Natural vegetation, Flora and Fauna - Population – Distribution, Growth, Composition, Racial groups, Languages, Religion, Urbanization – **Kerala** – Physiography, Drainage, climate, Major crops, minerals, industries, population and urbanization

References

1. Dayal P (1990) A Text book of Geomorphology, Shukia Book Depot, Patna, India
2. Lal DS (1996) – Climatology, Chaitanya Publishing House, Allahabad
3. Strahler AH and Strahler AN (2001) Modern Physical Geography, John Wiley and Sons, Inc, New York
4. Khullar, DR, India: A Comprehensive Geography, Kalyani Publishers, New Delhi, 2006
5. Castree Noel, Demeritt David, Liverman Diana, Rhoads Bruce (Ed.) (2009) A Companion to Environmental Geography, Blackwell Publishing Ltd, Hong Kong
6. Linacre Edward and Geerts Bart (2003) Climate and Weather Explained, Routledge London
7. Leong, G. C. and Morgan, G. C. (1982). *Human and Economic Geography*. Singapore: Oxford University Press.
8. Knowles, R. and Wareing, J. (2000). *Economic and Social Geography Made Simple*. New Delhi: Rupa and Company

OPEN COURSE

GG 1551.4BIO-GEOGRAPHY

No. of Credits: 2
No. of contact hrs.: 54

UNIT I

Definition, Scope and significance of Biogeography – Basic Ecological principles: Darwin's Theory of Evolution – Concepts of Biome, Ecotone and Community

UNIT II

Origin of Fauna and Flora – Plant and animal evolution through Geological times – Distribution of Plant life on Earth and its relation to Soil types, Climates and Human Practices.

UNIT III

Problems of extinction of plant and animal life - Habitat degradation- and their conservation - process of desertification-its consequences and its management principles. Industrial effluent and its effect on fresh water biology management practices, (Special Reference to India.)

UNIT IV

Major Terrestrial biomes: Study of biomes with reference to regional climate, vegetation, structure, ecological succession, species richness, geographical affinities, soils, faunal adaptations, mapping at a global level (Applicable for both Unit – IV and Unit - V)

1. Tropical Rain Forests
2. Tropical Grasslands
3. Deserts
4. Temperate Grasslands

UNIT V

1. Broad-Leaved Evergreen Forest
2. Mountains
3. Taiga
4. Tundra

References

1. Cox, C.D. and Moore P.D., Biogeography: An Ecological and Evolutionary Approach 5thedn., Blackwell, 1993
2. Huggett, R.J., Fundamentals of Biogeography, Routledge, 2004
3. Llies,J., Introduction to Zoogeography, McMillan, London, 1974

4. Khoshoo, T.N. and Sharma M. (ed.), Indian Geo-sphere-Biosphere Har-Anand Publication, Delhi, 1991 2
5. Lapedes, D.N. (ed), Encyclopedia of Environmental Science, McGraw Hill, 1974
6. Mathur H.S., Essentials of Biogeography, Anuj Printers, Jaipur, 1998 Pears, N., Basic Biogeography 2nd edition, Longman, London,1985
7. Simmon I.G., Biogeography, Natural and Cultural, Longman, London, 1974
8. Tivy, J., Biogeography: A study of Plants in Ecosphere, Oliver an Boyd, 1992
9. Ian, N Healey, C. Barry Cox, Peter D. Moore, Biogeography: An Ecological and Evolutionary approach, Blackwell, Oxford, 1972
10. Pielou E.C., Biogeography, John Wiley, New York, 1973
11. Husain M., Biogeography, Anmol Publication, New Delhi, 1994
12. Robinson, H.,Biogeography, ELBS & MacDonald and Evans, London, 1972

GG 1641: CARTOGRAPHY

No. of credits : 4

No. of contact hours : 72

UNIT I

Nature and scope of Cartography – History of Cartography ; Ancient period, late Medieval period – Early modern period – recent period; Meaning of maps, Classification of maps, Artistic learning and scientific bases of cartography – Cartography as a science of human communication – branches of cartography

UNIT II

Process of map making: Elements of maps, procedure of mapping data – map compilation– elements of generalization; simplification, classification – controls of generalization – symbolization – thematic and complex mapping – types and problems

UNIT III

Map design and layout – principles; Toponomy and map reproduction; Automated and computer cartography

UNIT IV

Special purpose maps – Planning and designing maps for a) Blind b) Children c) Neo-literates d) Business and Commercial Organizations

UNIT V

Cartographic Appreciation of Survey of India Topographic maps

References

1. Misra R. P and Ramesh A, (1989) Fundamentals of Cartography. Concept Publishing Company, New Delhi
2. Robinson, A.H et al, (1995) Elements of Cartography, Wiley
3. Jan Kraak, Menno and OrmelingFerjan (2003) Cartography: Visualization of Geospatial Data, Prentice Hall
4. Deetz, Charles Henry (2005) Cartography, University Press of Pacific

GG 1642: ENVIRONMENTAL GEOGRAPHY

No. of credits : 4

No. of contact hours : 72

UNIT I

Nature and Scope of Environmental Geography – Types of Environment-Physical-Biological-Cultural- Components of Environment –Biotic –Abiotic;Human-Environment Relationship – Recent trends.

References

1. Bodkin, E.: Environmental studies, Charles E. Merril Pub. Co., Columbus, Ohio, 1982
2. Nobel and Wright: Environmental Science, Prentice Hall, New York, 1996

UNIT II

Concept of Ecosystem: its structure and classification; Functions of the Ecosystem: Food-chain, Food-web, Food-pyramid and Nutrient Cycles

References

1. Odum, E.P. : Fundamentals of Ecology, W.B. Saunders, Philadelphia, 1971
2. Manners, I.R. and Mikesell, M.W.(eds), Perspectives on Environment, Commission on College Geography, Publ. no. 13, Washington D.C.,1974

UNIT III

Disruptions in Ecosystem: Natural (Floods, Droughts, Quakes, Tsunamis, and Volcanic Eruptions) and Human-caused Environmental Problems (Erosion, Degradation, Pollution, and Climate Change); Human modifications: Consequences of Agriculture (Green Revolution), Mining and Industrial Development.

References

1. Russwurm, L.H. and Sommerville, E.(eds.) : Man's Natural Environment – A systems Approach, Duxbury, Massachusetts, 1985
2. R.B Singh,Environmental Geography,Heritage Publishers,1990

UNIT IV

Environment and health – Environment and development; Environmental Movements (Chipko, Narmada BachaoAndolan), environmental Movements in Kerala (MadhavGadgil/KasturiRangan Reports, Aranmula Airport, Various Wetland Reclamations and localized anti-reclamation movements)

References

1. Agarwal, A. and Sen, S.: The Citizen's Fifth Report, Centre for Science and Environment. New Delhi 1999
2. Chandna, R.C.: Environmental Awareness, Kalyani Publishers, New Delhi, 1998
3. Sharma, H.S.: RathambhoreSanctuary – Dilemma of Eco-development, Concept.

UNIT V

Environmental Management and Planning: laws, valuation and impact assessments, Concept of Sustainable Development

References

1. Noel Castree, David Demeritt, Diana Liverman, Bruce Rhoads, A Companion to Environmental Geography, Blackwell companions,2009
2. Baker, Susan: Sustainable Development,Routledge,2006

GG 1661 - AN INTRODUCTION TO DISASTER MANAGEMENT

No. of Credits: 2

No. of Contact hrs. 54

UNIT I

Disaster Management- Meaning and Definition; Definitions of Disaster, Hazard, Risks, Vulnerability, and Resilience and their relationship; Classification of disasters- Human induced and Natural; Causes of Disasters; impacts of disasters. Factors affecting Vulnerability – Economic, Political, Environmentaland Social

References

- www.ifrc.org/en/what-we-do/disaster-management/
- Coppola, Damon (2011),**Introduction to International Disaster Management, Elsevier** ISBN: 978-0-12-382174-4
- Abbott ,Patrick Leon (2008), Natural Disasters ,McGraw-Hill,**ISBN-13:** 978-0072428650

UNIT II

Disaster Management Cycle; Disaster Management Phases- Prevention and Preparedness, Mitigation, Response and Recovery; Community based disaster management - Roles and responsibilities of community, An over view of Disaster Management Act – Disaster

Management Strategies to be adopted by Panchayati raj institutions, local bodies, states and the centre.

References

- http://www.mnmk.ro/documents/2008/2008-6.pdf
- Carresi,A.L, et al (2013) **Disaster Management: International Lessons in Risk Reduction, Response and Recovery ,** Routledge, U.K.

http://www.ndma.gov.in/images/ndma-pdf/DM_act2005.pdf

UNIT III

Hazard and Vulnerability profile of India; Disaster prone or vulnerable areas in India with emphasis to cyclones, earthquakes and floods; Structural and Non-structural measures for disaster risk reduction in earthquake and cyclone prone areas.

References

- http://www.ndma.gov.in/en/vulnerability-profile.html
- http://www.ndma.gov.in/en/media-public awareness/disaster/naturaldisaster/earthquakes.html
- http://www.ndma.gov.in/en/media-public-awareness/disaster/natural-disaster/floods.html

http://www.ndma.gov.in/en/media-public-awareness/disaster/natural-disaster/cyclones.html

UNIT IV

Disasters and development- impact of development projects such as dams, embankments, changes in land-use and setting up of new industries. Impacts of disasters:on health, mental health, social, economy and environment.Understanding Differential Impacts on people based on caste, class, gender, age, location, disability and religion. Indigenous knowledge and disaster prevention.

References

- Carresi,A.L, et al (2013) **Disaster Management: International Lessons in Risk Reduction, Response and Recovery ,** Routledge, U.K.

UNIT V

Standard Operating Procedures (SOP) – Definition and the need for SOP's. Gender and culture sensitive disaster management - purpose. Disaster management plan- components

References

http://ndmindia.nic.in/SOP-NDM-2010.pdf

1. Kurowa, Julio, Disaster Reduction: Living in harmony with nature Quebecor World Peru S.A

2. C Emdad Hague, Mitigation of natural hazards and disasters: International perspectives,
Springer, 2005

3. Shaw Rajib and Krishnamurthy R.R (2009) Disaster Management: Global Challenges and Local Solutions, Universities Press

4. Kapoor Mukesh, (2009) Disaster Management, Universities Press

5. DiwanParang, (2010) A Manual on Disaster Mangement, Universities Press

GG 1643- PRACTICAL PAPER II
REPRESENTATION AND INTERPRETATION OF GEOGRAPHIC DATA

No. of Credits: 4
No. of contact hours: 108

UNIT I

Graphical Representation and analysis of Socio-economic data by means of Line graph – Simple, Multiple; Bar Graph – Simple, Compound/divided bar graph, Multiple Bar Diagram, Band Graph/Percentage Bar Graph, Rectangular diagram, Pie Diagram, Ring Diagram, Comparative circles, Sphere Diagram, Pictogram, Age-Sex Pyramid, Traffic Flow Diagram

UNIT II

Representation of temperature, pressure, wind and rainfall data by means of line and bar graph – isotherms – isobars – isohyets, construction and significance of Taylor's Climograph – Hythergraph – Windrose diagram

UNIT III

Study of various meteorological signs and symbols

UNIT IV

Station model

UNIT V

Study and interpretation of Indian daily Weather Reports of different seasons

References:

1. Monkhouse and Wilkinson: Maps and Diagrams, Metheun and Company
2. R.L.Singh: Elements of Practical Geography, Kalyani Publishers
3. Gopal Singh: Map work and Practical Geography, Vikas Publishing House Pvt. Limited

4. M H Siddiqui: Teaching of Geography, Chaman Enterprises
5. Graham T. Richardson: Illustrations – Everybody's complete and practical handbook, The Humana Press Inc., NJ
6. www.skwirk.com/
7. www.qsa.qld.edu.au/
8. Steven A. Ackerman, John A.Knox: Meteorology, Jones and Bartlett Learning
9. www.hpc.ncep.noaa.gov/
10. www.imd.gov.in/

GG 1644: PRACTICAL PAPER III
MAP READING AND ANALYSIS

No. of Credits: 4
No. of contact hours: 54

UNIT I

Maps and their classsification

UNIT II

Representation of relief in maps – Spot heights, hachures, hill shading, layer tints and contours – representation of important landform features by contours – Uniform/conical hill, uniform depression, concave slope, convex slope, uniform slope, terraced slope, v-shaped valley, gorge, u-shaped valley, hanging valley, knoll, ridge and saddle, escarpment, spur, re-entrant, sea-cliff, waterfall, cirque, Plateau, Dissected plateau

UNIT III

Concept of slope and gradient, intervisibility

UNIT IV

Study of Indian Topographic Maps – Lay out and numbering, conventional signs and symbols, grid references, Interpretation of Topographic maps (1:250,000/1:50,000/1:25,000 – *one* each) – Marginal Information, Relief, Drainage, Natural Vegetation, Settlements, Occupation, Irrigation, Transport and Communication.

References:

1. Monkhouse and Wilkinson: Maps and Diagrams, Metheun and Company
2. R.L.Singh: Elements of Practical Geography, Kalyani Publishers
3. Gopal Singh: Map work and Practical Geography, Vikas publishing house pvt. Limited
4. K.K.Rampal: Mapping and compilation – methods and techniques, Concept and Publishing House
5. Rollin D.Salisbury: Interpretation of Topographic maps, Nabu Press, 2012
6. www.nwcg.gov/

7. http://geology.isu.edu/
8. http://www.nrm.qld.gov.au/
9. Ian F.Mahaney: Topographic Maps, PowerKids Press
10. Nelson Petrie: Analysis and Interpretation of Topographic Maps, Orient BlackswanPvt.Ltd

GG 1645: PRACTICAL PAPER IV SURVEYING AND LEVELLING

No. of Credits: 3
No. of contact hours: 90

UNIT I

Principles of surveying – equipment for land survey – their advantages and disadvantages

UNIT II

Surveying by means of

1. Chain and Tape – preparation of plans and calculation of area
2. Prismatic compass – preparation of simple transects by open and closed traverse
3. Plane Table – Radiation and Intersection methods
4. Indian climometer – use of clinometers with plane table
5. Dumpy level – drawing of profiles

UNIT III

Field Work/Study Tour to places of geographic importance, with the duration of not exceding seven days

References:

1. R. L .Singh: Elements of Practical Geography, Kalyani Publishers
2. Gopal Singh: Map work and Practical Geography, Vikas Publishing House Pvt. Limited
3. http://www.whycos.org/
4. *www.**levelling**.uhi.ac.uk/*
5. https://archive.org/details/surveyingfieldwo00will
6. S.S.Bhavikatti: Surveying and Levelling, Vol.I, IK International Publishing House Pvt Ltd., New Delhi, 2009
7. R. Subramanian: Surveying and Levelling, OUP India, 2013
8. www.academia.edu/.../**CHAIN_AND_TAPE_SURVEY_G**
9. http://nptel.ac.in/
10. *www.bajr.org/Documents/Basic**Survey**.pdf*

Note: Of the total 80 marks, 10 marks are earmarked for Field Work/ Study tour report

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UNIVERSITY OF KERALA

Scheme & Syllabi

For First Degree Programme in Hindi (Other than General English)

(Faculty of Oriental Studies)

Under the Choice based Credit and Semester system (CBCSS)

2020 admission onwards

Preface

The proposed revised syllabus to be implemented with effect from 2020 admission onwards has been prepared by Board of Studies in Hindi (Pass) of the University of Kerala as 'outcome based as per the instructions of University Grants Commission, the Kerala State Higher Education Council and Kerala University. The aim of each course is identified and the syllabus of each course is divided accordingly, into different modules. The outcome of each module and the course outcome of each of the 36 courses is outlined in the syllabus. The outcome of the programme is that the students who pass this programme (FDP in Hindi under CBCSS) will have comprehensive knowledge of Hindi literature both prose and poetry from the Ancient period to contemporary period. They will be proficient in grammer. The programme will kindle their aspiration for a career as translator/Hindi Officer/Journalist in Hindi.

I extend my sincere thanks to Prof. Dr. Devendra Kumar Chowbey, Professor of Hindi, JNU, Deshi for being the Resource person in the workshop conducted as part of revising the syllabus and for his valuable suggestions. I thank Dr. R. Jayachandran Dean, Faculty of Oriental studies and Head, Dept. of Hindi, University of Kerala, Chairman, BOS in Hindi (P.G) for his guidance. I thank all members of the Board of studies in Hindi (pass) for helping me in preparing study materials, compiling study materials, editing text books. I thank all the participants of the workshop especially Dr. K.Shaji, member academic council, Kerala University for their valuable suggestions. My special gratitude to Dr. Suma.S, Member BOS Hindi (pass) for her selfless service throughout the preparation of the syllabus. Hope the students will find the syllabus interesting and helpful.

Trivandrum
12.2.2020

Dr. R.I. Santhi
Chairman, BOS Hindi (Pass)

Board of Studies in Hindi (Pass)

Chairman

Dr. R. I.Santhi
Associate Prof. and Head (Rtd.)
Dept. of Hindi, Govt. College for Women
Trivandrum

Members

1. **Dr.Sasikala Namboothiri**
   Associate Prof. & Head, Dept. of Hindi
   SD College, Alappuzha

2. **Dr. Deepak K.R**
   Asst. Prof. of Hindi
   SDE, University of Kerala

3. **Dr. Satheesh Kumar.G** Associate Professor of Hindi FMN College, Kollam

4. **Dr. R. Sethunath** Associate Prof. of Hindi University of Calicut

5. **Dr. S.R. Jayasree**
   Asst. Prof. of Hindi
   MG College, Trivandrum

6. **Dr. T. Sheela.T. Nair**
   Asst. Prof. of Hindi, NSS College Pandalam

7. **Dr. Suma.S**
   Asst. Prof. of Hindi
   Govt. College for Women, Tvpm

8. **Dr. V. John Panicker**
   Asst. Prof. of Hindi
   St. Gregorios College, Kottarakara

9. **Dr. Reshmi Krishnan**
   Asst. Prof. of Hindi
   Govt. College, Ambalappuzha

10. **Dr. R. Jayachandran**
    Chairman, BOS Hindi (PG)

Resource Person

Prof. Dr. Devendra Kumar Chowbey
Professor of Hindi, JNU, Delhi

Special Invitee

Dr. K.Shaji, Member, Academic Council (Kerala University) Asst. Prof. of Hindi
SN College, Kollam

University of Kerala
Scheme & Syllabi
For the First Degree Programme in Hindi (Other than General English) Faculty of Oriental Studies) w.e.f. 2020 admission

General Scheme

Duration : 6 semesters of 18 weeks/ 90 working days per semester

Total Courses : 36
Total credits : 120
Total lecture hrs. : 150/week

Common course

Language course for B.Com : 2
Credits : 8
Lecture hrs./week : 8
Language course (Common course)
For restructured B.Com : 2
Credits : 8
Lecture hrs. /week : 10
Language course (common course)
For career related BA/BSc. : 2
Credits : 8
Lecture hrs/week : 10

Summary of Course in Hindi

Course Type	Name of Course	No. of Courses	Credits	Lecture Hr./week
a	Common course for BA/BSc.	4	14	18
	Common Course for B.Com	2	8	8
	Common Course for restructured B.Com	2	8	10
	Common course for career related BA/BSc	2	8	10
b	Foundation Course	1	3	4
c	Complementary courses	8	22	24
d	Core Courses	14	52	64
e	open course	1	2	3
f	elective course	1	2	3

g	Project/Dissertation	1	4	6

a) Outline of Common courses

(i) for BA/BSC Degree Programmes

Course Code	Course Type	Course title	Credit	Lecture hrs./week
HN 1111.1	Common Course I	Hindi Katha Sahitya	3	4
HN1211.1	Common Course II	Hindi Nibadh aur anya gadya Vidhayen	3	4
HN 1311.1	Common Course III	Hindi Natak, Vyakaran tatha Anuvad	4	5
HN1411.1	Common Course IV	Hindi Kavita evam Ekanki	4	5

(ii) B.Com Degree Programme

Course Code	Course Type	Course Title	Credit	Lecture hrs/week
HN1111.2	Common Course I	Hindi Gadya aur Vyavasayik lekhan	4	4
HN 1211.2	Common Course II	Hindi Kavita, Anuvad aur paribhashik sabdavali	4	4

(iii) B.Com Degree (restructured) programme

Course Code	Course Type	Course title	Credit	Lecture hrs./week
HN 1111.4	Common Course I	Adhunik Hindi Sahitya	4	5
HN 1211.4	Common Course II	Hindi Natak, Vyavasayik Lekhan aur Anuvad	4	5

(iv) BA/BSc (Career related) Programme

Course Code	Course Type	Course Title	Credit	Lecture hrs/week
HN 1111.3	Common course I	Hindi Gadya Sahitya	4	5
HN 1211.3	Common Course II	Hindi Padyasahitya	4	5

Outline of FDP in Hindi language and literature (Foundation course, Complementary Courses , Core Courses, Open Course, Elective Course & Dissertation

b. Foundation course

Course code	Course type	Course title	credit	lecture hrs/week
HN 1321	Foundation Course II	Soochana praudyogiki aur adhunik patrakarita	3	4

c. Complementary courses

Course code	**Course type**	**Course title**	**credit**	**lecture hrs/week**
HN 1131	Complementary Course I (compulsory)	Samkaleen Sahityik Vimarsh	2	3
HN 1132/ SK1131.1	Complementary Course II (Optional)	Pracheen tatha Madhyakaleen Bharateeya Sanskriti	2	3
HN 1231	Complementary Course III (Compulsory)	Kathakar Premchand	3	3
HN 1232/ SK 1231.1	Complementary Course IV (optional)	Paristhithik patt aur Hindi Sahitya	3	3
HN 1331/ SK 1331.1	Complementary Course V (optional)	Tulnatmak Adhyayan	3	3
HN 1332	Complementary Course VI (Compulsory)	Rajbhasha Prabandhan	3	3
HN 1431	Complementary Course VII (Compulsory)	Bharatiya Sahitya	3	3
HN 1432/ SK 1431.1	Complementary Course VIII (optional)	Patkatha Lekhan va vigyapan	3	3

d.Core Courses

Course code	**Course type**	**Course title**	**credit**	**lecture hrs/week**
HN 1141	Core Course I	Hindi kathethar Gadya sahitya	4	6
HN 1241	Core Course II	Hindi Sahitya ka itihas – Ritikal tak	4	6
HN 1341	Core Course III	Hindi Sahitya Ka itihas- Adhunik Kal	4	5
HN 1441	Core Course IV	Hindi Natak aur Rangmanch	4	5
HN 1442	Core Course V	Vishesh Lekhak Agney	3	4
HN 1541	Core Course VI	Pracheen evam Madhyakaleen Hindi Kavya	4	4

HN 1542	Core Course VII	Adhunik Hindi Kavya	4	4
HN 1543	Core Course VIII	Adhunik Hindi Katha Sahitya	2	3
HN 1544	Core Course IX	Hindi Vyakaran	4	4
HN 1545	Core Course X	Bhasha Vigyan va Bhasha Ka itihas	4	4
HN 1641	Core Course XI	Samkaleen Hindi Katha Sahitya	4	5
HN 1642	Core Course XII	Bharatiya evam paschatya kavya shastra	4	5
HN 1643	Core Course XIII	Anuvad: sidhant tatha prayog	4	5
HN 1644	Core Course XIV	Hindi Vyangya Sahitya	3	4
g. Project/Dissertation				
Course code	**Course type**	**Course title**	**credit**	**lecture hrs/week**
HN 1645	Dissertation/Essay	Dissertation Laghu shodh Prabhandh/Essay	4	6
e. Open Course				
Course Code	**Course type**	**Course title**	**credit**	**lecture hrs/week**
HN 1551	Open Course I	Hindi cinema	2	3
f.				
Course code	**Course type**	**Course title**	**credit**	**lecture hrs/week**
HN 1661	Elective Course	Jan Sanchar aur Hindi Cinema	2	3

Semester wise Break-up of courses

Semester-I

Course code	**Course type**	**Course title**	**credit**	**lecture hrs/week**
EN 1111.1	English Language course I		4	5./week
HN 1111.1	Common Course 1	Hindi katha Sahitya	3	4/week
EN 1123	Foundation course I (English)		2	4/week
HN 1131	Complementary course I (Compulsory)	Samkaleen Sahityik Vimarsh	2	3/week
HN 1132/ SK 1131.1	Complementary Course II (Optional)	Pracheen tatha Madhya Kaleen Bhartiya Sanskriti	2	3/week

HN 1141	Core Course I	Hindi katethar Gadya Sahitya	4	6/week
			17	25

Semester II

Course code	Course type	Course title	credit	lecture hrs/week
EN 1211	English		4	5./week
EN 1212	English		3	4/week
HN 1211.1	Common Course II	Hindi Nibandh aur anya gadya vidhyan	3	4/week
HN 1231	Complementary course III (Compulsory)	Kathakar Premchand	3	3/week
HN 1232/ SK 1231.1	Complementary Course IV (Optional)	Paristhithik patt aur Hindi Sahitya	3	3/week
HN 1241	Core Course II	Hindi Sahitya ka Itihas (Reetikal tak)	4	6/week
			20	25

Semester III

Course code	Course type	Course title	credit	lecture hrs/week
EN 1311	English		4	5./week
HN 1311.1	Common Course III	Hindi Natak, Vyakaran tatha Anuvad	4	5/week
HN 1321	Foundation course II	Soochana Praudyogiki aur adhunik patrakarita	3	4/week
HN 1331/ SK 1331.1	Complementary course V (Optional)	Tulnatmak adhyayan	3	3/week
HN 1332	Complementary Course VI (Compulsory)	Rajbhasha Prabandhan	3	3/week
HN 1341	Core Course III	Hindi Sahitya ka itihas (Adhunik kal)	4	5/week
			21	25

Semester 4

Course code	Course type	Course title	credit	lecture hrs/week
EN 1411	English		4	5./week
HN 1411.1	Common Course IV	Hindi Kavitha evam Ekanki	4	5/week

HN 1431	Complementary Course VII (compulsory)	Bharatiya Sahitya	3	3/week
HN 1432/ SK 1431.1	Complementary course VIII (optional)	Pat katha lekhan va vigyapan	3	3/week
HN 1441/	Core Course IV	Hindi Natak aur Rangamanch	4	5/week
HN 1442	Core Course V	Vishesh lekhak Agney	3	4/week
			21	25

Semester 5

Course code	**Course type**	**Course title**	**credit**	**lecture hrs/week**
EN 1541	Core Course VI	Pracheen evam Madhya Kaleen Hindi Kavya	4	4./week
HN 1542	Core Course VII	Adhunik Hindi Kavya	4	4/week
HN 1543	Core Course VIII	Adhunik Hindi Katha Sahitya	2	3/week
HN 1544	Core course IX	Hindi Vyakaran	4	4/week
HN 1545	Core Course X	Bhasha vigyan va Bhasha ka itihas	4	4/week
HN 1551	Open Course I	Hindi Cinema	2	3/week
HN 1645	Dissertation/Essay	Dissertation laghushodh prabandh/Essay		3/week
			20	25

Semester 6

Course code	**Course type**	**Course title**	**credit**	**lecture hrs/week**
HN 1641	Core Course XI	Samkaleen Hindi katha sahitya	4	5./week
HN 1642	Core Course XII	Bharatiya Evam paschatiya Kavya Sasthra	4	5/week
HN 1643	Core course XIII	Anuvad Sidhant tatha prayog	4	5/week
HN 1644	Core Course XIV	Hindi Vyangya Sahitya	3	4/week
HN 1645	Dissertation	Dissertation laghu shodh prabandh	4	3/week
HN 1661	Elective Course	Jan Sanchar aur Hindi Cinema	2	3/week
			21	25

Syllabi in detail
Common course Hindi for BA/BSc Programmes

Semester I **Contact Hrs. 4/week**
Common Course I: HN1111.1 **Hindi Katha Sahitya-** **Credits:3**

Aim of the Course:

1. To familiarize the students with the world of fiction
2. To develop their faculty of appreciation of fiction
3. To develop creativity in the students

Module 1: Short stories- 6 representative short stories to be studied in detail from Premchand yug to Samkaleen yug.
Outcome of the module: 1) Remembers main works of the representative writers 2) understands the craft of the representative writers 3) analyses the stories 4) Evaluates the contribution of the representative writers 5) Elucidates key sentences with reference to context.

Module 2: A modern novel in Hindi for nondetailed study
Outcome of the study. 1) Remembers the names of main works of the prescribed writer
2) understands the craft of the prescribed writer 3) Analyses the novel on the basis of the subject of the novel, its relevance, its place among contemporary Hindi novels 4)Critically evaluates the place of the novel & the novelist among contemporary Hindi novels & novelists.

Prescribed text books

1. **Kahani Sarovar (कहानी सरोवर):** Edited by Sheela.T. Nair

(Detailed study) published by Rajkamal prakashan 1-B, Netaji Subhash Marg, Daryaganj, New Delhi-110002.

i. Sadgati-Premchand
ii. Saranagat – Jayashankar Prasad
iii. Sahaj aur Subh-Markandey
iv. Domin kaki- Chitra Mudgal
v. Panchwa Beta-Nasira Sharma
vi. Ma Rasoyi Mem rahiti hai-Kumar ambud

vii. Amrood ka ped- Gyan ranjan
viii. Salaam- OM Prakash Valmiki

Except Lessons : 'Sahaj aur Subh'- Markandey and 'Panchwa Beta'- Nasira Sharma

2. 'Mobile' (Novel) by Kshama Sharma published by Rajkamal Prakashan, Daryaganj, New Delhi-110002.

Outcome of course±É:

1) Recollect the main works of the representative fiction writers
2) Understand the craft of the fiction writers
3) Analyse and evaluate the works of the fiction writers they studied
4) Understand how the resource language is used as a medium in creative writing.

Hours distribution: 2 hours each for each text.

Reference :

1.Hindi kahani Antharang Pahachan by Ramdaras Mishra,Vani Prakashan,New Delhi

2.Hindi kahani kaa vikas by Madhuresh ,Lokbharati Prakashan ,New Delhi

Semester II

Common Course-II HN 1211.1- Hindi Nibandh aur anya Gadya Vidhayem – credits-3, lecture hrs. 4/week

Aim of the course: (1) to acquaint the students with the different forms of prose in Hindi (2) To develop their faculty of appreciation of prose. (3) to develop the skill of evaluating prose writing of representative prose writer in Hindi

Module1: Two essays to be studied in detail

Outcome: (1) Remembers the main works of the prescribed writers (2) understand the craft of the prescribed writers (3) Analyse the prescribed prose (4) Elucidate key sentences with reference to context.

Module 2: Other prose forms – Biography, Autobiography, sketch, Reportage, Satire. **Outcom**e: (1) understand the different forms of prose (2) Recollect the main works of prescribed writers of prose (3) Analyse the prose form in accordance with the craft (4) Elucidate key sentences with reference to context.

Prescribed text books- Gadya Garima (detailed study). Editors, Dr. N. Mohanan, Dr. Deepak.K.R. Publishers- Rajpal and Sons, 1590, Madrasa Road, Kashmiri Gate, Delhi-110006.

(i) Devdaru- Hazari Prasad Dwivedi (Essay)
(ii) Beti ka vivaah- Amrit Rai (Biography)
(iii) Badauda ka Anubhav – Ambedkar (Autobiography)
(iv) Mera Hamdum Mera Dost: Kamleshwar- Rajendra Yadav (Sketch)

(v) Sookhe Sarovar ka Bhoogol- Mani madhukar (Reportage)
(vi) Nindaras- Hari Shankar Parsayi (Satire)
(vii) Aap- Pratap narayan Misr (Essay)
(viii) Gehu banam gulaab – Ram Vrksh Beni puri (Essay)

Except Lesson: 'Aap' Pratap Narayan Misr.

Outcome of the course:

i) Recollect the main works of the prescribed writers
ii) Understand the forms of various prose writing in Hindi
iii) Analyse & evaluate the prose forms prescribed, with respect to the craft and the relevance

Reference :

1.Hindi mein Nibandh saahity by Janardan swaroop Agarwal ,
Saahitybhavan Ltd,Prayag
2.Nibandhmala by Gulabray by E-pustakalay
3.Hindi Nibandh kaa udbhav aur vikas : hindikunj.com

Semester III

Common Course III HN 1311.1 Hindi Natak, vyakaran tatha Anuvad credits: 4, Lecture hours: 5/week

Aim of the course:

1. To familiarize the students with the development of plays in Hindi
2. To learn to appreciate play
3. To use Hindi language correctly by understanding grammar
4. To facilitate the use of translation as a tool for communicating in Hindi and English
5. To motivate the students for a career as translator

Module 1: To study a play in Hindi

Outcome: (1) Remember and recollect the major works of the playwright (2) Appreciate and evaluate the play with respect to craft, subject, relevance of it in the modern world. (3) Elucidate Key sentences with reference to context

Module 2: A text to study basic grammar of Hindi language & Translation from English to Hindi

Module1: Varna vichar, Sandhi, Sabd vichar, Sagya, Sagyamem roopantar-1, Sagya men roopantar-2

Outcome: (1) understands and recollects all 44 Hindi varnas (2) Classifies the 44 varnas (3) splits a word on the basis of Sandhi & names the sandhi (4) identifies a noun and states the type of noun in a given sentence (5) Elaborates the changes in a noun with respect to gender, number and cases (5) Defines sagya and elaborates its Subdivisions.

Module 2: Sarvnaam, visheshan, kriya, kriyamem roopantar

Outcome: (1) Defines all three parts of speeches and elaborates upon its subdivisions
(2) Identifies sarvanam, visheshan and kriya and states their type in a given sentence
(3) Elaborates on the changes in kriya with respect to kaal, vachya (4) elaborates 'ne' rule

Module 3: Krident, Avyay, Sabd rachna, Vakya vichar
Outcome: (1) Defines krident and Avyay and subdivisions (2) Identifies major prefixes, suffixes and samas (3) elaborates upon the types of samas and splits a word on the basis of samas (4) Defines phrase, clause its types (5) Defines a sentence, its different types
(6) understands the importance of padkram and Anvay in sentence.

Module 4: Translation – from English to Hindi, Common grammatical mistakes made while writing in Hindi.

Outcomes: (1) Translates simple passages from English to Hindi (2) identifies common grammatical mistakes made while writing in Hindi.

Prescribed text books:

1. Sakubai (Play in Hindi) – Nadira Zaheer Babbar published by Vani Prakashan, 21- a, Daryaganj, New Delhi-110002.
2. Vyavaharik Hindi vyakaran, Anuvad tatha Rachna- Dr. H. Parameswaran,

Published by Radhakrishna Prakashan, Ansari Marg, Daryaganj, New Delhi-110002.
Except Lessons : Bhasha aur vyakaran, Hindi ucharan aur vartini, Rachna Abhyaas.

Distribution of hours- 2 hrs for play, 2 hrs for grammar 1 hr for translation.

Outcome of the course: (1) critically appreciates play (2) Understands difference between spoken Hindi and written Hindi (3) Writes grammatically correct sentences in Hindi (4) Defines different parts of speech and identifies them in a given sentence (5) Translates simple passages from English to Hindi
Reference :

1.Hindi naatak :udbhav aur vikaas by Dasarath Ojhaa ,Rajpaal &sons
2.Hindi natak kaa udbhav aur vikaas : hindikunj.com
3.vyaakaran pradeep by Ramdev M A ,Hindi Bhavan

Semester IV
Common Course IV- HN 1411.1 Hindi Kavita Evam Ekanki credits 4, Teaching hr: 5hr/week.
Aim of the course: (1) To understand development of Hindi poetry through selected poems (2) to develop the faculty of appreciation of Hindi poems. (3) To familiarize the students with the development to one act plays in Hindi (4) learn to appreciate Hindi- one act play.

Module1: Ancient Hindi poetry- collection of poems of Kabirdas, Soordas, tulsidas, Raheem

Outcome: (1) understands the aesthetics of ancient poetry through the couplets of Kabirdas, Raheem & Soordas (2) understands the history of Bhakti poetry (3) appreciates the creativity

of ancient poets (4) critically evaluates the contribution of poets of Bhakti period.

Module 2: Modern Hindi poetry: collection of 10 poems representing modern period with different styles and themes.

Outcome: (1) understands the development of modern poetry from early 20th century to 21st century (2) remembers & recollects the major works of prescribed poets (3) appreciates the different styles of poetry (4) critically evaluates the contribution of prescribed poets to the development of modern Hindi poetry (5) Elucidates given lines of poems with reference to context.

Module 3: Collection of five one act plays
Outcome: (1) Remembers & recollects major works of the prescribed one-act play wrights (2) Appreciates and evaluates the one-act plays with respect to craft, subject (3) elucidates key sentences of the one act plays with reference to context (4) critically evaluates the contribution of prescribed one-act play wrights to the development of one- act plays.

Prescribed text books (1) kavya deepthi- Edited by Dr. Reshmi Krishnan, Dr. Shiny Mathew and Dr. Preetha Remani T.E published by Vani Prakashan, 21-A, Danyaganj, New Delhi-110002 detailed study. 2) Saral Ekanki edited by Dr. John Panicker published by Aman Prakashan, Kanpur. **Except Ekanki** 'Hari ghas par ghante Bhar' by Surendra Verma.

Except the following portions in kavita : 7,8,9,10 dohas of Kabirdas, 7,8,9,10 dohas of Tulsidas, 7,8,9.10 dohas of Raheem, 'Samar shesh' of Dinkar, 'choolha of Pavan karan.

Distribution of hours: 3 hours for 'Kavya Deepthi' and 2 hrs for 'Saral ekanki'.

Reference:

1.Hindi Ekaanki :udbhav aur Vikaas by Ramcharan Mahendr ,Saahitya prakaashan
2.Hindi saahity kaa Itihaas ny Shyaam chandr kapoor ,Prabhaat prakaashan
3.Aadhunik Hindi padya saahity kee pramukh pravruttiyaan : Youtube link uploaded by Hindi Bhashaavaani ,June 12 ,2018

Course outcome: (1) Appreciates ancient and modern Hindi poems. (2) Critically evaluates the contribution of Ancient & modern poets to the development of Hindi poetry (3) Elucidates key lines of poetry with reference to context (4) Appreciates and evaluates one act play with respect to craft and subject.

Common Course Hindi for B.Com Programme Semester I

– Common Course 1 HN 1111.2 Credits 4 lecture hours 4/week.

Hindi gadya aur vyavasayik lekhan
Aim of the course: (1) to acquaint students with different forms of prose and styles involved in prose writing (2) To develop the faculty of appreciation of prose of the students (3) to develop the skill of evaluating prose writing of prescribed prose writers in Hindi (4) To make

the students aware of the importance of correspondence (5) To make them proficient in letter writing- both personal and official.

Module1: One short story and four other prose forms
Outcome (1) recollects all major works of the authors of the prescribed prose forms (2) understands the difference between the different prose forms (3) critically evaluates the prose forms.

Module 2: correspondence: Types of letters, components of letters- personal letters, official letters, business letters

Outcome: (1) understands the different styles of different forms of letter (2) Distinguishes one form of letter from the other based on their specific features (3) writes personal letters, official letters and business letters.

Prescribed text books: (1) Naveen Sankalan- Edited by Dr. J. Francis, Dr.S. Suma, Dr. Lekha.S Nair Dr. R. Girija Kumari. Published by Director, dept. of publications, Kerala University. Bhag-1 of the text to be studied.

Course outcome: (1) Appreciates prose writings in Hindi (2) Critically evaluates the contribution of prescribed writers of prose to Hindi literature (3) Differentiates various types of letters based on their style and components (4) writes personal, official and business letters in Hindi
Distribution of hrs: 2 hrs for prose, 2 hrs for vyavasayik lekhan

Reference :

1. Oupacharik patralekhan –Omprakash –Kitab ghar ,New Delhi -2
2. Hindi kahani Antharang Pahachan by Ramdaras Mishra,Vani Prakashan,New Delhi

Semester II: Common Course II HN 1211.2 Hindi Kavita Anuvad aur Paribhashik Sabdavali . No. of credits: 4 Lcture hrs: 4 hr/week

Aim of the course: (1) To make students understand development of Hindi poetry through selected poems (2) to develop the faculty of appreciation of Hindi poems (3) to make students understand the importance of translation (4) To facilitate the use of translation as a tool for communicating Hindi & English (5) To motivate & equip the students for a career as translator.

Module 1: Poetry- Ancient poetry: poems of 3 ancient poets

Outcomes: (1) Recollect names of major works of the prescribed poets (2) Basic understanding of Bhakti poetry (3) Appreciates Bhakti poetry (4) Critically evaluates the contribution of prescribed poets (5) Elucidates lines of the poem ciritically.

Module: 2: Modern poetry- 5 representative poems of the poets of modern period. **Outcome**:

(1) recollects names of major works of the prescribed poets (2) Basic understanding of the development of poetry in Hindi in the modern period (3) Appreciates and critically evaluates poems (5) Elucidates lines of the poems

Module 3: Anuvad- 8 passages from English to Hindi & 8 passages from Hindi to English to be translated.

Outcome: (1) understands the importance of translation as a tool for communication
(2) Translates simple passages from Hindi to English and vice versa.

Module 4: Technical terminology- 50 in Hindi with English Translation and 50 in English with Hindi translation.

Outcome: (1) Recollects the common technical terms used in official language (2) opens a career, option –that of a translator

Text books (1) Naveen Sankalan- Edited by Dr. J. Francis, Dr. S. Suma, Dr. Lekha.S. Nair, Dr. R. Girija Kumari- published by Director of publications, Kerala University. Bhag II of the text book to be studied in this semester.

Course outcome: (1) understands the development of Hindi poetry from the Bhakti period to modern times (2) Translates simple passages from Hindi to English & vice versa (3) opens a career option that of a translator.

Reference :

1.Anuvad ; sidhanth aur prayog – Dr.Gopinathan ,Lokbharathi Prakashan
2. .Aadhunik Hindi pady saahity kee pramukh pravruttiyaan : Youtube link uploaded by Hindi Bhashaavaani ,June 12 ,2018
3.Hindi ke aadhunik kavi by Rameshchandr Sharma,Saraswati prakaashan,Kanpur

Distribution of hrs: 2 hrs for poetry 2 hrs for Anuvad & Technical Terminology.

Common Course Hindi for B.Com (restructured) Programme.

Semester:I

Common Course –I HN 1111.4 credits: 4 hrs. 5/week

Adhunik Hindi Sahitya

Aim of the course: (1) to acquaint students with different forms of modern literature from poetry to modern prose forms; and its development (2) to develop the faculty of appreciation of both prose & modern poetry (3) To develop the skill of evaluating poetry & prose

Module I: Modern Poetry A collection of 10 poems of modern Hindi Poets. Outcomes: (1) understands the aesthetics of modern Hindi poetry (2) Recollects the major works of the poets of the collection (3) Critically evaluates the contribution of the poets to Hindi lit (4) Elucidates lines of the poems with ref. to context (5) Appreciates the craft & creativity of

poets.

Module 2: Collection of 4 prose forms ie, 2 stories, 1 essay 1 sketch and a part of an autobiography.

Outcome: (1) Recollects all major works of the authors of the prescribed prose writers
(2) understands the difference between different prose forms (3) critically evaluates the prose forms (4) elucidates lines of the prose with ref. to context.

Prescribed text book- 'Sanchaika' edited by Dr. Preetha Remani T.E, Dr. Pradeepa Kumari.R published by Jawahar Purthaka lay, Sadar Bazar, Mathura 281002 (detailed study) Bhag I to be studied.

Course outcome: (1) Appreciates the aesthetics of Hindi Poetry & prose (2) critically evaluates the contribution of Hindi poets to Hindi lit. (3) understands the difference between short story & essay, essay & sketch and also essay & autobiography (4) critically evaluates the contribution of prescribed short story writers, essayists to Hindi lit.
Hour distribution: 3 hrs. for poetry 2 hrs for prose.

Reference :
1. Hindi ke aadhunik kavi by Rameshchandr Sharma,Saraswati prakaashan,Kanpur

2.Pragatisheel kavitaa ke saundarymoolya by Ajay Tiwaree ,Vanee prakaashan

Semester II
Common Course II- Credits: 4 hrs: 5/week
HN 1211.4 Hindi Natak, Vyavasayik Lekhan aur Anuvad
Aim of the course (1) To familiarize the students with the development of plays in Hindi (2) to learn to appreciate plays (3) To facilitate the use of translation as a tool for communicating in Hindi & English (4) To motivate students for a career as translator
(5) To make them proficient in writing business letters.

Module I: A modern Hindi play (detailed study)
Outcome: (1) remembers and recollects major works of the prescribed play wright (2) Appreciates and evaluates the play with respect to its style, craft subject & relevance to the modern times (3) Elucidates key sentences with ref. to context.

Module II: Vyavasayik Lekhan, Paribhashik sabdavali

Outcome: (1) Understands the features of business letters (2) Writes business letters in Hindi (3) Recollects common technical terms used in official language Hindi.

Module III- Anuvad- 7 passages from English to Hindi, 5 passages from Hindi to English

Outcome: (1) understands the importance of translation as a tool for communication
(2) Translates simple passages from English to Hindi & Vice Versa

Prescribed Text book: (1) Sanchayika – Edited by Dr. Preetha Remani T.E, Dr. Predeepa kumari R published by Jawahar Pusthakalaya, Sadar Bazar, Muthura – Bhag II to be studed in this semester (2) Savithri 2007 (play) Kailash chandra- Vani prakashan, Daryaganj, New Delhi.

Course Outcome : (1) critically appreciates the play with respect to its style, craft and relevance (2) writes business letters in Hindi (3) Translates simple passages from Hindi to English and vice versa (4) opens a career option- that of a translator.

Distribution of hrs: 2 hrs for play, 3 hrs for vyavasayik lekhan and Anuvad.

Reference:

1. Hindi Natak : Udbhav aur Vikas by Dr.Dasharath Ojha ,Bharateey saahitya sangrah
2. Anuvad kala – Dr.N.E.Viswanath Iyer,Prabhat Prakashan,Chowdi Bazar ,Delhi -6
3. Pramanik Alekhan aur Tippan – Prof.Viraj , Rajpal and sons ,New Delhi.

Common Course in Hindi for BA/BSc (career related) Programme

Semester I

Common Course I, HN 1111.3, Hindi Gadya Sahitya credits: 4, Lecture hrs: 5/week

Aim of the course: (1) To familiarize students with different prose forms (2) To develop the faculty of appreciation of prose (3) To develop the skill of evaluating prose literature.

Module I: Short stories, one act play, Essay
Outcome: (1) Appreciates the prose forms (2) understands the difference between the prose forms of the module (3) critically evaluates the short stories, one act play & essay
(4) Elucidates lines from the short story, one act play & essay with ref- to context.

Module II: Satire, autobiography, sketch
Outcome: (1) appreciates the prescribed prose forms (2) under stands the difference between the prose forms of the module (3) Critically evaluates the prose forms (4) Elucidates lines from the satire, auto biography & sketch with reference to context.

Prescribed text book: 'Gadya Madhuri'- Edited by Dr. Sunil Kumar, Dr. Jayasree.O published by Aman prakashan, Kanpur (detailed study)
Except Lessons (1) Kunwari Dharti- Mohan Rakesh (2) Jahan Aakash dikhayi nahi deta- Vishnu Prabhakar.

Course out come: (1) Understands the difference between different prose forms (2) Appreciates prose literature (3) Critically evaluates the prose forms (4) Elucidates lines from prose with ref. to context.

Distribution of hours: 3 hrs for module I, 2hrs for module II

Reference :

1.Hindi Sahitya kaa subodh itihaas by Gulaab Ray , Lekshminaaraayan agarwal ,Agra

2.Hindi saahitya kee kathetar vidhaayein : www.bharatkaitihas.com

Semester II
Common Course II HN 1211.3
Hindi Padya Sahitya- Credits: 4, hrs: 5/week
Aim of the course: (1) To make students understand the development of poetry in Hindi from the Ancient period to modern times (2) To develop the faculty of appreciation of poetry

Module I: Ancient poetry- Collection of Ancient poetry of Kabeer, Soordas, Tulsidas, Biharital

Outcome: (1) understands the aesthetics of Ancient Hindi Poetry (2) Understands the history of Bhakti poetry (3) Recollects the major works of the prescribed poets (4) appreciates the creativity of the Ancient poets (5) Critically evaluates the contribution of the Ancient poets to Hindi literature

Module II: Modern poetry- collection of 10 poems of modern Hindi poets.
Outcome: (1) understands the aesthetics of modern Hindi poetry (2) Recollects the major works of the poets in the collection (3) critically evaluates the contribution of the poets to modern Hindi poetry (4) Elucidates lines of the poems with ref. to context.

Prescribed text books: 'Kavya Kaumudi' – edited by Dr. Shaji.N, Dr. Sheeba M.R and Dr. Manju.A published by Rajpal & Sons 1590, Madrasa Road, Kashmiri Gate, Delhi- 110006 (Detailed Study)

Except lessons: (1) Padas 5 & 6 of Soordas (2) Dohas 5 &6 of Biharilal

Course Outcome: (1) understands the aesthetics of Ancient and modern poetry in Hindi (2) appreciates the creativity of the poets (3) critically evaluates the contribution of the poets to Hindi literature (4) understands the development of poetry in Hindi

Reference :

1. Aadhunik Hindi padya saahity kee pramukh pravruttiyaan : Youtube link uploaded by Hindi Bhashaavaani ,June 12 ,2018
2. Hindi ke aadhunik kavi by Rameshchandr Sharma,Saraswati prakaashan,Kanpur

Complementary Courses for FDP in Hindi

Semester I
Complementary Course I (compulsory) HN 1131-credits: 2 lecture hrs : 3/week
Samkaleen Sahityik Vimarsh

Aim of the course: (1) To sensitize the students about latest trends and discourses in Hindi literature like Dalit Discourse, adivasi discourse (2) To provide comprehensive knowledge about latest styles and trends of lit. and to help the students to develop their creativity.

Module I: Bhoomika Strivimarsh:- Saidhantiki: **Stri Vimarsh moolak Sahitya**
(i) Poem – 'Hockey Khelti ladkiyam – Katyayani (ii) Shortstory- Kayantar- Jaysree Rai (iii)Autobiography- 'Anya Se Ananya tak' Prabha Khaitan
Outcome: (1) understands the theories and development related to strivimarsh (2) understands the salient features of strivimarshatmak literature through the representative poem, fiction and autobiography (3) critically evaluates stri vimarshatmak literature prescribed for study

Module II: Dalit Vimarsh – theory and revolution.
Dalit vimarsh moolak sahitya (1) poem 'Suno Brahmin' Malkhan singh (2) Short stories – Nau bar- Jayaprakash Kardan Salaam-Valmiki (3) Essay 'Abhishapt chintan se itihas chintan kee ore' –R. Dharamveer

Outcome: (1) understands and evaluates Dalit literature in Hindi (2) critically evaluates the representative Dalit literature prescribed for study.

Module III; Aadivasi vimarsh: Theory, revolution **vimarshmoolak** Sahitya- (1) poem 'Tiririri , Bansuri ke Swar mein'; - Dulam Chandra munda, 'Prateeksha- Grace kunjar
(2) Short story- Salgi, Jugnoo aur anva ganch- Alice ekka (3) geet-chering geet- Translated by Snehlatha negi

Outcome: (1) Understands and evaluates aadivasi literature (2) critically evaluates the representative adivasi literature

Module IV: Anya Vimarsh- Kinnar vimarsh, Kisaan vimarsh, Vrdh vimarsh, Paristhitik vimarsh. **Vimarsh Moolak Sahitya**- (1) Shortstory; 'Kabeeran' Sooraj Badatya.

Outcome: (1) understands and evaluates different discourses in modern Hindi literature.
Prescribed text: 'Asmitamoola k Vimarsh aur Hindi Sahitya'- Edited by Dr. S.R. Jayasree published by Aman Prakashan, Kanpur.

Except lessons: (1) Mei kaisi aurat hu- Savitha Singh (2) Kitni vyatha – Nageena Singh
(3) Salaam- Om Prakash Valmiki (4) Prateeksha- Grace Kunjar.
Extra Reading: 1 Essay, 1 poem, 1 shortstory, a few pages of a Novel for extra reading,
Parishisht –Names and major works of literatures of different discourses.
[Questions will not be asked from these parts]

Course outcome: (1) The students understand the latest trends in literature (2) critically evaluate different discourses in modern Hindi literature.

Hour distribution: 1 hr for module I. 1 hr for Module II, 1 hr for III and IV.

Reference:
1.Samakaaleen Hindi saahitya : vividh vimarsh Edited by Prof.Shreeraam Sharma,Vanee prakashan ,New Delhi
2.Hindi sahitya mein asmitaamoolak vimarsh , www.streekaal.com
3.Samakaaleen asmitaamoolak vimarsh , online course by www.swayam.gov.in

Complementary Course II (Optional) HN 1132 credits 2 hrs. 3/week.
Pracheen tatha madhyakaleen Bharatiya Sanskriti

Aim of course: (1) To enrich student's knowledge of History (2) to familiarize with the important events of Indian culture from the age of the Vedas (3) to enrich knowledge of cultural History of India through Historical development during the reign of various rulers from ancient times to medieval India.

Module I: Sanskriti- Swaroop evan nirdharan- Paribhasha- Sanskriti ke Kshetr; Bharateey Sanskriti kee visheshatayam

Outcome: (1) The students understand the basics of culture, its definition field.

Module II: Pracheen Sanskriti- Vaidik Samaj- Vaidic Dharam Boudh Dharm evam Sansktiri- Jain Dharm- Unki Sanskritik Dein

Outcome: (1) understands the ancient culture (2) understands Budhism, Jainism, their cultural contribution.

Module III- Madhya Kaleen Bharatiya Sanskriti- Uttar Bharat evam Dakshin Bharath " Prashasan evam visheshatayem- Paal Samrajya- Prathihara- Rashtra koota- Pallav- Chola.

Outcome: (1) understands medieval Indian culture with respect to contributions of pallavas, cholas, paal- pratiharas and Rashtra kootas.

Module IV; Bharath par Vidheshi Akraman ka Prabhav.
Rajputom ka Uday- Tarayi ki ladayi- Rajputom ka Parajay- Gulam Vansh- Delhi Sultanate- Khilji Vansh- Tuglaq vansh- lodi Vansh.

Outcome: (1) understands the culture of medieval period (2) Role of various dynasties in moulding the cultural History of India.

Module VI: Mughalom ka Agaman- Babar- Humayun- Shershah ka Uday- Soor Samrajya- unka yogdan – Akbar –Dharmikniti- Jayangir- Shahjahan- aurongazeb Mughal Kaleen Sanskriti

Outcome: (1) Evaluates role of Mughal dynasty in influencing medieval Indian culture.

Prescribed Text: Pracheen evam Madhyakaleen Bharatiya
Sanskriti: Edited by Dr. Asha S Nair, Dr. Maheswari, Smt. Salini.C Published by Vani Prakashan, New Delhi

Outcome of course: 1) Students understand Ancient and medieval culture of India.
2) Evaluate contribution of various dynasties to the cultural heritage of India.

Reference :
1.Bharateey sanskriti by Shivdatt Gyanee ,Rajkamal prakashan
2.Bharteey sanskriti kee rooprekhaa by Gulab Ray , Bharateey saahitya sangrah

SECOND SEMESTER
Complementary Course- III (Compulsory)
HN 1231 'Kathakar Premchand' credits 3 hrs. 3/week

Aim of course: 1) to provide comprehensive knowledge about Premchand as fiction writer. 2) To make the students appreciate the theme of Premchand's fiction and to evaluate his style and craft.

Module I: six short stories of Premchand with introduction regarding contribution of Premchand to Hindi short story (Detailed Study)

Outcome: (1) Appreciates and critically evaluates the short stories of Premchand with respect to theme, and craft (2) Recollects the names of important short stories of Premchand (3) Elucidates lines from the prescribed short stories with respect to context.

Module II: One novel of Premchand.

Outcome: (1) Recollects names of all major novels of Premchand (2) Appreciates & evaluates the theme of the prescribed novel (3) critically evaluates contribution of Premchand to Hindi Novel (4) Evaluates the novel with respect to the character , craft and style.

Prescribed texts: (1) 'Premchand kee Kahaniyam (Detailed study) edited by Dr. Jyothi N & Dr. K.P Ushakumari published by 'Vani Prakashan, 21 A, Daryaganj, N.Delhi (2) 'Rangbhoomi' Premchand- abdridged students version with Bhoomika by Sudheesh Pachauri. Published by Vani Prakashan

Distribution of hrs: 2 hrs for short story 1 hr for Novel

Outcome of the course: (1) The students attain comprehensive knowledge of Premchand as fiction writer: (2) Appreciates and critically evaluates prescribed short stories and Novel of Premchand (3) Evalautes the contribution made by Premchand in the field of Hindi fiction writing.

Reference :

1.Premchand ghar mein by Shivrani Devi ,Atmaaraam and sons
2.Premchand ka rachanaa sanchayan by Nirmal varma & Kamal Kishore Goyanka,Sahitya Academy

Complementary Course IV (Optional)
HN 1232 'Paristhithik Paat aur Hindi Sahitya credits: 3 hrs: 3/weeks.

Aim of the course: (1) To familiarize the students with how environmental issues are depicted in Hindi literature (2) To familiarize the students with the role of literature in tackling environmental issues.

Module I: Five short stories depicting environmental issues
Outcome: (1) understands how environmental issues are depicted in Hindi short stories
(2) critically evaluates the stories in the light of the issues discussed in them.

Module II: Seven poems in Hindi dealing with environmental issues (detailed study)

Outcome: (1) understands how environmental issues are depicted in poetry (2) Critically evaluates the poems in the light of the issues discussed in them and with respect to the craft of the poems (3) Elucidates lines of the poems with reference to context.

Prescribed text: 'Paristithik paat aur Hindi Sahitya'-edited by Dr. Suma.S and Dr. Jayasree S R published by 'Vani Prakashan, Daryaganj, New Delhi.

Course outcome: (1) The students get a comprehensive knowledge of how environmental issues are depicted in literature (2) critically evaluates short stories &
poems in the light of the environmental issue discussed in them (3) students are motivated to interfere in the environmental; issues around them.

Hour distribution: 1 hr for module 1 and 2 hrs for module II.

Reference :

1. Paryavaran Sanrakshan har naagarik kaa kartavya by Sudarshan Bhatia ,Saksham prakashan,New Delhi
2. Paryavaran Shikshaa by Rajeev Garg ,Aviram Prakashan ,New Delhi

Third Semester
Complementary Course V (Optional)
HN 1331- 'Tulnatmak adhyayan' Credits: 3 hrs- 3/week

Aim of the course: (1) To acquaint students with how comparison of literature of two languages i.e. Hindi & Malayalam is done (2) To familiarize students with fiction of Malayalam & Hindi with special reference to Premchand and Thakazhi (3) To familiarize

students with Hindi and Malayalam poetry esp. of Jayashankar Prasad and Kumaranasan (4) To familiarize students with similarities of literature written in Hindi & Malayalam.

Module I: introduction to comparative studies
Outcome: (1) Understands what is comparison (2) understands what is comparison in literature (3) understands the difference between comparison in western literature & Indian literature

Module II: comparison of Novels in Hindi & Malayalam with special ref. to Premchand and Thakazhi.

Outcome: (1) students attain basic knowledge of Hindi & Malayalam novels especially that of Premchand & Thakazhi 2) understands similarity between novels of Premchand & thakazhi especially 'Godan & 'Randidangazhi'

Module III: Comparison of Hindi and Malayalam short stories

Outcome: 1) students attain basic knowledge of Hindi & Malayalam short stories 2) understands similarities and dissimilarities between Malayalam & Hindi short stories 3) understands the craft of comparison of short stories in Hindi & Malayalam through comparing few stories of both languages.

Module IV. Comparison of two poets – Jayashankar Prasad and Kumaranasan.

Outcome: (1) Attains basic knowledge of poems of Jayashankar Prasad & Kumaranasan (2) understands the similarities and dissimilarities between the two poets

(3) understands the craft of comparison of poems in Hindi & Malayalam through the poems of Prasad and Asan.

Prescribed Text Book: 'Tulnatmak Adhyayan: Hindi-Malayalam kee Katha va kavita ke Sandarbha mein': Edited by Dr. M.S. vinayachandran, Dr. P. Letha, Dr. Kumari Geetha.S, Dr. Jayasree O, Smt. Salini.C, Dr. Shabana Habeeb Published by Director of publications, University of Kerala.

Distribution of hrs: 1 hr for module I and III, 1 hr for module II, 1 hr for module IV.

Course outcome: (1) understands the basic techniques of comparison of Hindi and Malayalam fiction and poetry (2) compares fiction and poem of Hindi & English.

Reference :
1.Tulanaatmak saahitya : Saiddhantik Adhyayan by Hanumaan prasaad shukla ,Rajkamal prakaashan
2. Tulanaatmak saahitya ke adhyayan kee samasyayein by Jagadeesh Chaturvedi Nayaa zamaanaa journal 18 feb 2017 (www.egyankosh.ac.in)

Complementary Course VI (Compulsory)
HN 1332 Rajbhasha Prabandhan, credits: 3 hrs: 3/week

Aim of the course: (1) To provide comprehensive knowledge about official language Hindi (2) To understand the merits and demerits of Hindi as official language (3) To understand the problems involved in management of Hindi as official language (4) To understand use of Hindi for official communication in Central Govt. Offices, PSU, Banks etc. (5) to motivate students to a career as Translator/Hindi officer.

Module I: Development of Hindi as official language

Outcome: (1) Attains comprehensive knowledge as to how Hindi became official language of India.

Module II: Acceptance of Hindi as official language- Provisions in the Constitution regarding official language-

Outcome: understands the constitutional provisions regarding official language Hindi.

Module III- Official language management – field of official language management- role of institutions, offices in official language management- Hindi officer- problems in implementing constitutional provisions- managerial solutions.

Outcome: (1) attains knowledge of official language management
Module IV: official language Hindi- practical side
Types of official correspondence – noting- drafting, in Hindi- Technical terminology- Hindi to English

Prescribed text book: Rajbhasha Prabandhan- by Dr. Julia Emmanuel –published by Rajpal & Sons, Madrasa Road, Kashmiri Gate, Delhi.

Course outcome: (1) Attains comprehensive knowledge of official language Hindi (2) Does noting and drafting in Hindi./ (3) understands official language Hindi management
(4) opens a career option- that of translator/Hindi officer in Central Govt. Officers /PSUS/Banks.

Distribution of hrs: 1 hr for module 1 & II, 1 hr for module III 1 hr for module IV.

Reference :
1. www.rajbhasha.gov.in
2. Rajbhasha kaaryaanwayan - dgpm website portal (www.dgicce.nic.in)

IVth Semester-Complementary Course VII (Compulsory) HN
1431 'Bharatiya Sahitya' credits 3 hrs: 3/week

Aim of the course: (1) To familiarize the students with the concept of one Indian literature (2) To familiarize the students with renowned Indian writers through their representative works.

Module I: Definition of Indian literature: Features of Indian literature- problems of considering literature written in different Indian languages as one Indian literature – Role of Sanskrit in Indian literature.

Outcome: (1) understands the concept of 'Indian literature' (2) understands the concept of Unity in diversity through one Indian literature.

Module II: Representative literature of renowned Indian writers- poems of Dr. Manorama Vishval Mahapatr, Amrita preetam, Dr. J. Bapu Reddy, K.Sachidanandan, Subramonia Bharati- Short stories of Tagore, Takazhi, Pratibha Rai, Saran Kumar Limbale, M.K. Vinodhini- Travalogue by Indira Goswami.

Outcome: (1) Appreciates literary works of litterateurs of different Indian languages.
(2) Identifies the element of oneness in literature written in various Indian languages.

Prescribed Text book: 'Bharatiya Sahitya' compiled by Dr. RI. Santhi & Dr. A Prakash published by Vani Prakashan, Daryaganj New Delhi.

Except lessons: 4,6, and 7 from Khand 1 and Khand II completely
Course outcome: (1) understands the concept of one Indian literature (2) Appreciates the works of different writers of different Indian languages.
Reference :

1. Bharateeya saahitya kee bhoomika by Ramvilas Sharma
2. Bharateeya saahitya by Nagendra Prabhaat prakaashan

Complementary Course VIII (Optional) credits 3 hrs: 3/weekl

HN 1432 'Patkatha Lekhan va vigyapan

Aim of the course: (1) to know the technique and process of script writing (2) To understand the form and procedure of Advertisement (3) To understand the importance of Advertisement.

Module I: An introduction to Script- Basic methods and techniques of script writing- idea story- situation- treatment, characterization, dialogue- sequence – climax language of script. The art of script writing.

Outcome: (1) understands what script and script writing is (2) understands techniques of script writing (3) elucidates the art of script writing

Module 2: Types of script
Outcome: (1) understands the different types of scripts

Module 3: Meaning and definition of advertisement- Necessity, aim and importance of Advertisement- objectives of advertisement
Outcomes: (1) understands the meaning, necessity, aim and importance of Advertisement.

Module 4: Media of advertisement- press advertising, Direct mail advertising, Out door advertising, broadcast advertising.

Types of advertisement: language & style of advertisement

Outcome: 1) understands the media of advertisement – 2) evaluates the types of advertisement with respect to their style.
Prescribed text: 1) 'patkatha lekhan- aur vigyapan kee vyavaharik Nirdeshika'- edited by Dr. Nimmy A.A, Dr. T. Sreedevi published by Rajkamal Prakashan, Daryaganj, New Delhi.
Distribution of hrs: 1 hr for module 1& 2 , 2 hrs for module 3 &4

Course outcome: (1) understands the techniques of script writing (2) understands the importance of Advertisement (3) enriches the creativity of the student (4) opens a career option in the field of script writing & advertisement.

Reference :

1.Patkatha lekhan by Manohar Shyam Joshi ,Rajkamal prakashan
2.Vyavahaarik nideshika Patkathaa lekhan by Asgar Vajaahat , Rajkamal prakashan

Core Courses for FDP in Hindi Semester I
Core course I credits: 4 hrs : 6/week
HN 1141- Hindi kathetar Gadya Sahitya

Aim of the course: 1) to familiarize the students with prose forms other than fiction 2) To make the students understand the difference between different forms of prose like Biography and autobiography, Essay & Reportage 3) to enrich their aesthetic sense.

Module I : Development of Essays in Hindi- 4 representative essays by Balakrishna Bhat, Mahavirprasad Dwidevi, Ramchandra Sukla & Hazari, Prasad Dwivedi

Outcome: (1) understands the development of essays in Hindi (2) Recollects the names of famous essayists in Hindi (3) Recollects the names of major works of the prescribed essayists (4) critically evaluates the contribuition of the essayists to Hindi literature (5) critically evaluates the essays with respect to its style, theme & caft. (6) elucidates lines with reference to context.

Module II: 3 representative essays by Dinakar, Vidyanivas misr and harishankar Parsai

Outcome: (1) Recollects the names of major works of the prescribed essayists (2) critically evaluates the essays with respect to its theme, style and craft (3) evaluates the contributions of these essayists to Hindi literature (4) Elucidates lines from these essays with reference to context.

Module III: Development of modern prose forms in Hindi-4 Representative modern prose forms- part of a biography of Premchand by Amrit Rai, Reminiscence by Ramkumar Varma, a part of an autobiography and a sketch.

Outcome: (1) Understands the development of modern prose forms in Hindi (2 Recollects the names of famous authors of different prose forms (3) Recollects major works of the writers prescribed (4) critically evaluates the prose forms (4) Analyses key sentences with reference to context.

Module IV: 3 representative prose forms: Diary, travelogue and reportage.

Outcome: (1) Recollects the major works of these writers (2) critically evaluates the prose forms (3) understands the difference between diary & reportage, Essay & reportage, Reminiscence & sketch etc. (4) Analyses key sentences with reference to context.
Prescribed text books: (1) Gadya Sushama- edited by Dr. N. Mohanan & Dr. Deepak.K.R published by Rajpal and Sons, Madrasa Road, Delhi, (Detailed study) (2) 'Gadya Saushthav'- Edited by Dr. N. Mohanan & Dr. Deepak K R published by Rajpal & sons, Madrasa Road, Delhi (Detailed study)

Distributionof hrs: 2 hrs for 'Gadya Sushama', 3 hrs for 'Gadya Saushthav'

Outcome of course: (1) understands the different forms of prose other than fiction (2) critically evaluates and appreciates the different prose forms (3) enriches the aesthetic sense of students.
Reference :
1.Hindi sahitya kee kathetar vidhaayein ,article on www.bharatkaitihas.com
2. Hindi kaa kathetar gadya parampara aur prayog Edited by dayanidhi Mishra ,Vaniprakashan

Second Semester- Core Course II- Credits: 4 hrs. 6/week HN
1241-'Hindi Sahitya Ka ithihas' (Ritikal tak)
Aim of the course: (1) To give the students a detailed account of trends in literature in the early and Riti period (2) To familiarize the students with the thoughts, philosophy of great poets like Kabeer, Soordas, Tulsi, Jayasi (3) to make students understand the influence of early & Bhakti period writers on society and Hindi literature as a whole.

Module I: Hindi Sahitya ka Kaal vibhajan- uski Samagri
Outcome: (1) students understand the basis on which Hindi literature is classified (2) understands the division of literature and their names & period.

Module II: Aadikal- uski peetika- Dharmik Sahitya- uski visheshatayem – Laukik Sahitya- Veergatha Sahithya- PramukhKavi- Veer gatha Sahtya kee visheshatayem- Ameerkhusro
Outcome: (1) Students gain comprehensive knowledge about aadikal.

Module III: Bhakti kaal-uski peetika- Madhya yug ka Mahatwa -Bhakti aandolan- Sagun- Nirgun- Sant Kavi- Sant Kavya kee Visheshatayem- Premkavya- uski visheshatayem- Ram kavya – Krishna Kavya. Krishna Kavya ka mahatwa
Outcome: (1) students gain extensive knowledge of Bhakti kaal (2) critically evaluate the contributions of Bhakti poets

Module IV: Reetikaal- Uski peetika- Reeti Sahtya ka janam- pramukh kavi- unki rachnayem- Khadiboli Gadya- Kaal kee Visheshtayem
Outcome: (1) Students gain comprehensive knowledge of Reetikaal (2) critically evaluate contributions of the poets to Hindi literature

Prescribed text: Hindi Sahitya ka Sanshipt itihas- by Lakhsmi Sagar Varshney- Published by Lok Bharati Prakashan, M G Road, Allahabad-1

Except lessons: lessons 1, 2, and 6 from the text.
Course outcome: (1) the students gain comprehensive knowledge of the classification of Hindi literature from the beginning to 1800 AD (2) critically evaluate the contributions of poet to Hindi literature during the various periods.

Distribution of hours: 1 hr for module 1, 1 hr for module 2, 2 hrs for module 3, 2 hrs for module 4.

Reference :
1.Hindi sahitya ka Itihas by dr.Nagendra
2. Hindi sahitya ka subodh Itihas by Gulab Ray Lekshminarayan Agarwal,Agra

Third Semester- Core Course III Credits: 4
HN 1341 Hindi Sahitya ka itihas (Aadhunik kaal) hrs 5/week

Aim of the course: (1) To give the students a detailed account of the trends in Hindi literature since 1800 (2) To familiarize the students with the Socio, economic political situation since 1800 and its influence on Hindi literature. (3) To give comprehensive knowledge about the contribution of main litterateurs of the modern period.

Module I: British Raj kee sthapna aur Aadhunik yug- shasan sambandi tatha anya sudhar- Beeswi Shatabdi- British Kaleen Sahitya kee roop rekha- Gadya ke prarambhik unnayak- Unneswi Satabdi ke pramukh Shailikar- Dwivedi yug- Pramukh Shailikar **Outcome**: (1) Students get extensive knowledge of literature from AD 1800 to 1920 (2) critically evaluate the trends in literature and also contributionof writers of this period to Hindi literature.

Module II: Aadhunik Gadya Sahitya ke vividh Roop- Upanyas, Kahani, Upakhyan, Akhyayika, Rekhachitr, Reportage, Ekanki, Natak- Hindi meim kahani- Pramukh Kahanikar, Pramukh Ekanki kaar, Natakkar, Nibandh, Jeevani, Samalochana.

Outcome: (1) students get extensive knowledge of prose literature till 1947 (2) critically evaluate evolution of various prose forms in Hindi literature and the contribution of writers.

Module III: kavya uneeswi Shatabdi- Braj Kavya- Khadiboli Kavya –pravarthiyam- Chayavad- rahasyavad, pragativaad,

Outcome: (1) Students get extensive knowledge about development of poetry till 1947
(2) critically evaluates the features of Hindi poetry from 19th century to middle of 20th century.

Module IV: Swatantrya kal- natak, upanyas, kahani, kavita navageet, ageet, akavita.
Outcome: (1) students gain knowledge of development of play, novels, short stories and poetry since 1947 to 1960.

Prescribed text book: 'Hindi Sahitya ka Sanshipt itihas' by Lakshmi sagar varshney- published by lokbharati, Allahabad

Distribution of hrs: 1 hr for module 1 2 hrs for module 2 2 hrs for module 3 & 4.

Reference :
1.Hindi sahitya ka Itihas by dr.Nagendra
2. Hindi sahitya ka subodh Itihas by Gulab Ray Lekshminarayan Agarwal,Agra

Course outcome: (1) The students get a comprehensive knowledge of History of Hindi literature from 10th century to the middle of 20th century (2) critically evaluates the trends in literature during this period (3) critically evaluate the evolution of prose in Hindi and its development till 1960.

IVth semester- Core Course IV- credits: 4 hrs: 5/week HN
1441-'Hindi Natak aur Rangmanch

Aim of the course: (1) To understand the development of plays in Hindi literature (2) to understand the development of theatre in Hindi (3) To understand the district features of Hindi play through two representative plays (4) To understand the trends in Hindi plays upto 1980 through a representative play (5) To understand the changes in Hindi play since 1980 through a representative play.

Module I: Hindi natak ka udbhav aur vikas- poorva Bhartendu yug- Bhartendu yug- Dwivedi yug- Prasad yug- Prasadottar yug.

Outcome: (1) critically evaluates the evolution and development of Hindi plays from latter half of 19th century to 21st century. (2) Recollects names of famous playwrights and their major plays.

Module II: Rangmanch Parampara aur Hndi Rangmanch – Rangmanch- Paribhasha – Aavirbhav- Bharatiya Rangamanch. Sanskrit Rangmanch- Adim Rangmanch- Vartaman Bharatiya Rangmanch. Rangmanch ka vikas- natya sansthayem
Outcome: (1) Evaluates the evolution of theatre in India and development oftheatre in Hindi (2) Recollects names of famous Rangkarmi and their contribution to theatre (3) understand the contribution of various natya institutes towards theatre in Hindi.

Module III; To study in detail a play written upto 1980.
Outcome: (1) Appreciates the play (2) critically evaluates the play with respect to theme, characterization and craft & style of the play (3) Recollects names of other major plays written by the play Wright (4) Elucidates key lines of the play with reference to context.

Module IV; To study in detail a play written after 1980

Outcome: (1) Appreciates the play (2) critically evaluates the –play with respect to theme, characterization, style and craft of the play (3) Recollects names of other plays written by the play wright. (4) Elucidates key lines of the play with reference to context.

Prescribed text books: (1) Rakta Kamal- Play by Lekshmi Narayan lal (detailed study) published by Rajkamal Prakashan (2) 'Utto ahalya' play by Surendra Dubey (detailed study) published by 'Vani Prakashan with introduction to development of Hindi play & Hindi Rangamanch by Dr. Manju Ramachandran & Dr. Jayasree.O. Vani Prakashan Daryaganj. New Delhi.

Course outcome: (1) understands and evaluates development of Hindi plays (2) Evaluates the development of theatre in Hindi (3) Appreciates and critically evaluates the prescribed plays.

Distribution of hrs: 1 hr for modules I &II, 2 hrs for Module III 2 hrs for module IV.

Reference :

1. Hindi Natak Aaj –Kal by Jayadev Thaneja ,Takshila prakashan ,New Delhi
2. Nayee Rangchethana aur Hindi ke Natakkar By Jayadev Taneja, Takshila prakashan ,New Delhi

Core Course V- Credits: 3 lecture hrs: 4
HN 1442 'Vishesh Lekhak Agney'

Aim of the course: (1) To give comprehensive knowledge of Agney as a Hindi Writer.

(2) To make students understand the contributions Agney has made to Hindi literature.
(3) To understand the place of Agney in Hindi literature.

Module I: Agney- EK Parichay- unki jeevan rekha-kavi Agney- Agney ke Upanyas- Agney kee Kahaniyam.
Outcome: (1) understands the contributions made by Agney in the field of Hindi poetry, fiction (2) Evaluates the contribution smade by Agney towards Hindi poetry, Hindi fiction (3) Recollects names of poetry collection, novels & short story collections of Agney.

Module II: Collection of 5 poems of Agney (detailed study)
Outcome: (1) Appreciates the poems of Agney (2) critically evaluates the poems with respect to theme craft & style (3) Elucidates lines of the poems with reference to context
(4) evaluates the contribution of Agney to Hindi poetry through the representative poems of the syllabus.
Module II; Five prose writings of Agney.
Outcome: (1) Recollects names of prose writings of Agney (2) Evaluates Agney as a prose writer.

Module IV: Five short stories of Agney (detailed study)

Outcome: (1) understands Agney as a fiction writer (2) Critically evaluates the short stories with respect to theme, craft and style (3) evaluates the contribution made by Agney towards Hindi short stories (4) Elucidates key lines of th stories with reference to context.

Prescribed Text: 'Lokpriya Sahityakar Agney'- edited by Dr. R.I. Santhi, Dr. s. Suma and published by Vani Prakashan, Daryaganj, N.Delhi with introductory essays titled Agney Jeevan Rekha, Agney ke upanyas: Parichay by Dr. Gopal Rai, Agney kee Kahaniyam, by Dr. Gopal Rai & Kavi Agney. Poems & Short stories for detailed study.

Distribution of hrs: 1 hr for modules I & module III, 1 hr for module II and 2 hrs for module IV.

Course outcome: (1) appreciates Agney as a poêt & fiction writer (2) critically evaluates Agney as a poet, as a fiction writer and prose writer (3) critically evaluates the contribution of Agney to Hindi literature.

Reference :
1.Agyey se sakshaatkaar by krishnadatt paleevaal ,Aryaprakashan mandal
2. Agyey kee rachanaayein by hindisahityavimarsh.blogspot.com

Fifth Semester Core Course VI. Credits: 4 hrs. 4/wk HN
1541. 'pracheen evam Madhya Kaleen Hindi Kavya'

Aim of the course: (1) to provide the best specimen of ancient and medieval poetry representing different periods trends & styles. (2) To develop the faculty of appreciation of poetry.

Module I: Pracheen tatha Madhyakaleen kavithya ka viaks – pramukh kavi
Outcome: 1) Critically evaluates the evolution and development of ancient and medieval poetry. (2) Recollects the names of poets representing each stream of poetry
(3) Recollects major poems of all the poets.

Module II Ancient poets- Chand bardayi, Vidya pathi, Ameer Khusro- their representative poetry.
Outcome: (1) Appreciates the poetry of Ancient poets (2) Critically evaluates the poetry of Chandbardayi, Vidyapati and Ameer Khusro (3) Recollects names of major works of these poets (4) Eludicates lines from the poems of Chandbardayi & Vidyapati.

Module III: Medieval parts- Kabeer, Soordas and Tulsidas- Representative poetry of these poets.
Outcome: (1) Appreciates the poetry of these medieval poets (2) critically evaluates the poetry of Kabeer, Soordas & Tulsidas (3) evaluates the contribution of these poets

to the Bhakti literature and to Hindi literature (4) Elucidates key lines of the padas of Soordas and Tulsidas and couplets of Kabeerdas.

Module IV: Poets Meerabai, Biharilal and Bhooshan- their representative poetry. **Outcome**: (1) Familiarize with the style, theme, craft of these medieval poets (2) critically evaluates the style, theme and craft of these poets (3) Elucidates key lines of these poets.

Prescribed text books: Pracheen aur Madhyakaleen Hindi Kavya (with elaborate essay on origin & development of ancient & medieval poetry) edited by Dr. N. Jyothi, Dr. Nimmy AA, Dr. Jayasree.B, published by Jawahar Pustakalay, Mathura (detailed study)

Distribution of hrs: 1 hr for module I & II, 2 hrs for Module III and 1 hr for Module IV.

Course outcome: (1) appreciates ancient & medieval poetry (2) critically evaluates the poetry of representative ancient & medieval poets (3) critically evaluates the contribution of these poets to Hindi literature. (4) Elucidates key lines of the poems of Ancient & Medieval poets.

Reference :
1.Madhyakaaleen kaavya by Sanjeev kumar jain , Kailash pustak sadan ,Bhopal
2. pracheen Hindi kavya by www.epustakalay.com

Core Course VII Credits 4, hrs- 4/week
HN 1542 Adhunik Hindi Kavya
Aim of the course: (1) to familiarize students with the development of modern poetry- the different trends & styles of modern poetry (2) To provide students with best specimens of modern poetry representing different styles (3) To help students develop their faculty of appreciation (4) To familiarize students with the development of long poems in Hindi.

Module I: Development of modern poetry – Trends of Modern poetry -poets Maithilisharan Gupt, Jayashanakar Prasad, Bachan, Sumitra Nandan Pant and Mahadevi Varma and their representative poems.
Outcome: (1) recollects major works of the prescribed poets (2) Appreciates the poems (3) critically evaluates the poets as well as poems with respect to style, craft & theme (4) Elucidates lines of the poem with ref. to context (5) Evaluates development of modern poetry.

Module II: Poets Nagarjun, Swapnil Shrivastawa, gyanendrapati, Anamika Madankashyap and their representative poems.

Outcome: (1) Recollects major works of the prescribed poets (2) Appreciates the poems (3) critically evaluates the poets as well as poems with respect to style, craft and theme (4) elucidates lines of the poem with ref. to context.

Module III: Poets Nirmala Puthul, Niveditajha, Katyayini, Arunkamal, Mahendra Bhatnagar and their representative peoms.
Outcome: (1) Recollects major works of the poets (2) critically evaluates the poets as well as as their poems with respect to style, craft and theme. (3) Elucidates lines of the poem with ref. to context.

Module IV: long poems in Hindi- Long poem of Nirala
Outcome: (1) Recollects names of major works of Nirala (2) Understands main features of long poems (3) critically evaluates Nirala as a poet (4) critically evaluates the poem (5) Elucidates key lines of the poem with ref. to context.
Prescribed text: Aadhunik Hindi Kavya, edited by Dr. Suma.S Published by Vani Prakashan, Daryaganj, New Delhi.
Hours distribution: 1 hr each for each module.
Course outcome: (1) understands and evaluates development of modern Hindi poetry (2) Appreciates modern poetry (3) critically evaluates prescribed poets and their poems with respect to theme, style & craft.

Reference :

1.Aadhunik Hindi kaavya aur kavi by www.epustakalay.com
2. Hindi saahitya kaa Adhunik ithihas by Tarknaath Bali

Core course VIII credits: 2 hrs: 3/week HN
1543. Aadhunik Hindi Katha Sahitya

Aim of the course: (1) To familiarize students with trends in modern Hindi fiction upto 1980 (2) To develop their aesthetic sense.
Module I: Origin & Development of Hindi Novel- famous novelists- their major works.
Outcome: (1) Basic understanding of origin & development of Novel in Hindi (2) Recollects names of popular novelist of various genre and also their major novels

Module II: To study a novel published before 1980.
Outcome: (1) Appreciates the novel (2) critically evaluates the novel with respect to theme, characterization, craft and style (3) evaluates the contribution of the novelist towards Hindi Novels.

Module III: Origin and development of Hindi short stories till 1980-major short story writers- their major collections.

Outcome: (1) basic understanding of origin & development of short stories in Hindi (2) Recollects names of famous short story writers along with stories (3) understands major trends in Hindi short stories upto 1980.

Module IV: A collection of 7 short stories published prior to 1980.
Outcome: (1) appreciates the short stories (2) recollects names of major short stories of the prescribed writers (3) critically evaluates the shortstories with respect to theme, genre, style an craft (4) elucidates key lines with reference to context.

Prescribed texts: (1) 'Daak Bangla' Novel by Kamleshwar published by Rajpal & sons, Kashmiri Gate, Delhi, (2) Kathakunj (collection of short stories) edited by Dr. Asha.G, Dr. Shabana Habeeb published by Jawahar Prakashan, Mathura.

Except lessons: (1) Letterbox- Agney (2) Mavali- Mohan Rakesh
Hour distribution: 1 hr modules I & II, 2hrs for module III & IV

Course Outcome: (1) Appreciates modern Hindi fiction (2) critically evaluates modern Hindi fiction upto 1980 (3) inspires creativity in students (4) understands and evaluates development of fiction in Hindi (upto 1980).

Reference :

1. Hindi saahitya kaa Adhunik ithihas by Tarknaath Bali
2.Aadhunik Hindi katha sahitya by gangaprasad pandey , www.epustakalay.com

Core Course IX credits: 4 hrs: 4/weeks

HN 1544 Hindi Vyakaran

Aim of the course: (1) To familiarize the students with the grammar of Hindi language (2) To make them use grammatically correct language.

Module I: Varna vichar- Dhwaniyam- Swar aur Vyanjan Samyukt Vyanjan- lekhan aur vartini- Akshar- Vartani ki Samasya.
Outcome: (1) understands varna and its subdivisions (2) recollects types of varna and its subdivisions (3) understands correct spelling of words.

Module II: Sabda Rachana- Sandhi – types –samas – upsarg –pratyay- Sanskrit Hindi aur videshi pratyay
Outcome: (1) Recollects types of Sandhi, Samas, Upsarg, Pratyay (2) Splits words correctly according to Sandhi and identifies the Sandhi used (3) Splits the words correctly as per Samas and names the samas (4) Makes new words using Upsarg & pratyay and Identifies the Upsargs & pratyays.

Module III; vikari sabd- Sagya- Sarvanam- Visheshan-Kriya Sagya mem Roopantar- Sarvanam mem roopantar- Visheshan mem roopantar- Visheshan kee tulanavastha- Kriya mem roopanthar

Outcome: (1) defines all four parts of speech (2) Recollects all subdivisions & types of four parts of speech. (3) enumerates on the reasons for changes in Sagya, Sarvanam, visheshan and kriya (4) Identifies Sagya, Sarvanam, Visheshan and Kriya in a given sentence along with their types; or subclassification.

Module IV- Avikari Sabd- Kriya visheshan, Sambandh Bodhak, Samuchchya Bodhak, Vismayadi Bodhak- Unki padavyakhya
Outcome: 1) identifies avikari shabd in a sentence 2) Defines 4 avikari sabds along with their subdivisions.

Module V: Vakya-uske anga- Bhed
Outcome: 1) Defines vakya 2) enumerates vakya
Prescribed text: vyavaharik Hindi vyakaran tatha rachna by Hardev Bahari published by Lok Bharati Prakashan, Allahabad.

Except lessons 1) vyakaran aur uske anga 2) sabd vichar 3) From vakya vichar- adhyahaar, Vakyantaran, Vakya Sansleshan, Vakya vinyas, Padkram, Anvay, Kathan Bhed, Biraam, Muhavre, Lokokti, Anusmaranika.

Hour distribution: 1 hr for module I & II- 2 hrs for module III- 1 hr for module IV & V.
Course outcome: (1) Enumerates on varna and its classification (2) Enumerates 4 vikari sabd (3) Does pada vyakhya (4) Writes grammatically correct sentences.
Reference :

1. Vyakaran Pradeep – Ramdev , Lokbharathi Prakashan,Allahabad
2. Vyavaharik Hindi vyakaran Anuvad Tatha Rachana by Dr.H Parameswaran

Core Course X Credits: 4 hours: 4/week

HN 1545 Bhasha Vigyan va Bhasha Ka itihas

Aim of the course: 1) to familiarize the students with the linguistics of Hindi language and the history of Development of Hindi language and its lipi.

Module I: Bhashiki: Swaroop aur Anga- Dhwani vigyan- Swaniki- Swaniki ka Kshetra- Vag yantr Swanom ka Vargeekaran- Sruthi- Manswar- Swar vargeekaran- vyangjan vargeekaran- Dwani gun-Akshar- Swanimi- Swanim- Swaniki Swanimi-tulna Swanim nirdharan ke sidhant- Swanimom ke Bhed
Outcome: 1) understands phonology and enumerates it 2) enumerates phonotics & phonemics

Module II: Roop vigyan- Roopim- Roopimom ke prakar- Roop vaigyanik KOtiyam- Vyakaranik Kotiyam

Outcome: 1) understands morphology and enumerates it 2) enumerates morphemes (3) classifies morphemes (4) enumerates morphological categories & grammatical categories.

Module III: Vakya vigyan- Vakya –Upavakya- Vakyom ke Prakar- sannihit Ghatak- Arth Vigyaan. Arth Vistaar- Arth Sankoch- Arhtadesh- Arthotkarsh- Arthopakarsh **Outcome:** (1) understands vakya vigyan (2) enumerates vakya vigyan (3) Enumerates Artha Vigyaan

Module IV: Sansar kee Bhashayem aur Unka vargeekaran – akriti moolak vargeekaran- parivarik vargeekaran. Bharat Uropeeya parivar- Bharateeya Arya Bhashavom ka Itihaas – Bharateeya Arya Bhashavom ka Samanya parichay- Hindi aur Uski Boliyam- Hindi aur Hindi ke vividh roop lipi –nagari lipi aur ank.
Outcome: (1) understands the classification of languages in the world (2) enumerates upon the classification of world languages (3) classifies Indo European languages (4) enumerates Hindi and its dialects.

Prescribed texts: (1) Bhashiki ke prarambhik sidhant – By Dr. H. Parameswaran published by Vani Prakashan, Darya Ganj, New Delhi.
Except lessons: (1) Roopimom ka Abhi nirhdaran (2) Roopimom ka ankan (3) Chapter 4- Sabda vigyan (4) Anta Kendrik aur Bahir Kendrik vakya (5) Chapter 7- Roop Swanini (6) Chapter 8. Lekhan pranali.

(2) Hindi Bhasha aur lipi: By prof. H. Padmanabhan & Prof. G. Seethalakshmi published by Vani Prakashan, Daryaganj New Delhi.
Except lessons: (1) Chapter 4 (2) Chapter 8.

Hour distribution: 2 hrs for module 1, 1 hr for modules II, III; 1 hr for module IV.

Course outcome: (1) understands Basic theories of linguistics and History of Hindi Language (2) Enumerates Dwani Vigyan, Roop Vigyan, Vakya Vigyan and Arth Vigyan (3) Classifies world languages (4) classifies Indo European languages (5) Enumerates Hindi language and its dialects (6) understands lipi.

Reference :
1.Bhasha vigyan by Shyam sundardas ,Harish prakashan mandir
2. Bhasha vigyan aur Hindi Bhasha ,Sahitya sarovar

3.Hindi Bhasha aur lipi ka itihas by Dr.Vipulkumar ,Shree natraj prakashan

Sixth Semester
Core Course XI Credits: 4 hours: 5/week HN
1641 Samkaleen Hindi Katha Sahitya

Aim of the course: (1) to familiarize students with the trends in contemporary Hindi fiction (since 1980) (2) to develop the aesthetic sense of students.

Module I: Development of contemporary Hindi novel- important novelists and their major works.
Outcome: (1) understands development of contemporary Hindi novel (2) Recollects names of important novelists and their novels.

Module II: to study in detail 'Giligadu' by Chitra Mudgal- published by Samayik Prakashan.
Outcome: (1) Appreciates the novel (2) critically evaluates the novel with respect to theme characterization style and craft of the novel. (3) Recollects names of major novels of the author (4) Elucidates key lines of the novel with reference to context.

Module III: Development of contemporary Hindi short story- important short story writers and their major works.
Outcomes: (1) understands the development of contemporary Hindi short stories (since 1980) (2) Recollects names of important short story writers of the period along with their major works.

Module IV: Collection of 8 short stories (detailed study)
Outcome: (1) critically evaluates the contribution of the prescribed writers to contemporary Hindi short story (2) critically evaluates the short stories with respect to theme, style and craft (3) recollects the major works of the prescribed short story writers
(4) elucidates key lines of short stories.

Prescribed text: Navya Kahaniyam- Edited by Dr. Latha.D Dr. Elizabeth George published by Aman Prakashan, Kanpur

Except short story: Apradh by Udaya Prakash

Outcome of the course: (1) kindles creativity in students (2) students critically evaluate contemporary fiction (3) appreciates contemporary fiction.

Reference :
1.Kathadesh :Khand 8 by Santosh Chaube
2.Bharateeyataa aur samakaleen Hindi kahani by www.hindisamay .com
3.Samakaleen Hindi kahanee by Dr.Narendr Mohan ,Bharateey Prakashan Sansthan

Core Course XII credits: 4 hrs: 5/week
HN 1642 bharatiya evam paschatya kavya sasthr

Aim of the course: (1) To familiarize the students with Eastern and western literary thoughts (2) To familiarize the students with sabd sakti, selected Alankars, selected chands and nine rasas.

Module I: Bharatiy Kavya Shastr- kavya lakshan: kavita kya hai- Kavya prayojan. **Outcome:** (1) understands what is poetry (2) understands use of poetry as explained in Sanskrit literary thought.

Module II: Ras Sidhant- Alankar Sidhant- Reeti Sidhant
Outcome: (1) understands these three ancient Indian literary thoughts (2) Evaluates the literary theories of Bharatha, Bhamaha and Vamana.

Module III: Dhwani Sidhant- Vakrokti Sidhant: Auchitya Sidhant
Outcome: (1) students understand these three Indian literary theories (2) Evaluate the theories of Anandavardhan, Kuntak and Kshemendra

Module IV: Paschatya Kavya- plato ke Kavya sidhant- Arastu- longinus ka udaat Sidhant-
Outcome: (1) students understand and evaluate these three western literary thoughts

Module V: William Wordsworth- Coleridge- Croche- I.A. Richards- T.S. Eliot
Outcome: (1) Students understand and evaluate these literary thoughts

Module VI: Sabd Sakthi, Navras, Alankar Chand
Outcome: (1) identifies Chand & Alankar (2) understands power of word.

Prescribed text book -1) Bharatiya evam paschatya kavya shastr- by Taraknath bali Published by Vani Prakashan, New Delhi 2) Kavya pradeep-Rambahori Sukla- Lokbharati Prakasan.

Course Outcome: 1) understands various Indian and western literary theories. 2) Identifies prescribed chands and Alankars 3) understands the power of words. 4) Applies the knowledge gained in their creative writing.

Distributionof hrs: 2 hrs for Bharatiya Kavya Sasthr. 2 hrs for Paschatya Kavya Sastr, 1 hr for module VI.
Reference :
1.Bharateey evam Pashchatya Kavy shaastra by Dr.Vivek Sankar ,rajasthan Hindi Granth Academy
2.Kavya ke roop by Gulab ray ,Aatmaaraam and sons , New Delhi

Core Course XIII Credits 4L hours 5/week
HN 1643 Anuvad: Sidhant tatha Prayog
Aim of the course: (1) To familiarize the students with the theory of Translation (2) To

facilitate use of Translation as a tool for communication in Hindi and English (3) To motivate the –students for a career in Translation.

Module I : Anuvad ka Swaroop- Anuvad kee prakriya
Outcome: (1) Defines translation (2) identifies fields of translation (3) enumerates on characteristics of good translator (4) understands steps involved in translation

Module II: anuvad Ke prakar- Anuvad: Prayogikata kee seemayem
Outcome: (1) Enumerates on types of translation- literary and non literary (2) identifies limitations of translation

Module III: Translation practice- from English to Hindi and Vice Versa
Outcome: (1)Translates passages from English to Hindi and Vice versa.

Prescribed text: (1) Anuvad: Sidhant tatha prayogikata- By Dr. M.S. vinayachandran
published by: Director of Publication, Kerala University.

Course outcome: (1) understands theories of Translation and limitations of Translation
(2) Translates simple passages from English to Hindi and Vice Versa (3) opens career option- that of Translator.
Distribution of hrs: 2 hrs for module I, 2 hrs for module II, and 1 hr for module III.

Reference :
1.Anuvad vigyan by Bholanaath Tiwari ,Kitab ghar prakashan
2.Vyavaharik Anuvad vy Dr.N E Viswanath Iyer ,Prabhat prakashan

Core Course XIV: Credits : 3 Hours: 4/week
HN 1644 Hindi Vyangya Sahitya
Aim of the course: (1) To familiarize students with the development of satire in Hindi
(2) to make students understand the use of satire as a tool by Writers while discussing socio-political situations and issues in literature.

Module I: Vyangya- Sabdarth, Vyutpatti, Paribhasha- Vyangya kee visheshatayem- Vyangya parampara ka vikas- Bhartendu yug- Dwivedi yug- Chayavadi yug. Swatantryothar yug- Pramukh vyangyakaar aur Rachnayem
Outcome: (1) understands the development of satire in Hindi (2) critically evaluates the development of satire in Hindi (3) Recollect names of famous satirists in Hindi along with their major works.

Module II; A collection of satires – 5 satires
Outcome: (1) Appreciates satire (2) understands use of satire as a tool while discussing socio economic issues in literature.

Module III- To study in detail a play

Outcome: (1) Appreciates satirical play (2) understands use of satire as a tool, while

discussing political issues (3) Elucidates key lines of the play with reference to context.

Prescribed texts: (1) Hindi vyangya Sahitya- edited by Dr. Reshmikrishnan published by Aman Prakashan, Kanpur (2) Bakri- play by Sarveshwar Dayal Saxena published by Vani prakashan, New Delhi (Detailed study)
Course outcome: (1) understands and evaluates satirical literature (2) understands use of satire as a tool while discussing socio-economic-political issues in literature

Distribution of Hrs: 1 hr for module I, 1 hr for module II, 2hrs for module III.

Reference :

1.Vyangy sahitya : sandarbh evam chunautiyan by Amardev Angiras , www.divyahimachal.com
2.Hindi vyangy kee avasan belaa by Omprakash Kashyap , www.hindisamay.com

Elective Course: credits 2 lecture hrs: 3/week
HN 1661 Jan Sanchar aur Hindi Cinema
Aim of the course: (1) To make students understand media both print and electronic and its merit and demerits (2) To make students understand mass communication- its uses (3) to enable students to understand the medium cinema & to make them aware of the significant film movements (4) make them aware of world renowned film makers and the art of film making.

Module I: Sanchar- Sanchar Madhyamom ke prakar- Sravya Madhyam: Radio-Sravya –Drsya Madhyam
Outcome: (1) students understand different types of communication media its uses- cinema as a medium of communication.

Module II: cinema- Bhoomika- Viswa Cinema ka Sanshipta Parichay- Hindi Cinema- Prarambhik yug, vikas ke charan, Samkaleen Hindi cinema pramukh nirdeshak, abhinetha
Outcome: (1) comprehensive knowledge of world cinema and Indian cinema.

Module III- to view 3 classic Hindi films and critically evaluate it.
Outcome: (1) Evaluates film with respect to story, screen play, dialogue, cinematography- editing, acting, direction.
Text books: (1) soochanaa,computer aur prayojanmoolak hindi jagat –Dr.naaga lekshmi (only jansanchar part) (2) Hindi cinema ka safar- edited by Dr. S. Suma & Dr.B Asok (3) To view- Do Ankhem Barah haat (1957)- V. Santharam) Do Beegha Zameen (1953 Bimal Roy) Bawarchi (1972- Hrishikesh Mukherjee)

Course outcome: (1) understands history of world cinema (2) understands development of Hindi cinema (3) understands mass communication and cinema as medium of mas communication (4) critically evaluates film

Hour distribution: 1 hr for module I, 1 hr for module II 1 hr for module III.

Reference :

1. Filmein kaise bantee hai : Kwaja Ahmed Abbas ,National Book Trust ,New Delhi
2. Cinema kal,aaj,kal –Vinod Bharadwaj
3. Media lekhan – Sumith Mohan ,Vani prakashan ,New Delhi

Fifth Semester
Open Course Credits 2 hrs. 3/week
HN 1551- Hindi Cinema

Aim of the course: (1) to enable students to understand a brief history of world cinema (2) to make students understand the development of Hindi cinema (3) to enable students to critically evaluate classic films in Hindi.

Module I: Introduction- Brief History of World Cinema
Outcome: gets knowledge of world cinema

Module II: Hindi Cinema; prarambhik yug, vikas ke charan- Samkaleen Hindi cinema; Pramukh rirdeshak aur abhineta
Outcome: (1) understands development of Hindi Cinema from early times to contemporary times.

Module III: Film sameeksha- To view 3 Hindi classic films and evaluate on basis of direction, acting theme, screenplay, dialogue, cinematography, editing'
Outcome: (1) critically evaluates films in Hindi.

Prescribed text: (1) Hindi cinema ka safr' edited by Dr. S. Suma. (2) To view- (i) Do ankhen Barah haat (1957-V. Santharam) (ii) Do Beegha Zameen (1953: Bimal Roy)
(iii) Bawarchi (1972: Hrishikesh Mukherjee)

Course Outcome: (1) understands development of world cinema & Hindi cinema (2) critically evaluates Hindi cinema.

Foundation Course II credits 2 hrs: 4/week
HN 1321 Soochana Praudyogiki aur Aadhunik Patrakarita

Aim of the Course: (1) to update and expand basic informatics skills (2) to give theoretical and practical knowledge in computing (3) To make students realize the possibilities of computing in Hindi (4) To make students ware of modern trends in Journalism.

Module I: Hindi computing ka itihaas- computer mein Hindi ke vibhin Prayog- Sabd sansadhak – Rajbhasha Hindi, Computer aur Soochana Praudyaogiki- Font, Software aur tools- Unicode aur devanagiri lipi- computer par Hindi ka anuprayog- unicode aur Hindi font

mem antar- Mukt Hindi software- E governance – online sevayem **Outcome**: (1) Gets comprehensive knowledge of computing in Hindi

Module II: Patrakarita ka Udbhav Aur vikas- Viswa Patrakarita ka Uday- Bharat Meim patrakaritha ka uday- Hindi patrakarita ka pehla charan- Doosra yug- Theesra charan 1947 ke baad Hindi patrakaritha
Outcome: (1) understands development of Journalism in the world (2) comprehensive knowledge of development of Journalism in Hindi upto 1980.

Module III: Sanchar Kranti aur Hin di patrakarita-web patrakarita –web patrakarita : Lekhan va Bhasha – bloglekhan- web patrakarita aur blog- stingoperation- pramukh e- patrikayem aur portal.
Outcome: (1) understands development of Journalism in the modern times (2) gets comprehensive knowledge of development of Hindi journalism in the age of communication revolution.

Prescribed text books (1) sanchaar,soochanaa ,computer naur prayojanmoolak hindi – Dr.Nagalekshmi (soochana proudyogiki part only) (2)patrakaaritaa kee badaltee duniyaa : Edited by Hindi UG Board,kerala university,Vanee prakasan

Distribution of hrs: 2 hrs for module I, 2 hrs for module II & III.
Course outcome: (1) understands possibilities of computing in Hindi (2) updates and expands Basic informatics skills (3) understands modern trends in Journalism

Reference :
1. Information Technology (Malayalam) Cosmos publication ,Mettupalayam street ,Palakkad
2. Computer aur Hindi –Hari Mohan,Thakshashila Prakashan

Dissertation/Essay credits: 4, Hours: 6/week
HN 1645

The dissertation work should commence in the 5th semester and a small thesis has to be submitted for evaluation at the end of the 6th semester.

Aim of the course: (1) to apply the knowledge about language & literature gained during the programme (2) to examine the student's ability to analyse, evaluate and think

critically and to put to practice what has been gained during the programme (3) To kindle the students Research aptitude.

Nature of work: The dissertation may be based on any piece of literature in Hindi, on Hindi language, grammar, translation, media and communication. The size of the dissertation may be between 40-50 pages. Research methodology should be followed. The dissertation should contain the following: (1) Title (2) Introduction (3) Expansion of Title chapter (4) Summary of important findings and conclusion (5) Bibliography.

No. of chapters: 3 excluding conclusion

Evaluation points: 1.	Title and introduction	-15
2.	Expansion and explanation of title chapter	-25
3.	Conclusion	-15
4.	Language & Grammar	-15
5.	Reference (Bibliography)	-5
	Total	75
	Viva voce	25
	Total marks	**100**

Essay: Essays of 20 marks each- 5 tobe attempted- Total marks- 100. Eight essays from 'Sahitya ka itihaas' may be given; out of which 5 have to be attempted. The exam will be of 3 hrs duration.

Outcome: (1) Develops skill of enumeration (2) Develops critical evaluation

List of Text Books and Portions to be studied in detail

Common Course in Hindi for BA/BSc students -4hrs /week

HN1111.1 (Common Course I) Name of course- हिंदी कथा साहित्य

Name of the text books

कहानी सरोवर सम्पादक : डा.शीला टी नायर (Detailed Study)

except lessons

सहज और शुभ - मार्कंडेय ,पांचवां बेटा -नासिरा शर्मा

¨मोबाईल- क्षमा शर्मा (Non detailed study)

HN1211.1 (Common course II) Second Semester) 4hrs/week

हिंदी निबंध और अन्य गद्य विधाएं

Name of the text books

गद्य गरिमा (Detailed study) सम्पादक : डा.एन.मोहनन ,डा.दीपक आर

except lesson

आप - प्रतापनारायण मिश्र

HN 1311.1. (Common Course III) Third Semester 5hrs/week

‘हिंदी नाटक ,व्याकरण तथा अनुवाद

Name of the text books

सकूबाई -नादिरा ज़ाहिर बब्बार (Detailedstudy)

´व्यवहारिक हिंदी व्याकरण ,अनुवाद तथा रचना -डा.एच परमेश्वरन

HN 1411.1 (Common Course IV) Fourth Semester 5hrs/week

हिंदी कविता एवं एकांकी

Name of the text books

काव्य दीप्ति

सम्पादक:डा.रश्मिकृष्णन,

डा.शैनी मैथ्यू,

डा.प्रीतारमणी.टी .ई

(detailedstudy)

except lessons

1) 7,8,9,10 दोहे कबीर के , (2) 7,8,9,10 तुलसी के दोहे (3) 7,8,9,10 रहीम के दोहे (4) समर शेष : दिनकर

(5) चूल्हा - पवनकरण

2.सरल एकांकी सम्पादक -डा.जॉन पणिक्कर

Except lesson

हरी घास पर घंडे भर

Common Course in Hindi for B.Com students 4hrs/week HN
1111.2 Common Course I 1st Semester.

हिंदी गद्य और व्यावसायिक लेखन

Name of the text book

नवीन संकलन भाग 1 -सम्पादक : डा.जे.फ्रांसिस ,डा.सुमा एस ,डा.लेखा एस नायर , डा आर गिरिजाकुमारी

प्रकाशक केरल विश्व विद्यालय

HN 1211.2 Common Course II 2nd Semester 4hrs/week

हिंदी कविता अनुवाद और पारिभाषिक शब्दावली

Name of the text book

नवीन संकलन भाग 2 - सम्पादक डा.जे.फ्रांसिस ,डा.सुमा एस ,डा.लेखा एस नायर , डा आर गिरिजाकुमारी

प्रकाशक केरल विश्व विद्यालय

Common Course in Hindi for B.Com (Restructured) Programme HN
1111.4 Common Course I 1st Semester 5hrs/wk)

आधुनिक हिन्दी साहित्य

Name of Text

1. संचयिका सम्पादक -डा.प्रीतारमणी टी .ई , डा.प्रदीपाकुमारी , जवाहर पुस्तकालय

HN 1211.4 Common Course II 2nd Semester 5hrs/week

हिंदी नाटक,व्यवसायिक लेखन और अनुवाद

Name of texts

सावित्री 2007(नाटक) - कैलाशचंद्र -वाणी प्रकाशन (detailedstudy)

. संचयिका भाग 2

Common Course in Hindi for BA/BSc Career related programme
HN 1111.3 Common Course II 1st Semester 5hrs/wek

हिंदी गद्य साहित्य

Name of the text book

गद्य माधुरी सम्पादक डा.सुनील कुमार ,डा.जयश्री ओ -अमन प्रकाशन (Detailed study)

Except lessons :

1. कुंवारी धरती -मोहन राकेश 2.जहां आकाश दिखाई नहीं देता -विष्णु प्रभाकर

HN 1211.3 Common Course II 2nd Semester 5hrs/week

हिंदी पद्य साहित्य

Name of the text book

काव्य कौमुदी सम्पादक डा.शाजी के ,डा.शीबा ,डा.मंजू -राजपाल एंड सन्स **(Detailed study)**

Except Lessons – 1) 5,6 सूर के पद 2) 5,6, कितनी व्यथा -नगीना सिंह 3)सलाम - ओमप्रकाश वाल्मीकी 4)प्रतिज्ञा - ग्रेस कुंजार

Complementary Courses for FDP in Hindi
Semester I Complementary Course I (Compulsory) 3hrs/week

HN 1131 प्राचीन तथा मध्यकालीन भारतीय संस्कृति

Name of the text

अस्मितामूलक विमर्श और हिन्दी साहित्य सम्पादक डा.जयश्री एस आर, डा.गायत्री - अमनप्रकाशन except Lessons

1.मैं कैसी औरत हूँ -सविता सिंह 2. कितनी व्यथा - नगीना सिंह

3.सलाम - ओमप्रकाश वाल्मीकी 4. प्रतिज्ञा - ग्रेज कुंजार

Semester I Complementary Course II (Optional) 3hrs/week

HN 1132 प्राचीन तथा मध्यकालीन भारतीय संस्कृति

Name of text book

प्राचीन एवं मध्यकालीन भारतीय संस्कृति - सम्पादक आशा एस नायर ,डा.महेश्वरी शालिनी सी वाणी प्रकाशन

Semester II Complementary Course III (Compuslory) 3hrs/week HN 1231 कथाकार प्रेमचंद

Name of text book

प्रेमचंद की कहानियाँ संपादक डा.ज्योति.एन ,डा.उषाकुमारी के पी - वाणी प्रकाशन - Detailed study

रंगभूमि -प्रेमचंद छात्र संस्करण भूमिका -सुधीश पचौरी ,वाणी प्रकाशन

Complementary Course IV (Optional) 3hrs/week

HN1232 पारिस्थितिक पाठ और हिंदी साहित्य

Name of text book

पारिस्थितिक पाठ और हिंदी साहित्य- सम्पादक- डा सुमा एस , डा.जयश्री एस आर ,वाणी प्रकाशन

Semester III Complementary Course V (Optional) HN 1331 तुलनात्मक अध्ययन

Name of text books

तुलनात्मक अध्ययन: हिंदी मलयालम की कथा व् कविता के सन्दर्भ में -
समादक -डा. एम्.एस.विनय चंद्रन ,डा.पी लता ,डा.कुमारी गीता एस ,डा.जयश्री ओ ,
श्रीमती शालिनी सी ,डा.शबाना हबीब
- University publications

Complementary Course VI (Compulsory) HN 1332 राजभाषा प्रबंधन

Name of the text book
राजभाषा प्रबंधन - डा.जूलिया इम्मानुवल - राजपाल एंड सन्स

Semester IV Complementary Course VII (Compulsory) 3hrs/week

HN 1431 भारतीय साहित्य

Name of text book

भारतीय साहित्य संकलन कर्ता डा.आर अई .शान्ति , डा.प्रकाश ए
Except lessons : 4,6,7 from खंड 1 and खंड 3 completely

Complementary Course VIII (Optional) 3hrs/week HN
HN **1432** पटकथा लेखन व् विज्ञापन

Name of text book
पटकथा लेखन और विज्ञापन की व्यावहारिक निर्देशिका - सम्पादक डा.निम्मी ए.ए , डा.टी श्रीदेवी ,राजकमल प्रकाशन

Core Courses for FDP in Hindi

Semester I core course I 6hrs/week

HN 1141 हिंदी कथेतर गद्य साहित्य

गद्य सुषमा (detailed study) डा.एन.मोहनन ,डा.दीपक के आर ,राजपाल एंड सन्स

गद्य सौष्ठव (Detailed study) डा.एन.मोहनन ,डा.दीपक के आर ,राजपाल एंड सन्स

Semester II Core Course II 6hrs/week
HN 1241 हिंदी साहित्य का इतिहास (रीतिकाल तक)

Name of text book

हिंदी साहित्य का संक्षिप्त इतिहास - डा.लक्ष्मी सागर वार्ष्णेय ,लोकभारती प्रकाशन except lessons- Lesson 1,2 and 6 from the text

Semester III Core Course III 5hrs/week
HN 1341 हिंदी साहित्य का इतिहास (आधुनिक काल)

Name of the text

हिंदी साहित्य का संक्षिप्त इतिहास - डा.लक्ष्मी सागर वार्ष्णेय ,लोकभारती प्रकाशन

Semester IV Core Course IV 5hrs/week
HN 1441 हिंदी नाटक और रंगमंच

Name of the text books

1. रक्तकमल - लक्ष्मी नारायण लाल (Detailed study) राजकमल प्रकाशन

2. उठो अहल्या - सुरेन्द्र डूबे (Detailed study) भूमिका मंजू रामचंद्रन एंड डा जयश्री ओ,वाणी प्रकाशन

Core Course V- Lecture hrs 4/week

HN 1442 विशेष लेखक अज्ञेय

Name of text books

1.लोकप्रिय साहित्यकार अज्ञेय -सम्पादक डा.आर.आई शान्ति ,डा.सुमा एस ,वाणी प्रकाशन (With introductory essays)

कवितायें Detailed study

except lessons : साम्राज्ञी का नैवेद्य दान ,घृणा का गान

निबंध Nondetailed

कहानियाँ - detailed

Fifth Semester –Core Course VI- 4hrs/week

HN 1541 प्राचीन एवं मध्यकालीन हिंदी काव्य

Name of the text books

प्राचीन एवं मध्यकालीन हिंदी काव्य - सम्पादक डा.बी जयश्री ,डा.ज्योति एन ,

डा.निम्मी ए ए , जवाहर प्रकाशन -Detailed study

Core Course VII- 4hrs/week

HN 1542 आधुनिक हिंदी काव्य

Name of text

आधुनिक हिंदी काव्य - सम्पादक डा.सुमा एस ,वाणी प्रकाशन (Detailed study)

Core Course VIII- 3hrs/week

HN 1543 आधुनिक हिंदी कथा साहित्य

Name of the text books

1.डाक बँगला - कमलेश्वर -राजपाल एंड सन्स

2.कथा कुंज - सम्पादक डा.आशा जी ,डा.शबाना हबीब ,जवाहर प्रकाशन (Detailed study) except lessons लेटर बॉक्स - अज्ञेय , मवाली - मोहन राकेश

Core Course IX- 4hrs/week

HN 1544 हिन्दी व्याकरण

´व्यावहारिक हिंदी व्याकरण तथा रचना - डा.हरदेव बाहरी ,लोकभारती प्रकाशन

except **lessons**

1 . व्याकरण और उसके अंग 2. शब्द विचार 3.अध्याहार 4.वाक्यांतरण 5. वाक्य संश्लेषण 6. वाक्य विन्यास 7.पदक्रम 8.अन्वय 9.कथन भेद 10.विराम 11.मुहावरे 12.लोकोक्ति 13 अनुस्मारानिका पद

Core Course 4hrs/week

HN 1545 भाषा विज्ञान और भाषा का इतिहास

Name of texts

1.भाषिकी के प्रारम्भिक सिद्धांत - डा.एच परमेश्वरन ,वाणी प्रकाशन

except lessons:

1.रूपिमो का अभिनिर्धारण 2. रूपिमों का अंकन 3. शब्द विज्ञान 4. अंत: केन्द्रिक और बहि: केन्द्रिक वाक्य

5. रूप स्वानिमी 6. लेखन प्रणाली

2.हिंदी भाषा और लिपि डा.सीतालक्ष्मी ,वाणी प्रकाशन

except lessons (1) Chapter 4 (2) chapter 8

Semester VI Core Course Xi hrs: 5 /week

HN 1641 समकालीन हिंदी कथा साहित्य

Name of text books

गिलिगडु - चित्रा मुद्गल - सामायिक प्रकाशन (Detailed Study)

नव्य कहानियां - सम्पादक डा.लता डी ,एलिज़ाबेथ जॉर्ज ,अमन प्रकाशन

except lesson अपराध -उदयप्रकाश

Core course XII 5hrs/week

HN 1642 ¦भारतीय एवं पाश्चात्य काव्यशास्त्र

Text Books

1. भारतीय एवं पाश्चात्य काव्यशास्त्र -तारक्नाथ्बाली ,वाणी प्रकाशन

except **lessons**

From भारतीय काव्य शास्त्र - काव्य हेतु,रस सिद्धांत की आधुनिक प्रासंगिकता ,रस सिद्धांत : आधुनिक सन्दर्भ में , साधारणीकरण और आधुनिक समीक्षा ,अलंकारों का वर्गीकरण ,अलंकार सिद्धांत की आधुनिक प्रासंगिकता , शब्द शक्ति ,ध्वनि सिद्धांत की आधुनिक प्रासंगिकता ,वक्रोक्ति सिद्धांत और अभिव्यंजनावाद

From पाश्चात्य काव्यशास्त्र - अरस्तु- त्रासदी का विवेचन ,कथावस्तु,चरित्र चित्रण,विचार तत्व वर्ड्सवर्थ ,कॉलरिज का काव्य संबंधी मत ,छंद का महत्व ,कविता की परिभाषा ,भावमूलक मानवतावाद ,प्रकृति चित्रण

2.काव्य प्रदीप - राम बहोरी शुक्ल ,लोकभारती प्रकाशन

To study - शब्द शक्ति, नव रस ,अलंकार -अनुप्रास , यमक , श्लेष , वक्रोक्ति , उपमा , रूपक ,उत्प्रेक्षा

छंद - चौपाई ,रोला ,दोहा ,सोरठा , इन्द्रवज्रा ,उपेन्द्र वज्रा

Core course XIII 5hrs/week

HN 1643 अनुवाद : सिद्धांत तथा प्रयोग

Name of the text

अनुवाद : सैद्धान्तिकता तथा प्रायोगिकता - डा एम्.एस विनयचंद्रन - University Publications

Core Course XIV 4hrs/week

HN 1644 हिंदी व्यंग्य साहित्य

Name of the text

1.हिंदी व्यंग्य साहित्य - सम्पादक डा.रश्मि कृष्णन ,अमन प्रकाशन

2. बकरी (नाटक) सर्वेश्वरदयाल सक्सेना (Detailed study) वाणी प्रकाशन ´

Elective Course 3hrs/week

HN 1661 जनसंचार और हिंदी सिनेमा

Text Books

1.संचार ,सूचना,कम्प्युटर और प्रयोजनमूलक हिंदी जगत - डा.नागलक्ष्मी (केवल जनसंचार मात्र)

2.हिंदी सिनेमा का सफ़र - डा.सुमा एस and डा.बी.अशोक

3. To view cinemas (i) दो आँखें बारह हाथ -वी शांताराम

(ii) दो बीघे ज़मीन - बिमल रॉय

(iii) बावर्ची - हृषिकेश मुखर्जी

Open course –semester V 3 hrs /week

HN1551 हिंदी सिनेमा

Text book

हिंदी सिनेमा का सफ़र - सम्पादक -डा.सुमा एस

To view cinemas (i) दो आँखें बारह हाथ -वी शांताराम

(ii) दो बीघे ज़मीन - बिमल रॉय

(iii)बावर्ची - हृषिकेश मुखर्जी

Foundation Course II 3 hrs/week Third semester

HN1321 सूचना प्रोद्योगिकी और आधुनिक पत्रकारिता

Textbooks

1.संचार ,सूचना,कम्प्युटर और प्रयोजनमूलक हिंदी जगत - डा.नागलक्ष्मी (सूचना प्रोद्योगिकी part only)

2.पत्रकारिता की बदलती दुनिया : सम्पादक Hindi U G Board ,Kerala University ,वाणी प्रकाशन

B.A. HISTORY (CBCSS)

Restructured Syllabus

Affiliated Colleges, Kerala University

For 2013 Admission (3rd to 6th semester) and

2014 Admission Onwards(1st to 6th semester)

Contents

Board of Studies –History(Pass)

University of Kerala

Dr.Geetha Rani A.V.(Chairman)

Principal (Rtd)

K.K.T.M. Govt. College

Pullut,Trichur(Dist)

Dr.Suresh Jnaneswaran

Professor & Head

Department of History

Dean ,Faculty of Social Sciences

University of Kerala.

Dr.K,R. Usha Kumari

Asso. Professor

V.T.M.N.S.S College

Dhanuvachapuram

Dr.S.Jaya Kumar

Asso. Professor

S.D. College

Alapppuzha

K.Vikraman Nair

Asso.Professor

Govt. College

Chittur, Palaghat

Dr. Jaseem

Director ,School ofDistance Education

University of Kerala.

Invited Resource Persons (Subject Experts) at the Revision Workshop held at the Department

of History ,University of Kerala.

Dr. Sobhanan

Fomerly Professor and Head

Department of History

University of Kerala.

Dr. K.N. Ganesh

Professor and Former Head

Department of History

University of Calicut

Dr. K.Gopalankutty

Fomerly Professor and Head

Department of History

University of Calicut.

Dr. Muhammad Maheen

Associate Professor and Head

Department of History

University of Calicut

Dr. Rajendren

U.G.C.Research Scientist

Archaeologist

Shri Sriram V

Chief Librarian

C. D. S.

Thiruvananthapuram

SEM NO	COURSE NO	COURSE TITLES	INSTR: HRS	NO.OF CREDITS
I	EN 1111	Language Course I (English-1)	5	4
	M/H 1111	Language Course II (Addl. Language)	4	3
	EN 1121	Foundation Course I	4	2
	HY 1141	Core **I**-Methodology and Perspectives of Social Sciences	6	4
	HY 1131.1 (EC/IH/SG)	Complementary **I**-History of Modern India (1857-1900), For Economics, Islamic History and Sociology	3	2
	HY 1131.2 (EN/PL)	Complementary **II**- History of Modern World, (1789-1900), For English & Political Science	3	2
		Total	25	17
II	EN 1211	Language Course III (English II)	5	4
	EN1212	Language Course IV (English III)	4	3
	M/H 1211	Language Course V (Addl. Language II)	4	3
	HY 1241	Core **II-**Cultural Formation of the Pre-Modern World	6	4
	HY 1231.3 (EC/IH/SG)	Complementary **III**- History of Modern India (1901-1920), For Economics, Islamic History and Sociology	3	3
	HY 1231.4 (EN/PL)	Complementary **1V**- History of Modern World, (1901-1920),for English & Political Science	3	3
		Total	25	20
III	EN 1311	Language Course V1 (English)	5	4
	M/H 1311	Language Course VII (Addl. Language III)	5	4
	HY 1321	Foundation Course II- Informatics	4	3
	HY 1341	Core **111**-Evolution of the early Indian society &Culture	5	4
	HY 1331.5 (EC/IH/SG)	Complementary **V**-History of Modern India (1921-1947), For Economics, Islamic History and Sociology	3	3
	HY 1331.6 (EN/PL)	Complementary **V1**- History of Modern World, (1921-1945),For English & Political Science	3	3
		Total	25	21
IV	EN 1411	Language Course VIII (English V)	5	4
	M/H 1411	Language Course 1X (Addl. Language 1V)	5	4
	HY1441	Core **1V-** Medieval India: Socio-Cultural Processes.	5	4
	HY1442	Core **V-**History Modern World – Part 1	4	3
	HY 1431.7 (EC/IH/SG)	Complementary **VII**-History of Modern India (after1948), For Economics, Islamic History and Sociology	3	3
	HY 1431.8 (EN/PL)	Complementary **VIII**- History of Modern World, (after1946), For English & Political Science	3	3
		Total	25	21

	HY1541	Core **V1**-Major trends in Historical thoughts and writings	4	4
	HY1542	Core **V11**-Colonialism and Resistance movements in India	4	4
	HY1543	Core**V111-**History of Modern World – Part II	3	2
	HY1544	Core **1X**-History of Pre- Modern Kerala	4	4
	HY1545	Core **X-**Making of Indian Nation	3	2
		Open Courses-		
V	HY 1551.1	Empowerment of Women with special reference to India		
	HY 1551.2	An Introduction to Archaeology	3	2
	HY1551.3	History of Human Rights Movement.		
		Project/Dissertation		
		Historical Method-Mechanics Project Writing	3	0
		Study Tour		
		Total	25	20
V1	HY1641	Core **XI** - Making of Modern Kerala	5	4
	HY 1642	Core **XII -** Major trends in Indian Historical thought & writings	5	4
	HY1643	Core **XIII** - Contemporary India	5	4
	HY1644	Core **X1V** - Twentieth Century Revolutions	4	3
		Electives		
	HY1651.1	Historical Tourism	3	2
	HY1651.2	Heritage Studies		
	HY 1651.3	Contemporary World		
	HY1651.4	Empowerment of Women with special reference to India		
	HY1651.5	An Introduction to Archaeology		
	HY1651.6	History of Human Rights Movement.		
	HY1651.7	Environmental History of Modern India		
	HY1645	Project/Dissertation	3	4
		Total	25	21
		Grand Total	150	120

HY 1141
Core 1 Semester I
Credits-4 Hours: 6

METHODOLOGY AND PERSPECTIVES OF SOCIAL SCIENCES

Aims and Objectives

- The course intends to familiarize the students with the broad contours of Social Sciences and its methodology.
- To familiarize the main concerns of Social Science disciplines.
- To articulate the basic terminologies and theories prevalent in concerned disciplines.
- Critically read popular and periodical literature from a Social Science perspective.

Module I

History Its Nature and Practice

a) What is History – Definitions- Carr – Karl Marx- Carlyle – Croce.
b) Problems in the construction of history – Nationality and Bias – Objectivity – Plagiarism.
c) Methodology of historians – D.D.Kosambi –R.C.Majumdar – Romila Thapar – Irfan Habib – Ranajith Guha – Ramachandra Guha.
d) History and Social Sciences – need for interdisciplinary approach.

Module II

Introduction to Social Sciences

Social Sciences – its emergence and nature – relevance of the Social Science in understanding and solving contemporary problems – Discussions of basic principles and concepts.

Module III

Objectivity in Social Sciences

Limits of Social Sciences and its practice – Sociology-Economics -Political Science –secular, communal and racial issues.

Module IV

Understanding Social Structure

Caste, Class, Gender – Marxist and other sociological perspectives.

Essential Readings:

1. Elgin Hunt, Social Science: *An Introduction to the Study of Society*, Allyn & Bacon, 2008. (Chapter: Social Science and its Methods).
2. John Perry, Contemporary Society -*An Introduction to Social Sciences*, Allyn & Bacon, 2009. (Chapter: Through the Lens of Science).
3. Donatella Della Porta & Micheal Keating, *Approaches and Methodologies in Social Sciences*; Pluralistic Perspective, Cambridge University Press, Delhi, 2008.
4. Sujata Patel, (et al), ed, *Thinking Social Science in India*, Sage Publication, New Delhi, 2002.
5. M.N.Srinivas, *Caste in India and Other Essays*, Asia Publishing House, 1962.
6. M.N.Srinivas, *Social Transition in Modern India*, Orient Longman, New Delhi, 2003.
7. B.Sheik Ali, *History: Its Theory and Method*, Macmillan Publication, New Delhi, 1980.
8. E.Sreedharan, A Textbook of Historiography, Orient Longman, 2003.
9. Gail Omvedt, *Dalits and Democratic Revolutions, Dr.Ambedkar and Dalit Movements in Colonial India*, Sage Publications New Delhi, 1994.

HY – 1241 Semester II
Core – II Hours - 6
Credits – 4

Cultural formation of the Pre-Modern World

Aims and objectives

*** To** enable the students to engage with conceptual and general issues regarding culture and civilization of the ancient period.

* To inculcate an awareness among the students about the cultural heritage of mankind.

* To have a sound knowledge about changes that took place among the major cultures of world civilizations.

* To give an idea about the harmonious existence of the different sections of the people.

Module I

Evolution of the Universe

Early Man – New Theories of Evolution of universe – 'God' particle theory – String theory – Genome theory – Human Origin – Charles Darwin – Spencer.

Module II

Stone Age Culture

Paleolithic- Mesolithic – Neolithic revolution and Chalcolithic stage.

Module III

Bronze Age civilizations

Egyptian Civilization – Mesopotamian Civilization – Sumerian – Babylonian – Assyrian and Chaldean Civilizations – Chinese Civilization – Indus Valley Civilization.

Module IV

Iron Age Civilizations

Greek and Roman Civilizations – Society – Economy – Culture

Module V

Medieval Developments

Advent of Islam and its Cultural Contributions – Monasticism – Crusades – Feudalism– Struggle between Empire and Papacy – Guilds.

Essential Readings

1. Will Durant, *The Story of Civilizations,* Simon & Schuster, New York, 1935.
2. Stanley M. Burstein, *World History – Ancient Civilizations*, Holt Rinehart and Winston, 2006.
3. Peter N. Stearns, *Western Civilizations in World History*, Taylor and Francis, 2003.
4. Stephen K. Sanderson, *Civilizations and World Systems*, Rowman Altamira, 2005
5. Jackson J. Spielvogel, *Western Civilization: A Brief History*, Vol. I, Words Worth Publishing Company, London, 2007.
6. Charles Freeman, *Egypt, Greece and Rome: Civilizations of the Ancient Mediterranean*, Oxford University Press, 2004.
7. Charles Kaith Maizels, *Early Civilizations of the Old World – The Formative Histories of Egypt, the Levant, Mesopotamia, India and China*, Psychology Press, 2001.
8. Francois Louis Ganshof, *Feudalism in Europe*, University of Toronto Press, 1964.
9. Mathew Gordon, *The Rise of Islam*, Greenwood Publishing Group, 2005.
10. Peter Sarris, *Empires of Faith – The fall of Rome to the Rise of Islam 500-700,* Oxford University Press, 2011.
11. M.A. Fisher, *A History of Civilization*, Penguin Books, New Delhi, 1993.

HY 1321 **Semester –III**

Foundation II **Hours -4**

Credits -3 **INFORMATICS**

Aims and Objectives

- To update and impart basic skills in informatics relevant to the emerging knowledge society and also to equip the students effectively to utilize the digital knowledge for their course
- To review the basic concepts and functional knowledge in the field of informatics
- To impart functional knowledge in a standard office package and popular utilities
- To create awareness about social issues and concerns in the use of digital technology
- To develop the skills to enable students to use digital knowledge resources in learning

Module I

Overview of Information Technology

Features of modern personal computer and peripheral-Computer Networks and Internet-Overview of operating systems and major application software

Module II

Knowledge skill for Higher Education

Internet as a knowledge repository – academic search techniques – Creating cyber presence – case study of academic websites –open access initiates open access publishing methods – Introduction to use of IT in teaching – case study of educational software – academic services –INFLIBNET-NICNET-BRNET

Module III

Social Informatics

IT & society –issues and concerns –digital – IT and development – the free software movement –IT industry –new opportunities and new threats- piracy – cyber threats – cyber security – piracy issues - cyber laws –cyber addictions – information overload – health issues guide lines for proper usage of computers – E wastes and green computing – impact of IT on language and culture – Localization issues IT and Regional languages –E-groups –social Cybernetics – Information society

Module IV

Data Analysis

The use of computer in data analysis and coding –Data analysis software –Excel and SPSS –Starting SPSS- working with data editor and SPSS –Viewer – Importing data – Major statistical techniques using – Excel and SPSS- Preparation of graphs and diagrams using Excel and SPSS –Data presentation using Power Point.

Note: Expecting only the conceptual level understanding .No detailed account is needed. No practical's in examination

Essential reading

1. Pearson, *Technology in Action*
2. V.Rajaraman, *Introduction to Information Technology* ,Prentice Hall
3. Alexis Leon & Mathew Leon , *Computers Today* , Leon Vikas
4. Peter Notion , *Introduction to Computers* , Indian adapted edition
5. Geirge Perry , *SAMS Teach yourself Open office org*, SAMS
6. Alexis Leon & Mathew Leo, *Fundamentals of Information Technology*
7. Armand Mathew , *The Information Society* , Sage Publications , London
8. Ajai.S.Gaur , *Statistical Methods for Practice and Research* ,Response books, New Delhi

Web resources

1. www.fgcu.edu/suppor/office 2000
2. www.openofficeorg
3. www.mocrosoft,com/office
4. www.lgta.org
5. www.learnthenet.co
6. www.lgta.org
7. www.learnthenet.com

HY1341

Core-III **Semester-III**

Credit-4 **Hours: 5**

EVOLUTION OF EARLY INDIAN SOCIETY AND CULTURE

Aims and Objectives

- To analyze the salient Features of Prehistoric and Proto Historic Culture in India
- To Trace the evolution of India Culture with special reference to the society and polity of Ancient period
- To familiarize the students with the heritage of India

Module 1

Pre Historic and Proto Historic Cultures in India

Location and Chronology of Early Stone Age Cultures-Paleolithic Period-Neolithic Revolution-Chalcolithic Culture- Transition to Metal Age

Module 2

Bronze Age Culture in India

Harappan Culture- Settlement Patterns and Town Planning-Agrarian Base- Technology- Craft -trade-Decline

Module 3

Vedic Period

Early Vedic Period-Social Stratification and Economy- Later Vedic Phase-

Second Urbanization- Heterodox Religions-Jainism and Buddhism-Mauryan State and Society

Module 4

Cultural Contribution of the Guptas

Contribution of Guptas to Indian Culture-Social Changes in the Post Gupta Period

Religious Movements-Vaishnavism, Saivism

Transmission of Knowledge-Secular and Religious

Module 5

Development of Culture in South India- Megalithic Background

Megalithic Background- Sangam Age-Formation of Tamil Society- Trade with Roman Empire-The Tamil Bhakti Movement

Essential Readings

1. Rajesh Kochar-*The Vedic People: Their History and Geography*, Orient Longman2000

2. Stuart and Piggot-*Pre Historic India*, Pelican Books 1950

3. Bridget &Raymond Allchin-*The Rise of Civilization in India and Pakistan*, CUP1982

4. A..L Basham(Ed)-*Cultural History of India*, OUP1975

5. A.L. Basham-*The Wonder that was India*, OUP 1953

6. D.N. Jha-*Economy and Society in Early India: Issues and Paradigms*, Munshiram Manoharlal Pub. New Delhi 1993

7. D. D. Kosambi-*An Introduction to the Study of Indian History*, Popular Books Depot, Mumbai1956

8. D. D. Kosambi-*The Culture and Civilization in Ancient India: A Historical Outline*, Routledge Kerganpaun, London 1965

9. R.S .Sharma-*Indian Feudalism*, McMillan 2005

10. Romaila Thaper-*Ancient Indian Social History: Some Interpretations*. Orient Longman,1978

11. Romaila Thaper- *From Lineage to State*, OUP 1985

12. Romaila Thaper-*History of India Vol.1*, Penguin Books, 1966

13. Romaila Thaper- *Asoka and the Decline of the Mauryas*, ISBN OUP 1998

14. Irfan Habib-*Medieval India: Study of a Civilization*. NBT 2008

15. K.A Neelakanta Sasthri-*A History of South India*, Oxford Press New Delhi-1957

16. Kesavan Veluthat- *The Political Structure of Early Medieval South India* –OLM 1993

17. Sathish Chandra- *Medieval India*, OLM 2007

18. N. Subhrahmanyan- Sangham Polity, Asia Publishing. House, Madras 1966

Books for Reading

1. Chempakalakshmi .R- *Trade Ideology and Urbanization in South India*

2. D.N. Jha- *Economy and Society in Early India*

3 R.C. Manjumdar- *Ancient India*

4. R.S. Sharma- *Ancient India*

5. Karashima Naboru - *South Indian History and Culture*

6. R.S. Sharma- *Material Culture and Social Formation in Ancient India*

HY1441

Core-IV **Semester IV**

Credit-4 **Hours: 5**

MEDIEVAL INDIA: SOCIO- CULTURAL PROCESSES

Aims and Objectives

- Equip the Students to have an idea on the Social Cultural and Administrative Features during the Medieval Period
- To familiarize the Students, the processes that made the socio-cultural specificities possible
- To make the Students, aware of the linkage effect of this period in subsequent centuries
- Feature: Political (Dynastic) history as such is avoided, however administrative system prevailed in the period concerned is included.

Module 1

Economic and Social Life under Delhi Sultanate

Concept of Medieval India-formation of Delhi Sultanate-Nature of Nobility-Peasant and Rural Gentry-Trade, Industry and Merchants-Emergence of new Towns-Town Life-Slaves, Artisans and other sections-Social manners and customs- Caste and Social mobility- status of Women

Module 2

Administrative System, Economic and Social Life under the Mughals

Concept of Sovereignty -Badushaship

Growth of Administration- Mansabdari system and the Mughal army- Economic and social conditions-Standard of living- Patterns of Village life and the Mass- Jagirdari system- Peasant Economy- the Ruling Classes-Nobles and Zamindars – Organization of Trade and commerce- -Foreign trade and European traders.

Module 3

Cultural Development in Medieval India

a) Architecture,-Religious ideas and beliefs- The Sufi Movement- Chisthi, Suharwari, Silsilahs

b) Bhakthi Movement in North India-The Vaishnavite Movement

c) Literature and Fine Arts

d) Painting –Language - Music

Module 4

Emergence of Regional Cultures

Growth of Regional Languages and Literature-Bengali-Punjabi-Urdu-Emergence of Maratha Culture

Formation of Regional Cultures in South India-Cholas and Vijayanagar

Essential Readings

1. B.D. Chathopadyaya –*The Making of Early Medieval India*. OUP 1994
2. Shireen Moosvi - *The Mughal economy*-OUP-1987
3. Peter Jacson-*The Delhi Sultanate:Political and Military History*,OUP2003
4. Sathish Chandra- *History of Medieval India*, Orient Black Swan, Delhi 2009
5. Irfan Habib (ed) ,*Medieval India*,Vol.I, OUP Delhi 1992
6. Irfan Habib- *The Agrarian System of Mughal India*- 1520-1707-OUP Delhi 1999
7. Tapan Ray Chaudhary & Irfan Habib(ed)- *The Cambridge Economic History of India, Vol 1*- Orient Longman, Delhi, 1993
8. Muhammed Habib and K.A. Nizami (ed), *The Delhi Sultanate, Vol:5*-2parts-People Pub House, Delhi, 1992
9. R.C. Majumdar &A.D. Pusalkar-*The Delhi Sultanate-The History and Culture of Indian People,Series*,Vol6Vidyabhavan, Bombay b1960
10. R.C. Majumdar, JN Chaudhari & S Chaudhari-*The Mughal empire, Vol 7-The History and Culture of the Indian People Series,Vol. 6,* Bharathiya Vidya Bhavan, Bombay 1960
11. Sathish Chandra-*Essays on Medieval Indian History*, OUP, Delhi 2003
12. I.H. Quereshi- *The Administration of Mughal Empire*, OUP, Karachi -1966
13. B. Catherine Asher, *Mughal Architecture*,OUP,1992
14. P.N. Ojha- Some *Aspects of North India Social Life* -1556-1707, Nagari Prakashan ,Patna 1961
15. K.A.N. Sasthri- *A History of South India*, OUP, Delhi,1957

Books for Readings

1. Chadopadhyaya B.D.- *The Making of Early Medieval India*

2. Kesavan Veluthattu- *Political Structure of Early Medieval South India*

3. Herman Kulki - *The State in India* (1000-1700AD)

4. R.S. Sharma- *Indian Feudalism*

5. Burton Stein- *Peasant, State and Society in early Medieval South India*

6. Musafir Alan and Sanjay Subrahmaniam: *Mughal state*- 1526-1750

7. Sathish Chandra- *Medieval India*, 2 Vols

8. Irfan Habib- *Agrarian System of Mughal India*

9. Kesavan Veluthatt- *Political Structure of Early Medieval South India*

10. Irfan Habib – *Medieval India*

HY – 1442 **Semester IV**

Core – V **Hours - 4**
Credits – 4

History of Modern World – Part I

Aims and objectives

*** To** familiarize the students about the changes in the history of the modern world

* To analyze the agenda of the imperialistic powers in Latin America and Africa

* To create an understanding among students about the liberal ideas and freedom struggles

Module I

Emergence of the Modern Age

Scientific revolution- Geographical Explorations – Renaissance – Reformation - Counter Reformation - Commercial Revolution – Rise of Nation States – England and France.

Module II

Age of Revolutions

English Civil War - Glorious Revolution – American War of independence – French Revolution of 1789.

Module III

Colonial Expansion and Resistance

Colonialism – imperialism - Latin American Resistance – Miranda – Simon Bolivar – San Martin - Colonialism in Africa.

Module IV

Industrialization and Emergence of Socialist Ideas

Industrial Revolution – Agrarian Revolution - Socialism – Robert Owen – Saint Simon – Karl Marx.

Essential Readings

1. R. Hilton, *Transition from Feudalism to Capitalism*, Alan Sutton Publication, England, 1976.

2. Jonnathan W. Zophy, *A Short History of Renaissance and Reformation in Europe: Dances over Fire and Water*, Prentice Hall PTR, 2003.

3. John Addington Aymonds, *Renaissance in Italy: The Age of the Despots*, Kessinger Publisher, 2005.

4. Andrew Johnson, *The Protestant Reformation in Europe*, Longman, 1991.

5. John Morris Roberts, *A Short History of the World*, Oxford University Press, 1993.

6. R.R. Palmer, *A History of the Modern World*, Mc Graw Hill Companies, 2004.

7. Eugene Davidson, *The Making of Adolf Hitler – The Birth and Rise of Nazism*, University of Missouri Press, 1997.

8. John Miller, *The Glorious Revolution*, Longman, 1997.

9. Henry Bamford Parkes, *The United States of America: A History*, (First Indian Reprint), Khosla Publishing House, New Delhi, 1986.

10. Christopher Hibbert, *French Revolution*, Penguin, UK, 2001.

11. C.A. Bailey, *The Birth of the Modern World*, Blackwell, California, 2004.

12. Edward Mc Nall Burns, Philip Lee Ralph, Robert E. Lerner & Standish Meacham, *World Civilizations*, GOYL SaaB Distributors, New Delhi, 1998.

13. Eric J. Hobsbawn, *Age of Revolution*, Abacus, 1998.

HY 1541
Core – VI Semester V
Credits -4 Hours : 4

MAJOR TRENDS IN HISTORICAL THOUGHT AND WRITINGS

Aims and Objectives:

- To enable the students to understand the history of historical writings.
- To intellectually equip the students to evaluate the works in the light of new theories and concepts.

Module I

Early Historical Writings

Greece-Rome –China- Herodotus - Thucydides – Livy –Tacitus – Su-ma-Chien.

Module II

Medieval Historiography

St.Augustine – Ibn Khaldun

Module III

Renaissance , Enlightenment and Romanticism.

Renaissance and its impact on historiography- Descartes –Vico – Gibbon – Hegel.

Module IV

Positivism and Historical Materialism

Positivism and Ranke – Karl Marx and Materialistic interpretation of history.

Module V

Twentieth Century Historiography

Annales School- Structuralism –Subaltern Studies -Post Modernism .

Essential Readings:

1. E.H.Carr, *What is History*, Vintage Publication, 1967.
2. R.G.Collingwood, *The Idea Of History*, Oxford University Press, 1994.
3. Keith Jenkins*, Re-thinking History*, Routledge Publication, London,2003.
4. G.A.Cohen, Karl Marx, *Theory of History*, Princeton University Press, 1978.
5. Arthur Marwick, *Nature of History*, Palgrave Macmillan, 1970.
6. Arthur Marwick, *The New Nature of History*, Palgrave Macmillan,2001.
7. B. Sheik Ali , *History : Its theory and Method*, Macmillan , New Delhi , 1980.
8. E. Sreedharan, *A Text Book of Historiography*, Orient Longman , 2003.
9. J.W.Thomson, *A History of Historical Writings* (2 Vols), Macmillan , 1942.
10. Keith Jenkins, ed,*The Post Modern History Reader*, Routledge Publication, London,2000.
11. Fernand Braudel , *On History*,University of Chicago Press, USA, 1982.
12. Satheesh.K.Bajaj , *Recent Trends in Historiography*, Anmol Publication, 1998.

HY1542

Core-VII Semester V

Credit-4 Hours 4

COLONOIALISM AND RESISTANCE MOVEMENTS IN INDIA

Aims and Objectives

- To Review the circumstances that led to the establishment of colonialism in India
- To bring out the impact of colonial rule in India with particular reference to socio-religious-political and economic fields
- To analyze the genesis and progress of the resistance Movements against the British

Module 1

Contextualizing Colonialism

Different Perspectives –Major Historiographical Trends

Module 2

Process of Colonial Conquest

The Early European Settlements- Contest for supremacy among European Powers- British conquest of India-Conflict between the English and the Nawab of Bengal- Battle of Plassey and Buxzar- Further wars and Alliances-Anglo-Mysore wars- Anglo-Maratha wars

Consolidation of British Power in India-Legislative Measures-The Regulating Act(1773)-Pitt's India Act(1784), The Charter Act of 1813,1833 and 1853

Module 3

Impact of British Rule

Economic impact-Land revenue settlements in British India- Permanent settlement-Ryotwari settlement-Mahalwari settlement-Commercialization of Agriculture- Impoverishment of the peasantry- Dislocation of Traditional Trade and Commerce- Concept of Deindustrialization – decline of traditional crafts- Drain of Wealth- State of Indigenous and Western Education in India- Growth of Press

Early attempts of Socio-Religious Reform Movements -Reform Movements against Sati- Child Marriage-Female -infanticide-untouchability -Movement for widow remarriage-

Module 4

Resistance against British Imperialism. Early Resistance Movements—Kattabhomman and Poligar Rebellion- Vellore Mutiny- Veluthampi- Pazhassi Raja- Sanyasi Rebellion of Bengal –Santhal Rebellion

The Revolt of 1857-nature- causes-failure-consequences

Essential Readings:

1. Bipan Chandra - *Nationalism and Colonialism in Modern India*, Orient Lomgman 1961

2. Bipan Chandra - *Essays on Colonialism* -Bertrams Pub.2005

3. Ramakrishna Mukherjee-*Rise and Fall of English East India Company* - Punthi Pustak 1994

4. R.C. Majumdar-*British Paramountcy and Indian Renaissance*-Bharathiya Vidya Bhavan 1963

5. Sekhar Bandopadhyaya-*Plassey to Partition*-Orient Longman 2004

6. Tarachand- *History of Freedom Movt. in India*- Vikas Pub. House, Delhi

7. Dadabhai Naoriji- *Poverty and Unbritsh Rule in India*-Anmol Pub.1991

8. P.N. Chopra, N Subrahmanyan and T.K. Ravindran- *History of South India*-Kanishka Pub, Bombay1986

9. Kenneth .W. Jones-*Socio-Religious Reform Movts in British India*, CUP-1990

10. M.S.A .Rao-*Social Movements and Social transformation*, Mac Millan, Madras 1977

12. Sumit Sarkar-*Writing Social History*, OUP USA 1989

13. S.N. Sen - Eighteen Fifty Seven –Pub, Division 1957

14. Charles. H. Heimsath –*India Nationalism and Hindu Social Reform*, Priceton Uty Press,1964

15. K. Rajayyan- *South Indian rebellion:The First War of Independence*. Rao &Raghavan, 1971

16.Paul.R. Brass- *The Politics of India Since Independence*, CUP, Delhi 1992

17.Anilket Alam-*Becoming India*, CUP Delhi 1992

19. Barbara Metcalf and Thomas. R. Metcalf-*A Concise History of India*, CUP, Delhi 1992

25. Jurgen Habermas- *Structure of Transformation in Public Sphere*-CUP 1984

Books for Reading

1. Bipan Chandra- *India's Struggle for Freedom*
2. Dharama Kumar, Tapan Ray chaudhari- *The Cambridge Economic History of India*
3. Sucheta Mahajan- *Independence and Partition*: *The Erosion of Colonial Power in India*
4. A.R. Desai- *Social Background of Indian Nationalism*
5. Herman Kulke - *State in India*
6. K.N. Panikkar- *Culture*, *Ideology*, *Hegemony and Social consciousness in Colonial India*
7. Sumit Sarkar- *Modern India*
8. Bandhopadhyaya Sekhar- *Plassey to Partition*
9. R.C. Majumdar-*The Struggle for Freedom*
10. Irfan Habib- *Essays in Indian History*

11. Partha Chatterjee- *National Thought and Colonial world*
12. Chandresekhar.S, *Colonialism, Conflict and Nationalism*
13. S.C. Gosh- *History of Education in Modern India*
14. Bhattacharya,SavyaSachi and Romila Thaper- S*ituating Indian History*
15. Cohn Bernarn .S .- *Colonialism and its form of Knowledge*
16. Jnanendra Pandey- *Construction of Communalism in Colonial North India*

HY – 1543 Semester V

Core – VIII Hours - 3

Credits – 2

History of Modern World – Part II

Aims and objectives

***** To trace the significance of the unification movements in Italy and Germany that paved the way for the beginning of a new epoch

* To give an idea about the First and Second World Wars

* To evaluate the achievements and failures of the International Organizations

Module I

US Civil War and Unification Movements in Europe

Civil War in USA – Unification of Italy – Unification of Germany – Bismarck.

Module II

World War I and the League of Nations

First World War – Background and Causes – Results – Significance – League of Nations.

Module III

Rise of Dictatorships

Turkey under Mustapha Kamal Pasha – Fascism in Italy – Nazism in Germany.

Module IV

Second World War and UNO

Second World War – Causes and Results – Significance – United Nations Organization.

Essential Readings

1. Henry Bamford Parkes, *The United States of America: A History*, (First Indian Reprint), Khosla Publishing House, New Delhi, 1986.

2. Martin Collier, *Italian Unification 1820-71*, Heinemann, 2003.

3. Timothy W. Mason, *Nazism, Fascism and the Working Class,* Cambridge University, Press, 1995.

4. Dutlef Muhlberger, *The Social Bases of Nazism 1919-1933,* CUP Press, 2003.

5. Eugene Davidson, *The Making of Adolf Hitler – The Birth and Rise of Nazism*, University of Missouri Press, 1997.

6. John Morris Roberts, *A Short History of the World*, OUP, 1993.

7. Martin Gilbert, *The First World War – A Complete History*, Henry Holt and Company, 2004,

8. J.M. Roberts, *The Penguin History of Europe*, Penguin Books, New Delhi, 1998.

9. Norman Lawe, *Mastering Modern World History*, MacMillan, New Delhi, 2003.

10. Andrew Langley, *World War II*, Raintree, 2013.

11. Stanley Maisler, *United Nations – A History*, Grove Press, 2011.

HY-1544 Semester V
Core-IX Hours-4
Credits-4

HISTORY OF PRE-MODERN KERALA

MODULE-1

SOURCES OF KERALA HISTORY AND GEOGRAPHICAL FEATURES

Sources –Physical features – Pre- historic cultures- Megalithic Culture

MODULE-2

EARLY HISTORIC KERALA-

Evidence for Early Chiefs and Kings – Sangam – Polity- Society- Ay, Ezhimala and Chera- Spice Trade- Internal and Overseas – impact- Jains- Buddhists- Jews – Arabs- Brahmin Settlements.

MODULE-3

EMERGENCE OF THE STATE

Perumals of Mahodayapuram- Nature of Monarchy- Evolution of Malayalam language- Development of different Art forms- Bhakti cult – Temples – Philosophy – Knowledge- Agrarian Expansion – Brahmaswam- Devaswam- Trade and Trade Corporations – Arab - Chinese

MODULE-4

FORMATION OF NADUS AND SWARUPAMS-

Formation of Nadus – Nattudayavar- Growth of Swaroopam- Village Communities- Martial Tradition – Caste- Untouchability- Mamamkom- Revathi Pattathanam- Janmi system- Matrilinial system

MODULE-5

RISE OF NEW KINGDOMS

Travancore and Cochin – Modernization – Mysorean Invasions- Effects on Kerala Society and Culture- Performing Arts – Art , Architecture - Cultural Symbiosis.

Essential Readings

1. RajanGurukkal – *Kerala Charitram* Malayalam, Part II, Vallathol Vidyapedam Sukapuram 2012.
2. Kavalam Narayana Panikkar– *Folklore of Kerala* – NBT 1991.
3. RajanGurukal&,KesavanVeluthat – *Theresappallippattayam* Malayalam 2013.
4. RajanGurukal – *Social Formations of Early South India*- Oxford Publications, New Delhi 2012
5. VijakumarMenon – *A Brief Survey of the Art Scenario of Kerala* – ICKS, 2006

6. M. T. Raghavan – *Folk plays and Dances of Kerala*, Thrissur, 1947
7. PanmanaRamachandran Nair (ed) – *Kerala SamskaraPatanangal* - 2Volumes, Current Books, 2014.
8. A. P. Ibrahim Kunju, *Medieval Kerala*, International Centre for Kerala Studies. University of Kerala, Trivandrum, 2007
9. A. SreedharaMenon, *A Survey of Kerala History*, DC Books, Ed .2, Kottayam, 2008.
10. A. SreedharaMenon, *Cultural Heritage of Kerala*, S.V. Publishers, Madras, 1996
11. ElamkulamKunjanPillai, *Studies in Kerala History*, Kottayam, 1970
12. *Kerala through the Ages,* Government of Kerala Trivandrum, 1980
13. KesavanVeluthat, *Brahmin Settlements in Kerala*, Calicut, 1978
14. K. K. Kusuman (ed.), *Issues in Kerala Historiography*, Trivandrum, 1976
15. K. K. Kusuman, *Slavery in Travancore*, Kerala Historical Society, Trivandrum, 1976
16. K. P. PadmanabhaMenon, *History of Kerala* (4 Volumes), Delhi, 1986.
17. M. G.S. Narayanan, *Perumals of Kerala*, Calicut, 1996
18. M. G.S. Narayanan, *Aspects of Aryanisation in Kerala*, Trivandrum, 1973
19. M.G.S. Narayanan, *Cultural Symbiosis in Kerala*, Trivandrum, 1972
20. P.K.S. Raja, *Medieval Kerala*, Nava Kerala Co-operative Publishing House, Calicut, 1966
21. M. R. Raghava Varier and Rajan Gurukkal (eds.), *Cultural History of Kerala Vol. I*, Trivandrum, 1999
22. M. R. Raghava Varier and Rajan Gurukkal, *Kerala Charithram* (Malayalam), Sukapuram, 1991
23. M. R. Raghava Varier, *Village Communities in Pre-colonial Kerala*, Delhi, 1994
24. R. Champakalakshmi & KesavanVeluthat (*et.al*), *State and Society in Pre Modern South India*, Thrissur, 2002.

HY1545 Semester: V

Core-X Hours 4

Credit-4

MAKING OF INDIAN NATION

Module 1

Emergence of Nationalism

Concept of Nationalism-British rule and emergence of Indian Nationalism-Formation of Indian National Congress- Moderate Phase - Rise of Extremism- Swadhesi Movement- Formation of Muslim League- Minto- Morely Reforms- Home rule League- Montague- Chelmsford Reforms

Module 2

Advent of Gandhiji

Champaran Sathyagraha- Rowlett act- Amritsar Tragedy- Khilafat agitation- Non- Co-operation Movement- Swarajist Pary- Simon Commission- Nehru Report-Revolutionary Nationalist Movement- Gaddar Party-Anuseelan Samithi- Hindusthan Republican Association**.**

Module 3

Emergence of New Forces

Emergence of Socialist ideas- Trade Union Movement- Bardoli Sathyagraha- Growth of Peasant Movements-Women in Revolutionary Movement- Kalpana Dutta- Bina Das- Preethy Latha Vadedar

Module 4

Towards Independence

Civil Disobedience Movement- Round Table Conferences- Poona Pact- Govt of India Act of 1935- National Movement and II world War-Quit India Movement-Subhash Chandra Bose and INA- RIN Mutiny- Communal Politics and Partition**.**

Module5

Making of a Nation

Framing of the constitution- Mount Batten Plan and Indian Independence Act-Integration of Indian States

Essential Readings

1. A.R. Desai - *Social Background of Indian Nationalism*, Popular Prakasham, Delhi 1987
2. Bipan Chandra - *India's Struggle for Independence* - Penguin Books 1998
3. Bipan Chandra - *Nationalism and Colonialism in Modern India*-Orient Longman,1987
4. Bipan Chandra - *Communalism In Modern India*, Har Anand Pub.2008

5. Bipan Chanrda- *Modern India*-NCERT Books,NewDelhi-2000
6. K.N. Panikkar- *Culture, Ideology Hegemony: Intellectual and Social Consciousness in Colonial India*, People's Pub House,1990
7. R.C. Manjumdar-*History of Freedom Movement in India* , South Asia Books 1998
8. Sumit Sarkar - *Modern India*, 1887-1947, McMillan ,Madras, 1983
9. TaraChand- *History of Freedom Movement in India* (3Vols) Pub. Division 1961
10. Ramachandra Guha, *India After Gandhi*, Picador India, 2008
11. Judith Brown - *Modern India* –OUP
12. S.C. Gosh- *History of Education in Modern India*, UBS Pub, Delhi ,2009
13. Irfan Habib - *Indian economy*-1858-1914-Manohar Pub.2006
14. Partha Chatterjee - *Wages of Freedom*, OUP 1999
15. Mohandas Karamchand Gandhi: *My experiments with Truth* - Crossland Pub.2009
16. Jawaharlal Nehru-*An Autobiography*, Theenmurthy House, Delhi ,1936
17. Jasvanth Singh- *Jinnah-India Pakistan Independence* - Rupa Pub, 2001
18. Ernst Gellner-*Nation and Nationalism* –Basil Blacklwell OUP-1983
19. Antony. D. Smith - *The Antiquity of Nations,* Polity Press , Cambridge ,2004
20. Anil Seal - *The Emergence of Indian Nationalism*, Cambridge University Press 1968

Books for Reading

1. Bipan Chandra - *Essays on contemporary India*

2. Bipan Chandra - *A history of India since Independence*

3. Brass Paul .R - *Politics of India since Independence*

4. Santhanan M.K - *Fifty Years of Indian Republic*

5. Hassan Mushirul - *Legacy of a Divided Nation*

6. Ahamed Aijaz - *Communalism and Globalization*

7. Byres Terence - *The Indian Economy- Major Debate since Independence*

8. Desai S.S.M - *An Economic History of India*

9. Puri Balraj - *The Issue of Kashmir*

10. AmartyaSen and Pranab Bardwan- *The Political economy of Development in India*

Semester: V
Hours : 3

HISTORICAL METHOD

Mechanics of Project Writing

Instructions

1. This paper is to be taught during the **3** instructional hours allotted for the Project Work during the **Semester - V**.
2. There is no end semester examination for this paper.

Aims and Objectives

- ❖ To enable the students to understand the method of writing history.
- ❖ To make aware of the various tools pertaining to the writing of history.
- ❖ To familiarize the new theories and concepts in historical method.

Module I

a) Preliminaries
Selection of a theme- criteria – framing of the topic – Hypothesis- preparation of a Bibliography- Data collection –Note taking – Card System.

b) Primary & Secondary Sources- Documentary and non documentary – Oral History Sources – Interviews –Newspaper reports – Internet Sources.

Module II

Method of Citation
Footnotes- Endnotes-MLA, APA , Chicago Style.
Quotations- Direct –Indirect- short quote- long quote- quote within quote.

Module III

Tentative Chapterization- writing the first draft- Acknowledgement- Glossary-List of Abbreviations- Introduction – Contents- Conclusion-Appendices-Bibliography-Primary - Secondary.

Essential Readings

1. Jonathan Anderson,et al, *Thesis and Assignment Writing*, John Wiley & Sons Inc .
2. Ralph Berry, *How to Write a Research Paper*, Pergamon Press, Oxford
3. Joseph Gibaldy, *MLA Handbook for the Writers of Research Papers*, New York, Modern Language Association, America, 1999.
4. Kate.L.Turabin, *A Manuel for Writers of Term Papers, Thesis and Dissertation*, University of Chicago Press, London.
5. B. Sheik Ali, *History: Its theory and Method*, Macmillan, New Delhi, 1980.
6. E. Sreedharan, *A Text Book of Historiography*, Orient Longman, 2003.
7. E.H.Carr, *What is History*, Vintage Publication, 1967.

Study Tour Semester-V

A compulsory study tour programme to historically important sites is introduced during the fifth Semester. The rules & regulations for the study tour are as per government order (Directorate of Collegiate Education).The students have to submit a detailed report of the same ,instead of Assignment/Seminar for the Core course- HY 1554-History of Pre –Modern Kerala.

Pattern of Question Papers (2013 Admission onwards)

Question Type	Total number of Questions	Number of Questions to be answered	Marks for each Questions	Total Marks
Very short answer type(One word to Maximum of two sentences) [1 to10]	10	10	1	(10x10) 10
Short answer(Not To exceed one Paragraph [11to22]	12	8	2	(8x2) 16
Short essay(Not to exceed 120 words) [23 to 31]	9	6	4	(6x4) 24
Long essay[32-35]	4	2	15	(2x15) 30
Total	35	26		80

HY-1641 Semester-VI
Core-XI Hours-5
Credits-4

MAKING OF MODERN KERALA

MODULE-1

COLONIAL EXPERIENCE

Advent of the Colonial powers- The Portuguese, Dutch, French and English. Impact of their intervention on Kerala society.

The Rise of the British Power- Nature of early Resistance movements- Revolt of Pazhassi Raja, Velu Thampi and Paliyath Achan- Kurichya Revolt

MODULE-2

TOWARDS MODERN ERA

Christian Missionaries and their role in the spread of education-Role of press- Upper cloth Rebellion – Kallumala Agitation- Social reform movements- Temple Entry Movement - Role of Caste organisations and their Leaders – Rationalism – Sahodaran Ayyappan- M. C. Joseph and Kuttipuzha Krishna Pillai.

MODULE-3

AGITATIONS FOR DEMOCRATIC PROCESS

Early political movements-Travancore- Cochin- Malabar- Memorials and Struggle for Civic rights – Travancore State Congress -Agitation for responsible Government- Travancore -Cochin – Nationalistic Struggle in Malabar – Peasant unrest – Role of Women in Freedom Struggle-

MODULE-4

POST INDEPENDENCE ERA

Formation of the State of Kerala- First Communist Ministry - Coalition experiments-Land reforms-Educational reforms-Socio-economic transformation

MODULE-5

DEBATE ON KERALA MODEL

Future Prospects and development in the Global era

Essential Readings

1. P. N. Chopra, ed – *History of South India* – S. Chand Publications ,New Delhi, 2003.
2. P. GovindaPillai – *Kerala Navodhanam Oru Marxist Veekshanam* (Malayalam) , Chinta Pub. Trivandrum, 2003
3. K. M. Chummar – *Thiruvithamkoor State Congress* (Malayalam) Bhasha Institute 2013.

4. Liten George Christophell – *The First Communist Ministry in Kerala*, Bagchi Kolkatta, 1982.
5. Planning Commission of India – *Kerala Development Report*, Academic Foundation ,New Delhi, 2008.
6. Parayill Govindan (ed) – *Kerala - The Development Experience* , Zed Books, London 2000.
7. PanmanaRamachandran Nair (ed) – *Kerala Samskara Patanangal* , 2 Volumes, Current Books, 2014.
8. A. SreedharaMenon, *A Survey of Kerala History*, DC Books, Ed.2, Kottayam, 2008
9. B. Sobhanan, *Dewan VeluThampi and the British,* Trivandrum, 1978
10. B. Sobhanan (ed), *A History of Christian Missionaries in South India*, Kerala Historical society, Trivandrum, 1996
11. Elamkulam KunjanPillai, *Studies in Kerala History*, Kottayam, 1970
12. K. K. N. Kurup, *Aspects of Kerala History and Culture*, Trivandrum, 1977
13. K. N. Panikkar, *Against Lord and State*, Delhi, 1989.
14. K. Raviraman(ed.) *Development, Democracy and the State: Critiquing Kerala Model of Development, Routledge*, London, 2010
15. M. A. Oommen, *Land Reforms and Socio- economic change in Kerala*, CLS Madras, 1971
16. K. T. Rammohan, *Tales of Rice: Kuttanad, South West India, Centre for Development Studies, Thiruvanthapuram,* 2006
17. P.S. Raghavan, *The History of Freedom Movement in Kerala* ,Vol. I, Trivandrum, 2000
18. P.K. K. Menon, *The History of Freedom Movement in Kerala* Vol. 2, Trivandrum, 1972
19. P. J.Cheriyan (ed.), *Perspectives on Kerala History, Kerala Gazetteers Department*, Trivandrum, 1999.
20. R. N. Yesudas, *A People's Revolt in Travancore – A backward class movement for social freedom*, Trivandrum, 1975
21. S. Raimon (ed.), *The History of Freedom Movement in Kerala* Vol. 3, Trivandrum, 2006
22. T. K. Ravindran, *Eight Furlongs of Freedom*, New Delhi, 1980
23. T. J. Nossiter, *Communism in Kerala*, Oxford University Press, Delhi, 1982
24. Anna Lindberg, *Experience and Identity*: *A Historical Account of Class, Caste and Gender Among the Cashew Workers of Kerala 1930-2000*, Lund University, Sweden, 2001.
25. Kerala 2000 (Mal.), ed.; State Language Institute, (Trivandrum, 2000).

HY 1642
Core XII Semester VI
Credits-4 Hours: 5

MAJOR TRENDS IN INDIAN HISTORICAL THOUGHT AND WRITINGS

Aims and Objectives

- To enable the students to understand the origin and development of historical writings in India.
- To locate major historical works in Indian history.
- To create an awareness among the students about the influence of ideas and theories, trends and concepts in Indian historical writings.

Module I

Early Historical Perceptions and Writings.

Historicity of *Itihasa, Purana* traditions – Jain and Buddhist traditions – Harsha Charita- Rajatarangini.

Module II

Medieval Historiography

Characteristic features of Sultanate and Mughal writings- Barani – Abul Fazl

Module III

Colonial Historiography

Orientalists – William Jones – Max Muller – Utilitarian and Imperialist approaches – James Mill-Vincent Smith.

Module IV

Indian Nationalist Response to Colonial historiography

K.P.Jayswal- J.N.Sarkar – R.C.Majumdar- K.A.N.Sastri – K.M.Panikkar.

Module V

Post- Independent Trends in Indian Historical Writings

D.D.Kosambi- R.S.Sharma – Romila Thapar- Irfan Habib- Bipan Chandra – Ranajith Guha - Ramachandra Guha.

Essential Readings:

1. Peter Hardy, *Studies in Indo- Muslim Historical writings*, Munshiram Manoharlal Publications,London, 1960.
2. D.N.Jha, Ancient India: *An Introductory Outline*, People's Publishing House, New Delhi, 1977.
3. Ranajith Guha, ed, *Subaltern Studies*, Vol I, Oxford University Press, Delhi, 1982.
4. R.C.Majumdar, *Historiography in Modern India*, Asia Publishing House , New Delhi, 1970.
5. C.H.Philip, ed, *Historians of India*, Pakistan and Ceylon, Oxford University Press,1961.
6. S.P.Sen,ed, *History and Historians of Modern India*.
7. B. Sheik Ali, *History: Its Theory and Method*, Macmillan, New Delhi, 1980.
8. E. Sreedharan, *A Text Book of Historiography*, Orient Longman, 2003.
9. D.K.Ganguli, *History and Historians of Ancient India*, Abhinav Publications, New Delhi, 1987.
10. V.S.Pathak, *Ancient Historians of India*, Asia Publishing House, New Delhi, 1963.
11. J.N.Sarkar, *History of History Writing in Medieval India*, Calcutta, 1977.

HY1643 Semester: VI

Core-XIII Hours 4

Credits-4

CONTEMPORARY INDIA

Aims and Objectives

- To provide the students with a graphic account of the circumstances that led to the formation of India Union
- To understand the challenges faced by independent India and the bold measures initiated after independence
- To evaluate the achievements of contemporary India with special reference to Science ,Information Technology

Module 1

Consolidation of the Nation

Consolidation of the Nation-Basic features of the Constitution- Issues of Minorities-Linguistic reorganization of States

Module 2

Nehruvian Era- Debate on National Re-construction-New Economic Policy- Position of Socialist and non-socialist Ideas-Mixed Economy-Five Year Plans and Economic Development- Educational Changes

Social Changes- Fight against Untouchability – Question of Caste and Gender

Cultural Changes- Growth of Regional Languages

Module 3

Progress of Science and Technology in the Post Independence Period

Growth of Scientific Institutions-CSIR-IISE-ISRO-IITs –Atomic Energy Commission

Technological Development-Growth of Communication-Mass Media-Electronic Revolution- Digital and Social Media

Agrarian Changes and Green Revolution Strategies

Environmental Issues-Movements against the construction of Big Dams-Nuclear Power Stations-Deforestation and Urban pollution

Module 4

India and the World

Foreign Policy under Nehru-NAM

Shift in Foreign Policy during 1970s and 1980s-IMF - World Bank- India in the age of Globalization

Essential Readings

1. Bipan Chandra,Mridula Mukharjee and Adithya Mukharjee — *India After Independence* - 1947-2000, Penguin Books ,2007.
2. Paul. R. Brass- *The Politics of India since independence*, Foundation Books .Delhi 1992
3. Theerthankar Roy- *The economic History of India*, 1857-1947, Oxford Press
4. Bipan Chandra- *Nationalism and Colonialism in Modern India*
5. M.S.A. Rao-*Social Movement in India*, Manohar Pub,1992
6. Anilker Alam- *Becoming India*, CUP Delhi 1992
7. Barbara MetCalf & Thomas R Metcalf- *A Concise History of India*, CUP, Delhi, 1992
8. Andrew .M. Watson- *Agricultural Innovations in the early Islamic World*
9. Adam Robert Lucas- *Industrial Milling in the Ancient and Medieval world*
10. Framcis and Joseph Gies, - *Cathredal Forge and Water Wheel Technology and the innovation in the Middle Ages*
11. Mourice Daumas(Ed) - *History of Technology and innovations*
12. Paul Ceruzzi, *A History of Modern computing*
13. L.T.C Rolt - *Tools for the job: A History of Machine tools*
14. Derry Thomas Kingston William – *A Short History of Technology*
15. Singer C Holmyard EJ, Hall & Williams - *A History of Technology*
16. J.A. Naik: *A Text Book of International Relations*, MC Millen, Delhi, 2003
17. Vinay Kumar Malhothra, *International Relations*,Anmol Pub, Delhi ,2008
18. Collin Mason - *A Short History of Asia*, Palgrave MC Millan Delhi ,2005

Books for Reading

1. Santhanan M.K- *Fifty Years of Indian Republic*

2. Hassan Mushirul- *Legacy of a Divided Nation*

3. Ahammed Aaijaz- *Communalism and Globalization*

4. Byres Terence-*The Indian Economy- Major Debate since Independence*

5. Desai S.S.M- *An Economic History of India*

6. Puri Balraj- *The Issue of Kashmir*

7. AmarthyaSen and Pranab Bardwan- *The Political economy of Development in India*

8. Neera Desai- *Women in Modern India*

9. Manmohan Kaur- *Women in India's Freedom Struggle*

10. Prakash Singh- *The Naxalite Movement in India*.

HY 1644

Core - XIV | Semester - VI

Credits-4 | Hours: 5

THE TWENTIETH CENTURY REVOLUTIONS

Aims and Objectives

- To introduce the students four major revolutions of the 20th century, *i.e.* Russian, Chinese, Vietnamese and Cuban
- To acquaint the students about the legacy of the above revolutions
- To familiarize the students about the nature, scope and significance of the revolutions in the present context

Module I

The Russian Revolution

Causes - Socialist and Working Class Movement - Revolutionary Movements in Russia - Capitalists and Peasantry -Lenin and Socialist Movement-Revolution of 1905-February Revolution of 1917-Provisional Government-October Socialist Revolution-Bolsheviks and Mensheviks-New Economic Policy - War - Communism - Significance of the Revolution

Module II

The Chinese Socialist Revolution

Revolution of 1911 - Nationalism and anti-colonial feelings-Sun-Yat-Sen and his political philosophy - Formation of the Republic - Different phases - Japanese expansion — Growth of Communism - Mao and New Democracy - The Long March - Japanese aggression-Civil-war - Formation of People's Republic of China - China in the world context - Internal developments - Cultural Revolution - China and Globalization

Module III

The Vietnamese Revolution

Indo - China and French colonialism - Feudal economy and growth of Capitalism - Working Class Movement and Communist Party-Ho-Chi-Minh - World War II and Japanese Aggression - Post War Uprisings and French reappearance - Partition and 17lh Parallel-US intervention-guerilla warfare-final victory in 1975-Unification and Reconstruction.

Module IV

The Cuban Revolution

Colonialism and Imperialism in Cuba - Peasantry and the Working Class Revolutionary Movements-Che- Guevara and Fidel Castro-Revolution of 1959 and Socialist Victory-US blockade and the Bay of Pig Crisis-Cuba and the Third World

Essential Readings

1. E.H.Carr, *A History of Soviet Russia,* Penguin Books, 1976

2. Robert. R. Palmer, *The Age of Democratic Revolution,* Princeton, University Press, 1956
3. Richard Pipes, *The Russian Revolution,* Vintage Publications, 1991
4. Gene Burton, *The Anatomy of Revolution.* Mac Millan Publishing Company, 1992.
5. Peter Kenez, *A History of Soviet Union from the Beginning to End,* Cambridge University Press, 2006
6. Edgar Snow, *Red Star over China*, Grove Press, 1994
7. Anthony Heywood, *Modernising Lenin's Russia,* Cambridge University Press, 2006
8. Hendrick Smith, *The Russians,* Ballentine Books, 1984
9. Joseph Strayer, Hans Gatzke & Harris Marbison, *The Main Stream of Civilization: Since I860,* Harcourt Brace College Publishers, 1984
10. D.W Treadgold, *Soviet and Chinese Communism: Similarities and Difference,*. Seattle University of Washington, 1967
11. Gunnar Myrdal, *Asian Drama,* Penguin Books, 1960
12. James T.Draper, *Castroism: Theory and Practice,* Prager, 1965
13. Richard R. Fagen, *The Transformation of Political Culture in Cuba, Stanford University Press,1969*
14. Leo Trotsky, *History of the Russian Revolution*, Haymarket Books, 2008
15. Sheila Fitzpatrick, *The Russian Revolution*, Oxford University Press, 2008.
16. Rex .A. Wade, *The Russian Revolution*, Cambridge university press, *1917*.
17. Steve Phillips, *Lenin and the Russian Revolution*, Heinemann, 2000.

HY 1645

Core - XIV Semester - VI

Credits - 4 Hours: 3

PROJECTWORK

Specifications of project work

1. The project work may be on any social problem relevant to the study of History
2. It should be based on both primary and secondary source of data
3. It should be 20-25 pages typed- spiral bound one (12 font size- times new roman, 1.5 space)
4. The project work shall contain the following items:-
   A. Introduction & Review of literature
   B. Methodology
   C. Analysis,
   D. Conclusion & Suggestions if any
   E. Bibliography & Appendix if any

The total Marks for Project is 100 (Project =75 &Viva voce=25)

The project assignment may be given in the 5th semester and report should be submitted at the end of 6th semester

The viva voce will be conducted under the leadership of the Chairman of the Examination Board.

An acknowledgement, declaration, certificate of the supervising teacher, etc., should also be attached in the project work

Evaluation indicators

1. Project Report

No.	Indicators	Marks	* Grade	Total
1	Introduction & Review of literature	10		
2	Methodology	10		
3	Analysis,	40		
	Conclusion & Suggestions	10		
4	Bibliography & Appendix	5		
	Total	75		.

*The Grade may be either A, B, C, D or E

2. Viva Voce

No.	Indicators	Marks	Grade	Total
1	Presentation skills	5		
2	Clarity in the subject	5		
3	Defending	10		
4	Overall	5		
	Total	25		

*The Grade may be either A, B, C, D or E

OPEN COURSES

HY 1551.1

Open Course Semester -V

Credits 2 Hours -3

EMPOWERMENT OF WOMEN WITH SPECIAL REFERENCE TO INDIA

Module-I

Empowerment of Women - Concept and Relevance- Scope of Women Empowerment-Understanding Gender Studies- Important legislations for Women in India

Module-II

Feminism- Theories of feminism: Liberal, Marxist, Social, Radical, Post Colonial and Eco-Feminisms

Module-III

Changing role and status of women in historical perspective: Indian Women-Dravidian, Aryan, Islamic, British and Post Independent periods

Module-IV

Important women personalities- Gargi- Lopamudra-Pancharatans-Prajapati Gautami- Sanghamitra-Amrapali-Meerabai- Sultana Raziya- Noorjahan- Jahanara- Chandbibi- Rani of Jhansi- Raj Kumari Amarit Kaur- Sarojini Naidu- Kasturba Gandhi- Annie Besant- Bikaji Kama- Aruna Asif Ali- Captain Lakshmi- Akkamma Cherian- Ammu Swaminathan- Anne Mascarene- Indira Gandhi- Medha Patkar-Vandana Siva

Essential Reading:

1. Bader, Clarisse. (2001) *Women in Ancient India*. Trubner's Oriental Series, Routledge.
2. Kumar, Radha. (1993) *History of Doing: An Illustrated Account of Movements for Women's Rights and Feminism in India, 1800-1900.* New Delhi: Kali for Women.
3. Forbes, Geraldine. (1996)*Women in Modern India, The New Cambridge History of India.* Vol.4. Cambridge: Cambridge University Press.
4. Sangari, Kumkum and Sudesh Vaid, (Ed.) (1990) *Recasting Women: Essays in India Colonial History*. New Jersey: Rutgers University Press.
5. Offor, Evans. (2000)*Women Empowerment*. Snaap Press.
6. Barber, Elizabeth Wayland. (1995) *Women's Work: The First 20,000 Years Women, Cloth and Society in Early Times.* USA: W.W. Norton.
7. Asmat, Shamim and Chanda Devi (Ed.) (2012)Women *Empowerment in India,* Mittal Publications
8. Parpart, Jane L., Shirin M. Rai, Kathleen A. Staudt Taylor and Francis. *Rethinking Empowerment: Gender and Development in Global/Local World.* Routledge: Warwick Studies
9. Ahuja, Ram. (2002) *Indian Social System.* Jaipur: Ravatt Publications
10. Andal,N. (2002) *Women and Indian Society-Options and Constrains.* USA: WW Norton and Co.
11. Kumar, Premjith T.B. (2014) *Keralathile Sthree Shaktheekaranavum London Missionary Prasthanavum.*(Mal.) Thiruvananthapuram: Raven Publications.

12. Gopalakrishnan, Bismi. (2013) *Shakti: laws to Ensure Gender Justice.* Thiruvananthapuram: University of Kerala
13. Myneni S.R., (2008 2nd Ed.)*Women and Law.* Hyderabad: Asia Law House
14. Andermahr,Sonya., Terry Lovell and Carol Wolkowitz. (2000) *A Glossary of feminist Theory.* New York: Oxford University Press
15. Singh S. Kans A.K. Singh. (2004) *OBC Women Status and Educational Empowerment.* Lucknow: New Royal Book Co.
16. Singh, U.B. *Empowerment of Women in Urban Administration.* New Delhi: Serials Publications
17. Agarwal, Bina. (1994) *A Field of Ones Own: Gender and Land Rights in South Asia.* Cambridge: Cambridge University Press
18. ICSSR Advisory Committee on Women Studies. (1977) *Critical Issues on the Status of Women: Employment, Health, Education.* New Delhi: Indian Council of Social Science Research.
19. Baluchamy. S., (2010) *Empowerment of Women.* New Delhi: Anmol Publications
20. Kumari, Sumitra. (2006) *Dynamics of Women Empowerment.* New Delhi: Alfa Publications

HY 1551. 2 Semester V
Open Course Hours - 3
Credits – 2

INTRODUCTION TO ARCHAEOLOGY

Aims and objectives

- To provide an insight into the discipline of archaeology
- To trace the evolution of archaeology as a subject
- It is also intended to give an introduction of the students on various periods & concepts in archaeology.
- Also introduce students to archaeological methods

Module – 1
Introduction to Archaeology
Definition – nature and scope – importance of archaeology -Archaeology as a discipline- Important concepts like Artifacts, Assemblage, tools, Culture, Civilization,,&,Settlement - Relation of Archaeology with other Sciences &Social Sciences

Module – 2
Kinds of Archaeology
Marine archaeology or under water archaeology - Ethno-archaeology- Environmental archaeology salvage archaeology, Aerial archaeology.
Module – 3 Functions of Archaeology
Introduction to Archaeological explorations &excavations -Dating technique –Relative Dating-typology technology &morphological aspects – Flourine-phospherous dating-Absolute dating- Potassium Argon – Dendrochronology or Tree Ring method – Pollen Analysis, Petrology – Thermolumniscence.

Module – 4
Archaeological survey of India (ASI)
Importance of the Museums – need for preservation & exhibition-General characteristics of Paleolithic-Mesolithic-Neolithic &Megalithic cultures in India.

Essential Readings:

1. Allchin Bridget and Raymond Allchin, *Rise of Civilization in India & Pakistan*, Cambridge, Cambridge University Press 1982.
2. Burkitt.M.C, *The old stone Age*, London, 1956
3. Chakrabarti.D.K *History of Indian Archaeology*, Munshiram Manoharlal, New Delhi 1988
4. Daniel, Glynn *150 years of Archaeology*, London 1978
5. Ghosh A, *Encyclopedia of Indian Archaeology*, Munshiram Manoharlal, New-Delhi 1990
6. Rajan K, *Archaeology- Principles & Methods*, Thanjavur, 2002
7. Raman K V, *Principles and Methods of Archaeology*, Madras, 1986
8. Sankalia H D, *Indian Archaeology Today*, Bombay 1962
9. Tauldahn, *Archaeology - A very short Introduction*, Oxford University Press, 1996

10. Wheeler, R.E.M , *Archaeology from the Earth*, London, 1954
11. Whitehouse, Ruth.D , *The Macmillan Dictionary of Archaeology*, London 1983
12. Zeuner F.E, *Dating the Past*, London, 1970

HY 1551.3

Open Course Semester V

Credits -2 Hours -3

HISTORY OF HUMAN RIGHTS MOVEMENTS

Module I

Definition- Human Rights and Violation – UN Proclamation

Module II

Movements against Racial Discrimination
Anti slavery Movement – Question of Slavery and Civil War in America – (1848). Activities of William Wilber Force.
Movements led by Mahatma Gandhi- Martin Luther King- Nelson Mandela-Desmont Tutu- Vangai Mathai

Module III

Indian Experiments of Human Rights - Human Rights in the Current Scenario-Constitutional Safeguards and Laws- Dr.B.R.Ambedkar-Movements against Violation- Ideological Background – Dalit Panthers-Tribal Movements – Women's Movements- Environmental Movements

Essential Readings

1. Cynthia Sahoo, Catherene Albisa and Martha S.Davis (ed), *Bringing Human Rights Home: Portraits of Movements*, Vol.I
2. Naomi Klein, *The Shock Doctrine, The Rise of Disaster Capitalism*
3. Donnelly Jack, *Universal Human Rights in Theory and Practice*
4. Steiner Henry. J. Diverse Partners: *Non Governmental Organisations in Human Rights Movements*
5. Shute Stephen and Susan Harley; *On Human Rights*
6. Marlin. J. *Revolution in Wonderland*
7. Krishna Menon (ed.), *Human Rights Gender and Environment*, Delhi, 2009
8. Davis Mike, *Planet of Slum*, Ureso, 2007
9. O.P Dhiman, *Understanding Human Rights* – An Overview, Kalpaz Publication, 2011
10. Jayanth Chaudhary, *A Text Book of Human Rights* .Wisdom Press, 2011
11. O, Byrne Darrew, Human rights- *An Introduction, Dorling Kindersley* (India pvt Ltd), 2007
12. Akhtar Saud, *Human Rights in the World*, Sarup Book Publishers, Pvt Ltd, 2012
13. Daniel Fischin Martha, The concise guide to Global Human Rights, Oxford University Press, 2007
14. Dr.Sreenivasulu.N.S, Human Rights – Many Sides to A Coin – Regal Publications, 2008

ELECTIVE COURSES

HY1651.1

Elective Course Semester VI

Credits: 2 **HISTORICAL TOURISM (ELECTIVE)** Hours 3

Aim of the course:

To inculcate the need for travel and visit to Historical and Cultural monuments and remains among the students so as to educate and sensitize them of their past heritage and history

UNIT I –Conceptualizing and Preserving the Memories of the Travel

- European travelers - perceptions of Geography& Environment
- Colonialism –travel& writing of History-Barbosa ,Bernier&Buchanan
- Relation between travel and tourism tour
- Tourist and the host destination.

UNIT II-Growth of Tourism in India

- Understanding Tourism: A faculty of study-scope , definition and varieties
- Fascination for the tropics: Ghats, Seas ,Traveler's gaze
- Growth of Tourist centers-Hill stations & leisure
- Tourism & social Acculturation.

UNIT III – Tourist Potential of India

- Geography – History and Monuments
- Heritage –Natural and cultural heritage

UNIT IV –Kerala and Its Tourist Manifestations

- Geography – Cultural Heritage – History –History and its Ramifications – identification and location of tourist attractions – Tools of Tourism.

Essential Readings

1. Salini Modi, *Tourism and Society*, Rwat Publications, 2001
2. Ghosh Viswanath, *Tourism and Travel Management*, Vikas Publishing House, Delhi, 1998
3. Singh Ratan Deep, *Dynamics of Modern Tourism*, Kanishka, New Delhi, 1998
4. Singh Ratan Deep, *Infrastructure of Tourism in India*
5. Singh Ratan Deep, *Economic Impact of Tourism Development: An Indian Experience*.
6. Chattopadhyaya Kunol, *Tourism Today* – Structure, Marketing and Profile.
7. Gupta S.P., *Cultural Tourism*, 2002

HY1651.2 Semester: VI
Elective Course Hours-3
Credits: 2

HERITAGE STUDIES

Aim of the course:

To enable the students studying disciplines other than History

- to understand the value of heritage and the need for preserving the same for posterity
- Archeological Survey of India
- Rescue and Salvage Archeology -International Organization for preserving heritage – Role of UNESCO –ICOMOS – ICOM – ICCROM –State Departments – International organization – smuggling and antiquities.

UNIT 1-Introductory Heritage Studies

- Meaning and Definition of Heritage
- Type of heritage – natural and cultural – tangible and intangible
- Conservation of Heritage –Archaeology -Museology –Archives – Folklore –Fine arts.
- Cultural Tourism

UNIT II – Heritage and Law

Laws against Vandalism and plunder

UNIT III –Indian Heritage

- Indian heritage defined perspectives from above and perspectives from below –Locating folk and Tribunal culture.

UNIT IV – Heritage Destinations of India

- Selected World Heritage Monuments of India –Ajanta –Ellora-Taj Mahal- Badami ,Fatepur Sikri,Sanchi,Mahabalipuram and Hampi.
- Pilgrim Centres
- Archaeological sites-Nagarjuna Konda –Lothal-Arikamedu-Bhimbetka- Edakkal- Pattanam.
- Important Museums of India
- Heritage Destinations of Kerala- Natural Heritage- Bekal Fort-Jain Temple- chitaral ,Sultan Bathery-Palakkad Fort- Jewish Synagogue, Mattanchery-Dutch Palace-Mural Paintings of Siva Temple, Kottakkal

Essential Readings

1. Cleere Henry (ed), *Approaches to Archaeological Heritage*, Cambridge University Press, 2002.
2. UNESCO, *Museums and Monuments-The Organisation of Museums: Practical Advice*, Switzerland, 1960.
3. Gupta S.P., *Cultural Tourism*, 2002.
4. Fopp Micheal A., *Managing Museums and Galleries*, Roultedge, 1997.
5. Sarkar H., *Museums and Protecting of Monuments and Antiquities in India*, Delhi, Sandeep Prakasam, 1998.
6. Gurukkal Rajan and Raghavaa varier (ed), *Cultural History of Kerala*, VOL.1,Dept. of Cultural Publication ,Govt. of Kerala ,1999.
7. Menon Sreedharan. A., *Cultural Heritage of Kerala*.

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HY1651.3 Semester-VI

Elective Course Hours-3

Credits-3

CONTEMPORARY WORLD

Aim of the course

- To bring out the significant features of .the contemporary world
- To highlight the nature, scope and relevance of NAM
- To assess the current problems of the world with special reference to the Unipolar and Bipolar coupled with the emerging nations

Module 1

Understanding Contemporary History

Role of India in the world Affairs – Non-Alignment

Module II

New International Economic Order

World systems - Analysis - World Bank, IMF and GATT – Uruguay round talks -WTO and GATS - Liberal market economy - Dismemberment of the Socialist bloc - Its impact on Third World - Unipolar World

Module III

Divided Nations

Palestine — India - Vietnam - Korea - Germany — Russia

Essential Readings

1. JanPalmowski, *Dictionary of Contemporary World from 1900 to the Present Day*
2. Peter Hinchcliffe, Beverley Milton, *Conflicts in the Middle East since 1945*, Routledge Publication, 2003
3. Alan P. Dobson, Steve Marsh, *US Foreign Policy Since 1945.*
4. Raymond F. Betts, *Decolonisation*, University of Minnesota Press, 1975
5. Stephen White, *Communism and its Collapse*, Routledge Publication, 2001
6. James. U. Henderson*, Since 1945. Aspects of World History*, Sage' Publication, London, 1966
7. Joseph. E. Stiglits and Norton, *Globalisation and Its Discontents*, WW Norton and Company, USA, 2003
8. K. Raviraman, "*Plachimada Resistance: A Post Development Social Movement Metaphor*" in Aram Ziai (ed.), *Post - Development Theory and Practice*, Routledge , London, 2007
9. Steger Manfred, Globalization, *A Very Short Introduction*, Oxford University Press, USA, 2003
10. Noam Chomsky, *Towards a New Cold War*, New Press, 2003
11. J.M. Roberts, *The Penguin History of Europe*, Penguin Books, New Delhi, 1998 .
12. Norman Lawe, *Mastering Modem World History*, MacMillan, New Delhi, 2003
13. J.A. Naik , *A Text Book of International Relations*, MacMillan, New Delhi, 2003

14. Vinaya Kumar Malhotra, *International Relations*, Anmol Publications, New Delhi, 2008
15. Colin Mason *, A Short History of Asia*, Palgrave MacMillan, New. Delhi, 2005
16. Roland Axtmann (ed.), *Globalisation and Europe. Theoretical and Empirical Investigations*, Pinter, London, 1998
17. John Ralston Saul, *The Collapse of Globalism and the Reinvention of the World*. Penguin Books, New Delhi, 2005
18. Andreas Wenger & Doron Zimmermann, *International Relations: from the Cold War to the Globalized world,* Viva Book Pvt, New Delhi , 2004

HY 1651.4

Elective Course Semester -VI

Credits 2 Hours -3

EMPOWERMENT OF WOMEN WITH SPECIAL REFERENCE TO INDIA

Module-I

Empowerment of Women - Concept and Relevance- Scope of Women Empowerment-Understanding Gender Studies: Important legislations for Women in India

Module-II

Feminism- Theories of feminism: Liberal, Marxist, Social, Radical, Post Colonial and Eco-Feminisms

Module-III

Changing role and status of women in historical perspective: Indian Women-Dravidian, Aryan, Islamic, British and Post Independent periods

Module-IV

Important women personalities-Gargi-Lopamudra-Pancharatans-Prajapatigautami- Sanghamitra-Amrapali-Meerabai- Sultana Raziya- Noorjahan- Jahanara- Chandbibi- Rani of Jhansi- Raj Kumari Amartkaur- Sarojini Naidu- Kasturba Gandhi- Annie Besant- Bikaji Kama- Aruna Asif Ali- Captain Lakshmi- Akkamma Cherian- Ammu Swaminathan- Anne Mascarene- Indira Gandhi- MedhaPatkar, Vandana Siva

Essential Reading:

1. Bader, Clarisse. (2001), *Women in Ancient India*, Trubner's Oriental Series, Routledge.
2. Kumar, Radha. (1993) *History of Doing: An Illustrated Account of Movements for Women's Rights and Feminism in India, 1800-1900.* New Delhi: Kali for Women.
3. Forbes, Geraldine. (1996), *Women in Modern India, The New Cambridge History of India.* Vol.4. Cambridge: Cambridge University Press.
4. Sangari, Kumkum and Sudesh Vaid, (Ed.) (1990) *Recasting Women: Essays in India Colonial History*. New Jersey: Rutgers University Press.
5. Offor, Evans. (2000), *Women Empowerment*, Snaap Press.
6. Barber, Elizabeth Wayland. (1995), *Women's Work: The First 20,000 Years Women, Cloth and Society in Early Times.* USA: W.W. Norton.
7. Asmat, Shamim and Chanda Devi (Ed.) (2012), Women *Empowerment in India,* Mittal Publications
8. Parpart, Jane L., Shirin M. Rai, Kathleen A. Staudt Taylor and Francis. *Rethinking Empowerment: Gender and Development in Global/Local World.* Routledge: Warwick Studies
9. Ahuja, Ram. (2002) *Indian Social System.* Jaipur: Ravatt Publications
10. Andal,N. (2002) *Women and Indian Society-Options and Constrains.* USA: WW Norton and Co.
11. Kumar, Premjith T.B. (2014), *Keralathile Sthree Shaktheekaranavum London Missionary Prasthanavum.* (Mal.) Thiruvananthapuram: Raven Publications.
12. Gopalakrishnan, Bismi. (2013) *Shakti: laws to Ensure Gender Justice.* Thiruvananthapuram: University of Kerala
13. Myneni S.R., (2008 2nd Ed.), *Women and Law.* Hyderabad: Asia Law House
14. Andermahr,Sonya., Terry Lovell and Carol Wolkowitz. (2000), *A Glossary of feminist Theory.* New York: Oxford University Press

15. Singh S.Kans A.K. Singh. (2004) *OBC Women Status and Educational Empowerment,* Lucknow: New Royal Book Co.
16. Sing, U.B. *Empowerment of Women in Urban Administration,* New Delhi: Serials Publications
17. Agarwal, Bina. (1994) *A Field of Ones Own: Gender and Land Rights in South Asia.* Cambridge: Cambridge University Press
18. ICSSR Advisory Committee on Women Studies, (1977) *Critical Issues on the Status of Women: Employment, Health, Education.* New Delhi: Indian Council of Social Science Research.
19. Baluchamy. S., (2010), *Empowerment of Women,* New Delhi: Anmol Publications
20. Kumari, Sumitra. (2006), *Dynamics of Women Empowerment,* New Delhi: Alfa Publications

Hy 1651.5 Semester VI
Elective Course Hours -3
Credits – 2

INTRODUCTION TO ARCHAEOLOGY

Aims and objectives

- To provide an insight into the discipline of archaeology
- To trace the evolution of archaeology as a subject
- It is also intend to give an introduction of the students on various periods & concepts in archaeology.
- Also introduce students to archaeological methods

Module – 1

Introduction to Archaeology

Definition – nature and scope – importance of archaeology -Archaeology as a discipline- Important concepts like Artifacts, Assemblage, tools, Culture, Civilization & Settlement - Relation of Archaeology with other sciences &Social Sciences

Module – 2

Kinds of Archaeology

Marine archaeology or under water archaeology - Ethno-archaeology- Environmental archaeology salvage archaeology, Aerial archaeology.

Module – 3

Functions of Archaeology

Introduction to Archaeological explorations &excavations -Dating technique –Relative Dating- typology ,technology &morphological aspects – Flourine-phospherous dating-Absolute dating- Potassium Argon – Dendrochronology or Tree Ring method – Pollen Analysis, Petrology – Thermolumniscence.

Module – 4

Archaeological survey of India (ASI)

Importance of the Musems – need for preservation & exhibition-General characteristics of Palaeolithic-Misolithic-Neolithic &Megalithic cultures in India.

Essential Readings:

1. Allchin Bridget and Raymond Allchin *Rise of Civilization in India & Pakistan*, Cambridge, Cambridge University Press 1982.
2. Burkitt.M.C *The Old Stone Age*, London, 1956
3. Chakrabarti.D.K *History of Indian Archaeology*, Munshiram Manoharlal, New Delhi 1988
4. Daniel, Glynn *150 years of Archaeology*, London 1978
5. Ghosh A *Encyclopedia of Indian Archaeology*, Munshiram Manoharlal, New-Delhi 1990
6. Rajan K *Archaeology- Principles & Methods*, Thanjavur, 2002
7. Raman K V *Principles and Methods of Archaeology*, Madras, 1986

8. Sankalia H D *Indian Archaeology Today*, Bombay 1962
9. Tauldahn *Archaeology - A very short Introduction*, Oxford University Press, 1996
10. Wheeler, R.E.M *Archaeology from the Earth*, London, 1954
11. Whitehouse, Ruth.D *The Macmillan Dictionary of Archaeology*, London 1983
12. Zeuner F.E *Dating the Past*, London, 1970

HY 1651.6 Semester VI

Elective Course Hours -3
Credits -2

HISTORY OF HUMAN RIGHTS MOVEMENTS

Module I

Definition- Human Rights and Violation – UN Proclamation

Module II

Movements against Racial Discrimination
Antislavery Movement – Question of Slavery and Civil War in America – (1848). Activities of William Wilber Force.
Movements led by Mahatma Gandhi- Martin Luther King- Nelson Mandela-Desmont Tutu- Vangai Mathai
(Emancipation Proclamation & International Human Right Law)- Omission

Module III

Indian Experiments of Human Rights - Human Rights in the Current Scenario-Constitutional Safeguards and Laws- Dr.B.R.Ambedkar-Movements against Violation- Ideological Background – Dalit Panthers- Tribal Movements – Women's Movements- Environmental Movements

Essential Readings

1. Cynthia Sahoo, Catherene Albisa and Martha S.Davis (ed), *Bringing Human Rights Home: Portraits of Movements*, Vol.I
2. Naomi Klein, *The Shock Doctrine, The Rise of Disaster Capitalism*
3. Donnelly Jack , *Universal Human Rights in Theory and Practice*
4. Steiner Henry. J, Diverse Partners : *Non Governmental Organisations in Human Rights Movements*
5. Shute Stephen and Susan Harley ; *On Human Rights*
6. Marlin. J, *Revolution in Wonderland*
7. Krishna Menon (ed.) , *Human Rights Gender and Environment*, Delhi , 2009
8. Davis Mike , *Planet of Slum*, Ureso, 2007
9. O.P Dhiman, *Understanding Human right – An Overview;* Kalpaz publication , 2011
10. Jayanth Chaudhary, *A Text Books of Human rights,* Wisdom Press ,2011
11. O, Byrne Darrew, *Human rights- An Introduction ,* Dorling Kindersley(India pvt Ltd),2007
12. Akhtar Saud, *Human Rights in the World,* Sarup Book Publishers , Pvt Ltd,2012
13. Daniel Fischin Martha, *The concise Guide to Global Human Rights*, Oxford University Press,2007
14. Dr.Sreenivasulu.N.S, *Human Rights – Many Sides to A Coin* – Regal Publications , 2008

HY 1651.7 Semester VI

Elective Course Hours: 3

Credits 2 **Environmental History of Modern India**

Aims and Objectives

- Environmental study is a multidisciplinary subject. It teaches people to understand their role in this universe
- It helps to learn, to live with limited natural resources so as to avoid future disaster
- It provides sufficient knowledge about the philosophy, genesis and consequences of local and global environmental problems and the necessity for their abatement and control, for the survival of the present and future generation

Module I

Why should Environmental History be studied?

Human interactions with nature – Habitat- Survival and livelihood patterns – Pastoralism – Exploitation of resources – Growth of agriculture – Ecological bases of human history

Module II

Colonialism and Environment

Colonial exploitation of resources – Introduction of new genetic varieties – Plantations- Destruction of traditional habitat – commercialization of agriculture. Urbanization- migration of population – Epidemics- Famines –Science policy and health care.

Module III

Environment in Independent India

Industrialization and its effects – slums – pollution- Mega hydro electric projects and their impact – deforestation, Commercialization of agriculture – use of chemical fertilizers and pesticides – exploitation of ground water.

Module IV

Environmental Movements

Chipko- Silent Valley – Narmada – Baliapal – Kudamkulam –Features and general patterns.

Essential Readings

1. Alfred Crosby , *Ecological Imperialism*, Cambridge, 1986
2. Ajay Skaria, *Hybrid Histories*, Delhi, 1999
3. Bismoi Pati and Mark Harrison (d) *Health, Medicine and Empire*, Orient Longman, 2001
4. David Arnold, *The Problem of Nature. Environment, culture and European Expansion*. Blackwell, 1996
5. ----------*The Tropics and the Traveler's Permanent Black*, 2005.

6. ---------- (ed), *Diseases and Medicine in India*
7. Jared Diamond, *Guns, germs and steel*, Vintage, 1999.
8. Keith Thomas *Man and the Natural World*.
9. K. Sivaramakrishnan (ed) *Social Nature,* OUP,2003
10. ----------and Gunnar Cederlof, *Ecological Nationalisms,* Permanent Black,2005
11. Madhav Gadgil and Ramachandra Guha, *This Fissured Land*, OUP, 1992.
12. Nandini Sundar , *Subalterns and Sovreigns* ,OUP,1998
13. Ramachandra Guha, *Environmentalism : A Global History* , London,2003
14. ----------Unquiet Words: *Ecological change and Peasant Resistance in the Himalayas* , Delhi,1989
15. ----------and David Arnold ,*Nature , Culture and Imperialism*, OUP,1995
16. R.K.Mukherjee , *Social Ecology* ,London ,1942.
17. Richard Grove , *Green Imperialism*, OUP, 1995
18. Robert Grove,Vineetha Damodaran and S.Sangwam(ed) *Nature and the Orient*,OUP 2001
19. Vasant Saberwal & Mahesh Ramarajan , *Battles over Nature,* Permanent Black , 2003
20. Mahesh Rangarajan , *India's Wildlife History* , Permanent Black , 2005
21. W.H.Maeneil, *Plagues and Peoples*
22. Lucien Febvre, *A Geological Introduction to History*, London,1950 EPW,Special Issue,1985.
23. ----------*Studies in History, Special Issue on Pastorialism* , Vol.XIV,No.2,1991.
24. ----------*Special Issue on Forests & Fields*, Vol. XIV, No.2,1998.
25. R.Ramchandran , *Urbanisation and Urban Systems in India* OUP,1989

COMPLEMENTARY COURSES

HY 1131.1 Semester I

Complementary I Hours -3
Credits -2

HISTORY OF MODERN INDIA (1857-1900)

Module I

Revolt of 1857

Background – Different Theories of the Revolt – Restorative Character of 1857 – Impact of the Revolt – Positive and Negative

Module II

Socio-Religious Reform Movements

Brahma Samaj, Arya Samaj – Prarthana Samaj-Sathya Shodak Samaj – Theosophical Society-Ramakrishna Mission- Aligarh Movement- Self-respect Movement – Back ward Class Movements-Impacts

Module III

Background of Indian Nationalism

The concept of Nationalism – Causative Factors – Early Political Organizations – Indian National Congress – Different Theories – Early Leaders – Ideology –Political ideology.

Essential Readings

1. Kenneth W. Jones , *Socio – Religious Reform Movements in British India* , Foundation Books , New Delhi, 1994
2. Sumit Sarkar , *Modern India* , (1885 – 1947), Mac Millan, Madras , 1983
3. A.R. Desai, *Social Background of Indian Nationalism,* Popular Prakasam, Bombay, 1976
4. Munshirul Hasan (ed) , *India's Partition ,Process, Struggle and Mobilization* , Oxford University Press
5. Anil Seal , *Emergence of Indian Nationalism* , Cambridge University Press, 1960
6. Gyanandra Pandey , *Remembering Partition*, Cambridge University Press
7. K.N.Panikkar, *Culture, Ideology, Intellectual and Social Consciousness in Colonial India* ,Tulika ,New Delhi, 1995
8. S. Chandra Sekhar , *Colonialism Conflict and Nationalism* , Viswa Prakasam,New Delhi , 1995
9. Bipan Chandra , (et.al) *India's Struggle for Independence* , Penguin Books , New Delhi, 1987
10. Ranajith Guha (ed), *Subaltern Studies Vol. I : Writing on South Asian History and Society* , Oxford University Press , Delhi , 1997
11. G.Aloysius , '*Nationalism without a Nation'*, Oxford University Press, Delhi,1997
12. Karl Marx & Frederick Engels , *'The First War of Indian Independence'* - 1857-1859, Progress Publishers , Moscow,1975
13. Supita Kaviraj , *The Unhappy Consciousness : Bankim Chandra Chathopathyaya and the formation of Nationalist Discourse in India* " Oxford University Press , Delhi , 1995
14. B.R Ambedkar, *What Congress and Gandhi have done to Untouchables* , Thakar & Company , Bombay, 1945
15. E.M.S. Namboothiripad , *A History of India n Freedom Movement* : Social Scientist Press, Trivandrum , 1986

HY – 1131.2
Complementary – II Semester-1
Credit -2 Hours – 3

History of Modern World (1789-1900)

Aims and objectives

***** To highlight the importance of French Revolution this marked the beginning of far-reaching changes in the history of mankind

* To trace the significance of the unification movements in Italy and Germany that paved the way for the beginning of a new epoch

* To make an awareness among the students about the genesis and growth of liberal ideas

Module I

French Revolution of 1789

Background – Rousseau – Voltaire and Montesquieu – Results and impacts of the Revolution-

Module II

Napoleon Bonaparte and Revolutions of 1830 and 1848

Rise of Napoleon Bonaparte – Wars – Domestic Reforms - Congress of Vienna – Revolutions of 1830 and 1848 – results.

Module III

Unification Movements

Unification of Italy – Joseph Mazzini – Victor Emmanuel II – Count Cavour – Garibaldi – Unification of Germany – Bismarck.

Module IV

Latin American Revolutions

Miranda– Simon Bolivar – San Martin –Signification of the Revolutions

Essential Readings

1. Eric J. Hobsbawn, *Age of Revolution*, Abacus, 1998.
2. C.A. Bailey, *The Birth of the Modern World*, Blackwell, California, 2004.
3. R.R. Palmer, *A History of the Modern World*, Mc Graw Hill Companies, 2004.
4. Martin Collier, *Italian Unification 1820-71*, Heinneman, 2003.
5. Prabhat Patnaik, *Whatever happened to Imperialism and other Essays*, Thulika Publications, Madras, 1937.
6. J.M. Roberts, *The Penguin History of Europe*, Penguin Books, New Delhi, 1998.
7. Norman Lawe, *Mastering Modern World History*, MacMillan, New Delhi, 2003.

HY 1231.3 Semester II

Complementary III Hours -3
Credits -2

HISTORY OF MODERN INDIA (1901-1920)

Module I

Indian National Congress in Crisis

- Moderates and Extremists- Emergence of Militant Nationalism – Partition of Bengal – Swadeshi and Boycott
- Rise of Communalism – Formation of Muslim League – Minto-Morley Reforms (Constitutional Effects)

Module II

Impact of First World War on Indian Nationalism.

Home rule movement – Ghadar Party –Lucknow Pact- Khilafat Movement- Montague-Chelmsford Reforms

Module III

Advent of Gandhi (Gandhian Ideologies)

The Satyagrahas – Champaran – Kheda – Ahmedabad – Rowlett Act – Jallianwala Bagh Massacre and its effects.

Essential Readings

1. Sumit Sarkar , *Writing Social History* , Oxford University Press , Delhi , 1998
2. Sumit Sarkar , *Beyond Nationalist Frames : Relocating Post Modernism* , Hindutva History , Permanent Black,Delhi 2002
3. Sumit Sarkar , *Modern India* , (1885 – 1947), Mac Millan, Madras , 1983
4. A.R. Desai, *Social Background of Indian Nationalism*, Popular Prakasam, Bombay, 1976
5. Munshirul Hasan (ed) , *India's Partition ,Process,Struggle and Mobilization* , Oxford University Press
6. Anil Seal , *Emergence of Indian Nationalism* , Cambridge University Press, 1960
7. Gyanandra Pandey , *Remembering Partition*, Cambridge University Press
8. K.N.Panikkar, *Culture, Ideology,Intellectual and Social Consciousness in Colonial India* , Tulika ,New Delhi, 1995
9. S. Chandra Sekhar ,*Colonialism Conflict and Nationalism* , Viswa Prakasam,New Delhi , 1995
10. Bipan Chandra , (et.al) *India's Struggle for Independence* , Penguin Books , New Delhi, 1987
11. Ranajith Guha (ed), *Subaltern Studies Vol. I : Writing on South Asian History and Society* , Oxford University Press , Delhi , 1997
12. G.Aloysius , *'Nationalism without a Nation'*, Oxford University Press, Delhi,1997
13. Supita Kaviraj , *'The Unhappy Consciousness'* : Benkin Chandra Chathopathyaya and the formation of Nationalist Discourse in India " Oxford University Press , Delhi , 1995
14. Kathleen Gough , *Indian Peasant Uprising* (*Economic and Political Weekly* , April 1974)
15. B.R Ambedkar, *What Congress and Gandhi have done to Untouchables* , Thakar & Company , Bombay, 1945
16. E.M.S. Namboothiripad , *A History of India n Freedom Movement :* Social Scientist Press, Trivandrum , 1986

HY – 1231.4 Semester II

Complementary – IV Hours – 3

Credits – 2

History of Modern World (1901-1920)

Aims and objectives

- To familiarize the students about the hidden agenda of the imperialistic powers in Asia and Africa
- To review the factors that led to the confrontation among European powers
- To highlight the triumph of the working class movements
- To assess the merits and demerits of the League of Nations as the First International Organization

Module I

Imperialism in Asia and Africa

Colonial Expansion – French in Africa –French in Asia - Boer Wars – British in Africa - British in Asia.

Module II

First World War

Background and Causes – Results – Significance

Module III

Russian Revolution of 1917

Background and Causes – Lenin – Significance of the Revolution

Module IV

Formation of the League of Nations

Fourteen Points of Wilson - Formation of the League of Nations – Aims and Objectives - Organs of the League – achievements and failures.

Essential Readings

1. Eric J. Hobsbawm, *Age of Revolution*, Abacus, 1998.
2. Prabhat Patnaik, *Whatever happened to Imperialism and other Essays*, Thulika Publications, Madras, 1937.
3. R.R. Palmer, *A History of the Modern World*, Mc Graw Hill Companies, 2004.
4. John Reed, *Ten days that shook the World*, Penguin Books, New Delhi, 1998.
5. J.M. Roberts, *The Penguin History of Europe*, Penguin Books, New Delhi, 1998.
6. Norman Lawe, *Mastering Modern World History*, MacMillan, New Delhi, 2003.
7. Leon Trotsky, *History of the Russian Revolution*, Haymarket Books, 2008.
8. Sheila Fitzpatrick, *The Russian Revolution*, Oxford University Press, 2008.
9. Rex A Wade, *The Russian Revolution 1917,* Cambridge University Press, 2005.
10. Steve Phillips, *Lenin and the Russian Revolution*, Heinemann, 2000.

HY 1331.5
Complementary V | Semester III

Credits -2 | Hours -3

HISTORY OF MODERN INDIA (1921-47)

Module I

Advent of Gandhi on the Political Scene of India

Gandhiji as a Non-Co-operator – Non Co-operation Movement – Chouri Chaura – The Swarajist Party – The Simon Commission – Nehru Report – The Civil Disobedience Movement

Module II

Emergence of Socialist Ideas

Revolutionary Movement – Bhagath Singh

Module III

Round Table Conferences – Government of India Act of 1935 -Second World War and its effects – Subash Chandran Bose and INA – RIN Mutiny

Mountbatten Plan – Indian Independence Act – Indian Constitution – Role of B.R Ambedker

Essential Readings

1. Sumit Sarkar , *Writing Social History* , Oxford University Press , Delhi , 1998
2. Sumit Sarkar , *Modern India* , (1885 – 1947), MAC Millan, Madras , 1983
3. A.R. Desai, *Social Background of Indian Nationalism*, Popular Prakasam, Bombay, 1976
4. Munshirul Hasan (ed) , *India's Partition ,Process, Struggle and Mobilization ,* Oxford University Press
5. Anil Seal , *Emergence of Indian Nationalism* , Cambridge University Press, 1960
6. Gyanandra Pandey , *Remembering Partition*, Cambridge University Press
7. K.N.Panikkar, Culture*, Ideology, Intellectual and Social Consciousness in Colonial India*, Tulika ,New Delhi, 1995
8. S. Chandra Sekhar ,*Colonialism Conflict and Nationalism* , Viswa Prakasam,New Delhi , 1995
9. B.R. Nanda , *Mahatma Gandhi : A Biography* , Oxford University Press , Delhi, 1958
10. Gail.Omvedt , *Dalit and the Democratic Revolution : Dr. Ambedkar and the Dalit Movement in Colonial India* , Sage Publication, New Delhi,1994
11. M.S.S. Pandyan , *Brahmin and Non Brahmin Geneaologies of Tamil Political Presents*
12. Barbara Metcalf & Thomas R. Metcalf , *A Concise History of India* , Cambridge University Press, New Delhi.1992
13. Anilket Alam , *Becoming India*, Cambridge University Press,New Delhi
14. T.G.Jacob (ed), National Question in India : Communist Party of India Documents (1942 – 47)
15. Christopher Jafferlot, *The Hindu Nationalist Movement and Indian Politics (1925-1980's)* Penguin Books ,New Delhi ,1999

HY – 1331.6 Semester III

Complementary – VI Hours – 3

Credits – 2 **History of Modern World (1921-1955)**

Aims and objectives

- To familiarize the students with the history of modern world from 1921 to 1955
- To analyze causes that led to the rise of dictatorship during the inter-war period
- To review the causes, course and results of the Second World War
- To assess the cold war alliances and developments

Module I

Rise of Dictatorship

Turkey under Mustapha Kamal Pasha, Fascism in Italy – Nazism in Germany.

Module II

Second World War and UNO

Second World War - Causes and Results - Significance - United Nations Organization – Aims and Objectives – Organs and important Agencies – Achievements.

Module III

Post War Developments

Emergence of Capitalist and Socialist blocs – Cold War – Truman Doctrine – Marshall Plan – NATO – CENTO – SEATO - Warsaw Pact.

Essential Readings

1. Timothy W. Mason, *Nazism, Fascism and the Working Class,* Cambridge Univerisity, Press, 1995.
2. Dutlef Muhlberger, *The Social Bases of Nazism 1919-1933,* Cambridge Univerisity, Press, 2003.
3. Eugene Davidson, *The Making of Adolf Hitler – The Birth and Rise of Nazism*, University of Missouri Press, 1997.
4. J.M. Roberts, *The Penguin History of Europe*, Penguin Books, New Delhi, 1998.
5. Stanley Maisler, *United Nations – A History*, Grove Press, 2011.
6. John Morris Roberts, *A Short History of the World*, Oxford University Press, 1993.
7. Andrew Langley, *World War II*, Raintree, 2013.
8. Stanley Maisler, *United Nations – A History*, Grove Press, 2011.
9. Andreas Wenger and Doron Zimmermann, *International Relations: From the Cold*
10. *War to the Globalized World*, Viva Books Private Limitied, New Delhi, 2004.

HY 1431.7

Complementary VII Semester IV

Credits -2 Hours -3

HISTORY OF CONTEMPORARY INDIA (After 1948)

Module I

Nehruvian Era

Integration of Indian States – Role of Patel and V.P. Menon- Indian Union

Module II

The Domestic Reforms

India's Foreign Policy – Non- Alignment – India's Role In World Affairs (Indo-Chinese War and Indo-Pak War)

Module III

Post – Nehruvian Period

New Economic Policy – Educational Changes – Information Revolution – Cultural changes- New Social Movement – Women's Movement – Tribal Movements- Cyber laws.

Essential Readings

1. Sumit Sarkar , Writing Social History , Oxford University Press , Delhi , 1998
2. Sumit Sarkar , Modern India , (1885 – 1947), MAC Millan, Madras , 1983
3. A.R. Desai, Social Background of Indian Nationalism, Popular Prakasam, Bombay, 1976
4. Munshirul Hasan (ed) , India's Partition ,Process,Struggle and Mobilization , Oxford University Press
5. Anil Seal , Emergence of Indian Nationalism , Cambridge University Press, 1960
6. Gyanandra Pandey , Remembering Partition, Cambridge University Press
7. K.N.Panikkar,Culture, Ideology,Intellectual and Social Consciousness in Colonial India, Tulika ,New Delhi, 1995
8. S. Chandra Sekhar ,Colonialism Conflict and Nationalism , Viswa Prakasam,New Delhi , 1995
9. Andre Beteille , Sociology : Essays on Approaches and Method , Oxford University Press.2002
10. Gail.Omvedt , Dalit and the Democratic Revolution , Sage Publication, New Delhi,1994
11. Bipan Chandra , India After Independence 1947-2000 , Penguin Books , USA,2000
12. Paul R.Brass, The Politics of India Since Independence, Cambridge University Press,New Delhi,1992
13. Anilket Alam , Becoming India, Cambridge University Press,New Delhi,1992

HY – 1431.8 Semester IV

Complementary – VIII Hours – 3

Credit-2 **History of Modern World (After-1955)**

Aims and objectives

- To highlight the nature, scope and relevance of NAM
- To assess the current problems of the world with special reference to the Unipolar and Bipolar coupled with the emerging nations
- To analyze the nature and circumstances that led to the rise of regional and international alliances

Module I

Non-Alignment

Non-Alignment – Origin – Objectives – Growth – Criticism – Role of Jawaharlal Nehru – Significance of NAM.

Module II

Neo- Colonialism

Definition – Methods of Neo Colonialism – Impacts – Globalization

Module III

Emergence of Third World Countries

Nature – Concepts - Growth and Role – Impact of Third World on International Relations.

Module IV

Towards World Co-operation

SAARC – ASEAN – Organization of African Unity (OAU) – European Unity (EU) – Asia Pacific for Economic Co-operation (APEC) – Disarmament and Arms Control – Need for Disarmament.

Essential Readings

1. Eric J. Hobsbawm, *Age of Revolution*, Abacus, 1998.
2. C.A. Bailey, *The Birth of the Modern World*, Blackwell, California, 2004.
3. R.R. Palmer, *A History of the Modern World*, Mc Graw Hill Companies, 2004.
4. J.M. Roberts, *The Penguin History of Europe*, Penguin Books, New Delhi, 1998.
5. Norman Lawe, *Mastering Modern World*, MacMillan, New Delhi, 2003.
6. Andreas Wenger and Doron Zimmermann, *International Relations: From the Cold War to the Globalized World*, Viva Books Private Limited, New Delhi, 2004.
7. J.A. Naik, *A Text Book of International Relations*, MacMillan, New Delhi, 2003.
8. Vinay Kumar Malhotra, *International Relations*, Anmol Publications, New Delhi, 2008.
9. Colin Mason, *A Short History of Asia*, Palgrave MacMillian, New Delhi, 2005.
10. John Ralston Saul, *The Collapse of Globalism of the World*, Penguin Books, New Delhi, 2005.

UNIVERSITY OF KERALA

FIRST DEGREE PROGRAMME IN MALAYALAM

Under the Choice Based Credit and Semester (CBCS) System for the Academic Year

2018 Admission onwards

പ്രോഗ്രാം – മലയാളം: ഭാഷയും സംസ്കാരവും സാഹിത്യവും

(Programme – Malayalam: Language, Culture and Literature)

സിലബസ് തയ്യാറാക്കിയ ബോർഡ് ഓഫ് സ്റ്റഡീസ് അംഗങ്ങൾ

ഡോ. ആർ. എസ്. രാജീവ് (ചെയർമാൻ)

ഡോ. ജി. പദ്മറാവു

ഡോ. ബി. വി. ശശികുമാർ

ഡോ. പി. പത്മകുമാർ

ഡോ. എം. എസ്. സുചിത്ര

ഡോ.എൽ. അലക്സ്

ഡോ. എസ്. രാജേശ്വരി അമ്മ

ഡോ. ജോസ്. കെ. മാനുവൽ

ഡോ. ആർ. ബി. ശ്രീകല

First Degree Programme in Malayalam under the Choice Based Credit and Semester (CBCS) System

പ്രോഗ്രാം: മലയാളം : ഭാഷയും സംസ്കാരവും സാഹിത്യവും

(Programme - Malayalam: Language, Culture and Literature)

Course Structure for First Degree Programme in Malayalam

Semester No.	Course Code	Course Title	Instructional hours/weeks			Credit/ Course	Page No
			L	T	P	C	
I	EN 1111	Language Course I (English I)	5	-	-	4	
	ML 1111.1	Lang. Course II (Addl. Lang. I) - മലയാളകവിത (കാവ്യമാലിക)	4	-	-	3	8
	EN 1121	Foundation Course - 1	4	-	-	2	
	ML 1141	Core Course-1 - നോവൽ: ചരിത്രവും പാഠവും	6	-	-	4	10
	ML 1131.1	Compl. Course 1 - കേരളസംസ്കാരം ഭാഗം - 1	3	-	-	2	13
	SK 1131.2	Compl. Course - II - സംസ്കൃതം - 1	3	-	-	2	
		ആകെ	**25**			**17**	
II	EN 1211	Lang. Course-III (English II)	5	-	-	4	
	EN 1212	Lang. Course IV (English III)	4	-	-	3	
	ML 1211.1	Lang. Course V (Addl. lang. II) - ഗദ്യസാഹിത്യം (ഗദ്യമാലിക)	4	-	-	3	16
	ML 1241	Core Course II - നാടകം: ചരിത്രം, പാഠം, പ്രയോഗം	6	-	-	4	18
	ML 1231.1	Compl. Course III - കേരളസംസ്കാരം ഭാഗം - 2	3	-	-	3	22
	SK 1231.2	Compl. Course IV - സംസ്കൃതം - 2	3	-	-	3	
		ആകെ	**25**			**20**	
III	EN 1311	Lang. Course VI (English IV)	5	-	-	4	
	ML 1311.1	Lang. Course VII (Addl. Lang. III) - ദൃശ്യകലാസാഹിത്യം (ദൃശ്യഭാരതി)	5	-	-	4	24
	ML 1321	Foundation Course - II (Informatics)- ആധുനിക സാങ്കേതികവിദ്യയും മലയാളഭാഷാപഠനവും	4	-	-	3	25
	ML 1341	Core Course III - സാഹിത്യ സിദ്ധാന്തങ്ങൾ: പൗരസ്ത്യവും പാശ്ചാത്യവും	5	-	-	4	28
	ML 1331	Compl. Course V - പരിസ്ഥിതി: സിദ്ധാന്തവും ആവിഷ്കാരവും	3	-	-	3	31
	SK 1331.2	Compl. Course VI - സംസ്കൃതം - 3	3	-	-	3	
		ആകെ	**25**			**21**	

Semester No.	Course Code	Course Title	Instructional hours/weeks			Credit/ Course	Page No
			L	T	P	C	
	EN 1411	Lang. Course - VIII (English V)	5	-	-	4	
	ML 1411.1	Lang. Course IX (Addl. Lang. IV) ആശയവിനിമയം, സർഗ്ഗാത്മകരചന, ഭാഷാവബോധം	5	-	-	4	34
1V	ML 1441	Core Course - IV- മലയാള കവിത പൂർവ്വഘട്ടം (ഉദയഭാരതി)	5	-	-	4	36
	ML-1442	Core Course-V- മലയാളസാഹിത്യനിരൂപണം	4	-	-	3	39
	ML-1431	Compl. Course VII - ദലിതെഴുത്ത്, പെണ്ണെഴുത്ത്: സിദ്ധാന്തവും ആവിഷ്കാരവും	3	-	-	3	42
	SK 1431.2	Compl. Course VIII - സംസ്കൃതം - 4	3	-	-	3	
		ആകെ	**25**			**21**	
	ML1541	Core Course VI - ഭാഷാശാസ്ത്രം, ഭാഷാചരിത്രം	4	-	-	4	46
	ML 1542	Core Course VII - ചെറുകഥാപഠനം	4	-	-	4	49
	ML 1543	Core Course VIII - വിവർത്തനം: സിദ്ധാന്തവും പ്രയോഗവും	3	-	-	2	52
V	ML 1544	Core Course IX - ജീവചരിത്രം, ആത്മകഥ, യാത്രാനുഭവം	4	-	-	4	54
	ML 1545	Core Course X - തിരക്കഥയും സിനിമയും	4	-	-	4	56
		Open Course -1					
	ML 1551.1	കേരളീയകലകൾ/					60
	ML 1551.2	തിരക്കഥാരചന: തത്ത്വവും പ്രയോഗവും/					63
	ML 1551.3	മലയാള പത്രപ്രവർത്തനം					65
	ML 1551.4	ചലച്ചിത്രപഠനം.	3	-	-	2	67
		Project/Dissertation	3	-	-	-	
		ആകെ	**25**			**21**	
	ML 1641	Core Course XI - മാധ്യമലോകം	5	-	-	4	71
	ML 1642	Core Course XII - മലയാളവ്യാകരണം	5	-	-	4	74
VI	ML 1643	Core Course XIII - മലയാളകവിത - ഉത്തരഘട്ടം	5	-	-	4	76
	ML 1644	Core Course XIV - നാടോടി വിജ്ഞാനീയം	4	-	-	3	79

Semester No.	Course Code	Course Title	Instructional hours/weeks			Credit/ Course	Page No
			L	T	P	C	
		Open Course II (Elective)					
	ML 1651.1	താരതമ്യ സാഹിത്യം/					82
	ML 1651.2	ഭാഷാസാഹിത്യസംവാദങ്ങൾ/					83
VI	ML 1651.3	കേരളീയ കലകൾ/					86
	ML 1651.4	തിരക്കഥാ രചന: തത്ത്വവും പ്രയോഗവും/					89
	ML 1651.5	മലയാളപത്രപ്രവർത്തനം	3	-	-	2	91
	ML 1645	Project/Dissertation	3	-	-	4	
		ആകെ	**25**			**21**	

Summary

1.	Language Course (English)	-	5	-	24 hrs	19 credits
2.	Additional Language	-	4	-	18 hrs	14 credits
3.	Foundation courses	-	2	-	8 hrs	5 credits
4.	Complimentary courses	-	8	-	24 hrs	22 credits
5.	Core courses	-	13	-	64 hrs	52 credits
6.	Open course/ Elective	-	2	-	6 hrs	4 credits
7.	Project	-	1	-	6 hrs	4 credits
	Total:	**35 courses**			**150 hrs**	**120 credits**

എഴുത്തു പരീക്ഷയുടെ ചോദ്യമാതൃക

സമയം: 3 മണിക്കൂർ **ആകെ മാർക്ക്: 80**

1. ഒരു വാക്കിലോ വാക്യത്തിലോ ഉത്തരം എഴുതാനുള്ള പത്തു ചോദ്യം. എല്ലാ ചോദ്യത്തിനും ഉത്തരം എഴുതണം. ഓരോന്നിനും ഒരു മാർക്ക് വീതം.
   (10 x 1 = 10)
2. ഒരു ഖണ്ഡികയിൽ ഉത്തരം എഴുതാനുള്ള 12 ചോദ്യം. എട്ടു ചോദ്യത്തിന് ഉത്തരം എഴുതണം. ഓരോന്നിനും രണ്ടു മാർക്ക് വീതം.
   (8 x 2 = 16)
3. 120 വാക്കിൽ കവിയാതെ ഉത്തരം എഴുതാൻ 9 ചോദ്യം. 6 ചോദ്യത്തിന് ഉത്തരം എഴുതണം. ഓരോന്നിനും 4 മാർക്ക് വീതം
   (6 x 4 = 24)
4. മൂന്നു പുറത്തിൽ ഉത്തരം എഴുതാനുള്ള ഉപന്യാസമാതൃകയിലുള്ള ചോദ്യം 4. ഉത്തരം എഴുതേണ്ടത് രണ്ടെണ്ണത്തിന്. പതിനഞ്ച് മാർക്ക് വീതം.
   (2 x 15 = 30)

ആകെ - 80 മാർക്ക്

ഇന്റേണൽ :

1.	ഹാജർ	:	5 മാർക്ക്
2.	ടെസ്റ്റ് പേപ്പർ	:	10 മാർക്ക്
3.	അസൈൻമെന്റ് / സെമിനാർ	:	5 മാർക്ക്
	ആകെ	:	**20 മാർക്ക്**

പ്രോജക്ട് /ഡിസ്സർട്ടേഷൻ

മലയാളം: ഭാഷയും സാഹിത്യവും സംസ്കാരവും എന്ന പ്രോഗ്രാമിന്റെ ഭാഗമായി വിദ്യാർത്ഥികൾ ഒരു പ്രോജക്ട്/ഡിസ്സർട്ടേഷൻ പൂർത്തിയാക്കേണ്ടതാണ്. അതിന്റെ പഠന പ്രവർത്തനങ്ങൾ V-ാം സെമസ്റ്ററിൽ തുടങ്ങുകയും VI-ാം സെമസ്റ്ററിൽ പൂർത്തിയാക്കുകയും വേണം. VI-ാം സെമസ്റ്റർ അവസാനിക്കുന്നതിനു മുമ്പ് പ്രോജക്ട് ഡിസ്സർട്ടേഷൻ റിപ്പോർട്ടിന്റെ ഡി.റ്റി.പി ചെയ്ത രണ്ടു കോപ്പി ഡിപ്പാർട്ട്മെന്റിൽ സമർപ്പിക്കേണ്ടതാണ്. റിപ്പോർട്ടിന് A4 പേപ്പറിൽ 30 മുതൽ 40 വരെ പേജുകൾ ഉണ്ടാവണം. മാർഗ്ഗനിർദ്ദേശകനായ അദ്ധ്യാപകൻ റിപ്പോർട്ട് സാക്ഷ്യപ്പെടുത്തുകയും വേണം.

പ്രോജക്ട് ഡിസ്സർട്ടേഷന്റെ മാർഗ്ഗനിർദ്ദേശകൻ എന്ന നിലയ്ക്ക് 15ൽ അധികമാവാത്ത വിദ്യാർത്ഥികളുടെ ചുമതല ഓരോ അദ്ധ്യാപകനിൽ നിക്ഷിപ്തമായിരിക്കും.

പ്രോജക്ട്/ഡിസ്സർട്ടേഷൻ പ്രവർത്തനങ്ങൾ വിദ്യാർത്ഥികൾക്ക് ഒറ്റക്കോ ഗ്രൂപ്പുകളായോ നടത്തി റിപ്പോർട്ട് സമർപ്പിക്കാം. ഒരു ഗ്രൂപ്പ് ഒരു റിപ്പോർട്ട് സമർപ്പിച്ചാൽ മതിയാകും. എന്നാൽ പ്രോജക്ടിന്റെ അടിസ്ഥാനത്തിൽ നടത്തുന്ന വൈവാവോസിയിൽ വിദ്യാർത്ഥികൾ ഓരോരുത്തരും പങ്കെടുക്കണം. ഒരു ഗ്രൂപ്പിലുള്ള ഓരോ വിദ്യാർത്ഥിയും പഠനപ്രവർത്തനങ്ങളിൽ തുല്യപങ്കാളികളായിരിക്കും.

പ്രോജക്ട്/ഡിസ്സർട്ടേഷന്റെ പഠനമേഖല വിദ്യാർത്ഥികളും മാർഗ്ഗനിർദ്ദേശകനായ അദ്ധ്യാപകനും ചേർന്ന് കണ്ടെത്തണം. ഭാഷ, സംസ്കാരം, സമൂഹം സാഹിത്യം, കലകൾ, മാധ്യമങ്ങൾ എന്നിവയുമായി ബന്ധപ്പെട്ട മേഖലകളാകണം തെരഞ്ഞെടുക്കേണ്ടത്. റിപ്പോർട്ട് തയ്യാറാക്കുന്നതിനുമുമ്പ് വ്യക്തമായ ഒരു സിനോപ്സിസ് വിദ്യാർത്ഥി/ഗ്രൂപ്പ് സമർപ്പിച്ചിരിക്കണം.

റിപ്പോർട്ടിന് നിശ്ചിതമായ ഒരു ഘടന ഉണ്ടായിരിക്കണം. വ്യക്തമായ ആമുഖം, ഉള്ളടക്കത്തിന്റെ സ്വഭാവം അനുസരിച്ചു വേർതിരിയുന്ന ഭാഗങ്ങൾ/അദ്ധ്യായങ്ങൾ, കണ്ടെത്തലുകളുടെയും നിഗമനങ്ങളുടെയും അടിസ്ഥാനത്തിലുള്ള ഉപദർശനങ്ങൾ, അടിക്കുറിപ്പുകൾ, ഗ്രന്ഥസൂചി എന്നീ ഘടകങ്ങൾ ചേർന്നതായിരിക്കണം റിപ്പോർട്ട്.

സർവ്വകലാശാല നിയമിക്കുന്ന രണ്ടു പരിശോധകരുടെ ഒരു ബോർഡ് ആയിരിക്കും റിപ്പോർട്ട് മൂല്യനിർണ്ണയം നടത്തുന്നത്. ഇതിന്റെ ഭാഗമായി വൈവാവോസി ഉണ്ടായിരിക്കും. എന്നാൽ കണ്ടിന്യൂവസ്സ് ഇവാല്യൂവേഷൻ ഉണ്ടായിരിക്കില്ല.

Course Structure of Additional Language - Malayalam for BA/B.Sc Degree Programmes

Semester I	ML 1111.1 Lang: Course II (Adl. lang.I)	- മലയാളകവിത
Semester II	ML1211.1 Lang. Course V (Adl. lang.II)	- ഗദ്യസാഹിത്യം
Semester III	ML 1311.1 Lang.CourseVII(Addl.lang.III)	- ദൃശ്യകലാ സാഹിത്യം
Semester IV	ML 1411.1 Lang. Course IX (Addl lang.IV)	- വിനിമയം, സർഗാത്മകരചന, ഭാഷാവബോധം

Course Structure of Additional Language - Malayalam for B.Com Degree Programmes

Semester I	ML 1111.2 Addl. Lang. Course I	- നോവൽ, നാടകം, സഞ്ചാരസാഹിത്യം, തിരക്കഥ
Semester II	ML1211.2 Addl. Lang. Course II	- കവിത, കഥ, ഉപന്യാസം, വിവർത്തനം

Course Structure of Additional Language - Malayalam for Career related first Degree Programme - under CBCS system Group - 2A

Semester I	ML 1111.3 Addl. Lang. Course I	- ഗദ്യസാഹിത്യം
Semester II	ML1211.3 Addl. Lang. Course II	- ദൃശ്യകലാസാഹിത്യം

ഒന്നു മുതൽ ആറുവരെ സെമസ്റ്ററുകളിലേക്കുള്ള കോഴ്സുകളും സിലബസും

സെമസ്റ്റർ : ഒന്ന്

സെമസ്റ്റർ	:	I
കോഴ്സ് കോഡ്	:	ML 1111.1
ലാംഗ്വേജ് കോഴ്സ്	:	II (അഡീഷണൽ ലാംഗ്വേജ് : 1)
സമയക്രമം	:	ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)
ക്രെഡിറ്റ്	:	3

മലയാള കവിത

പുസ്തകം : കാവ്യമാലിക

(കേരളസർവകലാശാലാ പ്രസിദ്ധീകരണം)

പഠനോദ്ദേശ്യം

1. മലയാളകവിതയെ സംബന്ധിച്ച സാമാന്യജ്ഞാനം വിദ്യാർത്ഥികൾക്കു നൽകുക.
2. വിദ്യാർത്ഥികളിൽ കാവ്യാഭിരുചിയും കാവ്യാസ്വാദന താല്പര്യവും വളർത്തുക.
3. കവിതകളെ വിശകലനം ചെയ്യാൻ അവരെ പ്രാപ്തരാക്കുക.
4. സെമിനാർ, അസൈൻമെന്റ് തുടങ്ങിയവ മേൽപ്പറഞ്ഞ ലക്ഷ്യങ്ങൾ മുൻനിർത്തി നൽകുക.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

കവിത - ആധുനിക കവിത്രയം വരെ

1. എഴുത്തച്ഛൻ - ജരിതാവിലാപം (ഖാണ്ഡവദാഹം)
   ('ആരണ്യം തന്നിൽ....' എന്ന് തുടങ്ങി 'കല്പിച്ചു പോയാളവൾ....' വരെ - 36 വരി)
2. വടക്കൻ പാട്ട് - ഉണ്ണിയാർച്ച കൂത്ത് കാണാൻ പോയ കഥ
   ('ആറ്റുംമണമ്മേലെ ഉണ്ണിയാർച്ച....' എന്നു തുടങ്ങി 'വേഗത്തിൽ പോകുന്നു ഉണ്ണിയാർച്ച....' വരെ)
3. കുമാരനാശാൻ - ചണ്ഡാലഭിക്ഷുകി
   ('തൂമതേടുംതൻപാള' മുതൽ 'മാരദൂതിപോൽ തെല്ലിട സുന്ദരി' വരെ - 96 വരി)

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

കവിത്രയാനന്തരകവിത

4. ചങ്ങമ്പുഴ - മനസ്വിനി
5. വൈലോപ്പിള്ളി - ജലസേചനം
6. ഇടശ്ശേരി - പുത്തൻകലവും അരിവാളും
7. എൻ. വി. കൃഷ്ണവാര്യർ - എലികൾ

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

ആധുനിക പൂർവ്വ - ആധുനിക ഘട്ടം

8. ഒ. എൻ വി. കുറുപ്പ് - ഒരു തൈ നടുമ്പോൾ
9. സുഗതകുമാരി - കാളിയമർദ്ദനം
10. അയ്യപ്പപ്പണിക്കർ - ഗോപികാദണ്ഡകം
11. എൻ.എൻ.കക്കാട് - സഫലമീയാത്ര

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

ആധുനിക - ആധുനികാനന്തര ഘട്ടം

12. കടമ്മനിട്ട - കുഞ്ഞേ മുലപ്പാൽ കുടിക്കരുത്
13. ശ്രീകുമാരൻ തമ്പി - അമ്മയ്ക്കൊരു താരാട്ട് *
14. എ. അയ്യപ്പൻ - നിനക്ക്
15. റോസ് മേരി - ചാഞ്ഞുപെയ്യുന്ന മഴ
16. റഫീക്ക് അഹമ്മദ് - മൊബൈൽ ഫോൺ

സഹായകഗ്രന്ഥങ്ങൾ

1. കൈരളിയുടെ കഥ - പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള
2. മലയാള കവിതാസാഹിത്യചരിത്രം - ഡോ. എം. ലീലാവതി
3. വർണ്ണരാജി - ഡോ. എം. ലീലാവതി
4. തെരഞ്ഞെടുത്ത പ്രബന്ധങ്ങൾ - പ്രൊഫ. എം. അച്യുതൻ
5. മുഹൂർത്തങ്ങൾ - സച്ചിദാനന്ദൻ
6. നവോത്ഥാനാനന്തരകവിത - എസ്. രാജശേഖരൻ
7. വടക്കൻപാട്ടുകളുടെ പണിയാല - എം. ആർ. രാഘവവാര്യർ
8. ആളൊഴിഞ്ഞ അരങ്ങ് - വി. രാജകൃഷ്ണൻ
9. കടലിൽ തങ്ങിയ കാന്തഭൂമി - ഡോ. ബി. വി. ശശികുമാർ
10. ഭാവഗീതത്തിന്റെ അടയാളങ്ങൾ മലയാള കവിതയിൽ - ഡോ. ആർ. എസ്. രാജീവ്
11. പ്രതിബിംബങ്ങൾ പറയാതിരിക്കുന്നത് - ആർ. ശ്രീലതാവർമ്മ.
12. ഹരിതദർശനം ആധുനികാനന്തര മലയാളകവിതയിൽ - ഡോ. സി. ആർ. പ്രസാദ്.
13. മലയാളകവിതയിലെ ഉയർന്ന ശിരസ്സുകൾ - ഡോ. എം. എൻ. രാജൻ.
14. പ്രകടനഗാനങ്ങളുടെ ആഖ്യാന സൗന്ദര്യശാസ്ത്രം - ഡോ. എൻ. അനിൽകുമാർ (കേരളസാഹിത്യഅക്കാദമി).

15. വൈലോപ്പിള്ളി : എഴുത്തും ജീവിതവും - ഡോ. ഇ. ബാനർജി (എഡി.).
16. കടമ്മനിട്ടക്കവിത - പഠനസമാഹരണം - കെ. എസ്. രവികുമാർ.
17. പരിസ്ഥിതിക്കവിതയ്ക്കൊരാമുഖം - പി.പി.കെ. പൊതുവാൾ, ഡി.സി. ബുക്സ്.
18. കീഴാളന്റെ പ്രതിരോധതന്ത്രം - ഡോ. ഷീബ എം. കുര്യൻ.
19. കാവ്യഭാവനയുടെ സ്ത്രീപഠനങ്ങൾ - ഡോ. എ. ഷീലാകുമാരി
20. കാവ്യസരസ്സിലെ രാഗപൗർണ്ണമി - ഡോ. അജയപുരം ജ്യോതിഷ് കുമാർ (എഡി.)
(കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്)

സെമസ്റ്റർ	:	**I**
കോഴ്സ് കോഡ്	:	**ML 1141**
കോർ കോഴ്സ്	:	**II**
സമയക്രമം	:	**ആഴ്ചയിൽ 6 മണിക്കൂർ**
		(18 ആഴ്ചയിൽ 108 മണിക്കൂർ)
ക്രെഡിറ്റ്	:	**4**

നോവൽ : ചരിത്രവും പാഠവും

പഠനോദ്ദേശ്യം :

1. നോവൽസാഹിത്യശാഖയെ സംബന്ധിച്ച് സാമാന്യ ധാരണയുണ്ടാകുക.
2. മലയാളനോവൽസാഹിത്യത്തിന്റെ വളർച്ചയുടെ വിവിധഘട്ടങ്ങൾ മനസ്സിലാക്കുക.
3. ഭാവുകത്വപരിണാമം, ഭാഷ, ഘടന, സങ്കേതങ്ങൾ ഇവ മനസ്സിലാക്കുക.
4. ചരിത്രപരവും സാംസാകാരികവുമായ പ്രതിനിധാനം എന്ന നിലയിൽ നോവലിനെ തിരിച്ചറിയുക.
5. സമകാലിക മലയാളനോവലിന്റെ സ്വഭാവങ്ങൾ മനസ്സിലാക്കുക.
6. നോവലിന്റെ ആസ്വാദനം, അപഗ്രഥനം, വിമർശനം എന്നിവയ്ക്ക് വിദ്യാർത്ഥികളെ പ്രാപ്തരാക്കുക.
7. വിവർത്തന നോവലുകളെ പരിചയപ്പെടുക.

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

നോവൽ എന്ന സാഹിത്യരൂപം - നിർവ്വചനങ്ങൾ - ആവിർഭാവത്തിനിടയാക്കിയ സാഹചര്യങ്ങളും കാരണങ്ങളും - നൊവെല്ലകളും റൊമാൻസുകളും - നോവൽ വിശ്വസാഹിത്യത്തിലും ഭാരതീയസാഹിത്യത്തിലും - മലയാളനോവലുകളുടെ പ്രാരംഭ ചരിത്രം - ആദ്യകാല രൂപമാതൃകകൾ - ഘാതകവധം - പുല്ലേലിക്കുഞ്ചു - കുന്ദലത - സാമൂഹിക നോവലുകൾ - ഇന്ദുലേഖ - ശാരദ - സി.വി.യുടെ ചരിത്രാഖ്യായികകൾ - ഘടന - ശൈലി - വീക്ഷണം - ഇതിവൃത്തം - കഥാപാത്രങ്ങൾ - ഭാഷ - ആവിഷ്കരണം.

വിശദപഠനം:

(1) കുന്ദലത (1, 2, 3 അദ്ധ്യായങ്ങൾ) - അപ്പു നെടുങ്ങാടി
(2) ശാരദ (6-ാം അദ്ധ്യായം) - ഒ. ചന്തുമേനോൻ
(3) ധർമ്മരാജ (1, 2 അദ്ധ്യായങ്ങൾ) - സി. വി. രാമൻപിള്ള

മൊഡ്യൂൾ : രണ്ട് (27 മണിക്കൂർ)

കേരളത്തിലെ മാറിയ സാമൂഹിക സാഹചര്യം, പാശ്ചാത്യസാഹിത്യവുമായി നമ്മുടെ എഴുത്തുകാർക്കുണ്ടായ സമ്പർക്കം, പുതിയ രാഷ്ട്രീയദർശനം, നൂതന പ്രവണതകളെക്കുറിച്ചുള്ള പരിചയം എന്നിവ എഴുത്തുകാരിൽ ചെലുത്തിയ സ്വാധീനം - നോവൽ സാമൂഹിക സാംസ്കാരികജീവിതത്തിന്റെ പ്രതിനിധാനം എന്ന നിലയിൽ - ഇതിവൃത്തം, കഥാപാത്രങ്ങൾ, ഭാഷ, ദർശനം, വീക്ഷണം, എഴുത്തുകാരന്റെ ലക്ഷ്യം, ശൈലി ഇവയിൽ വന്ന മാറ്റം - നവോത്ഥാന പ്രവണതകൾ - പുരോഗമനസാഹിത്യത്തിന്റെ ആവിർഭാവവും സ്വാധീനതയും - സാമൂഹിക പരിഷ്കരണ പ്രസ്ഥാനങ്ങൾ - കേശവദേവ് - തകഴി - വൈക്കം മുഹമ്മദ് ബഷീർ - എസ്. കെ. പൊറ്റെക്കാട്ട് - ഉറൂബ് - പാറപ്പുറത്ത് - മുത്തിരിങ്ങോട് ഭവത്രാതൻ നമ്പൂതിരിപ്പാട് - ബോധധാരാനോവൽ - ആത്മകഥാനോവൽ.

വിശദപഠനം :

1. രണ്ടിടങ്ങഴി - തകഴി
2. ബാല്യകാലസഖി - വൈക്കം മുഹമ്മദ് ബഷീർ

മൊഡ്യൂർ : മൂന്ന് (27 മണിക്കൂർ)

നോവലിന്റെ വളർച്ച - സമൂഹത്തിൽ നിന്ന് വ്യക്തിയിലേയ്ക്ക് - പുതിയ കാഴ്ചപ്പാടുകൾ - മനഃശാസ്ത്രത്തിന്റെ സ്വാധീനം - വ്യക്തി, സമൂഹ സംഘർഷങ്ങൾ - പുതിയ രചനാരീതികൾ - കോവിലൻ, രാജലക്ഷ്മി, ലളിതാംബിക അന്തർജ്ജനം, എം.ടി., മാധവിക്കുട്ടി, കെ. സുരേന്ദ്രൻ, കോവിലൻ, നന്തനാർ, ചെറുകാട്, മലയാറ്റൂർ രാമകൃഷ്ണൻ, സി. രാധാകൃഷ്ണൻ, വത്സല, എൻ. പി. മുഹമ്മദ്, എന്നിവരുടെ രചനകൾ.

വിശദപഠനം :

1. അഗ്നിസാക്ഷി - ലളിതാംബിക അന്തർജ്ജനം
2. രണ്ടാമൂഴം - എം. ടി. വാസുദേവൻ നായർ

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

1960കളോടെ നോവൽസങ്കല്പത്തിൽ വന്ന മാറ്റം മലയാള സാഹിത്യത്തിന്റെ ചരിത്രപരമായ വഴിത്തിരിവിന്റെ കാലം ആധുനികത നോവൽ സാഹിത്യത്തിലെ കഥാപാത്രസങ്കല്പത്തിലും ഭാഷയിലും ആഖ്യാനത്തിലും സംഭവിച്ച പ്രകടമായ മാറ്റം അസ്തിത്വദർശനം അന്യവൽക്കരണം ഒ.വി. വിജയൻ, എം. മുകുന്ദൻ, കാക്കനാടൻ, ആനന്ദ്, സേതു, സക്കറിയ, പുനത്തിൽ കുഞ്ഞബ്ദുള്ള, മേതിൽ രാധാകൃഷ്ണൻ എന്നിവരുടെ രചനകൾ.

വിശദപഠനം :

1. മരുഭൂമികൾ ഉണ്ടാകുന്നത് - ആനന്ദ്

മൊഡ്യൂൾ : അഞ്ച് (18 മണിക്കൂർ)

ഉത്തരാധുനികത - നോവലിലെ ആധുനികോത്തര പ്രവണതകൾ - ഇതിവൃത്തം, ആഖ്യാനം, കഥാപാത്രങ്ങൾ, ശൈലി, ദർശനം എന്നീ തലങ്ങളിൽ വന്ന മാറ്റം - സാംസ്കാരിക സ്വത്വത്തിലെ വ്യതിരിക്തതകൾ - ദേശം - കാലം - ഭാഷ - സ്ത്രീവാദം - ദളിത്വാദം - പരിസ്ഥിതിവാദം - ആഗോളവത്കരണം - ഭാഷയിലൂടെയുള്ള പ്രതിരോധം - ദാർശനിക വ്യതിയാനം - പുതിയ എഴുത്തുകാരും അവരുടെ രചനകളും.

വിശദപഠനം :

1. ഹെർബേറിയം - സോണിയാ റഫീക്ക് *

സഹായകഗ്രന്ഥങ്ങൾ

1. കൈരളിയുടെ കഥ - പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള.
2. മലയാള നോവൽ സാഹിത്യചരിത്രം - ഡോ. കെ. എം. തരകൻ.
3. ചരിത്ര നോവൽ മലയാളത്തിൽ - കല്പറ്റ ബാലകൃഷ്ണൻ.
4. നോവൽ സാഹിത്യം - എം. പി. പോൾ.
5. നോവൽ സ്വരൂപം - കെ. സുരേന്ദ്രൻ.
6. സി. വി. രാമൻപിള്ള - പി. കെ. പരമേശ്വരൻ നായർ.
7. നോവൽ സിദ്ധിയും സാധനയും - പി. കെ. ബാലകൃഷ്ണൻ.
8. നോവൽ സാഹിത്യപഠനങ്ങൾ - ഡോ. ഡി. ബഞ്ചമിൻ.
9. ചന്തുമേനോൻ ഒരു പഠനം - പി. കെ. ബാലകൃഷ്ണൻ.
10. മാറുന്ന മലയാള നോവൽ - കെ. പി. അപ്പൻ.
11. സി. വി. സാഹിത്യം വിമർശനവും ദർശനവും - ജോർജ് ഓണക്കൂർ.
12. സി. വി. പഠനങ്ങൾ - എഡി. പ്രൊഫ. പന്മന രാമചന്ദ്രൻ നായർ.
13. നോവൽ പ്രശ്നങ്ങളും പഠനങ്ങളും - എം. അച്യുതൻ.
14. ദൈവനീതിക്ക് ദാക്ഷിണ്യമില്ല - ഡോ. കെ. ഭാസ്കരൻ നായർ.
15. പ്രതിപാത്രം ഭാഷണഭേദം - പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള
16. ആധുനിക നോവൽ ദർശനങ്ങൾ - പ്രൊഫ. കെ. എം. തരകൻ.
17. നോവൽ ബോധവും പ്രതിബോധവും - (എഡി.) ഡോ. പി.കെ. രാജശേഖരൻ, ആസാദ്.
18. മൗനം തേടുന്ന വാക്ക് - വി. രാജകൃഷ്ണൻ.
19. നോവൽ പഠനങ്ങൾ - (എഡി.) പ്രൊഫ. പന്മന രാമചന്ദ്രൻ നായർ.
20. അന്ധനായ ദൈവം - മലയാളനോവലിന്റെ നൂറു വർഷം - ഡോ. പി.കെ. രാജശേഖരൻ.
21. ആധുനികത മലയാളനോവലിൽ - ഡോ. കെ. അഗസ്റ്റിൻ ജോസഫ്.
22. ആധുനികതയുടെ മദ്ധ്യാഹ്നം - പ്രൊഫ. നരേന്ദ്രപ്രസാദ്.
23. ഉത്തരാധുനികത വർത്തമാനവും വംശാവലിയും - പ്രൊഫ. കെ.പി. അപ്പൻ.
24. ആനന്ദ് ചരിത്രദൃഷ്ടിയിൽകൂടി - ഷാജി ജേക്കബ്.
25. ഉത്തരാധുനികത - ഉണ്ണിക്കൃഷ്ണൻ.
26. ലക്ഷ്മണരേഖ മുറിച്ചുകടക്കുമ്പോൾ - ഡോ. ജി. ഹേമലതാദേവി.
27. ഉത്തരാധുനിക ചർച്ചകൾ - ഡോ. കെ. പ്രസന്നരാജൻ.
28. നോവലും കാല്പനികതയും - ഡോ. നന്ത്യത്ത് ഗോപാലകൃഷ്ണൻ.
29. നോവൽ കലയും ദർശനവും - ഡോ. എം. കൃഷ്ണൻ നമ്പൂതിരി.
30. കഥയിലെ ആത്മീയസഞ്ചാരങ്ങൾ - ഡോ. ഇ. രമാഭായി.
31. ഒ.വി. വിജയൻ: വായന, പുനർവായന - വിജയൻ കോടഞ്ചേരി (എഡി.)
32. ചിതയും ചിദാകാശവും - ഡോ. എ. എം. ഉണ്ണിക്കൃഷ്ണൻ.
33. ആധുനികാന്തര മലയാളനോവൽ - (എഡി.) ഡോ. കെ. ഷിജു, ഡോ. കുമാർ.

സെമസ്റ്റർ	:	**I**
കോഴ്സ് കോഡ്	:	**ML 1131**
കോംപ്ലിമെന്ററി കോഴ്സ്	:	**I**
സമയക്രമം	:	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**2**

കേരള സംസ്കാരം – ഭാഗം 1

പഠനോദ്ദേശ്യം:

1. കേരളത്തിന്റെ സാംസ്കാരിക പശ്ചാത്തലത്തെക്കുറിച്ച് അറിവു നല്കുക.
2. ഏ.ഡി. 1400 വരെയുള്ള കാലഘട്ടത്തിൽ കേരളത്തിലെ ഭാഷ, സാഹിത്യം, കലാരൂപങ്ങൾ എന്നിവയുടെ വികാസത്തിന് കളമൊരുക്കിയ സാംസ്കാരികവും രാഷ്ട്രീയവുമായ കാര്യങ്ങൾ പഠിക്കുന്നതിന് സഹായകമായ സാംസ്കാരിക വീക്ഷണം ഉണ്ടാകുക.
3. സാംസ്കാരികത്തനിമ തിരിച്ചറിയുക, ദേശീയബോധം വളർത്തുക, മികച്ച പൗരത്വം വികസിപ്പിക്കുക, വിമർശനാത്മക ചിന്ത വളർത്തുക എന്നിവയാണ് ആത്യന്തിക ലക്ഷ്യം.

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

സംസ്കാരം എന്നാലെന്ത്? – വിവിധനിർവ്വചനങ്ങൾ – സംസ്കാരത്തെ കുറിച്ചുള്ള വിവിധ കാഴ്ചപ്പാടുകൾ – ഉച്ച-നീച സംസ്കാരം – ചരിത്രവും സംസ്കാരവുമായുള്ള ബന്ധം – ആദ്യകാല കേരളചരിത്രരചനാപരിശ്രമങ്ങൾ – സാധ്യതകളും പരിമിതികളും; കേരളം – ഭൂമിശാസ്ത്രപരമായ പ്രത്യേകതകൾ – കേരളോല്പത്തിയുമായി ബന്ധപ്പെട്ട കഥകളുടെ വിലയിരുത്തൽ – കേരളസംസ്കാരപഠനത്തിന് സഹായകമായ ഉപാദാനങ്ങൾ – കൊല്ലവർഷം – കേരളത്തിലെ ആദിമ നിവാസികൾ – സാംസ്കാരിക സവിശേഷതകൾ – ദ്രാവിഡ സംസ്കാരം.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

പ്രാചീനകാലത്തെ വിദേശബന്ധങ്ങൾ – വിദേശസഞ്ചാരികളുടെ കുറിപ്പുകൾ, തുറമുഖങ്ങൾ, വിദേശബന്ധങ്ങൾ കൊണ്ടുണ്ടായ സാംസ്കാരിക നേട്ടം. സംഘകാലം – സാമൂഹ്യജീവിതം – ഭാഷ, സാഹിത്യകൃതികൾ, സംസ്കാരം, ആചാരാനുഷ്ഠാനങ്ങൾ. മഹാശിലാസംസ്കാരം – അവശിഷ്ടങ്ങൾ, കല്ലറകൾ, കുടക്കല്ലുകൾ, നന്നങ്ങാടികൾ, തൊപ്പിക്കല്ലുകൾ, പുലച്ചിക്കല്ലുകൾ, മുതുമക്കത്താഴികൾ, പഴുതറകൾ, ഗുഹകൾ എന്നിവയുടെ സാംസ്കാരിക മൂല്യം. വൈദികസംസ്കാരം – ബുദ്ധ – ജൈന – ശൈവ – വൈഷ്ണവ – ജൂത – ക്രൈസ്തവ – ഇസ്ലാംമതങ്ങളുടെ സംഭാവനകൾ.

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

ഏ.ഡി. 10, 11 നൂറ്റാണ്ടുകളിലെ കേരളം - നമ്പൂതിരിമാരുടെ പ്രഭാവം - സാമൂഹിക, സാമ്പത്തിക, സാംസ്കാരിക രംഗങ്ങളിലെ സ്വാധീനത - ഭരണരംഗം - പെരുമാൾ, നാടുവാഴി, കോയിലധികാരി, മുന്നൂറ്റുവർ, അറുന്നൂറ്റുവർ, ദേശം, കൂട്ടം, കര, ചങ്ങാതം, ചാവേറുകൾ, ചാവേറ്റുവിരുത്തി, ശിക്ഷാസമ്പ്രദായങ്ങൾ - അടിമസമ്പ്രദായം, വാണിജ്യം - വർത്തക സംഘങ്ങൾ - നികുതികൾ. ഭാഷയും സാഹിത്യവും - കുലശേഖര ആഴ്വാർ, വാസുദേവ ഭട്ടതിരി, ശങ്കരനാരായണൻ, തോലൻ, ശക്തിഭദ്രൻ എന്നിവരുടെ സംഭാവന. ഹിന്ദുമതം - ശങ്കരാചാര്യർ, വാഗ്ഭടാനന്ദൻ - ക്ഷേത്രസംസ്കാരം - ക്ഷേത്രകലകൾ - അനുഷ്ഠാനകലകൾ - വിദ്യാശാലകൾ, വേദപഠനശാലകൾ, ദേവദാസികൾ, പട്ടത്താനം, കടവല്ലൂർ അന്യോന്യം - ദായക്രമം - മരുമക്കത്തായം, ജാതി വ്യവസ്ഥ - ജന്മി സമ്പ്രദായം.

രീതിശാസ്ത്രം

അദ്ധ്യാപകനെ കേന്ദ്രമാക്കിയുള്ള പഠനരീതിക്കുപകരം വിദ്യാർത്ഥി കേന്ദ്രിതമായ പഠനരീതി അനുവർത്തിക്കണം. ഓരോ മൊഡ്യൂളിലും ഉൾപ്പെട്ട കാര്യങ്ങളിൽ വ്യക്തമായ അവബോധം കുട്ടികളിൽ ഉണ്ടാക്കണം. അതിനനുയോജ്യമായ വിവരങ്ങൾ ക്ലാസ്സിൽ വിശദീകരിക്കണം. കൂടുതൽ വിവരങ്ങൾ കുട്ടികളെക്കൊണ്ടു തന്നെ ശേഖരിപ്പിക്കണം. ആവശ്യമായ ഗ്രന്ഥങ്ങളെപ്പറ്റി കൂടുതൽ വിവരങ്ങൾ അദ്ധ്യാപകൻ നല്കണം. അസൈൻമെന്റുകളും സെമിനാറുകളും തയ്യാറാക്കാൻ വിദ്യാർത്ഥികളെ ഒറ്റയ്ക്കോ, അഞ്ചുപേരുൾപ്പെടുന്ന ഗ്രൂപ്പിനെയോ നിയോഗിക്കാം. അസൈൻമെന്റുകൾ തിരുത്തി വിദ്യാർത്ഥികൾക്കു തിരിച്ചു നല്കണം.

ചരിത്ര പ്രാധാന്യമുള്ള സ്ഥലങ്ങൾ, കോട്ടകൾ, കൊട്ടാരങ്ങൾ ഇവ സന്ദർശിച്ച് റിപ്പോർട്ടുകൾ തയ്യാറാക്കിക്കാം. ഇതിലേക്ക് സ്റ്റഡി ടൂർ നടത്താവുതാണ്. ഇതിനുള്ള ഫണ്ട് പ്ലാനിംഗ് ഫണ്ടിൽ നിന്നും അനുവദിക്കേണ്ടതാണ്.

സഹായകഗ്രന്ഥങ്ങൾ

1. കേരളസംസ്കാരപഠനങ്ങൾ : (എഡി.) പ്രൊഫ. പന്മന രാമചന്ദ്രൻനായർ.
2. കേരളചരിത്രം : എ. ശ്രീധരമേനോൻ.
3. കേരളചരിത്രം : എം. ആർ. രാഘവവാര്യർ, രാജൻ ഗുരുക്കൾ (വള്ളത്തോൾ വിദ്യാപീഠം, ശുകപുരം).
4. കേരളത്തിന്റെ സാംസ്കാരികചരിത്രം : പി. കെ. ഗോപാലകൃഷ്ണൻ.
5. കേരള സംസ്കാരം : എ. ശ്രീധരമേനോൻ.
6. കേരളവിജ്ഞാനകോശം : ദേശബന്ധു പബ്ലിക്കേഷൻസ്.
7. കേരളസംസ്കാര പഠനങ്ങൾ: എം. ജി. എസ്. നാരായണൻ.
8. സംഘകാലത്തെ കേരളം : വി. വി. കെ. വാലത്ത് (എസ്.പി.സി. എസ്. കോട്ടയം).
9. സംഘസാഹിത്യചരിത്രം : മേലങ്ങത്തു നാരായണൻകുട്ടി.
10. ബുദ്ധമതവും കേരളവും : എസ്. ശങ്കു അയ്യർ (എസ്.പി.സി.എസ്. കോട്ടയം)

11. കേരളചരിത്രത്തിന്റെ അടിസ്ഥാനശിലകൾ : ഡോ. പുതുശ്ശേരി രാമചന്ദ്രൻ (കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്).
12. കേരളചരിത്രം (വാല്യം 1, 2) : കേരള ഹിസ്റ്ററി അസോസിയേഷൻ.
13. സംഘകാലഭരണസംവിധാനം: എൻ.സുബ്രഹ്മണ്യൻ, (ഡി.സി. ബുക്സ്, കോട്ടയം).
14. ദേവദാസികളും കേരളചരിത്രവും: ഡോ. പി. സോമൻ.
15. കൂത്തും കൂടിയാട്ടവും : അമ്മാമൻ തമ്പുരാൻ.
16. കേരളത്തിന്റെ ഇന്നലെകൾ : കെ. എൻ. ഗണേഷ് (വള്ളത്തോൾ വിദ്യാപീഠം).
17. കേരളസംസ്കാരം : പ്രൊഫ. എസ്. അച്യുതവാര്യർ.
18. കുലശേഖര നാടകങ്ങളും കേരളചരിത്രവും : എം. പി. ശങ്കുണ്ണിനായർ.
19. ഇളംകുളം കുഞ്ഞൻപിള്ളയുടെ തിരഞ്ഞെടുത്ത കൃതികൾ: ഇളംകുളം കുഞ്ഞൻപിള്ള.
20. കേരളം മലയാളികളുടെ മാതൃഭൂമി: ഇ.എം.എസ്. (ചിന്ത പബ്ലിക്കേഷൻസ്, തിരുവനന്തപുരം).
21. കേരളത്തിന്റെ മൂന്നു ദശകങ്ങൾ: (എഡി.) എൻ. വിജയൻ, ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
22. ജാതിവ്യവസ്ഥയും കേരളചരിത്രവും : പി. കെ. ബാലകൃഷ്ണൻ.
23. കേരളത്തിലെ ചുവർചിത്രകല : ഡോ. എം. ജി. ശശിഭൂഷൺ.
24. സംസ്കാരമുദ്രകൾ : ഡോ. നടുവട്ടം ഗോപാലകൃഷ്ണൻ.

സെമസ്റ്റർ : രണ്ട്

സെമസ്റ്റർ	:	**II**
കോഴ്സ് കോഡ്	:	**ML 1211.1**
ലാംഗ്വേജ് കോഴ്സ്	:	**V (അഡീഷണൽ ലാംഗ്വേജ് : II)**
സമയക്രമം	:	**ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**3**

ഗദ്യസാഹിത്യം

പുസ്തകം: ഗദ്യമാലിക (കേരളസർവ്വകലാശാല പ്രസിദ്ധീകരണം)

പഠനോദ്ദേശ്യം

1. മലയാളഗദ്യസാഹിത്യത്തിലെ പ്രധാന സാഹിത്യരൂപങ്ങളെക്കുറിച്ച് സാമാന്യാവബോധം ഉണ്ടാകുക.
2. തെരഞ്ഞെടുത്ത പാഠങ്ങളുടെ വിശദപഠനത്തിന് പുറമേ അതതു ഗദ്യങ്ങളുടെ ഉല്പത്തി വികാസപരിണാമങ്ങൾ സാമാന്യമായി മനസ്സിലാക്കുക.
3. രചനകളെ സ്വയം വിശകലനത്തിന് വിധേയമാക്കുക.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

നോവൽ

മലയാളനോവൽ പ്രസ്ഥാനത്തിന്റെ ഉത്ഭവ - വികാസ പരിണാമങ്ങളെപ്പറ്റി സാമാന്യമായി മനസ്സിലാക്കുകയും ഒരു നോവൽ വിശദമായി പഠിക്കുകയും വേണം.

വിശദപഠനം :

ഉമ്മാച്ചു - ഉറൂബ്

മൊഡ്യൂൾ : രണ്ട് (27 മണിക്കൂർ)

ചെറുകഥ

മലയാള ചെറുകഥയുടെ വികാസപരിണാമങ്ങളെപ്പറ്റി സാമാന്യജ്ഞാനം നേടുക, ആഖ്യാനതന്ത്രങ്ങളുടെ വൈചിത്ര്യം മനസ്സിലാക്കുക, പ്രമേയത്തിലും രൂപശില്പത്തിലും സംഭവിച്ച മാറ്റങ്ങൾ അറിയുക. കഥാസ്വാദനത്തിൽ താല്പര്യം വർദ്ധിക്കുക തുടങ്ങിയ ലക്ഷ്യങ്ങൾ മുന്നിൽക്കണ്ടുകൊണ്ടുള്ള ബോധനസമ്പ്രദായങ്ങൾ സ്വീകരിക്കാം.

വിശദപഠനം:

1. ആരാന്റെ കുട്ടി - കെ. സുകുമാരൻ
2. പെൺബുദ്ധി - കെ. സരസ്വതിയമ്മ
3. ഉതുപ്പാന്റെ കിണർ - കാരൂർ

4. കർക്കിടകം – എം. ടി. വാസുദേവൻ നായർ
5. കടൽത്തീരത്ത് – ഒ. വി. വിജയൻ
6. ഹിഗ്വിറ്റ – എൻ. എസ്. മാധവൻ
7. കൃഷ്ണഗാഥ – കെ.ആർ. മീര
8. തല്പം – സുഭാഷ് ചന്ദ്രൻ

മൊഡ്യൂൾ : മൂന്ന് (27 മണിക്കൂർ)

ഉപന്യാസം, പഠനം, അനുഭവം

സാഹിത്യവും സാഹിത്യേതരവുമായ വിഷയങ്ങളെ സംബന്ധിക്കുന്ന അഞ്ചു ലേഖനങ്ങളാണ് ഉൾപ്പെടുത്തിയിട്ടുള്ളത്. മലയാള ഗദ്യസാഹിത്യത്തിന്റെ വികാസത്തിൽ ഉപന്യാസങ്ങൾക്കുള്ള പങ്ക് പഠിതാക്കൾക്കു ബോധ്യപ്പെടണം.

വിശദപഠനം:

1. മലയാള കാല്പനികത – ഡോ. പി. വി. വേലായുധൻപിള്ള
2. മലയാളികളുടെ മലയാളം – ഇ. എം. എസ്. നമ്പൂതിരിപ്പാട്
3. മനസ്സും മാധ്യമങ്ങളും – എം. എൻ. വിജയൻ
4. ഫലിതത്തിൽ നിന്ന് മൗനത്തിലേക്ക് – കെ. പി. അപ്പൻ
5. ജീവിതമെന്ന അത്ഭുതം (ആമുഖം) – ഡോ. വി.പി. ഗംഗാധരന്റെ അനുഭവങ്ങൾ

സഹായകഗ്രന്ഥങ്ങൾ

1. കൈരളിയുടെ കഥ – പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള
2. ആധുനിക മലയാളസാഹിത്യചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ – ഡോ. കെ. എം. ജോർജ് (ജന: എഡിറ്റർ).
3. മലയാളനോവൽ സാഹിത്യചരിത്രം – ഡോ. കെ. എം. തരകൻ.
4. മലയാള ചെറുകഥാസാഹിത്യചരിത്രം – ഡോ. എം. എം. ബഷീർ.
5. ചെറുകഥ ഇന്നലെ ഇന്ന് – എം. അച്യുതൻ.
6. ചെറുകഥയുടെ ഛന്ദസ്സ് – വി. രാജകൃഷ്ണൻ.
7. കവിതയും മനഃശാസ്ത്രവും – എം. എൻ. വിജയൻ.
8. രോഗവും സാഹിത്യഭാവനയും – കെ. പി. അപ്പൻ.
9. പത്മരാജൻ : ദുരന്തകാമനകളിലെ ഗന്ധർവൻ – ഡോ. സജിത് ഏവൂരേത്ത്.
10. ശീർഷാസനം – എം. എൻ. വിജയൻ.
11. പുതുകഥ – (എഡിറ്റർ) ടോജി വർഗ്ഗീസ്.

സെമസ്റ്റർ	**:**	**II**
കോഴ്സ് കോഡ്	**:**	**ML 1241**
കോർ കോഴ്സ്	**:**	**II**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 6 മണിക്കൂർ (18 ആഴ്ചയിൽ 108 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**4**

നാടകം : ചരിത്രം പാഠം പ്രയോഗം

പഠനോദ്ദേശ്യം :

നാടകം എന്ന കലാരൂപത്തെ സമഗ്രമായി പരിചയപ്പെടുത്തുകയാണ് ഈ കോഴ്സിന്റെ ഉദ്ദേശ്യം. നാടകമെന്ന കലയുടെ ഉത്ഭവ - വികാസ - പരിണാമചരിത്രം, നാടകത്തിന്റെ സാഹിത്യം, അതിന് ഇതര സാഹിത്യരൂപങ്ങളിൽനിന്നുള്ള വ്യത്യാസം, നാടകാവതരണത്തിന്റെ സവിശേഷതകൾ, അരങ്ങിന്റെ വൈവിധ്യങ്ങൾ എന്നിവ ചരിത്രപരമായി മനസ്സിലാക്കുകയും അത് മലയാളനാടകവുമായി ഇണക്കിക്കൊണ്ട് സവിശേഷപഠനം നടത്തുകയുമാണ് ഇതിലൂടെ ലക്ഷ്യമാക്കുന്നത്. മനുഷ്യന്റെ പ്രാക്തന മായ കൂട്ടായ്മയിൽനിന്നു രൂപപ്പെടുകയും സാമൂഹികജീവിതത്തിൽ ഓരോ കൂട്ടായ്മ യ്ക്കുമുണ്ടായ പരിണാമങ്ങൾക്കനുസരണമായി നിരന്തരം നവീകരിക്കപ്പെടുകയും ചെയ്തുകൊണ്ട് ആധുനികകാലത്തും ശക്തമായി നിലകൊള്ളുന്ന കലയെന്ന നിലയിൽ നാടകത്തെയും അതിന്റെ സാധ്യതകളെയും വിദ്യാർത്ഥികൾ തിരിച്ചറി യേണ്ടതുണ്ട്. നാടകകലയുടെ വിവിധ ഘട്ടങ്ങളിൽ പ്രഭാവം ചെലുത്തിയ അരങ്ങു (തിയേറ്റർ) സങ്കല്പങ്ങൾ, നാടകത്തിന്റെ ആശയസങ്കല്പത്തിൽ വന്ന വ്യതി യാനങ്ങൾ എന്നിവ ചരിത്രപരമായി വിശദീകരിക്കണം. നാടകകലയെ സാമാന്യമായി പരിചയപ്പെടുത്തിക്കൊണ്ട് മലയാളനാടകത്തിന്റെ ചരിത്രത്തെയും പ്രവണതകളെയും കേരളത്തിന്റെ നാട്യപാരമ്പര്യത്തെയും കുറിച്ചു വിശദമാക്കണം. വിശദപഠനത്തിനു നിർദ്ദേശിക്കുന്ന കൃതികൾ കൂടാതെ ആ കാലയളവിലെ പ്രധാനനാടകങ്ങളെയും നാടകകൃത്തുക്കളെയും പരിചയപ്പെടുത്താൻ ശ്രമിക്കണം. അസൈൻമെന്റിന് പാഠേതരഭാഗങ്ങൾ സ്വീകരിക്കാൻ പ്രേരിപ്പിക്കുക.

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

നാടകകലാചരിത്രം, സവിശേഷതകൾ

എന്താണ് നാടകം - നാടകകലയുടെ രൂപവത്കരണ സാഹചര്യങ്ങൾ - പാശ്ചാ ത്യവും പൗരസ്ത്യവുമായ നാട്യോല്പത്തി സങ്കല്പങ്ങൾ - നാടകത്തിന്റെ പ്രയോ ജനവാദങ്ങൾ - രസവാദം, കഥാർസിസ് - വ്യത്യസ്തമായ നാട്യരീതികൾ - ക്ലാസ്സിക്, അനുഷ്ഠാന, വിനോദന, ട്രാജഡി, കോമഡി നാട്യരൂപങ്ങൾ, ദശരൂപകങ്ങൾ - നാട്യകലയിലെ വിവിധ ഘടകങ്ങൾ - അരങ്ങ്(തിയേറ്റർ) - വിവിധതരം അരങ്ങുകൾ, പ്രൊസീനിയം, അരീന, എപിക്, പുവർ, അവാങ്ഗാർദ്, പരിസരനാടകവേദി, അസംബന്ധ നാടകവേദി തുടങ്ങിയവ.

കേരളത്തിന്റെ വിപുലമായ നാട്യപാരമ്പര്യത്തിന്റെ സാമാന്യ വിവരണം - കേരളത്തിലെ പ്രധാന നാട്യകലകളുടെ പരിചയപ്പെടുത്തൽ - കൂടിയാട്ടം, കഥകളി, തെയ്യം, പടയണി, കാക്കാരിശ്ശിനാടകം, പൊറാട്ടു നാടകം, ചവിട്ടുനാടകം എന്നിവയിലെ നാട്യാംശവും സവിശേഷതയും - അവയിലെ അഭിനയത്തിന്റെയും സാഹിതീയാ വിഷ്കാരത്തിന്റെയും വ്യത്യസ്തതകൾ.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

മലയാളനാടകത്തിന്റെ ആദ്യകാലപ്രവണതകൾ

19-ാം നൂറ്റാണ്ടിന്റെ ഉത്തരാർദ്ധം മുതൽ കേരളത്തിൽ ഒരു പൊതുമണ്ഡലം രൂപപ്പെട്ടുവരുന്ന സാഹചര്യം - വിവിധതരം നവീന നാട്യരീതികളുമായുള്ള പരിചയം - തമിഴ് സംഗീത നാടകക്കാരുടെ വരവും പൊതു ആസ്വാദനമണ്ഡലത്തിന്റെ രൂപപ്പെടലും - പരിഭാഷാനാടകങ്ങളുടെ ആധിക്യം - ഇംഗ്ലീഷ്, സംസ്കൃതനാടകങ്ങളുടെ പരിഭാഷയും അവതരണവും - തമിഴ്സംഗീതനാടകങ്ങളുടെയും പരിഭാഷാനാടകങ്ങളുടെയും അനുകരണദശ - അനുകരണങ്ങളോടുള്ള എതിർപ്പുകൾ - മലയാളസംഗീതനാടകങ്ങൾ, പ്രഹസനങ്ങൾ, ചരിത്രനാടകങ്ങൾ - നാടകം ഗദ്യത്തിലേക്ക് - സമകാല സാമൂഹിക ജീവിതവുമായി നാടകത്തിനുണ്ടാകുന്ന ബന്ധം - അന്ധവിശ്വാസങ്ങൾ, അനാചാരങ്ങൾ, മനുഷ്യരുടെ വ്യക്തിപരവും സാമൂഹികവുമായ അസമത്വങ്ങൾ എന്നിവയ്ക്കെതിരെ നാടകത്തെ ആയുധമാക്കൽ - നാടകകലയുടെ വിവിധതലങ്ങളിലുള്ള ആധുനികീകരണം.

വിശദപഠനം

1. സ്വപ്നവാസവദത്തം (അഞ്ചാമങ്കം) - ഭാസൻ (വിവ: ഏ.ആർ. രാജരാജവർമ്മ)
2. മറിയാമ്മ (അരങ്ങ് 13, 14) - കൊച്ചീപ്പൻ തരകൻ
3. ഋതുമതി - എം.പി. ഭട്ടതിരിപ്പാട്

മൊഡ്യൂൾ : മൂന്ന് (27 മണിക്കൂർ)

സമൂഹബന്ധവും നാടകത്തിന്റെ നവോത്ഥാനവും

മലയാളനാടകത്തിന്റെ സാമൂഹികപ്രതിബദ്ധത - മനുഷ്യജീവിതത്തിന്റെ വിഭിന്ന തലങ്ങളോടുള്ള നാടകത്തിന്റെ അടുപ്പം - സാമുദായികവും രാഷ്ട്രീയവുമായ അധികാരസ്ഥാപനങ്ങളോടുള്ള കലാകാരന്റെ പ്രതികരണങ്ങൾ നാടകങ്ങളിലൂടെ - യോഗക്ഷേമനാടകങ്ങളുടെ സ്വഭാവം, പ്രമേയങ്ങൾ, സ്ത്രീജീവിതവുമായുള്ള ഇടപെടലുകൾ - രാഷ്ട്രീയമായ പുതുബോധങ്ങൾ നാടകത്തിൽ - പാട്ടബാക്കി, കൂട്ടുകൃഷി, നമ്മളൊന്ന്, നിങ്ങളെന്നെ കമ്യൂണിസ്റ്റാക്കി എന്നിവയുടെ വിശകലനം - വൈയക്തികവും കുടുംബപരവുമായ വിഷയങ്ങളും പുതിയ നാടകരീതികളും - ഇബ്സനിസം, പ്രശ്നനാടകം, സുഘടിതത്വം, എപിക്, എക്സ്പ്രഷനിസ്റ്റ് പ്രവണതകൾ - നാടകത്തിന്റെ സാഹിതീയാംശത്തിലും അവതരണത്തിലുമുണ്ടായ മാറ്റങ്ങൾ - നാടകത്തിന്റെ രൂപശില്പം, ആന്തരശില്പം എന്നിവയെപ്പറ്റിയുള്ള നവീനമായ കാഴ്ചപ്പാടുകൾ.

വിശദപഠനം

1. കന്യക - എൻ. കൃഷ്ണപിള്ള
2. സമത്വവാദി (ഒന്നാമങ്കം) - പുളിമാന പരമേശ്വരൻപിള്ള
3. ജനശത്രു - ഇബ്സൻ (വിവ: ഡോ. കെ. രാമചന്ദ്രൻ നായർ)
4. സാകേതം - സി. എൻ. ശ്രീകണ്ഠൻ നായർ.

മൊഡ്യൂൾ : നാല് (27 മണിക്കൂർ)

മലയാളനാടകത്തിലെ വീണ്ടെടുപ്പുകളും ബഹുസ്വരതയും

മലയാളനാടകത്തിന്റെ ആധുനികീകരണവും വൈവിധ്യപൂർണ്ണമായ വളർച്ചയും - യൂറോപ്യൻ നാടകാശയങ്ങളുടെ സ്വാധീനം - നാടകപ്രമേയം, അരങ്ങ് എന്നിവയിൽ അതുളവാക്കിയ മാറ്റം - വിവിധതരം നാടകശൈലികൾ - പ്രൊഫഷണൽ, അമച്വർ, റേഡിയോനാടകങ്ങൾ, ഏകാങ്കനാടകങ്ങൾ, തെരുവുനാടകങ്ങൾ, പരീക്ഷണനാടകങ്ങൾ, ജനപ്രിയനാടകങ്ങൾ, കുട്ടികളുടെ നാടകവേദി എന്നിവ - ഇവയിലെ അവതരണപരമായ സവിശേഷതകൾ, വ്യത്യസ്തതകൾ - പാശ്ചാത്യനാടകസങ്കല്പങ്ങളിൽനിന്നു വിടുതൽനേടി സ്വന്തം ദേശസംസ്കൃതിയിൽ വേരോട്ടമുള്ള നാടകം രൂപപ്പെടണമെന്ന തിരിച്ചറിവ് - തനതുനാടകങ്ങളുടെ ആശയലോകവും മലയാളനാടകരംഗത്തുണ്ടാക്കിയ പുതുചലനങ്ങളും - നാടകകലയിലെ സ്ത്രീമുന്നേറ്റങ്ങൾ - സ്ത്രീനാടകവേദി - അരങ്ങ് വിമോചനത്തിന്റെയും പ്രത്യാശയുടെയും ഇടമെന്ന ആശയം - അരങ്ങിലെ ശരീരഭാഷയിൽവന്ന മാറ്റങ്ങൾ - അഭിനയത്തിലും അരങ്ങുസങ്കല്പത്തിലും അവതരണത്തിലും ഉണ്ടാകുന്ന നിരന്തരപരീക്ഷണങ്ങൾ - അത് നാടകസാഹിത്യത്തിലുണ്ടാക്കുന്ന പരിവർത്തനം - സമകാല മലയാളനാടകത്തിന്റെ പൊതുസ്ഥിതി.

വിശദപഠനം

1. 1128 ൽ ക്രൈം 27 - സി. ജെ. തോമസ്
2. കറുത്ത ദൈവത്തെത്തേടി - ജി. ശങ്കരപ്പിള്ള.
3. ലേബർ റൂം - കെ. വി. ശ്രീജ
4. കേളു - ഇ. പി. രാജഗോപാലൻ, എൻ. ശശിധരൻ

സഹായകഗ്രന്ഥങ്ങൾ

1. മലയാളനാടകസാഹിത്യചരിത്രം - പ്രൊഫ. ജി. ശങ്കരപ്പിള്ള
2. മലയാളനാടകസാഹിത്യചരിത്രം - ഡോ. വയലാ വാസുദേവൻപിള്ള
3. നാടകരൂപചർച്ച - കാട്ടുമാടം നാരായണൻ
4. നാടകപ്രവേശിക - എ. ഡി. ഹരിശർമ്മ, ആർ. സി. ശർമ്മ.
5. ഉയരുന്ന യവനിക - സി. ജെ. തോമസ്, മാളുബൻ പബ്ളിക്കേഷൻസ്.
6. നാടകദർപ്പണം - എൻ. എൻ. പിള്ള.
7. രംഗഭാഷ - (എഡി.) ഡോ. വയലാ വാസുദേവൻപിള്ള
8. സി. ജെ. മുതൽ സി. എൻ. വരെ - വിജയരാഘവൻ.
9. എപ്പിക് തിയേറ്റർ കേരളത്തനിമയിൽ - അഴകേശൻ
10. ഇബ്സന്റെ നാടകസങ്കല്പം - പ്രൊഫ. ജി. ശങ്കരപ്പിള്ള
11. മലയാളസംഗീതനാടകചരിത്രം - കെ. ശ്രീകുമാർ.
12. തോപ്പിൽ ഭാസിയുടെ നാടകങ്ങൾ ഒരു പഠനം - എ. ഷീലാകുമാരി.
13. ചവിട്ടുനാടകം - സെബീനാറാഫി.
14. പാവനാടകം: ചരിത്രവും പ്രയോഗവും - വി. അജിത്കുമാർ.

15. കേരളത്തിലെ നാടോടിനാടകങ്ങൾ – ഡോ. എസ്. കെ. നായർ.
16. ദുരന്താവബോധത്തിന്റെ സാക്ഷാത്കാരം – ഡോ. എൻ. രാജൻ.
18. ക്രൈസ്തവമിത്തും സി. ജെ. നാടകങ്ങളും – ഡോ. ബിയാട്രിസ് അലക്സ്.
19. എൻ. കൃഷ്ണപിള്ളയുടെ നാടകചിന്തകൾ – പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള.
20. ആധുനികനാടകവേദി – എം. എം. വർക്കി, കെ. ആർ. വാര്യർ.
21. ബ്രെഹ്റ്റിന്റെ കല – സച്ചിദാനന്ദൻ.
22. നാടകം ഒരു പഠനം – സി. ജെ. സ്മാരക പ്രസംഗസമിതി.
23. എൻ. കൃഷ്ണപിള്ളയും ഭാരതീയ നാടകവേദിയും –
(എഡി.) ഡോ. പി. വി.വേലായുധൻ പിള്ള.
24. സി.എൻ. ശ്രീകണ്ഠൻനായർ : മലയാളത്തിന്റെ ഇബ്സൻ – ഡോ. കെ.ജോയ് പോൾ.
25. തനതുകവിത തനതുനാടകം – പ്രൊഫ. പി. നാരായണക്കുറുപ്പ്.
26. അരങ്ങും പൊരുളും – ആർ. നരേന്ദ്രപ്രസാദ്.
27. നാടകം പാഠവും പ്രയോഗവും – എൻ. ആർ. ഗ്രാമപ്രകാശ്.
28. മലയാളനാടക സ്ത്രീചരിത്രം – സജിത മഠത്തിൽ.
29. സംസ്കൃതിയുടെ ലാവണ്യരൂപകങ്ങൾ – ഡോ. രാജാവാര്യർ.
30. രംഗാവതരണം – ഒരു സംഘം ലേഖകർ (കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്).
31. കാക്കാരശ്ശിനാടകം – ജി. ഭാർഗ്ഗവൻപിള്ള.
32. പടേനി – കടമ്മനിട്ട വാസുദേവൻപിള്ള.
33. കൂടിയാട്ടം അഭിനയത്തിന്റെ വളർച്ചയും തുടർച്ചയും – കെ. ജി. പൗലോസ്.
34. മലയാളനാടകസർവ്വസ്വം – മടവൂർ ഭാസി.
35. കേരളത്തിലെ നാടൻകലകൾ – എ. കെ. നമ്പ്യാർ.
36. അരങ്ങിലെ ആധുനികീകരണം – ഡോ. സീമ ജെറോം.
37. എൻ. കൃഷ്ണപിള്ളയും പ്രശ്നനാടകവും – ആർ. ബി. രാജലക്ഷ്മി.
38. പരീക്ഷണപ്രവണതകൾ മലയാളനാടകത്തിൽ – എൽ. തോമസ്കുട്ടി.
39. ജി. ശങ്കരപ്പിള്ള: നാടകം ജീവിതം – സാബു കോട്ടുക്കൽ.

സെമസ്റ്റർ	:	**II**
കോഴ്സ് കോഡ്	:	**ML 1231**
കോംപ്ലിമെന്ററി കോഴ്സ്	:	**III**
സമയക്രമം	:	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**3**

കേരളസംസ്കാരം ഭാഗം 2

പഠനോദ്ദേശ്യം

കേരളത്തിന്റെ സാംസ്കാരിക പശ്ചാത്തലത്തെക്കുറിച്ച് അറിവു നല്കുകയാണ് ലക്ഷ്യം. ഭൂതകാല സംസ്കാരത്തെപ്പറ്റിയും, ചുറ്റുപാടുകളെപ്പറ്റിയും വ്യക്തമായ ധാരണയുണ്ടാക്കുക, സാംസ്കാരികത്തനിമ തിരിച്ചറിയുക, പൗരബോധം വളർത്തുക, സാമൂഹികമാറ്റത്തിനുതകുക, വിമർശനാത്മകചിന്ത വളർത്തുക തുടങ്ങിയവ ആത്യന്തിക ലക്ഷ്യമാവണം.

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

പോർട്ടുഗീസ്, ഡച്ച് പാശ്ചാത്യ അധിനിവേശശക്തികളുടെ കടന്നുവരവ് - സാമൂഹിക, സാമ്പത്തിക, സാംസ്കാരിക രംഗങ്ങളിൽ അവ ഉളവാക്കിയ മാറ്റങ്ങൾ, അധഃസ്ഥിതരുടെ ഉന്നമനം, അധിനിവേശ പ്രതിരോധം - എഴുത്തച്ഛന്റെ സംഭാവന. ബ്രിട്ടീഷ് അധിനിവേശകാലം - അതിനെതിരെ ഉണ്ടായ സമരങ്ങൾ - ആറ്റിങ്ങൽ കലാപം - പഴശ്ശിരാജ, വേലുത്തമ്പിദളവ. പാശ്ചാത്യവിദ്യാഭ്യാസത്തിന്റെ ആരംഭം - വിദേശ മിഷണറിമാരുടെ പ്രവർത്തനങ്ങൾ - സാംസ്കാരികരംഗത്തെ പരിവർത്തനങ്ങൾ - മാർത്താണ്ഡവർമ്മയും തിരുവിതാംകൂറും - ഭരണപരിഷ്ക്കാരങ്ങൾ.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

സാമൂഹിക പരിഷ്കരണ പ്രസ്ഥാനങ്ങൾ: ചാന്നാർ ലഹള, വൈക്കം, പാലിയം, ഗുരുവായൂർ സത്യാഗ്രഹങ്ങൾ, അയിത്തോച്ചാടനം - മലയാളി - ഈഴവ മെമ്മോറിയലുകൾ, ക്ഷേത്രപ്രവേശനവിളംബരം - സ്വയം പുരോഗതി പ്രാപിക്കാൻ വേണ്ടിയുണ്ടായ സാമുദായിക സംഘടനകൾ (എസ്.എൻ.ഡി.പി, എൻ.എസ്.എസ്, യോഗക്ഷേമസഭ, സാധുജന പരിപാലനയോഗം, പി.ആർ.ഡി.എസ്), ചട്ടമ്പിസ്വാമികൾ, ശ്രീനാരായണഗുരു, സഹോദരൻ അയ്യപ്പൻ, അയ്യങ്കാളി, വക്കം മൗലവി, ടി. കെ. മാധവൻ, മന്നത്തു പത്മനാഭൻ, കെ.കേളപ്പൻ, വി.ടി. ഭട്ടതിരിപ്പാട്, പൊയ്കയിൽ കുമാരഗുരുദേവൻ, ചെറുകോൽ ശുഭാനന്ദഗുരുദേവൻ, ചാവറയച്ചൻ.

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

സ്വാതന്ത്ര്യാനന്തര കേരളം : കേരളപ്പിറവി, ഭൂനിയമം, പ്രവാസികൾ, വിദേശധനം ഉളവാക്കിയ സാമൂഹികവ്യതിക്രമം, പരിസ്ഥിതി ധ്വംസനം; കുടിയേറ്റവും കൈയേറ്റവും - വിദ്യാഭ്യാസരംഗം, സാംസ്കാരിക സ്ഥാപനങ്ങൾ, സംഘടനകൾ, ആയുർവേദം - പ്രകൃതിചികിത്സ, നാട്ടുവൈദ്യം - പ്രസ്ഥാനങ്ങൾ - ഗ്രന്ഥശാലാപ്രസ്ഥാനം - കേരളഗ്രന്ഥശാലാസംഘം - പി. എൻ. പണിക്കർ, നെയ്യാറ്റിൻകര എ.പി. നായർ, ജ്ഞാനപ്രദായിനി ഗ്രന്ഥശാല, പുസ്തകപ്രസാധനം, അച്ചടി, ദൃശ്യ-ശ്രവ്യ മാധ്യമങ്ങൾ (ഇന്റർനെറ്റ്, ബ്ലോഗ്, കമ്പ്യൂട്ടർ, പത്രം, ടെലിവിഷൻ, സിനിമ, റേഡിയോ).

രീതിശാസ്ത്രം

വിദ്യാർത്ഥികേന്ദ്രിതമായിരിക്കണം പഠനരീതി. വിദ്യാർത്ഥികളിൽ വിമർശനാത്മക ചിന്ത വളർത്തുന്ന രീതിയിൽ അസൈൻമെന്റുകളും, സെമിനാറുകളും സംഘടിപ്പിക്കണം. ചരിത്രപ്രാധാന്യവും സാംസ്കാരികപ്രാധാന്യവുമുള്ള സ്ഥലങ്ങൾ സന്ദർശിച്ച് റിപ്പോർട്ടുകൾ തയ്യാറാക്കാൻ വിദ്യാർത്ഥികൾക്ക് അവസരം ഒരുക്കിക്കൊടുക്കണം. പ്രാദേശികസംസ്കാരത്തിന് ഊന്നൽ നല്കുന്ന തരത്തിലുള്ള സെമിനാറുകളും പ്രോജക്ടുകളും തയ്യാറാക്കാൻ വിദ്യാർത്ഥികളോട് ആവശ്യപ്പെടാം. ഒന്നോ, അഞ്ചു പേരിൽ അധികരിക്കാത്തതോ ആയ വിദ്യാർത്ഥിഗ്രൂപ്പുകൾക്ക് അസൈൻമെന്റ് അവതരിപ്പിക്കാൻ അവസരം നല്കാം. ചരിത്രസ്മാരകങ്ങൾ, സാംസ്കാരികകേന്ദ്രങ്ങൾ എന്നിവ സന്ദർശിക്കാൻ സ്റ്റഡിടൂർ പ്രോഗ്രാം സംഘടിപ്പിക്കണം. അതിനുള്ള സാമ്പത്തിക സഹായം പ്ലാൻ ഫണ്ടിൽ നിന്നും അനുവദിക്കേണ്ടതാണ്.

സഹായകഗ്രന്ഥങ്ങൾ

1. കേരളസംസ്കാരപഠനങ്ങൾ - (എഡി.) പ്രൊഫ. പന്മന രാമചന്ദ്രൻ നായർ.
2. കേരളചരിത്രം - എ. ശ്രീധരമേനോൻ.
3. കേരളചരിത്രം - എം. ആർ. രാഘവവാര്യർ, ഡോ. രാജൻഗുരുക്കൾ.
4. കേരളസംസ്കാരം - എ. ശ്രീധരമേനോൻ.
5. കേരളത്തിന്റെ സാംസ്കാരികചരിത്രം - പി. കെ. ഗോപാലകൃഷ്ണൻ.
6. കേരളത്തിലെ നവോത്ഥാനസമരങ്ങൾ - ഡോ. ആർ. രാധാകൃഷ്ണൻ (മാളുബൻ പബ്ലിക്കേഷൻസ്).
7. സാമൂഹിക നവോത്ഥാനവും സാഹിത്യവും - ഡോ. എൻ. സാം.
8. കേരളചരിത്രശില്പികൾ - പ്രൊഫ. എ. ശ്രീധരമേനോൻ.
9. നെയ്യാറ്റിൻകര എ. പി. നായരും ജ്ഞാനപ്രദായിനിയും - ഡോ. എ.എം. ഉണ്ണിക്കൃഷ്ണൻ.
10. മാധ്യമപഠനങ്ങൾ - (എഡി.) പ്രൊഫ. പന്മന രാമചന്ദ്രൻനായർ.
11. കലാലോകം - കെ. പി. നാരായണപ്പിഷാരടി.
12. കേരളപത്രപ്രവർത്തനചരിത്രം - പുതുപ്പള്ളി രാഘവൻ.
13. കേരളവിജ്ഞാനകോശം - ദേശബന്ധുപബ്ലിക്കേഷൻസ്.
14. പഴശ്ശിസമരങ്ങൾ - ഡോ. കെ. കെ. എൻ. കുറുപ്പ്.
15. കേരളചരിത്രധാരകൾ - ഡോ. നടുവട്ടം ഗോപാലകൃഷ്ണൻ.
16. നവോത്ഥാനസംസ്കാരം കേരളത്തിൽ - (എഡി.) ഡോ. പി. വി. വേലായുധൻപിള്ള.
17. കേരളസംസ്കാരം - പ്രൊഫ. എസ്. അച്യുതവാര്യർ.
18. തിരുവിതാംകൂർ ചരിത്രം - പി. ശങ്കുണ്ണിമേനോൻ, ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
19. കൈരളിയുടെ കഥ - പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള.
20. നാരായണഗുരുസ്വാമി - എം. കെ. സാനു.
21. ചട്ടമ്പിസ്വാമികൾ - പ്രൊഫ. സി. ശശിധരക്കുറുപ്പ്.
22. അയ്യങ്കാളി - ടി. എച്ച്. പി. ചെന്താരശ്ശേരി.
23. ഗ്രന്ഥശാലാപ്രസ്ഥാനം - ഡോ. സി. ഉണ്ണിക്കൃഷ്ണൻ.
24. ആദ്ധ്യാത്മികനവോത്ഥാനത്തിന്റെ ശില്പികൾ - എസ്. ഗുപ്തൻ നായർ.
25. സംസ്കാരമുദ്രകൾ - ഡോ. നടുവട്ടം ഗോപാലകൃഷ്ണൻ.
26. കേരള നവോത്ഥാനവും ചാവറയച്ചനും - ഡോ. കുര്യാസ് കുമ്പളക്കുഴി.

സെമസ്റ്റർ : മൂന്ന്

സെമസ്റ്റർ	:	III
കോഴ്സ് കോഡ്	:	ML 1311.1
ലാംഗ്വേജ് കോഴ്സ്	:	VII (അഡീഷണൽ ലാംഗ്വേജ് : III)
സമയക്രമം	:	ആഴ്ചയിൽ 5 മണിക്കൂർ (18 ആഴ്ചയിൽ 90 മണിക്കൂർ)
ക്രെഡിറ്റ്	:	4

ദൃശ്യകലാസാഹിത്യം

(പാഠപുസ്തകം: ദൃശ്യഭാരതി – കേരളസർവ്വകലാശാലാ പ്രസിദ്ധീകരണം)

പഠനോദ്ദേശ്യം

1. കേരളത്തിലെ ദൃശ്യകലാസംസ്കാരത്തിന്റെ സമ്പന്നതയും വൈവിധ്യവും തിരിച്ചറിയുക.
2. കഥകളി, തുള്ളൽ, നാടകം, സിനിമ എന്നീ ദൃശ്യകലകളെയും അവയ്ക്ക് ആധാരമായ സാഹിത്യപാഠങ്ങളെയും വിദ്യാർത്ഥികൾക്ക് പരിചയപ്പെടുത്തുക.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (36 മണിക്കൂർ)

ആട്ടക്കഥ, തുള്ളൽസാഹിത്യം

കഥകളിയുടെ ഉത്ഭവവികാസപരിണാമങ്ങൾ – ആട്ടക്കഥാസാഹിത്യം – പ്രധാന ആട്ടക്കഥാകൃത്തുക്കൾ – തുള്ളൽപ്രസ്ഥാനം – ചരിത്രം – വികാസപരിണാമങ്ങൾ – തുള്ളൽസാഹിത്യം – സാമാന്യപരിചയം.

വിശദപഠനം

1. നളചരിതം ആട്ടക്കഥ (ഒന്നാം ദിവസം) – ഉണ്ണായിവാര്യർ.
   ('അനക്കം കൂടാതേ' എന്നു തുടങ്ങുന്ന 6-ാം ശ്ലോകം മുതൽ 'അന്യഥാ വരുത്തുവാൻ കുന്നു മുതിർന്നീടുമോ'എന്ന് അവസാനിക്കുന്ന 17-ാം പദം വരെ).
2. ഘോഷയാത്ര (ഓട്ടൻതുള്ളൽ) – കുഞ്ചൻ നമ്പ്യാർ.
   ('ദൈതേതരസുഖരസികന്മാരായ്' മുതൽ 'പണ്ടേക്കാൾ പല വിക്രമപൗരുഷ മുണ്ടിപ്പോൾ മമ കൗരവവീരാ' വരെ).

മൊഡ്യൂൾ : രണ്ട് (36 മണിക്കൂർ)

നാടകസാഹിത്യം

നാടകം എന്ന ദൃശ്യകല – സാഹിത്യരൂപം – മലയാള നാടകപ്രസ്ഥാനം – സാമാന്യാവലോകനം.

വിശദപഠനത്തിന്

1. മലയാളശാകുന്തളം (നാലാം അങ്കം) – വിവ. ഏ. ആർ. രാജരാജവർമ്മ (മറ്റ് അങ്കങ്ങളുടെ സാമാന്യപഠനവും നാലാം അങ്കത്തിന്റെ വിശദപഠനവും).
2. സബർമതി ദൂരെയാണ് – ജി. ശങ്കരപ്പിള്ള.
3. രാവുണ്ണി – പി. എം. താജ്

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

തിരക്കഥാപഠനം

ചലച്ചിത്രനിർമ്മിതിയിൽ തിരക്കഥയ്ക്കുള്ള പ്രാധാന്യത്തെക്കുറിച്ച് സാമാന്യ ജ്ഞാനം നേടണം.

വിശദപഠനത്തിന്

ബൈസിക്കിൾ തീവ്സ് - വിറ്റോറിയോ ഡി സീക്ക (വിവ. കെ.എം. ലെനിൻ). *

സഹായകഗ്രന്ഥങ്ങൾ

1. കൈരളിയുടെ കഥ - പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള.
2. ആധുനിക സാഹിത്യചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - കെ. എം. ജോർജ് (എഡി.).
3. നളചരിതം ആട്ടക്കഥ - കൈരളീവ്യാഖ്യാനം - പ്രൊഫ. പന്മന രാമചന്ദ്രൻനായർ
4. ഉയരുന്ന യവനിക - സി.ജെ. തോമസ്, മാളുബൻ പബ്ലിക്കേഷൻസ്, തിരുവനന്തപുരം.
5. മലയാള നാടകസാഹിത്യചരിത്രം - ജി. ശങ്കരപ്പിള്ള.
6. മലയാളനാടകസാഹിത്യചരിത്രം - ഡോ. വയലാ വാസുദേവൻ പിള്ള.
7. സിനിമയുടെ വ്യാകരണം - ഡോ. ടി. ജിതേഷ്.
8. അരങ്ങിലെ ആധുനികീകരണം - ഡോ. സീമ ജെറോം.
9. തിരക്കഥാരചന : കലയും സിദ്ധാന്തവും - ജോസ് കെ. മാനുവൽ.
10. കഥയും തിരക്കഥയും - ആർ. വി. എം. ദിവാകരൻ.
11. സുവർണ ചകോരത്തിന്റെ കഥ - ശാന്തൻ (കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.)

സെമസ്റ്റർ	:	**III**
കോഴ്സ് കോഡ്	:	**ML 1321**
ഫൗണ്ടേഷൻ കോഴ്സ്	:	**II (ഇൻഫോർമാറ്റിക്സ്)**
സമയക്രമം	:	**ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**3**

ആധുനിക സാങ്കേതികവിദ്യയും മലയാളഭാഷാപഠനവും

സാങ്കേതിക പഥം (കേരളസർവ്വകലാശാലാ പ്രസിദ്ധീകരണം)

പഠനോദ്ദേശ്യം

1. വിവരസാങ്കേതികവിദ്യയെക്കുറിച്ച് സാമാന്യപരിചയം നേടുക.
2. മലയാളം കമ്പ്യൂട്ടിംഗിനെക്കുറിച്ച് അറിവുണ്ടാവുക.
3. ആധുനിക സാങ്കേതികവിദ്യയുടെ സാധ്യതകൾ പ്രയോജനപ്പെടുത്തി മലയാള ഭാഷയും സാഹിത്യവും പഠിക്കുക.
4. ഇന്റർനെറ്റിലെ ഭാഷാവ്യവഹാരമാതൃകകളും അവയുടെ സാധ്യതകളും മനസ്സിലാക്കുക.
5. മലയാളത്തിലെ സൈബർ സാഹിത്യത്തെക്കുറിച്ച് സാമാന്യ പരിചയം നേടുക.

പഠനത്തിന്റെ രീതിശാസ്ത്രം

ആധുനിക സാങ്കേതികവിദ്യയുടെ സഹായം കൂടാതെ നിർവഹിക്കപ്പെടുന്ന ഏത് വിജ്ഞാനശാഖയുടെ പഠനവും അപൂർണ്ണമായിരിക്കും. മലയാളഭാഷയുടെയും സാഹിത്യത്തിന്റെയും കാലോചിതമായ പഠനത്തിന് സാങ്കേതികവിദ്യയെക്കുറിച്ചുള്ള ജ്ഞാനം അനിവാര്യമാണ്. കമ്പ്യൂട്ടർ എന്ന ഉപകരണത്തെ പ്രയോജനപ്പെടുത്തി നിർവഹിക്കപ്പെടുന്ന ഭാഷാവ്യവഹാരസന്ദർഭങ്ങൾ നിരവധിയാണ്. അവയെക്കുറിച്ചുള്ള അറിവും ഭാഷാപഠനത്തെ ശക്തിപ്പെടുത്തും. മലയാളം കമ്പ്യൂട്ടിംഗിനെക്കുറിച്ച് സാമാന്യമായി വിവരിക്കുക, മലയാളത്തിലെ സൈബർസാഹിത്യത്തെ പരിചയപ്പെടുത്തുക എന്നിവയും പഠനത്തിന്റെ പരിധിയിൽ വരുന്നുണ്ട്. ഈ ലക്ഷ്യങ്ങൾ കൈവരിക്കുന്നതിന് സഹായകമായ പഠനസാഹചര്യങ്ങളാണ് ഒരുക്കേണ്ടത്.

കോഴ്സ് മൂന്ന് മൊഡ്യൂളായി വിഭജിച്ചിരിക്കുന്നു. പഠനത്തിന് സൂക്ഷ്മതയും ദിശാബോധവും നൽകുന്ന സാമഗ്രി എന്ന നിലയിലാണ് നൽകിയിട്ടുള്ള ലേഖനങ്ങളെ പരിഗണിക്കേണ്ടത്. തത്ത്വാധിഷ്ഠിതമായി മനസ്സിലാക്കിയ കാര്യങ്ങൾ പരിശീലനത്തിലൂടെ ഉറപ്പിക്കുക എന്നതാണ് പ്രായോഗിക പരിശീലനം കൊണ്ട് ലക്ഷ്യമാക്കുന്നത്.

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

(എ) ആധുനിക സാങ്കേതികവിദ്യ - സാമാന്യപരിചയം, ആധുനിക സാങ്കേതികവിദ്യയും ആശയവിനിമയവും; കമ്പ്യൂട്ടർ എന്ന ഉപകരണം - സാമാന്യപരിചയം, വികാസചരിത്രം, വിവിധതരം കമ്പ്യൂട്ടറുകൾ വിവിധ ഓപ്പറെറ്റിംഗ് സിസ്റ്റങ്ങൾ, സോഫ്റ്റുവെയറുകൾ; അച്ചടി - വികാസചരിത്രം. സ്വതന്ത്ര സോഫ്റ്റ്വെയർ.

(ബി) മലയാളം കമ്പ്യൂട്ടിംഗിന്റെ ചരിത്രം - വിവിധ മലയാളം സോഫ്റ്റ്വെയറുകൾ, കമ്പ്യൂട്ടറും അച്ചടിയും, വിവിധതരം ഫോണ്ടുകൾ, മലയാളം ടൈപ്പു ചെയ്യുന്നതിനുള്ള വിവിധ മാർഗ്ഗങ്ങൾ - യൂണിക്കോഡ് ഫോണ്ട്.

വിശദപഠനം

മലയാളഭാഷാ കമ്പ്യൂട്ടിംഗ് ചരിത്രാവലോകനം - ഡോ. മഹേഷ് മംഗലാട്ട് (സൈബർ മലയാളം: എഡി: സുനിത. ടി. വി.).

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

വിവരസാങ്കേതികവിദ്യയും വ്യവഹാര മാതൃകകളും

ഇന്റർനെറ്റ് - ചരിത്രം, സാധ്യതകൾ, വിവരവിനിമയത്തിലെ കുതിച്ചു ചാട്ടം; വെബ് സൈറ്റ് - പ്രത്യേകതകൾ, മലയാളം വെബ്സൈറ്റുകൾ വെബ് പോർട്ടലുകൾ, മലയാളഭാഷയും സാഹിത്യവുമായി ബന്ധപ്പെട്ട വെബ്സൈറ്റുകൾ - സാമാന്യവിവരം.

എ) ബ്ലോഗ് - വികാസചരിത്രം, വ്യവഹാരരൂപം എന്ന നിലയിലുള്ള സവിശേഷതകൾ, മലയാളം ബ്ലോഗുകൾ, ബദൽ മാധ്യമം എന്ന നിലയിൽ ബ്ലോഗിന്റെ സാധ്യതകൾ; ബ്ലോഗും ഇതരമാധ്യമങ്ങളും; സിറ്റിസെൻ ജേർണലിസം.

ബി) സോഷ്യൽ നെറ്റുവർക്കുകൾ - വികാസ ചരിത്രം; പ്രധാന സോഷ്യൽ നെറ്റുവർക്കിംഗ് സൈറ്റുകൾ - ഫെയ്സ് ബുക്ക്, ടിറ്റർ, ഓർക്കുട്ട്; പൊതു ഇടം എന്ന നിലയിൽ സോഷ്യൽ നെറ്റുവർക്കുകൾക്കുള്ള സ്ഥാനം.

സി) ഇ-സാഹിത്യം, ഇ-ബുക്ക്, ഇ-റീഡിംഗ്, ഇ-മെയിൽ; വിക്കിപീഡിയ - ആരംഭവും വികാസവും, മലയാളം വിക്കിപീഡിയ.

വിശദപഠനം

സാമൂഹിക സമ്പർക്ക സാധ്യതകൾ - വി. കെ. ആദർശ് (നവമാധ്യമ ങ്ങൾ - എഡി: ഡോ. ടി. കെ. സന്തോഷ്കുമാർ).

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

സൈബർ സാഹിത്യം

എന്താണ് സൈബർ സാഹിത്യം - സൈബർ സ്പേസ്, വിർച്വൽ റിയാലിറ്റി, സൈബർ സാഹിത്യം മലയാളത്തിൽ; സൈബറിൽ പ്രത്യക്ഷമാകുന്ന മലയാള സാഹിത്യം, സൈബർ പ്രമേയമാകുന്ന മലയാള സാഹിത്യകൃതികൾ - സാമാന്യ പരിചയം.

വിശദപഠനം

ഭാവനാതീതം : കഥയും പ്രതീതിയാഥാർത്ഥ്യവും - പി. കെ. രാജശേഖരൻ (ഏകാന്ത നഗരങ്ങൾ)

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

പ്രായോഗിക പരിശീലനം

കമ്പ്യൂട്ടറിൽ പ്രായോഗിക പരിജ്ഞാനം, പവർ പോയന്റിൽ സ്ലൈഡുകൾ നിർമ്മിക്കലും പ്രദർശിപ്പിക്കലും. മലയാളം ടൈപ്പിംഗ്, ബ്ലോഗ് നിർമ്മാണം, വെബ് പേജ് നിർമ്മാണം, ഇ-മെയിൽ വിലാസം നിർമ്മിക്കൽ, സോഷ്യൽ നെറ്റുവർക്കുകളിൽ അംഗത്വം നേടലും പരിപാലനവും.

വിശദപഠനം

ബ്ലോഗ് ആരംഭം : ബാബുരാജ്. പി. എം. (എങ്ങനെ മലയാളത്തിൽ ബ്ലോഗാം).

സെമിനാർ, അസൈൻമെന്റ്

പാഠ്യപദ്ധതിയുമായി ബന്ധപ്പെട്ട വിഷയങ്ങൾ ക്രമീകരിച്ച് സെമിനാർ, അസൈൻമെന്റുകൾ എന്നിവ നൽകാവുന്നതാണ്.

സഹായകഗ്രന്ഥങ്ങൾ

1. ഇൻഫർമേഷൻ ടെക്നോളജി - ഡോ. അച്യുത് ശങ്കർ എസ്. നായർ, കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
2. കമ്പ്യൂട്ടർ പരിചയവും പ്രയോഗവും - ഡോ. അച്യുത് ശങ്കർ എസ്. നായർ, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
3. ഭൂഗോളവൽക്കരണം - ഡോ. അച്യുത് ശങ്കർ എസ്. നായർ, പ്രിയദർശിനി പബ്ലിക്കേഷൻസ്.
4. വരൂ നമുക്ക് കമ്പ്യൂട്ടറും ഇന്റർനെറ്റും പരിചയപ്പെടാം - വി. കെ. ആദർശ്, ഡി. സി. ബുക്സ്.
5. വിവരസാങ്കേതികവിദ്യ നിത്യജീവിതത്തിൽ - വി. കെ. ആദർശ്, കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.

6. ഇനിവായന ഇ-വായന - വി. കെ. ആദർശ്, ഡി. സി. ബുക്സ്.
7. ആലോകം മുതൽ ഇ ലോകം വരെ - ഡോ. ജെ. വി. വിളനിലം, കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
8. ഇന്റർനെറ്റും ഇൻഫർമേഷൻ വിപ്ലവവും - കെ. രവീന്ദ്രൻ & ഡോ. ബി. ഇക്ബാൽ, ഡി. സി. ബുക്സ്.
9. ഇന്റർനെറ്റ് ഒരു പഠനം - പി. സേതുമാധവൻ, ലിപി പബ്ലിക്കേഷൻസ്.
10. എങ്ങനെ മലയാളത്തിൽ ബ്ലോഗാം - പി. എം. ബാബുരാജ്, ഡി. സി. ബുക്സ്.
11. വെബ്സൈറ്റ് - രചന, രൂപകല്പന, പരിപാലനം - ബി. മനോജ്, കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
12. സൈബർ മലയാളം (എഡി.) - സുനീത ടി. വി., കറന്റ് ബുക്സ്, തൃശൂർ.
13. ഇ-മലയാളം - സുനീത ടി. വി., കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
14. ഭാവനാതീതം - മലയാളത്തിലെ സൈബർ കഥകൾ (എഡി.) - പി. കെ. രാജ ശേഖരൻ, ഡി. സി. ബുക്സ്.
15. സൈബർ - ബഹുസ്വര വായനകൾ : എഡി: സജി കരിങ്ങോല.
16. മലയാളവും ഇന്റർനെറ്റും - സുനീത ടി. വി., ലിപി പീക്കേഷൻസ്, കോഴിക്കോട്.
17. വിനിമയം, വ്യവഹാരം, സാമൂഹികത - സാബു കോട്ടുക്കൽ.
18. നവമാധ്യമസാഹിത്യം : വികാസത്തിന്റെ ഘട്ടങ്ങൾ - ഡോ. മനോജ് കുറൂർ (നവമാധ്യമങ്ങൾ - ജനകീയതയും വിശ്വാസ്യതയും - എഡി: ഡോ. ടി. കെ. സന്തോഷ് കുമാർ).

സെമസ്റ്റർ	:	**III**
കോഴ്സ് കോഡ്	:	**ML 1341**
കോർ കോഴ്സ്	:	**III**
സമയക്രമം	:	**ആഴ്ചയിൽ 5 മണിക്കൂർ (18 ആഴ്ചയിൽ 90 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**4**

സാഹിത്യസിദ്ധാന്തങ്ങൾ : പൗരസ്ത്യവും - പാശ്ചാത്യവും

പഠനോദ്ദേശ്യം

പൗരസ്ത്യ പാശ്ചാത്യ കാവ്യശാസ്ത്ര സിദ്ധാന്തങ്ങളുടെ പഠനം കാവ്യാസ്വാദന ശേഷിയും നിരൂപണസിദ്ധിയും വർദ്ധിപ്പിക്കുവാൻ സഹായകമാകണം. സിദ്ധാന്തങ്ങളുടെ പഠനത്തോടൊപ്പം പ്രായോഗികജ്ഞാനം സിദ്ധിക്കുന്നതിനായി അസൈൻമെന്റുകൾ നല്കുകയും സെമിനാറുകൾ സംഘടിപ്പിക്കുകയും വേണം.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (36 മണിക്കൂർ)

പൗരസ്ത്യകാവ്യമീമാംസ

ഭാരതീയവിമർശനം - സംക്ഷിപ്തചരിത്രം (പ്രധാന കാവ്യസിദ്ധാന്തങ്ങളെക്കുറിച്ചുള്ള സാമാന്യജ്ഞാനം).

വിശദപഠനം

കവി, കാവ്യം, സഹൃദയൻ, കാവ്യഹേതുക്കൾ, കാവ്യപ്രയോജനങ്ങൾ ഇവയുടെ വിശദീകരണം. - രസസിദ്ധാന്തം - നിർവ്വചനം, രസസംഖ്യ - സ്ഥായിഭാവവും രസവും (രസസൂത്രവ്യാഖ്യാനങ്ങൾ വിശദീകരിക്കേണ്ടതില്ല).

ധ്വനിസിദ്ധാന്തം - ശബ്ദവ്യാപാരങ്ങൾ, വ്യഞ്ജനാവ്യാപാരത്തിന്റെ പ്രാധാന്യം, ധ്വനിലക്ഷണം - ഗുണീഭൂതവ്യംഗ്യവും ധ്വനിയും (ധ്വനിയുടെ അവാന്തരവിഭാഗങ്ങൾ ഏതെല്ലാമെന്ന് പരിചയപ്പെടുത്തിയാൽ മാത്രം മതി. വിശദീകരണങ്ങളിലേക്ക് കടക്കേണ്ടതില്ല).

അലങ്കാരം - നിർവ്വചനം. അർത്ഥാലങ്കാരങ്ങളും ശബ്ദാലങ്കാരങ്ങളും - സാമാന്യ പരിചയം.

വിശദപഠനം

ഉപമ, ഉൽപ്രേക്ഷ, രൂപകം, രൂപകാതിശയോക്തി, അപ്രസ്തുത പ്രശംസ, അർത്ഥാന്തരന്യാസം, ശ്ലേഷം, സമാസോക്തി, ദ്വിതീയാക്ഷരപ്രാസം എന്നിവ.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

വൃത്തശാസ്ത്രം

സംസ്കൃതവൃത്തങ്ങളുടെയും ഭാഷാവൃത്തങ്ങളുടെയും സിദ്ധാന്തങ്ങളും പ്രയോഗങ്ങളും അറിയുകയാണ് ലക്ഷ്യം. വൃത്തവും താളവും - സംസ്കൃതവൃത്തത്തിന്റെയും ഭാഷാവൃത്തത്തിന്റെയും പൊതുസ്വഭാവങ്ങൾ - ഇവ തമ്മിലുള്ള പ്രധാന വ്യത്യാസങ്ങൾ.

വിശദപഠനം

ഇന്ദ്രവജ്ര, ഉപേന്ദ്രവജ്ര, വസന്തതിലകം, ശാർദ്ദൂലവിക്രീഡിതം, സ്രഗ്ദ്ധര, വിയോഗിനി, പുഷ്പിതാഗ്ര, കാകളി, കളകാഞ്ചി, മിശ്രകാകളി, ദ്രുതകാകളി, കേക, തരംഗിണി, മഞ്ജരി, നതോന്നത എന്നീ വൃത്തങ്ങൾ.

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

പാശ്ചാത്യസാഹിത്യമീമാംസ

പ്രധാന പ്രസ്ഥാനങ്ങളും സിദ്ധാന്തങ്ങളും. ക്ലാസ്സിസിസം, നിയോ ക്ലാസ്സിസിസം, റൊമാന്റിസിസം, റിയലിസം, സിംബലിസം, മോഡേണിസം, പോസ്റ്റ് മോഡേണിസം എന്നിവയെക്കുറിച്ചുള്ള സാമാന്യജ്ഞാനം.

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

(എ) നിരൂപണവിഭാഗങ്ങൾ – സാമാന്യജ്ഞാനം

ബയോഗ്രാഫിക്കൽ, സോഷ്യോളജിക്കൽ, ഹിസ്റ്റോറിക്കൽ, സൈക്കോളജിക്കൽ, ഈസ്തെറ്റിക്കൽ, മാർക്സിയൻ നിരൂപണങ്ങൾ, ന്യൂക്രിട്ടിസിസം – പാരിസ്ഥിതിക, ഫെമിനിസ്റ്റ്, ദളിത് നിരൂപണങ്ങൾ.

(ബി) സാഹിത്യരൂപങ്ങൾ – സാമാന്യജ്ഞാനം

നാടകം – മഹാകാവ്യം – കവിത – ഭാവഗീതം – നോവൽ – ചെറുകഥ.

സെമിനാർ, അസൈന്മെന്റ്

പൗരസ്ത്യവും പാശ്ചാത്യവുമായ സിദ്ധാന്തങ്ങൾ ആസ്പദമാക്കി കൃതികൾ നിരൂപണം ചെയ്യുക. കാവ്യങ്ങളിലെ അലങ്കാരങ്ങളും വൃത്തങ്ങളും കണ്ടെത്തി വിശദപഠനം നടത്തുക.

പാഠപുസ്തകങ്ങൾ

1. ഭാഷാഭൂഷണം: ഏ. ആർ. രാജരാജവർമ്മ
2. വൃത്തമഞ്ജരി: ഏ. ആർ. രാജരാജവർമ്മ

സഹായകഗ്രന്ഥങ്ങൾ

1. ഭാരതീയകാവ്യശാസ്ത്രം – ഡോ. ടി. ഭാസ്കരൻ.
2. കാവ്യമീമാംസ – ഡോ. കെ. സുകുമാരപിള്ള.
3. ഭാരതീയകാവ്യശാസ്ത്രം – വേദബന്ധു.
4. ഭാരതീയ സാഹിത്യസിദ്ധാന്തങ്ങൾ – (എഡി:) നെല്ലിക്കൽ മുരളീധരൻ.
5. ഭാരതീയസാഹിത്യദർശനം – ഡോ. ചാത്തനാത്ത് അച്യുതനുണ്ണി.
6. വൃത്തവിചാരം – കെ. കെ. വാദ്ധ്യാർ.
7. വൃത്തശില്പം – കുട്ടിക്കൃഷ്ണമാരാർ.
8. വൃത്തശാസ്ത്രം – ഡോ. ടി. വി.മാത്യു.
9. വർണ്ണഭേദങ്ങൾ പാഠഭേദങ്ങൾ – ഡോ. പി.കെ. പോക്കർ, ചിന്ത പബ്ലിഷേഴ്സ്.
10. കാവ്യമീമാംസ – പാശ്ചാത്യവും പൗരസ്ത്യവും – ഡോ.എൻ.ആർ. ഗോപിനാഥപിള്ള.
11. പാശ്ചാത്യസാഹിത്യദർശനം – എം. അച്യുതൻ.
12. പാശ്ചാത്യസാഹിത്യതത്ത്വശാസ്ത്രം – കെ.എം. തരകൻ.
13. നിരൂപണസാഹ്യം – ഡോ. പി. വി. വേലായുധൻപിള്ള.
14. വിശ്വസാഹിത്യദർശനങ്ങൾ – നെല്ലിക്കൽ മുരളീധരൻ.
15. ഘടനാവാദോത്തരചിന്ത – പി. പി. രവീന്ദ്രൻ.
16. വക്രോക്തി കൈരളി – ഡോ. പൂജപ്പുര കൃഷ്ണൻ നായർ.
17. ആധുനികാനന്തരം – പി. പി. രവീന്ദ്രൻ.
18. അപനിർമ്മാണം – വി. സി. ശ്രീജൻ.
19. ദറിദ – അപനിർമ്മാണത്തിന്റെ തത്വചിന്തകൻ – പി. കെ. പോക്കർ.

20. രസകൗമുദി - ഡോ. പൂജപ്പുര കൃഷ്ണൻ നായർ.
21. ആധുനികാനന്തര സാഹിത്യസമീപനങ്ങൾ - സി. ജെ. ജോർജ്ജ് (എഡി:).
22. ഛന്ദസ്സ് നമ്മുടെ കവിതയിൽ - സച്ചിദാനന്ദൻ, മലയാളകവിതാപഠനങ്ങൾ, മാതൃഭൂമി ബുക്സ്, പുറം 83-99.
23. ദലിത് സാഹിത്യപ്രസ്ഥാനം - കെ. എം. പുരുഷോത്തമൻ.
24. ഭാരതീയേതര സാഹിത്യസിദ്ധാന്തങ്ങൾ - ഡോ. തോമസ് സ്കറിയ.

സെമസ്റ്റർ	:	**III**
കോഴ്സ് കോഡ്	:	**ML 1331**
കോംപ്ലിമെന്ററി കോഴ്സ്	:	**V**
സമയക്രമം	:	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**3**

പരിസ്ഥിതി : സിദ്ധാന്തവും ആവിഷ്ക്കാരവും

പഠനോദ്ദേശ്യം

പരിസ്ഥിതിദർശനവുമായി ബന്ധപ്പെട്ട ആശയങ്ങൾ, തത്ത്വങ്ങൾ, പ്രവണതകൾ, പ്രതിഭാസങ്ങൾ എന്നിവയെക്കുറിച്ചുള്ള അറിവുകൾ നേടുക - പ്രകൃതിസ്രോതസ്സുകളെയും അവയുമായി ബന്ധപ്പെട്ട പ്രശ്നങ്ങളെയും കുറിച്ചു മനസ്സിലാക്കുക - പരിസ്ഥിതിയുടെ ജൈവ, സാമൂഹിക, സാംസ്കാരിക, രാഷ്ട്രീയ, സാമ്പത്തിക വശങ്ങൾ, പാരിസ്ഥിതിക മേഖലയിൽ മനുഷ്യനുള്ള സ്വാധീനത്തിന്റെ പ്രത്യേകത, ഭൂമിയിൽ ജീവൻ നിലനിർത്തുന്നതിനാവശ്യമായ സാഹചര്യങ്ങൾ എന്നിവയെക്കുറിച്ചു മനസ്സിലാക്കുക - സർഗ്ഗാത്മകതലത്തിൽ, പരിസ്ഥിതിദർശനത്തിന്റെ ഭൂമികയിൽ നിന്നുകൊണ്ട് കലയെയും സാഹിത്യത്തെയും കാണുവാനും വിലയിരുത്തുവാനുമുള്ള മനോഭാവം സൃഷ്ടിക്കുക.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (9 മണിക്കൂർ)

എ. പരിസ്ഥിതിദർശനം

പരിസ്ഥിതി - അർത്ഥവും വ്യാപ്തിയും - പരിസ്ഥിതി സമീപനങ്ങൾ - പരിസ്ഥിതിദർശനങ്ങൾ - ഗഹനപരിസ്ഥിതിവാദം - സാമൂഹിക പരിസ്ഥിതിവാദം - പാരിസ്ഥിതിക സ്ത്രീവാദം - പാരിസ്ഥിതിക മാർക്സിസം - പാരിസ്ഥിതികപ്രസ്ഥാനങ്ങൾ - ഇവയെക്കുറിച്ചുള്ള പഠനം.

ബി. പരിസ്ഥിതിദർശനം സർഗ്ഗാത്മകതലത്തിൽ

പരിസ്ഥിതിബോധം സാമൂഹിക, സാംസ്കാരികതലങ്ങളിൽ, പരിസ്ഥിതിബോധം സർഗ്ഗാത്മകതലത്തിൽ - പാരിസ്ഥിതിക സൗന്ദര്യശാസ്ത്രം - പരിസ്ഥിതിദർശനം കലാരൂപങ്ങളിൽ - സാഹിത്യത്തിൽ - സാമാന്യപഠനം.

മൊഡ്യൂൾ : രണ്ട് (9 മണിക്കൂർ)

പരിസ്ഥിതി ദർശനം – പഠനങ്ങൾ

വിശദപഠനം :

1. പരിസ്ഥിതിസൗന്ദര്യശാസ്ത്രത്തിന് ഒരു മുഖവുര – ഡോ. ടി. പി. സുകുമാരൻ (ഈ പേരിലുള്ള ലേഖനം മാത്രം) – ബോധി പബ്ലിക്കേഷൻസ്, കോഴിക്കോട്.
2. സംസ്കാരവും ആവാസവ്യവസ്ഥയും – ജി. മധുസൂദനൻ (ഭാവനയുടെ ജലസ്ഥലികൾ).

മൊഡ്യൂൾ : മൂന്ന് (9 മണിക്കൂർ)

പരിസ്ഥിതിദർശനം കഥയിൽ

വിശദപഠനം

1. ആമസോൺ – അശോകൻ ചരുവിൽ
2. ഹരിതമോഹനം – സുസ്മേഷ് ചന്ദ്രോത്ത്

മൊഡ്യൂൾ : നാല് (9 മണിക്കൂർ)

പരിസ്ഥിതിദർശനം നോവലിൽ

വിശദപഠനം

ജൈവം – പി. സുരേന്ദ്രൻ

മൊഡ്യൂൾ : അഞ്ച് (9 മണിക്കൂർ)

പരിസ്ഥിതിദർശനം കവിതയിൽ

വിശദപഠനം

1. കൊച്ചിയിലെ വൃക്ഷങ്ങൾ – കെ. ജി. ശങ്കരപ്പിള്ള
2. ഭൂമിയുടെ ചടങ്ങുകൾ – സച്ചിദാനന്ദൻ
3. അതിരപ്പിള്ളിക്കാട്ടിൽ – പി. എൻ. ഗോപീകൃഷ്ണൻ
   (ഇടിക്കാലൂരി പനമ്പട്ടടി – മാതൃഭൂമി പ്രസിദ്ധീകരണം)

മൊഡ്യൂൾ : ആറ് (9 മണിക്കൂർ)

ഹരിതദർശനം നാടകത്തിലും ചലച്ചിത്രത്തിലും

വിശദപഠനം

(എ) നാടകം: കനകം വിളയുന്ന മണ്ണ് – തിക്കോടിയൻ.

(ബി) ചലച്ചിത്രം: 1. പേരറിയാത്തവർ – ഡോ. ബിജു.
2. അരജീവിതങ്ങൾക്ക് ഒരു സ്വർഗ്ഗം – എം. എ. റഹ്മാൻ.
3. ഓരോപുഴയും പറയുന്നത് – അലിഫ്ഷാ.

സഹായകഗ്രന്ഥങ്ങൾ

1. ഹരിതനിരൂപണം മലയാളത്തിൽ - (എഡി.) ജി. മധുസൂദനൻ, കറന്റ് ബുക്സ്, തൃശൂർ.
2. കഥയും പരിസ്ഥിതിയും - ജി. മധുസൂദനൻ, കറന്റ് ബുക്സ്, തൃശൂർ.
3. പരിസ്ഥിതി കവിതയ്ക്കൊരാമുഖം - പി. പി. കെ. പൊതുവാൾ, ഡി. സി. ബുക്സ്,
4. പരിസ്ഥിതിബോധവും സംസ്കാരവും - പി. പി. കെ. പൊതുവാൾ, മാതൃഭൂമി ബുക്സ്.
5. പരിസ്ഥിതിവിജ്ഞാനം - എൻ. ബാലകൃഷ്ണൻ നായർ, ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
6. പ്രകൃതി, പരിസ്ഥിതി ദാരിദ്ര്യം ഊർജ്ജം - ആനന്ദ്, ഡി. സി. ബുക്സ്.
7. ഹരിതരാഷ്ട്രീയം : ചരിത്രം സിദ്ധാന്തം പ്രയോഗം- ജോർജ് കെ. അലക്സ്, ഡി. സി. ബുക്സ്.
8. ജീവന്റെ കയ്യൊപ്പ് - ആഷാമേനോൻ: ഡി. സി. ബുക്സ്.
9. പരിസ്ഥിതി സൗന്ദര്യശാസ്ത്രത്തിന് ഒരു മുഖവുര - ഡോ. ടി. പി. സുകുമാരൻ, ബോധി പബ്ലിക്കേഷൻസ്, കോഴിക്കോട്.
10. കവിതയുടെ രഥോത്സവം - (എഡി.) അജയപുരം ജ്യോതിഷ്കുമാർ, ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
11. ഹരിതസാഹിത്യദർശനം - എം. അച്യുതൻ.
12. കവിതയും പരിസ്ഥിതിയും - എസ്. രാജശേഖരൻ.
13. കാലിഫോർണിയ കാടുകളിൽ - സുഗതകുമാരി.
14. ഹരിതദർശനം ആധുനികാനന്തരകവിതയിൽ - ഡോ. സി. ആർ. പ്രസാദ്.
15. പ്രതിരോധചിന്തകൾ - ലിപി പബ്ലിക്കേഷൻസ്, കോഴിക്കോട്.
16. മലയാള കവിതയും പരിസ്ഥിതിയും - ഡോ. ആനന്ദ് കാവാലം.
17. പടരുന്ന മഷിച്ചാലുകൾ - ഐറിസ് കൊയ്ലിയോ.
18. ഭാവനയുടെ ജലസ്ഥലികൾ - ജി. മധുസൂദനൻ.
19. പ്രകൃതി സമീപനങ്ങൾ ആദ്യകാല കവിതകളിൽ - ഡോ. സീമ ജെറോം.
20. പരിസ്ഥിതിയുടെ രാഷ്ട്രീയം - (എഡി.) സി. റഹിം, ഫേബിയൻ ബുക്സ്.

സെമസ്റ്റർ : നാല്

സെമസ്റ്റർ	**:**	**IV**
കോഴ്സ് കോഡ്	**:**	**ML 1411.1**
ലാംഗ്വേജ് കോഴ്സ്	**:**	**IX (അഡീഷണൽ ലാംഗ്വേജ് - IV)**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 5 മണിക്കൂർ (18 ആഴ്ചയിൽ 90 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**4**

ആശയവിനിമയം, സർഗ്ഗാത്മകരചന, ഭാഷാവബോധം

പഠനോദ്ദേശ്യം

1. വിദ്യാർത്ഥികളുടെ ആശയവിനിമയശേഷി വർദ്ധിപ്പിക്കുക.
2. ഔദ്യോഗിക/ഭരണകാര്യങ്ങളും ശാസ്ത്രവിഷയങ്ങളും മലയാളഭാഷയിലൂടെ അവതരിപ്പിക്കാനുള്ള കഴിവുണ്ടാകുക.
3. മലയാളഭാഷ കൈകാര്യം ചെയ്യുമ്പോൾ ഉണ്ടാകാവുന്ന പാകപ്പിഴകൾ സ്വയം തിരുത്താൻ പ്രാപ്തരാക്കുക.
4. പദം, വാക്യം, ചിഹ്നം എന്നിവ തെറ്റുകൂടാതെ പ്രയോഗിക്കുന്നതിലൂടെ ഭാഷാശുദ്ധി നിലനിർത്തുക.
5. മലയാളഭാഷ അനായാസം കൈകാര്യം ചെയ്യാനുള്ള കഴിവ് നേടിക്കൊടുക്കുക.
6. വിവർത്തനത്തിൽ പ്രായോഗിക പരിശീലനം നൽകുക.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

ആശയ വിനിമയം

1. പൊതുവിഷയം അടിസ്ഥാനമാക്കി ഉപന്യാസ രചന.
2. ഭാഷാശുദ്ധി - തെറ്റായരൂപത്തിൽ എഴുതപ്പെടുന്ന വാക്കുകളും അവയുടെ ശരിയായ രൂപങ്ങളും - വാക്യരചനയിൽ സാധാരണ വരുന്ന പിഴവുകളും അവ തിരുത്തുതിനുള്ള മാർഗ്ഗനിർദ്ദേശങ്ങളും - പ്രധാനപ്പെട്ട ചിഹ്നങ്ങളും അവയുടെ പ്രയോഗ സാഹചര്യങ്ങളും.
3. സത്ത ചോർന്നു പോകാതെ സംഗ്രഹിക്കൽ.
4. ആശയവിപുലനം.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

സർഗ്ഗാത്മകരചന

സർഗാത്മകത - നിർവചനം - സർഗാത്മകതയുടെ ഉറവിടം - വിവിധ കാഴ്ച പ്പാടുകൾ - കാവ്യപ്രചോദനത്തെക്കുറിച്ചുള്ള ഭാരതീയസങ്കല്പം - സർഗ്ഗാത്മകരചന യിലേക്കു നയിക്കുന്ന സാഹചര്യങ്ങൾ - ജന്മവാസന - അനുഭവം - ആവിഷ്കാരം - രചനയുടെ വിവിധഘട്ടങ്ങൾ.

1. കാഥികന്റെ പണിപ്പുര - എം. ടി. വാസുദേവൻ നായർ

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

വിവർത്തനം

പ്രായോഗിക പരിശീലനം:

ഇംഗ്ലീഷിൽനിന്ന് മലയാളത്തിലേക്കും മലയാളത്തിൽനിന്ന് ഇംഗ്ലീഷിലേക്കുമുള്ള വിവർത്തനം - ഗദ്യം, പദ്യം, ശൈലികൾ, പഴഞ്ചൊല്ലുകൾ, സാങ്കേതിക പദങ്ങൾ മുതലായവയുടെ വിവർത്തനം.

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

മാദ്ധ്യമ മലയാളം

വിനിമയമാധ്യമങ്ങൾ - മാധ്യമരംഗത്തെ ഇന്നത്തെ അവസ്ഥ - വിവിധതരം മാധ്യമങ്ങൾ - അച്ചടിമാധ്യമം, റേഡിയോ, ചലച്ചിത്രം, ടെലിവിഷൻ, ഇന്റർനെറ്റ് (സാമൂ ഹിക മാധ്യമങ്ങൾ) - മാധ്യമസ്വഭാവത്തിലും വിനിമയസ്വഭാവത്തിലും ഉള്ള ഇവയുടെ സവിശേഷതകൾ, വ്യത്യസ്തതകൾ - മാധ്യമങ്ങളും സമൂഹവും - മാധ്യമങ്ങൾ തുറന്നുതരുന്ന പുതിയ വിനിമയ സാധ്യതകൾ.

മൊഡ്യൂൾ : അഞ്ച് (18 മണിക്കൂർ)

സൈബർ മലയാളം

സൈബർലോകം തുറന്നുതരുന്ന എഴുത്തിന്റെയും വായനയുടെയും പുതിയ സാദ്ധ്യതകൾ - ഭാഷയുടെയും സാഹിത്യത്തിന്റെയും വളർച്ച - സൈബർ മലയാളം - സൈബർ സാഹിത്യം - മലയാളഭാഷാവിനിമയത്തിനും സാഹിത്യാസ്വാദനത്തിനും സൈബർലോകം നൽകുന്ന സംഭാവനകൾ.

1. മലയാളം കമ്പ്യൂട്ടിംഗ് (വിവരസാങ്കേതികവിദ്യ നിത്യജീവിതത്തിൽ)
   - വി. കെ. ആദർശ്.

സഹായകഗ്രന്ഥങ്ങൾ

1. മാധ്യമം : മൗലികതവും നിരാകരണവും - ഡോ. എ. എം. ശ്രീധരൻ, നാഷണൽ ബുക്ക് സ്റ്റാൾ.
2. മാധ്യമങ്ങളും മലയാളസാഹിത്യവും - എം. വി. തോമസ്, കേരള സാംസ്ക്കാരിക പ്രസിദ്ധീകരണവകുപ്പ്.
3. മാധ്യമങ്ങളും മലയാളസാഹിത്യവും - കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്,
4. മാധ്യമവിചിന്തനം - ഡോ. കെ.വി. തോമസ്, ഡോ. മാത്യു ജെ. മുട്ടത്ത്, ലിപി പബ്ലിക്കേഷൻസ്, കോഴിക്കോട്.

5. മലയാളവും ഇന്റർനെറ്റും - സുനീത ടി.വി., ലിപി പബ്ലിക്കേഷൻസ്, കോഴിക്കോട്.
6. സൈബർ മലയാളം - (എഡി.) സുനീത ടി. വി., കറന്റ് ബുക്സ്, തൃശൂർ.
7. ഭാഷയും ഭരണഭാഷയും - ഡോ. എഴുമറ്റൂർ രാജരാജവർമ്മ, ഇൻഫർമേഷൻ ആന്റ് പബ്ലിക്കേഷൻ വകുപ്പ്, കേരള സർക്കാർ.
8. ഭരണ ശബ്ദാവലി, കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്,
9. വൃത്താന്തപത്രപ്രവർത്തനം - സ്വദേശാഭിമാനി രാമകൃഷ്ണപിള്ള, മാളുബെൻ പബ്ലിക്കേഷൻസ്.
10. ലിറിക്കൽ ബാലഡ്സിന്റെ ആമുഖം - വില്യം വേർഡ്സ്വർത്ത്, വിവ: ഡോ. തോന്നയ്ക്കൽ വാസുദേവൻ, എം. എൻ. വിജയൻ സാംസ്ക്കാരികവേദി.
11. ഗദ്യശില്പം - സി. വി. വാസുദേവഭട്ടതിരി, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്,.
12. തെറ്റും ശരിയും - പ്രൊഫ. പന്മന രാമചന്ദ്രൻ നായർ, കറന്റ് ബുക്സ്, കോട്ടയം.
13. തെറ്റില്ലാത്ത മലയാളം - പ്രൊഫ. പന്മന രാമചന്ദ്രൻ നായർ,
14. ഭാഷാശുദ്ധി - സംശയപരിഹാരങ്ങൾ - പ്രൊഫ. പന്മന രാമചന്ദ്രൻ നായർ, കറന്റ് ബുക്സ്, കോട്ടയം.
15. ഭാഷാശുദ്ധിയും ഭരണഭാഷയും - ഡോ. വിളക്കുടി രാജേന്ദ്രൻ, പ്രിയദർശിനി പബ്ലിക്കേഷൻസ്.
16. മലയാളശൈലി - കുട്ടികൃഷ്ണമാരാർ, മാരാർ സാഹിത്യപ്രകാശം, കോഴിക്കോട്.
17. തായ്മൊഴി - എം. എൻ. കാരശ്ശേരി, ഡി. സി. ബുക്സ്.
18. ഭരണഭാഷാപ്രശ്നങ്ങൾ എം. വി. തോമസ്, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
19. വിവർത്തനവിചാരം - ഡോ. എൻ. ഇ. വിശ്വനാഥ അയ്യർ, കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
20. തർജ്ജമയുടെ താക്കോൽ - സി. വി. വാസുദേവ ഭട്ടതിരി, സ്കൈ ബുക്സ് പബ്ലിഷേഴ്സ്.
21. നല്ലമലയാളം - സി.വി.വാസുദേവഭട്ടതിരി, ലിപി പബ്ലിക്കേഷൻസ്, കോഴിക്കോട്.
22. തെളിമലയാളം - എം. എൻ. കാരശ്ശേരി.

സെമസ്റ്റർ	**:**	**IV**
കോഴ്സ് കോഡ്	**:**	**ML 1441**
കോർ കോഴ്സ്	**:**	**IV**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 5 മണിക്കൂർ (18 ആഴ്ചയിൽ 90 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**4**

മലയാളകവിത - പൂർവ്വഘട്ടം

(പുസ്തകം: ഉദയഭാരതി - യൂണിവേഴ്സിറ്റി പ്രസിദ്ധീകരണം)

പഠനോദ്ദേശ്യം

1. മലയാളകവിതയുടെ വാമൊഴിപാരമ്പര്യം മുതൽ പത്തൊമ്പതാം നൂറ്റാണ്ടു വരെയുള്ള വ്യത്യസ്ത കാവ്യസമ്പ്രദായങ്ങളെയും ചരിത്രഘട്ടങ്ങളെയും പരിചയപ്പെടുക.

2. പ്രാചീന - മദ്ധ്യകാലഘട്ടങ്ങളിലെ കാവ്യപ്രസ്ഥാനങ്ങളെ തിരിച്ചറിയുക.
3. പ്രസ്ഥാനപരമായ കവിതാപഠനത്തോടൊപ്പം കാലം, ദേശം, കവിവ്യക്തിത്വം എന്നിവയിൽ അടിസ്ഥാനധാരണയുണ്ടാകുക.
4. കാവ്യവിശകലനത്തിനും കാവ്യാസ്വാദനത്തിനും വഴിയൊരുക്കുക.
5. കാവ്യഭാഷയിൽ സംഭവിച്ച കാലാനുസൃതമായ പരിണാമങ്ങൾ തിരിച്ചറിയുക.
6. താളം, വൃത്തം, അലങ്കാരം, ബിംബസന്നിവേശം, ഇതരകാവ്യസങ്കേതങ്ങൾ എന്നിവയെക്കുറിച്ച് അറിവു നേടുക.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

മലയാളകവിതയുടെ വേരുകൾ - നാടൻപാട്ടുകൾ - വീരകഥാഗാനങ്ങൾ - ചരിത്ര കഥാഗാനങ്ങൾ - കൃഷിപ്പാട്ടുകൾ - വിനോദഗാനങ്ങൾ - വാമൊഴിസാഹിത്യത്തിന്റെ സവിശേഷതകൾ - പ്രാചീനസാഹിത്യം - പാട്ട് - ലീലാതിലകത്തിലെ നിർവചനം - രാമചരിതം - പാട്ടിന്റെ പരിണാമം - തിരുനിഴൽമാല - നിരണംകൃതികൾ - കണ്ണശ്ശരാമായണം - ഭാരതമാല - ഭാഷാഭഗവദ്ഗീത - രാമകഥപ്പാട്ട്.

വിശദപഠനം

1. കൃഷിപ്പാട്ട് - മാരിമഴകൾ നനഞ്ഞേ...
2. പലവകപാട്ട് - കറുത്ത പെണ്ണേ കരിങ്കുഴലീ...(കേരളഭാഷാഗാനങ്ങൾ, ഭാഗം 2, കേരളസാഹിത്യ അക്കാദമി 1980, പുറം 147, 332).
3. രാമചരിതം - 1-ാം പടലം.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

മണിപ്രവാളം - ലീലാതിലകത്തിലെ നിർവ്വചനം - ഭാഷാപരമായ സവിശേഷതകൾ - ഇതിവൃത്തം - സമകാലികജീവിതത്തോടുള്ള സമീപനം - പ്രാദേശികത - കാവ്യഗുണം - പ്രാചീനചമ്പുക്കൾ - ഉണ്ണിയച്ചീചരിതം - ഉണ്ണിയാടീചരിതം - ഉണ്ണിച്ചിരുതേവീചരിതം - ചന്ദ്രോത്സവം - സന്ദേശകാവ്യങ്ങൾ - ഉണ്ണുനീലിസന്ദേശം - കോകസന്ദേശം - മദ്ധ്യകാലചമ്പുക്കൾ - ഭാഷാരാമായണം ചമ്പു - നൈഷധം ചമ്പു - പ്രാചീന - മദ്ധ്യകാല ചമ്പുക്കൾ താരതമ്യം - ഇതര മണിപ്രവാളകൃതികൾ- സാമാന്യവിശകലനം.

വിശദപഠനം

1. ഉണ്ണിച്ചിരുതേവീചരിതം - ഒരു ഗദ്യം (പൊയിലം വർണ്ണന - ഗദ്യം: 5)
2. ഉണ്ണുനീലിസന്ദേശം (പൂർവ്വഭാഗത്തിൽനിന്ന് ആദ്യത്തെ 15 ശ്ലോകം).
3. ഭാഷാനൈഷധം ചമ്പു (പൂർവ്വഭാഗം) - മഴമംഗലം.

   ('അമ്പത്തൊന്നക്ഷരാളീ....' മുതൽ 'ശ്രോത്രപ്രീതിയെവെച്ചു വാഴ്ചകഴിയിച്ചാരമിതൗദംപതീ....' വരെ 20 പദ്യവും 'ഹരഹരശിവശിവ ചിത്രംചിത്രം...' എന്നു തുടങ്ങുന്ന ഒരു ഗദ്യവും മാത്രം).

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

പാട്ടിന്റെ പരിണാമം - ലക്ഷണങ്ങളിൽനിന്നുള്ള സ്വാതന്ത്ര്യം - ഭാഷയുടെ പരിണാമം - ഗാഥാപ്രസ്ഥാനം - കൃഷ്ണഗാഥ - രചനാപരമായ സവിശേഷതകൾ - ഫലിതം - ഭക്തി - ശൃംഗാരം - വർണ്ണന - ലാളിത്യം - പുരാണകഥാസ്വീകാരം. കിളിപ്പാട്ടുപ്രസ്ഥാനം - എഴുത്തച്ഛൻ - അദ്ധ്യാത്മ രാമായണം കിളിപ്പാട്ട് - ഭാരതം കിളിപ്പാട്ട് - ഭക്തിയും നവോത്ഥാനവും - എഴുത്തച്ഛന്റെ ഭാഷ - സംസ്കാരസമന്വയം - ഭാഷയുടെ മാനകീകരണം - പിൽക്കാല കവിതയിലെ സ്വാധീനം - കീർത്തന സാഹിത്യം - പൂന്താനം - ജ്ഞാനപ്പാന - അറബിമലയാളം - സാംസ്കാരിക സാഹചര്യം.

വിശദപഠനം

1. കൃഷ്ണഗാഥ - വത്സസ്തേയം - ചെറുശ്ശേരി.
2. മഹാഭാരതം കിളിപ്പാട്ട് - സ്ത്രീപർവ്വം - എഴുത്തച്ഛൻ.
3. ജ്ഞാനപ്പാന - പൂന്താനം.

മൊഡ്യൂൾ : നാല് (36 മണിക്കൂർ)

രംഗകലകളും സാഹിത്യവും - ഇതിഹാസങ്ങൾ രംഗകലകളിൽ - ആട്ടക്കഥ - രാമനാട്ടം - കോട്ടയത്തു തമ്പുരാൻ - ആട്ടക്കഥകളുടെ രൂപഘടന - നളചരിതം - കവിതയും പ്രമേയവും - ഇരയിമ്മൻതമ്പി - വി. കൃഷ്ണൻതമ്പി തുള്ളൽപ്രസ്ഥാനം - കുഞ്ചൻനമ്പ്യാർ - ജനകീയകവി - പുരാണകഥാപുനരാഖ്യാനവും സാമൂഹിക വിമർശനവും - വഞ്ചിപ്പാട്ട് - കുചേലവൃത്തവും രാമപുരത്തുവാര്യരും - കേരളവർമ്മയുഗം - മഹാകാവ്യപ്രസ്ഥാനം - രചനാപരീക്ഷണങ്ങൾ - സംസ്കൃതകാവ്യനാടകങ്ങളുടെ വിവർത്തനം - വെണ്മണിപ്രസ്ഥാനം - കൊടുങ്ങല്ലൂർ കളരി - കവിതയും വിനോദവും - പച്ചമലയാളം - വെണ്മണിക്കവിതയുടെ സവിശേഷതകൾ - മുക്തകങ്ങൾ - സമസ്യാപൂരണങ്ങൾ - കവിതക്കത്തുകൾ - കാവ്യസമരങ്ങൾ - കവിതയിലെ പുതുയുഗപ്പൊടിപ്പുകൾ.

വിശദപഠനം

1. നളചരിതം രണ്ടാം ദിവസം (ആട്ടക്കഥ) - ഉണ്ണായിവാര്യർ.
2. സഭാപ്രവേശം (തുള്ളൽ) - കുഞ്ചൻ നമ്പ്യാർ.
3. കുചേലവൃത്തം വഞ്ചിപ്പാട്ട് - രാമപുരത്തു വാര്യർ ('പറഞ്ഞതങ്ങനെ തന്നെ....' എന്നതുമുതൽ 'ശാർങ്ഗിയുടെ പുരദ്വാരം പൂകിക്കപ്പെട്ടു' - എന്നതുവരെ).
4. ഉമാകേരളം - ഉള്ളൂർ.

   (സർഗം 1 - 'ശ്രീക്കേറ്റലാസ്യപദമായ്....' തുടങ്ങി 'മാരിപൊഴിച്ചിടുന്നു' വരെ - ആദ്യ 20 ശ്ലോകം).

5. **മുക്തകങ്ങൾ.**

   1. പാടത്തിങ്കര നീളെ നീലനിറമായ്... - ചേലപ്പറമ്പ് നമ്പൂതിരി.
   2. വാസന്തീമധുവാർന്നവാക്കിനു.. - കേരളവർമ്മ വലിയകോയിത്തമ്പുരാൻ.
   3. വാകച്ചാർത്തിനുവല്ലവണ്ണവു..... - വി. കെ. ഗോവിന്ദൻനായർ.

സഹായകഗ്രന്ഥങ്ങൾ

1. കേരളസാഹിത്യചരിത്രം - ഉള്ളൂർ.
2. സാഹിത്യചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - (എഡി.) ഡോ. കെ. എം. ജോർജ്.
3. സമ്പൂർണമലയാളസാഹിത്യചരിത്രം - (എഡി.) പന്മന രാമചന്ദ്രൻനായർ.
4. കൈരളിയുടെ കഥ - പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള.
5. പദ്യസാഹിത്യചരിത്രം - ടി. എം. ചുമ്മാർ.
6. മലയാളകവിതാ സാഹിത്യചരിത്രം - ഡോ. എം. ലീലാവതി.
7. ഗാഥയും കിളിപ്പാട്ടും - ഡോ. എൻ. മുകുന്ദൻ.
8. കുഞ്ചൻനമ്പ്യാരും അദ്ദേഹത്തിന്റെ കൃതികളും - വി. എസ്. ശർമ്മ.
9. വെണ്മണി പ്രസ്ഥാനം - അകവൂർ നാരായണൻ.
10. മണിപ്രവാളകവിത - ഡോ. പി. വി. വേലായുധൻപിള്ള.
11. കണ്ണശ്ശന്മാരും എഴുത്തച്ഛനും (ഒരു ഉപപാദനം) - വിദ്വാൻ കുറിശ്ശേരി നാരായണ പിള്ള.
12. ഒറ്റശ്ലോകങ്ങൾ - എ. ഭാസ്കരൻ.
13. വചനവഴിയിലെ വിസ്മയങ്ങൾ - ഡോ. ആർ. ബി. ശ്രീകല.

സെമസ്റ്റർ	:	**IV**
കോഴ്സ് കോഡ്	:	**ML 1442**
കോർ കോഴ്സ്	:	**V**
സമയക്രമം	:	**ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**3**

മലയാളസാഹിത്യനിരൂപണം

പഠനോദ്ദേശ്യം:

മലയാളഭാഷയിലെ സാഹിത്യവിമർശനശാഖയെപ്പറ്റി സാമാന്യമായ അവബോധം വിദ്യാർത്ഥികളിലുണ്ടാക്കുക എന്നതാണ് ഈ കോഴ്സിന്റെ ലക്ഷ്യം. മലയാള നിരൂപണത്തിന്റെ ഉൽപ്പത്തിയുടെയും വളർച്ചയുടെയും ഘട്ടങ്ങൾ, പ്രധാന നിരൂപകർ, സമകാലിക നിരൂപണത്തിന്റെ പ്രവണതകൾ എന്നിവ ഇവിടെ പഠനവിധേയമാക്കുന്നു. ഒപ്പം പ്രമുഖ നിരൂപകരുടെ വിമർശനമാതൃകകളും പാഠ്യവിഷയമാക്കുന്നു.

രീതിശാസ്ത്രം

ഈ കോഴ്സ് നാലു മൊഡ്യൂളായി വിഭജിച്ചിരിക്കുന്നു. ആദ്യത്തെ രണ്ട് മൊഡ്യൂൾ ചരിത്രപരമായ പഠനത്തിനും മൂന്നും നാലും മൊഡ്യൂളുകൾ പ്രായോഗിക നിരൂപണത്തിന്റെ പഠനത്തിനും ഇടം നൽകുന്നു. പ്രമുഖരായ നിരൂപകരുടെ വിമർശനകൃതികൾ പരിചയപ്പെട്ടുകൊണ്ടുള്ള ഒരു പഠനരീതിയാണ് അവലംബിക്കേണ്ടത്. അത്തരത്തിലായിരിക്കണം അസൈൻമെന്റും സെമിനാറും സംഘടിപ്പിക്കേണ്ടതും.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

മലയാളസാഹിത്യവിമർശനത്തിന്റെ ആരംഭവും പത്രമാസികകളുടെ പങ്കും - പ്രാസവാദത്തിന്റെ പ്രസക്തി - സി. പി. അച്യുതമേനോൻ, കേരളവർമ്മ വലിയ കോയിത്തമ്പുരാൻ, സ്വദേശാഭിമാനി രാമകൃഷ്ണപിള്ള, സി. അന്തപ്പായി, ഏ. ആർ. രാജരാജവർമ്മ, സാഹിത്യപഞ്ചാനനൻ പി.കെ. നാരായണപിള്ള - എന്നിവരുടെ സംഭാവനകൾ - സാമാന്യജ്ഞാനം. വിമർശനത്തിന്റെ നവോത്ഥാനഘട്ടം - കേസരി എ ബാലകൃഷ്ണപിള്ള, എം.പി. പോൾ, മുണ്ടശ്ശേരി, കുട്ടിക്കൃഷ്ണമാരാർ, എം. ഗോവിന്ദൻ, സി. ജെ. തോമസ്.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

ആധുനിക നിരൂപണവും നിരൂപകരും - എം. തോമസ് മാത്യു, എം. കെ. സാനു, കെ.പി. അപ്പൻ, എം. എൻ. വിജയൻ, എം. ലീലാവതി, സുകുമാർ അഴീക്കോട്, വി. രാജകൃഷ്ണൻ, നരേന്ദ്രപ്രസാദ്, അയ്യപ്പപ്പണിക്കർ, സച്ചിദാനന്ദൻ, ആഷാമേനോൻ, ബി. രാജീവൻ - പുതിയ പ്രവണതകൾ

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

പ്രായോഗിക നിരൂപണപഠനം - 1

1.	പുരോഗമന സാഹിത്യം	-	കേസരി എ. ബാലകൃഷ്ണപിള്ള (പ്രബന്ധങ്ങൾ).
2.	സാഹിത്യഭാഷയുടെ മുഴക്കോൽ	-	മുണ്ടശ്ശേരി (പുതിയ കാഴ്ചപ്പാടിൽ).
3.	വാല്മീകിയുടെ രാമൻ	-	കുട്ടിക്കൃഷ്ണമാരാർ (രാജാങ്കണം).
4.	സാഹിത്യനിരൂപണത്തെക്കുറിച്ച്	-	എം. കെ. സാനു (വിമർശനവും വിമർശകരും).

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

പ്രായോഗിക നിരൂപണപഠനം - 2

1.	സ്വർണ്ണമത്സ്യങ്ങൾ	-	എം. എൻ. വിജയൻ (ചിതയിലെ വെളിച്ചം).
2.	സമയതീരങ്ങളിലെ സംഗീതം	-	കെ. പി. അപ്പൻ
3.	പ്രതികൂല വിമർശനം : അർത്ഥവും പ്രസക്തിയും	-	പ്രസന്നരാജൻ (വാക്കും വിമർശവും).
4.	എന്റെ ചങ്ങമ്പുഴ വായന	-	എസ്. ശാരദക്കുട്ടി (വിചാരം വിമർശം വിശ്വാസം).

സഹായകഗ്രന്ഥങ്ങൾ

1. സി.പി. അച്യുതമേനോന്റെ നിരൂപണങ്ങൾ - (സമ്പാ.) ടി. ടി. പ്രഭാകരൻ (കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്).
2. കേരളവർമ്മയുടെ തെരഞ്ഞെടുത്ത ഗദ്യകൃതികൾ - (സമ്പാ.) ഡോ. തിക്കുറിശ്ശി ഗംഗാധരൻ (എൻ. ബി. എസ്).
3. കേരളവർമ്മയും മലയാളഗദ്യവും - ഡോ. തിക്കുറിശ്ശി ഗംഗാധരൻ, (എൻ.ബി. എസ്).
4. പ്രബന്ധസംഗ്രഹം - ഏ. ആർ. രാജരാജവർമ്മ (കേരള സാഹിത്യ അക്കാദമി).
5. സാഹിത്യപഞ്ചാനനന്റെ കൃതികൾ ഭാഗം - ഒന്ന്, രണ്ട് - (സമ്പാ.) ഡോ. എം. ഗോപാലകൃഷ്ണൻ നായർ (കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്).
6. കേസരിയുടെ സാഹിത്യവിമർശനങ്ങൾ - (എഡി.) എം. എൻ. വിജയൻ (എൻ.ബി. എസ്).
7. സാഹിത്യവിചാരം - എം. പി. പോൾ, ലിപി പബ്ലിക്കേഷൻസ്.
8. സൗന്ദര്യനിരീക്ഷണം - എം. പി. പോൾ, എൻ. ബി. എസ്.
9. നോവൽ സാഹിത്യം - എം. പി. പോൾ, എൻ. ബി. എസ്.
10. എം. പി. പോളിന്റെ അസമാഹൃതരചനകൾ - (സമ്പാ.) ഡോ. എം. എൻ. രാജൻ, ഡി.സി. ബുക്സ്.
11. മുണ്ടശ്ശേരികൃതികൾ - ജോസഫ് മുണ്ടശ്ശേരി (വാല്യം 1-3) എൻ. ബി. എസ്.
12. ദന്തഗോപുരം - കുട്ടികൃഷ്ണമാരാർ, മാരാർ സാഹിത്യപ്രകാശം, കോഴിക്കോട്.
13. സാഹിത്യവിദ്യ- കുട്ടികൃഷ്ണമാരാർ, മാരാർ സാഹിത്യപ്രകാശം, കോഴിക്കോട്.
14. കല ജീവിതം തന്നെ - കുട്ടികൃഷ്ണമാരാർ, മാരാർ സാഹിത്യപ്രകാശം, കോഴിക്കോട്.
15. കുട്ടികൃഷ്ണമാരാരുടെ സൗന്ദര്യദർശനം - ഡോ. പി. എസ്. രാധാകൃഷ്ണൻ, ഡി.സി. ബുക്സ്.
16. കെ. പി. അപ്പന്റെ തെരഞ്ഞെടുത്ത കൃതികൾ - വാല്യം 1-3, ഹരിതം ബുക്സ്, കോഴിക്കോട്.
17. രോഗത്തിന്റെ പൂക്കൾ - വി. രാജകൃഷ്ണൻ, ഒലിവ് പബ്ലിക്കേഷൻസ്.
18. ഭാവുകത്വം മാറുന്നു - നരേന്ദ്രപ്രസാദ്, എൻ. ബി. എസ്.
19. എന്റെ സാഹിത്യനിരൂപണങ്ങൾ - നരേന്ദ്രപ്രസാദ്, ഡി. സി. ബുക്സ്.
20. കവിതയുടെ ജീവചരിത്രം - കല്പറ്റ നാരായണൻ (മാതൃഭൂമി).
21. മലയാളസാഹിത്യവിമർശനം - ഡോ. സുകുമാർ അഴീക്കോട്, ഡി. സി. ബുക്സ്.
22. മലയാളസാഹിത്യവിമർശനം - ഡോ. പി. വി. വേലായുധൻപിള്ള, എൻ. ബി. എസ്.
23. മലയാളസാഹിത്യനിരൂപണം (എഡി.) - പ്രൊഫ. പന്മന രാമചന്ദ്രൻനായർ, കറന്റ് ബുക്സ്.
24. ആദിപ്രരൂപങ്ങൾ - ഡോ. എം. ലീലാവതി.
25. സാഹിത്യനിരൂപണം - ജി. ഗോപാലകൃഷ്ണൻ നായർ, മാളുബൻ പബ്ലിക്കേഷൻസ്.
26. ജനനിബിഡമായ ദന്തഗോപുരം - ബി. രാജീവൻ, ചിന്ത പബ്ലിഷേഴ്സ്.
27. രുദിതാനുസാരീ കവി - എം. തോമസ് മാത്യു, മാളുബൻ പബ്ലിക്കേഷൻസ്.
28. എം. പി. പോളിന്റെ സാഹിത്യവിമർശനം - ഡോ. എം. മുരളീധരൻ, കറന്റ് ബുക്സ്.
29. മുഹൂർത്തങ്ങൾ - സച്ചിദാനന്ദൻ, ഡി. സി. ബുക്സ്.
30. ആഖ്യാനങ്ങളുടെ പുസ്തകം - രാജേന്ദ്രൻ എടത്തുംകര, ലോഗോസ് ബുക്സ്.
31. എം. എൻ. വിജയന്റെ ലോകങ്ങൾ : സമാഹരണം പഠനം : ഷൂബ. കെ. എസ്.
32. സംസ്കൃതിയുടെ പാഠാന്തരങ്ങൾ, ഡോ. നന്ത്യത്ത് ഗോപാലകൃഷ്ണൻ, വ്യാസാ ബുക്സ്.

സെമസ്റ്റർ	**:**	**IV**
കോഴ്സ് കോഡ്	**:**	**ML 1431**
കോംപ്ലിമെന്ററി കോഴ്സ്	**:**	**VII**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**3**

ദലിതെഴുത്ത്, പെണ്ണെഴുത്ത്: സിദ്ധാന്തവും ആവിഷ്ക്കാരവും

പഠനോദ്ദേശ്യം:

ദലിത് പഠനമെന്ന വിജ്ഞാനമേഖലയുടെ പശ്ചാത്തലത്തിൽ മലയാളത്തിലെ ദലിത് സാഹിത്യത്തെ തിരിച്ചറിയുക - മലയാളികളുടെ സാംസ്കാരികവൈവിധ്യം സാഹിത്യ വഴിയിൽ മനസ്സിലാക്കുക - ചരിത്രത്തിന്റെ വ്യത്യസ്ത ഇടങ്ങളിൽ പാർശ്വവൽക്കരിക്ക പ്പെട്ട ജനവിഭാഗങ്ങളെയും അവരുടെ സംസ്കാരത്തെയും സാഹിത്യത്തെയും കുറിച്ച് അറിയുക - മുഖ്യധാരാസംസ്കാരത്തിന്റെ സാഹചര്യങ്ങൾക്കു പുറത്ത് രൂപപ്പെട്ട സംസ് കാരത്തിന്റെ ഒരു ജനകീയധാരയെക്കുറിച്ചു ബോധ്യപ്പെടുക.

സമീപകാല സൈദ്ധാന്തികപഠനങ്ങളിൽ ഏറെ പരാമർശിക്കപ്പെടുകയും വിമർശിക്ക പ്പെടുകയുംചെയ്ത 'സ്ത്രീവാദ'ത്തെ പരിചയപ്പെടുക - ലിംഗപരമായ വ്യത്യസ്തത യുടെ അടിസ്ഥാനത്തിലുള്ള വിവേചനത്തിൽ നിന്നും സ്ത്രീകൾക്കു തുല്യനീതി ഉറപ്പാ ക്കുക എന്ന ലക്ഷ്യത്തോടെ രൂപപ്പെടുത്തിയ ചിന്താപദ്ധതിയും പ്രവർത്തനവും എന്ന നിലയിൽ അതിനെ തിരിച്ചറിയുക - സ്ത്രീകളുടെ വൈയക്തികവും സാമൂഹികവുമായ യാഥാർത്ഥ്യത്തെ വെളിപ്പെടുത്തുകയും ലിംഗകേന്ദ്രിതമായ എല്ലാത്തരം പാർശ്വവല്ക്ക രണത്തെയും ചെറുക്കുകയുമാണ് അതിന്റെ രീതിശാസ്ത്രം എന്നു മനസ്സിലാക്കുക - ഫെമിനിസത്തിന്റെ ചരിത്രവികാസത്തിന്റെയും സിദ്ധാന്തങ്ങളുടെയും പൊതു പശ്ചാ ത്തലത്തിൽ മലയാളത്തിലെ സ്ത്രീപക്ഷരചനകളെ പഠിക്കുക.

സംസ്കാരത്തിലെ വംശ, വർഗ്ഗ, മത, ജാതി, ലിംഗനിർണയനങ്ങളെക്കുറിച്ചുള്ള ധാരണ നവീകരിക്കുകയും മാറുന്ന ലോകത്തിന്റെ പരിതഃസ്ഥിതികളിൽ നിന്നുകൊണ്ട് ഒരു പുതിയ മാനവീയതയെക്കുറിച്ചുള്ള അവബോധം സൃഷ്ടിക്കുകയും ചെയ്യുക എന്നതാണ് ഈ കോഴ്സിന്റെ സവിശേഷ ലക്ഷ്യം.

രീതിശാസ്ത്രം

ഈ കോഴ്സിന്റെ പഠനത്തിനു രണ്ടുതലങ്ങളുണ്ട്. ഒന്ന്: സിദ്ധാന്തതലം. രണ്ട്: ആവിഷ്ക്കാരതലം. സിദ്ധാന്തതലത്തിൽ ദലിതെഴുത്തിനും പെണ്ണെഴുത്തിനും ആസ്പദമായ അവസ്ഥകളെയും സിദ്ധാന്തങ്ങളെയും സാമാന്യമായി പരിചയപ്പെടു ത്തുന്നു. ആവിഷ്ക്കാരതലത്തിൽ ദലിതെഴുത്ത്, പെണ്ണെഴുത്ത് മാതൃകകൾ പരിചയ പ്പെടുത്തുകയും വിശദപഠനം ഏതാനും രചനകളിലായി പരിമിതപ്പെടുത്തുകയും ചെയ്യുന്നു.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (9 മണിക്കൂർ)

ദലിതെഴുത്ത്

ദലിത് എന്ന പദത്തിന്റെ നിഷ്പത്തി - ഇതര സംജ്ഞകൾ - ദലിത് പദത്തിന്റെ വ്യത്യസ്ത വ്യാഖ്യാനങ്ങൾ - ദലിത്പഠനത്തിന്റെ സാമാന്യചരിത്രം - ആഫ്രിക്കൻ - അമേരിക്കൻ എഴുത്തും കറുപ്പിന്റെ സാംസ്കാരിക മുന്നേറ്റങ്ങളും - ഇന്ത്യൻ പശ്ചാത്തലം - മലയാളത്തിലെ ദലിത് സാഹിത്യം - സാമാന്യ അവലോകനം - വാമൊഴി - വരമൊഴി ഭേദങ്ങൾ.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

എ. വാമൊഴി സാഹിത്യമാതൃക :

പാലുവം പെണ്ണിനെത്തേടി (നാടൻപാട്ട്)

ബി. വരമൊഴി സാഹിത്യമാതൃകകൾ :

I കവിത

1. എന്റെ വംശത്തെപ്പറ്റി.... - പൊയ്കയിൽ അപ്പച്ചൻ
2. അമ്മ ഒരു കാല്പനിക കവിത - വിജില ചിറപ്പാട്.
3. കറുത്ത കല്ല് - എസ്. ജോസഫ്

II ചെറുകഥ

1. നിരവത്ത് കയ്യാണി - സി. അയ്യപ്പൻ
2. നിസ്സഹായരുടെ നിലവിളി - നാരായൻ

III നോവൽ

എരി - പ്രദീപൻ പാമ്പിരിക്കുന്ന്

സഹായകഗ്രന്ഥങ്ങൾ

1. ദലിത്പഠനം : സ്വത്വം, സംസ്കാരം, സാഹിത്യം - ഡോ. പ്രദീപൻ പാമ്പിരിക്കുന്ന്, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
2. ദലിത് തിരിച്ചറിവുകൾ (എഡി:) ഡോ. അജു. കെ. നാരായണൻ, ഭൂമിമലയാളം, യു.സി. കോളേജ്, ആലുവ.
3. ദലിത്പാതകൾ : (എഡി.) ബോബി തോമസ്, സൈൻ ബുക്സ്, തിരുവനന്തപുരം.
4. ബുദ്ധനിലേക്കുള്ള ദൂരം - കെ. കെ കൊച്ച്, ഡി. സി. ബുക്സ്.
5. ദലിത് സാഹിത്യപ്രസ്ഥാനം - കെ. എം. പുരുഷോത്തമൻ, സാഹിത്യഅക്കാദമി.
6. ദലിത് സാഹിത്യം - കവിയൂർ മുരളി, കറന്റ് ബുക്സ്, കോട്ടയം.
7. ദലിത് ഭാഷ - കവിയൂർ മുരളി.
8. കീഴാളജീവിതമുദ്രകൾ - ഡോ. പി. ജി. പത്മിനി, സമയം പബ്ലിക്കേഷൻസ്.
9. ദലിത് വർത്തമാനം (എഡി.) രാജേഷ് ചിറപ്പാട്, മൈത്രി ബുക്സ്, തിരുവനന്തപുരം.
10. 500 വർഷത്തെ കേരളം - ചില അറിവടയാളങ്ങൾ - (ജന. എഡി.) ഡോ. സ്കറിയാ സക്കറിയ, താരതമ്യപഠനസംഘം, കറന്റ് ബുക്സ്, കോട്ടയം.

11. വായനയുടെ ദലിത് പാഠം - കെ. കെ. കൊച്ച്, പൂർണ്ണ പബ്ലിക്കേഷൻസ്.
12. ദലിതന്റെ നിനവും നോവും നാടൻ പാട്ടുകളിൽ - ഡോ. കുമാരൻ വയലേരി, പാപ്പിയോൺ, കോഴിക്കോട്.
13. ദലിത് സാഹിത്യം പരസ്യകല - ഡോ. വി. സി. സുപ്രിയ/ ഡോ. കെ. കെ. ശിവദാസ്, ഡോ. സന്തോഷ് മാനിച്ചേരി - മാളുബൻ പബ്ലിക്കേഷൻസ്.
14. കീഴാളന്റെ പ്രതിരോധതന്ത്രം - ഷീബ എം. കുര്യൻ.
15. കാവ്യഭാവനയുടെ സ്ത്രീപഠനങ്ങൾ - ഡോ. എ. ഷീലാകുമാരി.

മൊഡ്യൂൾ : മൂന്ന് (9 മണിക്കൂർ)

പെണ്ണെഴുത്ത്

സ്ത്രീവാദചിന്തയുടെ ആദ്യാങ്കുരങ്ങൾ - ഇക്കാലത്തെ ഫെമിനിസ്റ്റു ചിന്തയിലെ ശ്രദ്ധേയ വ്യക്തിത്വങ്ങൾ - കൃതികൾ - സ്ത്രീവാദത്തിലെ വ്യത്യസ്ത ധാരകൾ - ഒന്നാംതരംഗ സ്ത്രീവാദം - രണ്ടാംതരംഗസ്ത്രീവാദം - മൂന്നാംതരംഗസ്ത്രീവാദം, പ്രധാന വ്യക്തിത്വങ്ങളും കൃതികളും - ശ്രദ്ധേയങ്ങളായ ഉപധാരകൾ - ഉദാരസ്ത്രീവാദം (Liberal feminism), സോഷ്യലിസ്റ്റു സ്ത്രീവാദം, മാർക്സിസ്റ്റുസ്ത്രീവാദം, മൗലിക സ്ത്രീവാദം (Radical feminism), കറുത്തസ്ത്രീവാദം (Black feminism), എക്കോ ഫെമിനിസം - സ്ത്രീവാദവും സാഹിത്യവും - സ്ത്രൈണ സർഗ്ഗാത്മകതയെക്കുറിച്ചുള്ള വ്യത്യസ്ത സമീപനങ്ങൾ - ഭാഷയുടെ ലിംഗകേന്ദ്രിത സ്വഭാവം - ഇവയെക്കുറിച്ചുള്ള സാമാന്യപഠനം - കേരളത്തിലെ സ്ത്രീമുന്നേറ്റങ്ങളുടെ ചരിത്രപശ്ചാത്തലം - മലയാളത്തിലെ സ്ത്രീരചനാപാരമ്പര്യങ്ങൾ - ആദ്യകാല എഴുത്തുകാരികൾ - തുടർന്നുള്ള ഘട്ടങ്ങൾ - മുഖ്യസംഭാവനകൾ.

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

പെണ്ണെഴുത്ത് : മലയാള മാതൃകകൾ

എ. കവിത

1. കെട്ടിയിട്ട കോലാട് - കമലാദാസ് (വിവ. സച്ചിദാനന്ദൻ)
   (ഈ പേരിലുള്ള കവിത മാത്രം)
2. പ്രതിഷ്ഠ - സാവിത്രിരാജീവൻ
3. പെണ്ണുങ്ങൾ കാണാത്ത പാതിരാനേരങ്ങൾ - വി. എം. ഗിരിജ
   (ഈ പേരിലുള്ള കവിത മാത്രം)

ബി. കഥ

1. പരാജിത - രാജലക്ഷ്മി
2. വനദുർഗ്ഗ - സാറാജോസഫ്
3. ഇത്തവണ രാധ - പ്രിയ. എ. എസ്.

സി. ആത്മകഥ

നഷ്ടബോധങ്ങളില്ലാതെ (ആത്മകഥ) - ദേവകി നിലയങ്ങോട്

സഹായകഗ്രന്ഥങ്ങൾ

1. ഫെമിനിസം : ചരിത്രപരമായ ഒരന്വേഷണം - ഡോ. എം. ലീലാവതി, ചിന്ത, പബ്ലിഷേഴ്സ്.
2. ഫെമിനിസം - വാല്യം 1, 2 (എഡി.) ഡോ. ജാൻസി ജയിംസ്, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
3. കേരളത്തിലെ സ്ത്രീമുന്നേറ്റങ്ങളുടെ ചരിത്രം - സി. എസ്. ചന്ദ്രിക, സാഹിത്യ അക്കാദമി.
4. ആദ്യകാല സ്ത്രീകഥകൾ - (എഡി.) ഡോ. എം. എം. ബഷീർ, ലിപി പബ്ലി ക്കേഷൻസ്.
5. സ്ത്രീവാദം - ജെ. ദേവിക, ഡി. സി. ബുക്സ്.
6. സ്ത്രീരചനാദർശനം : ഒരു അവലോകനം - പ്രശാന്ത് കുമാർ. എൻ., എൻ.ബി. എസ്. കോട്ടയം.
7. സ്ത്രീസ്വത്വാവിഷ്ക്കാരം മലയാളത്തിൽ - ഡോ. എം. ലീലാവതി, സാഹിത്യ അക്കാഡമി, തൃശൂർ.
8. സ്ത്രീവിമോചനം : ചരിത്രം, സിദ്ധാന്തം, പഠനം - എ. കെ. രാമകൃഷ്ണൻ/ കെ. എം. വേണുഗോപാലൻ, നയനാബുക്സ്, പയ്യന്നൂർ.
9. ആധുനിക മലയാളകവിതയിലെ സ്ത്രീപക്ഷ സമീപനങ്ങൾ - പി. ഗീത, ലിപി പബ്ലിക്കേഷൻസ്, കോഴിക്കോട്.
10. ഇക്കൊഫെമിനിസം, ഇക്കോടൂറിസം, മാർക്സിസം - എൻ. എം. പിയേഴ്സൺ, കറന്റ് ബുക്സ്, കോട്ടയം.
11. മുടിത്തെയ്യങ്ങൾ - സച്ചിദാനന്ദൻ ('പാപത്തറ' എന്ന സമാഹാരത്തിന്റെ ആമുഖ പഠനം).
12. പ്രത്യവമർശം - ബാലചന്ദ്രൻ വടക്കേടത്ത്, കറന്റ് ബുക്സ്, കോട്ടയം.
13. കുലസ്ത്രീകളും ചന്തപ്പെണ്ണുങ്ങളും ഉണ്ടായത് - (എഡി.) ജെ. ദേവിക.

സെമസ്റ്റർ : അഞ്ച്

സെമസ്റ്റർ	:	V
കോഴ്സ് കോഡ്	:	ML 1541
കോർ കോഴ്സ്	:	VI
സമയക്രമം	:	ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)
ക്രെഡിറ്റ്	:	4

ഭാഷാശാസ്ത്രം - ഭാഷാചരിത്രം

എ - ഭാഷാശാസ്ത്രം

പഠനോദ്ദേശ്യം

ഭാഷയുടെ ശാസ്ത്രീയപഠനമാണ് ഭാഷാശാസ്ത്രം. ഭാഷാസ്വരൂപം അപഗ്രഥിച്ച് ഭാഷാനിയമം രൂപവൽക്കരിക്കുക, കണ്ടെത്തിയ നിയമപദ്ധതി ഭാഷകളിൽ പ്രയോഗിക്കുക എന്നിങ്ങനെ രണ്ടു സുപ്രധാന ലക്ഷ്യങ്ങളാണ് ഭാഷാശാസ്ത്രത്തിനുള്ളത്. ഭാഷാ ശാസ്ത്രത്തിൽ താല്പര്യമുളവാക്കാൻ പര്യാപ്തമായ പ്രാഥമിക പഠനമാണ് ഇവിടെ ലക്ഷ്യമാക്കുന്നത്.

രീതിശാസ്ത്രം

വിദ്യാർത്ഥികേന്ദ്രിതമായ ഒരു പഠനരീതി ഈ കോഴ്സിലും അനുവർത്തിക്കണം. ഭാഷാശാസ്ത്രസംബന്ധമായ സിദ്ധാന്തങ്ങൾ മനസ്സിലാക്കുതോടൊപ്പം ഭാഷയിൽനിന്ന് പ്രായോഗികമാതൃകകൾ കണ്ടെത്തി, വിശകലനം ചെയ്ത് അറിവ് ആഴത്തിലുള്ള താക്കാനും പ്രത്യേകം ശ്രദ്ധിക്കേണ്ടതാണ്. അതിനു സഹായകമാകുംവിധത്തിൽ അസൈൻമെന്റും സെമിനാറും ക്രമീകരിക്കാവുന്നതാണ്.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

1. ഭാഷ - നിർവചനം - ഭാഷയുടെ സവിശേഷതകൾ - ജീവൽഭാഷ, മൃതഭാഷ, സ്വാഭാവികഭാഷ, കൃത്രിമഭാഷ, മാനകഭാഷ, മാനകേതര ഭാഷ.
2. ഭാഷാപഗ്രഥനരീതികൾ - ഏകകാലികം, ബഹുകാലികം, താരതമ്യാത്മകം, വിവരണാത്മകം, ചരിത്രാത്മകം.
3. വർണ്ണവിജ്ഞാനീയം - വർണ്ണം, അക്ഷരം - സ്വനം, സ്വനിമം, ഉപസ്വനം. വിതരണം - വ്യത്യയവിതരണം, പൂരകവിതരണം. സ്വരവിഭജനം - വ്യഞ്ജനവിഭജനം (ഉച്ചാരണസ്ഥാനം, ഉച്ചാരണരീതി എന്നിവയെ ആസ്പദമാക്കി).
4. രൂപവിജ്ഞാനീയം - രൂപം, രൂപിമം, ഉപരൂപം - രൂപിമ വിഭാഗങ്ങൾ.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

1. വാക്യവിജ്ഞാനീയം - വാക്യം, വാക്യവിഭാഗങ്ങൾ.
2. അർത്ഥവിജ്ഞാനീയം - അർത്ഥപരിണാമം, അർത്ഥവികാസം, അർത്ഥസങ്കോചം, അർത്ഥോൽക്കർഷം, അർത്ഥാപകർഷം
3. ഭാഷാഭേദവിജ്ഞാനം - വ്യക്തിഭാഷ, ഭാഷാഭേദം, ഭാഷ - മലയാളത്തിലെ ഭാഷാ ഭേദങ്ങൾ.

സെമിനാർ - അസൈൻമെന്റ്

1. ഭാഷാഗോത്രവിഭജനത്തിന്റെ ശാസ്ത്രീയാടിസ്ഥാനം.
2. ഭാഷാശാസ്ത്രപഠനം ഇതരവിജ്ഞാനമേഖലകളെ എങ്ങനെ സ്വാധീനിക്കുന്നു?
3. ഭാഷയുടെ അടിസ്ഥാന ഘടകങ്ങളെക്കുറിച്ചുള്ള പഠനം.
4. ഭാഷാശാസ്ത്രത്തിൽ ഭാഷാഭേദത്തിനുള്ള പഠന-സാധ്യതകൾ.

സഹായകഗ്രന്ഥങ്ങൾ

1. ഭാഷാശാസ്ത്രപ്രവേശിക - ഇ.വി.എൻ. നമ്പൂതിരി.
2. വാക്യഘടന - ഇ.വി.എൻ. നമ്പൂതിരി.
3. ആധുനിക ഭാഷാശാസ്ത്രം - കെ. എം. പ്രഭാകരവാര്യർ/ശാന്താ അഗസ്റ്റിൻ
4. ഭാഷാശാസ്ത്ര പരിചയം - വി. ആർ. പ്രബോധചന്ദ്രൻ നായർ
5. ഭാഷയും മനഃശാസ്ത്രവും - കെ. എം. പ്രഭാകരവാര്യർ
6. സ്വനിമ വിജ്ഞാനം - കെ. എം. പ്രഭാകരവാര്യർ
7. ഭാഷാശാസ്ത്ര നിഘണ്ടു - വി. ആർ. പ്രബോധചന്ദ്രൻ നായർ
8. ദ്രാവിഡ ഭാഷകൾ - ആന്ദ്രനോവ് എം. എസ്.
9. ഭാഷാർത്ഥം - ടി. ബി. വേണുഗോപാലപ്പണിക്കർ.
10. ഭാഷാഭേദവിജ്ഞാനം - പി. സോമശേഖരൻനായർ.
11. ഭാഷാദർശനം - സി. ജെ. റോയ്.
12. ചോംസ്കി - നൂറ്റാണ്ടിന്റെ മനസ്സാക്ഷി - എം. എ. ബേബി (എഡി.).
13. സ്വനവിജ്ഞാനം - വി. ആർ. പ്രബോധചന്ദ്രൻ നായർ.
14. ഭാഷാശാസ്ത്രവിവേകം - കെ. എം. പ്രഭാകരവാര്യർ.
15. അധികാരവും ഭാഷയും - പി. എം. ഗിരീഷ്.
16. ഭാഷാവ്യാകരണ പഠനം - പ്രൊഫ. എസ്. അച്യുതവാര്യർ.

ബി. ഭാഷാചരിത്രം

പഠനോദ്ദേശ്യം

മലയാളഭാഷയുടെ ഉല്പത്തി വികാസപരിണാമങ്ങളെക്കുറിച്ച് വിദ്യാർത്ഥികൾക്ക് സാമാന്യജ്ഞാനം നല്കുകയാണ് ഇവിടെ ലക്ഷ്യമാക്കുന്നത്. സാഹിത്യചരിത്രത്തിൽ നിന്ന് എങ്ങനെ ഭാഷാചരിത്രം വ്യത്യസ്തമാകുന്നു എന്ന് വിദ്യാർത്ഥികൾ തിരിച്ചറിയേണ്ടതുണ്ട്.

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

മലയാളഭാഷാചരിത്രം എഴുത്തച്ഛൻവരെ

1. മലയാളം എന്ന പദത്തിന്റെ നിരുക്തി.
2. മലയാളഭാഷയുടെ ഉല്പത്തിസംബന്ധമായ വിവിധ വാദഗതികൾ.
3. പ്രാചീന മധ്യകാലശാസന ഭാഷ - വാഴപ്പിള്ളി, തരിസാപ്പള്ളി, തിരുനെല്ലി - ശാസനഭാഷയുടെ സവിശേഷതകൾ.
4. ശാസനേതരഗദ്യഭാഷ - ഭാഷാകൗടലീയം, ബ്രഹ്മാണ്ഡപുരാണം.
5. പാട്ടുഭാഷ, നിരണം കൃതികളിലെ ഭാഷ.
6. മണിപ്രവാളം - ലക്ഷണം.

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

മലയാള ഭാഷാചരിത്രം എഴുത്തച്ഛൻ മുതൽ

1. മലയാള കാവ്യഭാഷ എഴുത്തച്ഛൻ മുതൽ (സാമാന്യാവലോകനം).
2. മിഷണറിഗദ്യം - ഉദയംപേരൂർ സൂനഹദോസിലെ കാനോനകൾ, വർത്തമാനപ്പുസ്തകം.
3. സമകാലികമലയാളഭാഷ - വിദേശഭാഷകളുടെ സ്വാധീനം.
4. മാധ്യമ മലയാളം - പത്രഭാഷ, ദൃശ്യമാധ്യമങ്ങളിലെ ഭാഷ, സൈബർമലയാളം.

സെമിനാർ, അസൈൻമെന്റ്

1. മലയാളഭാഷയുടെ വളർച്ചയിൽ പത്രഭാഷ ചെലുത്തിയ സ്വാധീനം.
2. ഇന്നത്തെ ഗദ്യഭാഷയുടെ സവിശേഷതകൾ.
3. ഇന്നത്തെ കാവ്യഭാഷയുടെ സവിശേഷതകൾ.
4. മലയാളഭാഷയുടെ വികാസത്തിന്റെ ഘട്ടങ്ങൾ - ഒരു വിശകലനം.

സഹായകഗ്രന്ഥങ്ങൾ

1. മലയാളഭാഷാചരിത്രം - (എഡി.) എസ്. വി. വേണുഗോപൻ നായർ.
2. കേരളപാണിനീയം (പീഠിക) - ഏ. ആർ. രാജരാജവർമ്മ.
3. ലീലാതിലകം - ആദ്യത്തെ മൂന്നുശില്പം.
4. കേരളഭാഷാ വിജ്ഞാനീയം - ഡോ. കെ. ഗോദവർമ്മ.
5. കേരളഭാഷയുടെ വികാസപരിണാമങ്ങൾ - ഇളംകുളം കുഞ്ഞൻപിള്ള.
6. മധ്യകാലമലയാളം - ഡോ. പി. വി. വേലായുധൻപിള്ള.
7. ബ്രഹ്മാണ്ഡപുരാണം അവതാരിക - ഡോ. പി. വി. വേലായുധൻപിള്ള.
8. പൂർവ്വകേരളഭാഷ - ഡോ. കെ. എം. പ്രഭാകരവാര്യർ.
9. പ്രാചീനമലയാളം - ശാസന ഭാഷാപഠനം - ഡോ. പുതുശ്ശേരി രാമചന്ദ്രൻ.
10. മിഷിനറിഗദ്യമലയാള മാതൃകകൾ - സാമുവൽ ചന്ദനപ്പള്ളി.
11. ഭാഷാചരിത്രം എഴുത്തച്ഛൻ വരെ - ഡോ. കെ. രത്നമ്മ.

12. കൃസ്ത്യാനികളും മലയാളസാഹിത്യവും – ഡോ. പി. ജെ. തോമസ്.
13. ആധുനിക സാഹിത്യചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ – ഡോ. കെ.എം. ജോർജ് (എഡി.).
14. അന്വേഷണം – ഡോ. എൻ. ആർ. ഗോപിനാഥപിള്ള.
15. കേരളസാഹിത്യചരിത്രം – ഉള്ളൂർ.
16. ഭാഷാചരിത്രം – ഇ. വി. എൻ. നമ്പൂതിരി.
17. മലയാളം മാറ്റവും വളർച്ചയും – കെ. എം. പ്രഭാകരവാര്യർ.

സെമസ്റ്റർ	**:**	**V**
കോഴ്സ് കോഡ്	**:**	**ML 1542**
കോർ കോഴ്സ്	**:**	**VII**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**4**

ചെറുകഥാപഠനം

കഥാമാലിക (കേരളസർവ്വകലാശാല പ്രസിദ്ധീകരണം)

പഠനോദ്ദേശ്യം

1. ചെറുകഥാസാഹിത്യത്തിന്റെ ഉദ്ഭവത്തെക്കുറിച്ചും വളർച്ചയെക്കുറിച്ചും മനസ്സിലാക്കുക.
2. മലയാളചെറുകഥാചരിത്രത്തിലെ വ്യത്യസ്ത കാലഘട്ടങ്ങളെയും പ്രവണതകളെയും കുറിച്ച് പഠിക്കുക.
3. സമകാലിക മലയാളചെറുകഥകളുടെ രൂപതലത്തിലും ഭാവതലത്തിലുമുള്ള സവിശേഷതകൾ മനസ്സിലാക്കുക.
4. ചെറുകഥകളെ ചരിത്രപരമായും സാംസ്കാരികമായും വിശകലനംചെയ്യാനും വിലയിരുത്താനും വിദ്യാർത്ഥികളെ പ്രാപ്തരാക്കുക.
5. വിദ്യാർത്ഥികളിൽ ആസ്വാദനശേഷി വളർത്തുക.

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

ചെറുകഥയുടെ ചരിത്രം – കഥ എന്നാൽ എന്ത്? കഥാപാരമ്പര്യം – നാടോടിക്കഥകൾ, ജാതകകഥകൾ, ബൈബിളിലെ കഥകൾ തുടങ്ങി പഴയമട്ടിലുള്ള കഥകളുടെ സ്വഭാവം – അച്ചടിയുടെ പ്രചാരം – ആനുകാലിക പ്രസിദ്ധീകരണങ്ങളും ചെറുകഥയും – രണ്ടുതരം കഥകൾ – ചെറുകഥയുടെ ആദ്യമാതൃകകൾ – ചെറുകഥയുടെ ഘടനാപരമായ സവിശേഷതകൾ – ഏകാഗ്രത, സംക്ഷിപ്തത, ഏകീകൃത ഫലപ്രതീതി – ചെറുകഥയുടെ യൂറോപ്യൻ മാതൃകകൾ – മോപ്പസാങ്ങ്, ചെഖോവ് – മലയാള ചെറുകഥകളുടെ ആവിർഭാവം – ആദ്യകാല മലയാള ചെറുകഥകൾ – വിവരണാത്മകമായ അവതരണം – പരിണാമഗുപ്തി – ആലങ്കാരിക ഭാഷ – സാമൂഹിക യാഥാർത്ഥ്യത്തിന്റെ കുറവ്.

വിശദപഠനം

1. വാസനാവികൃതി – വേങ്ങയിൽ കുഞ്ഞിരാമൻ നായനാർ.
2. ഉളിപിടിച്ച കയ്യ് – അമ്പാടി നാരായണപൊതുവാൾ.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

ലോകചെറുകഥയുമായി പരിചയപ്പെടുന്നു – സാമൂഹിക ലക്ഷ്യത്തോടുകൂടിയ പ്രമേയം – ലളിതമായ ഭാഷ – വസ്തുനിഷ്ഠവും ബാഹ്യവുമായ വീക്ഷണം – റിയലിസ്റ്റ് സാങ്കേതികരീതി – ഹ്യൂമനിസ്റ്റ് സമീപനം – പ്രാദേശികത്തനിമ.

വിശദപഠനത്തിന്

1. ഉതുപ്പാന്റെ കിണർ – കാരൂർ
2. ജന്മദിനം – ബഷീർ
3. രാച്ചിയമ്മ – ഉറൂബ്
4. ശബ്ദിക്കുന്ന കലപ്പ – പൊൻകുന്നം വർക്കി
5. ശംഖ് – കോവിലൻ

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

സാമൂഹിക പ്രമേയങ്ങളിൽ നിന്നും വ്യക്തിനിഷ്ഠ പ്രമേയങ്ങളിലേക്കുള്ളമാറ്റം – ഏകാകികളുടെ കഥകൾ – ചിത്തവൃത്തികളുടെ ആവിഷ്ക്കാരം – ഭാവഗീതാത്മകമായ രചന – ബോധധാരയോട് അടുത്തുനിൽക്കുന്ന ആവിഷ്ക്കാരം – മനുഷ്യാവസ്ഥയെ സംബന്ധിച്ച ദാർശനികമായ അന്വേഷണം – സാമൂഹിക നിയമങ്ങളോടും സദാചാര മൂല്യങ്ങളോടുമുള്ള വെല്ലുവിളി – അസ്തിത്വദർശനം – അന്യവല്ക്കരണം – മരണാഭിമുഖ്യം – സങ്കീർണ്ണമായ ആഖ്യാനഘടന – പ്രകടനാത്മകമായ ഭാഷാരീതി.

വിശദപഠനം

1. വാനപ്രസ്ഥം – എം. ടി. വാസുദേവൻനായർ
2. നെയ്പായസം – മാധവിക്കുട്ടി
3. വിവാഹപ്പിറ്റേന്ന് – വി. കെ. എൻ.
4. ആർക്കറിയാം – സക്കറിയ
5. ചൂളൈമേടിലെ ശവങ്ങൾ – എൻ. എസ്. മാധവൻ

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

ആധുനികതയിൽ നിന്ന് മുന്നോട്ട് – കഥയിലെ സൂക്ഷ്മരാഷ്ട്രീയം – പരിസ്ഥിതി സ്ത്രീവാദം – പാർശ്വവല്ക്കരിക്കപ്പെട്ടവരുടെ ജീവിതം – സാങ്കേതിക ജഡിലതയിൽ നിന്നുള്ള മോചനം. ആഗോളവല്ക്കരണത്തിന്റെ സ്വാധീനത – മാധ്യമവത്കൃതമായ ലോകം – സൈബർസ്വാധീനം – പ്രാദേശിക സ്വത്വാന്വേഷണം – ആഖ്യാനത്തിലെ പുതുമകൾ – സമകാലിക ജീവിതത്തോടുള്ള പ്രതികരണം.

വിശദപഠനം

1. ശ്രീപാർവ്വതിയുടെ പാദം – ഇ. ഹരികുമാർ
2. സ്ഥാവരം – എൻ. പ്രഭാകരൻ
3. മണ്ണ് – സിതാര. എസ്.
4. എറണാകുളം സൗത്ത് – എസ്. ആർ. ലാൽ
5. ഒറ്റവൈക്കോൽ വിപ്ലവം – വി. ജെ. ജയിംസ്

സഹായകഗ്രന്ഥങ്ങൾ

1. ചെറുകഥാ പ്രസ്ഥാനം – എം. പി. പോൾ.
2. ചെറുകഥ, ഇന്നലെ, ഇന്ന് – എം. അച്ചുതൻ.
3. കഥ – ആഖ്യാനവും അനുഭവസത്തയും – കെ. പി. അപ്പൻ.
4. ചെറുകഥയുടെ ഛന്ദസ്സ് – വി. രാജകൃഷ്ണൻ.
5. കഥയും ഭാവുകത്വപരിണാമവും – ഡോ. കെ. എസ്. രവികുമാർ.
6. ചെറുകഥ വാക്കും വഴിയും – ഡോ. കെ. എസ്. രവികുമാർ.
7. കഥയുടെ ന്യൂക്ലിയസ്സ് – വത്സലൻ വാതുശ്ശേരി.
8. കഥയും പരിസ്ഥിതിയും – ജി. മധുസൂദനൻ.
9. സ്ഥലവും കാലവും മലയാളചെറുകഥയിൽ – ഡോ. സോമൻ നെല്ലിവിള.
10. കഥതേടുന്ന കഥ – എൻ. പ്രഭാകരൻ.
11. മലയാള ചെറുകഥാസാഹിത്യചരിത്രം – എം. എം. ബഷീർ.
12. കൊത്തിമുറിച്ച ശില്പങ്ങൾ – (എഡി.) എൻ.ബി.സുരേഷ്, ലോഗോസ് ബുക്സ്.
13. ഭാവുകത്വത്തിന്റെ വഴികൾ – ഡോ. എം. കൃഷ്ണൻ നമ്പൂതിരി.
14. കഥയുടെ പ്രകാശവർഷങ്ങൾ – ഡോ. ടി. ജിതേഷ്.
15. വാക്കിന്റെ വഴിച്ചന്തം – ഡോ. അജയപുരം ജ്യോതിഷ് കുമാർ, ലിപി – കോഴിക്കോട്.
16. നിലപാടുറപ്പിക്കുന്ന ആഖ്യാനങ്ങൾ ('ആധുനികതയ്ക്ക് ഒരു ദേശീയബദൽ' എന്ന ലേഖനം) – ഡോ. സി. ആർ. പ്രസാദ്.
17. മാധവിക്കുട്ടി : സ്നേഹത്തിന്റെ കൊടിയടയാളം – ഡോ. എം. രാജീവ് കുമാർ.
18. ആഗോളീകരണവും മലയാള ചെറുകഥയും – ഡോ. എം.ഏ. സിദ്ദീക്ക്.
19. കോവിലന്റെ വഴികൾ – ഡോ. എസ്. നസീബ്.
20. കവർ സ്റ്റോറി – (എഡി.) കെ. ബി. ശെൽവമണി.

സെമസ്റ്റർ	**:**	**V**
കോഴ്സ് കോഡ്	**:**	**ML 1543**
കോർ കോഴ്സ്	**:**	**VIII**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**2**

വിവർത്തനം: സിദ്ധാന്തവും പ്രയോഗവും

പഠനോദ്ദേശ്യം

വ്യത്യസ്ത സമൂഹങ്ങൾ തമ്മിലുള്ള സമ്പർക്കത്തെ ആശയവിനിമയത്തിലൂടെ ദൃഢവും അനായാസവും ആകുന്നതിന് സഹായകമായ മാധ്യമമെന്ന നിലയിൽ വിവർത്തനത്തിന് സുപ്രധാനമായ സ്ഥാനമാണുള്ളത്. സാഹിത്യത്തിന്റെ ആശയപരമായ വികാസത്തിനും സമ്പന്നതയ്ക്കും വിവർത്തനം നല്കുന്ന സംഭാവനകളും അതി പ്രധാനമാണ്. അതിനാൽ വിവർത്തനത്തിന്റെ സ്വഭാവവും പ്രയോജനവും ആധുനിക കാലത്തെ അതിന്റെ സാധ്യതകളും പഠനവിധേയമാക്കേണ്ടതുണ്ട്.

വിവർത്തനത്തിന്റെ സ്വഭാവം, അതിന്റെ വ്യത്യസ്ത സമീപനങ്ങൾ, അതിന്റെ സിദ്ധാന്തങ്ങൾ, സാഹിത്യവിവർത്തനത്തിന്റെ പ്രശ്നങ്ങൾ എന്നിവ മനസ്സിലാക്കുക എന്നതാണ് ഈ കോഴ്സിന്റെ ലക്ഷ്യം.

രീതിശാസ്ത്രം

വിവർത്തനത്തിന്റെ മികച്ച മാതൃകകൾ കണ്ടെത്തിയുള്ള പ്രായോഗിക പഠനത്തിനും, ശൈലി, പഴഞ്ചൊല്ലുകൾ, കടങ്കഥകൾ, സാങ്കേതികപദങ്ങൾ, ഭരണഭാഷാപദങ്ങൾ, പത്രപരസ്യം, വാർത്ത എന്നിവയുടെ വിവർത്തനത്തിനും ഈ കോഴ്സിൽ പ്രത്യേകം ഊന്നൽ നല്കുന്നു. കോഴ്സിന്റെ ഉള്ളടക്കവുമായി ബന്ധപ്പെട്ട വിഷയങ്ങൾ അസൈൻമെന്റ്, സെമിനാർ എന്നിവയ്ക്കായി നല്കേണ്ടതാണ്.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

1. വിവർത്തനം

നിർവ്വചനം - സ്രോതഭാഷ, ലക്ഷ്യഭാഷ - വിവർത്തനം എന്ന പദത്തിന് പകരം പ്രയോഗിക്കുന്ന പദങ്ങൾ - വിവർത്തനം കലയോ ശാസ്ത്രമോ - വിവർത്തനത്തിന്റെ സാംസ്കാരിക പ്രാധാന്യം - വിവർത്തനചരിത്രം - മലയാളവിവർത്തനചരിത്രം.

2. വിവർത്തനരീതികൾ

പദാനുപദവിവർത്തനം - സ്വതന്ത്രവിവർത്തനം - ആശയവിവർത്തനം പുനരാഖ്യാനം (Adaptation), പുനഃസൃഷ്ടി (Re-creation).

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

3. വിവർത്തനവും സംസ്കാരവും

വിവർത്തനത്തിന്റെ പ്രശ്നങ്ങൾ - സാങ്കേതിക പദങ്ങളുടെ വിവർത്തനം - കവിതാവിവർത്തനത്തിന്റെ പ്രശ്നങ്ങൾ - വിവർത്തനത്തിന്റെ പരിമിതികൾ - വിവർത്തകന്റെ യോഗ്യതകൾ - യന്ത്രവിവർത്തനം - വിവർത്തനോപകരണങ്ങൾ - വിവർത്തനസിദ്ധാന്തങ്ങൾ - പണ്ഡിതപരിതോഷവാദം (Scholar Satisfaction Method), നികഷോപലവാദം (Touch Stone Method).

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

4. പ്രായോഗിക വിവർത്തനം

എ. സ്രോതഭാഷാപാഠവും ലക്ഷ്യഭാഷാപാഠവും താരതമ്യം ചെയ്തുകൊണ്ട് വിവർത്തനത്തിന്റെ സ്വഭാവവും പ്രശ്നങ്ങളും ചർച്ച ചെയ്യുന്നു.

വിശദപഠനം

1. വീണപൂവ് (കുമാരനാശാൻ) - The Fallen Flower (ജി. കുമാരപിള്ള) (ആദ്യത്തെ പത്ത് ശ്ലോകം).

ബി. ഇംഗ്ലീഷിൽ നിന്ന് മലയാളത്തിലേക്കും, മലയാളത്തിൽ നിന്ന് ഇംഗ്ലീഷിലേക്കും ഉള്ള വിവർത്തനം (കവിത, കഥ, പത്രവാർത്ത, പത്രപരസ്യം, ശൈലികൾ, പഴഞ്ചൊല്ലുകൾ, സാങ്കേതികപദങ്ങൾ, ഭരണഭാഷാപദാവലി എന്നിവ). ചില മാതൃകകൾ നൽകി അവ വിവർത്തനം ചെയ്യാൻ പരിശീലിപ്പിക്കുക. പരീക്ഷയ്ക്ക് പ്രായോഗിക വിവർത്തനത്തിൽനിന്നും ചോദ്യം നിർബന്ധമായും ഉണ്ടായിരിക്കണം.

സഹായകഗ്രന്ഥങ്ങൾ

1. വിവർത്തനം : കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
2. തർജ്ജമ: സിദ്ധാന്തവും പ്രയോഗവും : (എഡി.) ഡോ. സ്കറിയാസക്കറിയ & ജയാസുകുമാരൻ.
3. വിവർത്തന വിചാരം : ഡോ. എൻ. ഇ. വിശ്വനാഥ അയ്യർ.
4. വിവർത്തന വിചിന്തനം : ഡോ. കെ. വി. തോമസ്, ഡോ. മാത്യു ജെ. മുട്ടത്ത്.
5. വിവർത്തന ചിന്തകൾ : (എഡി.) ഡോ. വി. ആർ. പ്രബോധചന്ദ്രൻ നായർ.
6. ഭാഷയും പരിഭാഷയും : എം. പി. സദാശിവൻ (കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്).
7. തർജ്ജമയുടെ താക്കോൽ : സി.വി.വാസുദേവഭട്ടതിരി, സ്കൈ ബുക്ക് പബ്ലിക്കേഷൻസ്, മാവേലിക്കര.
9. വിവർത്തനപഠനസിദ്ധാന്തങ്ങൾ : താപസം 2006, വാല്യം 1-4.
10. വിവർത്തനത്തിന്റെ വിശാലലോകത്തിൽ : ആർസു. വിദ്യാർത്ഥിമിത്രം.
11. ചന്ദ്രികയായി മാറുന്ന സൂര്യപ്രകാശം : ഒ. എൻ. വി കുറുപ്പ്, ചിന്താ പബ്ലിക്കേഷൻസ്.
12. ഭരണശബ്ദാവലി : കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
13. വിവർത്തനവും ആശയവിനിമയവും : കെ. വി. തോമസ്, ലിപി പബ്ലിക്കേഷൻസ്.
14. ബംഗാളി നോവലുകൾ മലയാളത്തിൽ - വിവർത്തനപഠനത്തിന്റെ സിദ്ധാന്തവും പ്രയോഗവും - ജയാസുകുമാരൻ - കറന്റ് ബുക്സ്.

സെമസ്റ്റർ	**:**	**V**
കോഴ്സ് കോഡ്	**:**	**ML 1544**
കോർ കോഴ്സ്	**:**	**IX**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**4**

ജീവചരിത്രം, ആത്മകഥ, യാത്രാനുഭവം

പഠനോദ്ദേശ്യം:

മലയാളസാഹിത്യപഠനത്തിൽ ജീവചരിത്രം, ആത്മകഥ, സ്മരണകൾ, ഓർമ്മക്കുറിപ്പുകൾ, ഡയറിക്കുറിപ്പുകൾ, ജീവിതാനുഭവസാഹിത്യം എന്നിവയ്ക്കുള്ള സവിശേഷസ്ഥാനം വിദ്യാർത്ഥികൾ മനസ്സിലാക്കുക - വ്യക്തിചരിത്രത്തിന്റെ പഠനത്തിലൂടെ സാമൂഹികജീവിതത്തെ വിശകലനം ചെയ്യാനുള്ള ശേഷി ആർജ്ജിക്കുക - സ്വകാര്യമനസ്സിന്റെ സങ്കീർണ്ണതലങ്ങളെക്കുറിച്ച് അവബോധം ആർജ്ജിക്കുന്നതോടൊപ്പം ആത്മാപഗ്രഥനത്തിനും ആത്മാവിഷ്ക്കാരത്തിനും പ്രാപ്തി നേടുക - ജീവചരിത്രം, ആത്മകഥ, ജീവിതാനുഭവം, യാത്രാനുഭവം തുടങ്ങിയവ രചിക്കാനുള്ള അഭിരുചി ഉണ്ടാക്കുക.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (27 മണിക്കൂർ)

ജീവചരിത്രം - നിർവചനം - ജീവചരിത്രകാരനുണ്ടായിരിക്കേണ്ട ഗുണങ്ങൾ - ലോകസാഹിത്യത്തിലെ പ്രധാനപ്പെട്ട ജീവചരിത്രകൃതികൾ - മലയാളത്തിലെ ആദ്യകാല ജീവചരിത്രകൃതികൾ - പ്രത്യേകതകൾ - പില്ക്കാല ജീവചരിത്രകൃതികൾ - തൂലികാചിത്രങ്ങൾ - ജീവചരിത്രനോവൽ - ഇവയെക്കുറിച്ചുള്ള സാമാന്യപഠനം.

വിശദപഠനം

1. ഇവൻ എന്റെ പ്രിയ സിജെ - റോസി തോമസ്
2. കാമ്പിശ്ശേരി (അനുബന്ധം കൂടാതെ) - സാബു കോട്ടുക്കൽ *

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

ആത്മകഥ

എന്താണ് ആത്മകഥ? - നിർവചനം - ആത്മകഥാകാരനുണ്ടായിരിക്കേണ്ട ഗുണങ്ങൾ - ലോകസാഹിത്യത്തിലെ ശ്രദ്ധേയമായ ആത്മകഥകൾ - മലയാളത്തിലെ ആദ്യകാല ആത്മകഥകളുടെ സ്വഭാവം - പില്ക്കാല ആത്മകഥകൾ - ആത്മകഥകളിൽ പ്രതിഫലിക്കുന്ന സാമൂഹിക വ്യവസ്ഥിതി - സ്വകാര്യതകൾ അനാവരണം ചെയ്യുന്നതിൽ എഴുത്തുകാർ സ്വീകരിക്കുന്ന വ്യത്യസ്ത നിലപാടുകൾ - ശൈലീഭേദങ്ങൾ - ആത്മകഥകളിലെ പുതിയ പ്രവണതകൾ - സ്മരണകൾ - ഇവയെക്കുറിച്ചുള്ള സാമാന്യപഠനം.

വിശദപഠനം

അരങ്ങുകാണാത്ത നടൻ - തിക്കോടിയൻ

മൊഡ്യൂൾ : മൂന്ന് (9 മണിക്കൂർ)

ജീവിതാനുഭവ സാഹിത്യം (Life Sketch)

ശക്തവും അനന്യസാധാരണവുമായ ജീവിതാനുഭവങ്ങൾക്കുടമയെങ്കിലും ഭാഷാപരമായോ ആശയപരമായോ ആവിഷ്ക്കാരപരമായോ ഉള്ള പരിമിതികൾ കൊണ്ടോ, മറ്റു കാരണങ്ങൾ കൊണ്ടോ സ്വയം എഴുതാൻ കഴിയാതെ മറ്റൊരാളിന്റെ എഴുത്തിലൂടെ ജീവിതകഥ പറയുന്നവരുടെ പുസ്തകങ്ങൾ ഇന്ന് ധാരാളമായി ഉണ്ടാകുന്നുണ്ട്. അത്തരം പുസ്തകങ്ങളുടെ പഠനമാണ് ഇവിടെ ഉദ്ദേശിക്കുന്നത്. പ്രകൃതി, ഭാഷ, ജീവിതം ഇവയോട് ഇവർ എടുക്കുന്ന വ്യത്യസ്തമായ നിലപാട് പഠനവിധേയ മാക്കണം.

വിശദപഠനം

മയിലമ്മ ഒരു ജീവിതം - ജ്യോതിബായ് പരിയാടത്ത്, മാതൃഭൂമി ബുക്സ്.

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

യാത്രാനുഭവം

യാത്രയ്ക്ക് മനുഷ്യചരിത്രത്തോളം പഴക്കമുണ്ട്. യാത്രാനുഭവം എപ്പോഴും മനുഷ്യജീവിതത്തെ നവീകരിക്കുന്നു. വായനക്കാരന്റെ ലോകാനുഭവചക്രവാളത്തെ വികസ്വരമാക്കുന്നു. കച്ചവടം, വിനോദം, കുടിയേറ്റം, പ്രവാസം ഇവയൊക്കെ യാത്രാനു ഭവത്തിന് പ്രേരകമാകുന്നു.

വിശദപഠനം

ആമസോണും കുറെ വ്യാകുലതകളും - എം.പി. വീരേന്ദ്രകുമാർ

സഹായകഗ്രന്ഥങ്ങൾ

1. ആത്മകഥാസാഹിത്യം മലയാളത്തിൽ - ഡോ. നടുവട്ടം ഗോപാലകൃഷ്ണൻ (ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്).
2. ജീവചരിത്രസാഹിത്യം - ഡോ. കെ. എം. ജോർജ്ജ്.
3. ആത്മകഥാസാഹിത്യം മലയാളത്തിൽ - ഡോ. വിജയാലയം ജയകുമാർ.
4. ജീവചരിത്രസാഹിത്യം മലയാളത്തിൽ - ഡോ. നടുവട്ടം ഗോപാലകൃഷ്ണൻ (ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്).
5. സഞ്ചാരസാഹിത്യം മലയാളത്തിൽ - വി. രമേഷ് ചന്ദ്രൻ.
6. സഞ്ചാരികളും ചരിത്രകാരന്മാരും - വേലായുധൻ പണിക്കശ്ശേരി.
7. യാത്രാവിവരണം - എം.കെ.മാധവൻ നായർ (സാഹിത്യചരിത്രം പ്രസ്ഥാന ങ്ങളിലൂടെ (ജന.എഡി:) ഡോ. കെ. എം. ജോർജ്).
8. സഞ്ചാരസാഹിത്യം - ഡോ. ടി. ജി. മാധവൻകുട്ടി (സമ്പൂർണ്ണ മലയാള സാഹിത്യ ചരിത്രം (എഡി.). പ്രൊഫ. പന്മന രാമചന്ദ്രൻ നായർ, കറന്റ് ബുക്സ്).

സെമസ്റ്റർ	**:**	**V**
കോഴ്സ് കോഡ്	**:**	**ML 1545**
കോർ കോഴ്സ്	**:**	**X**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**4**

തിരക്കഥയും സിനിമയും

പഠനലക്ഷ്യം

വർത്തമാനകാലം മാധ്യമങ്ങളുടേതാണ്. മാധ്യമയുഗത്തിന്റെ വേഗതയിൽനിന്നും സംവാദങ്ങളിൽനിന്നും മാറിനിന്ന് കലാസ്വാദനം നിർവഹിക്കുവാൻ ആഗ്രഹിക്കുന്നവർക്ക് ആ കാലഘട്ടത്തിന്റെതന്നെ നിർമ്മിതിയാണ് സിനിമ. രൂപീകരണപക്ഷത്തും ആസ്വാദനത്തിലും സംഘസ്വഭാവമാണ് സിനിമ പുലർത്തുന്നത്. സിനിമാപഠനത്തിന് വിവിധ രീതികളുണ്ട്. സിനിമയുടെ സ്വഭാവവും നിർമ്മിതിയും സൗന്ദര്യശാസ്ത്രവുമെല്ലാമായി ഈ പഠനം ബന്ധപ്പെട്ടുനിൽക്കുന്നു. ഇവിടെ സിനിമയുടെ സാഹിത്യപക്ഷത്തിന് പ്രധാന്യം നൽകി അതിന്റെ സാമാന്യസ്വഭാവം വിദ്യാർത്ഥികളെ പരിചയപ്പെടുത്തുന്നു.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (9 മണിക്കൂർ)

ചലച്ചിത്രകല

ആധുനികകാലത്തിന്റെ കല - ശ്രദ്ധേയമായ സിനിമാസിദ്ധാന്തങ്ങൾ - തിരക്കഥ - സംവിധാനം - അഭിനയം - ഛായാഗ്രഹണം, ചിത്രസംയോജനം, പശ്ചാത്തലസംഗീതം തുടങ്ങിയ ഘടകങ്ങളുടെ പ്രസക്തി. ഓരോ ദേശത്തിനും ഭാഷയ്ക്കും അവരുടെ സംസ്കാരത്തിനുമനുസരിച്ചുള്ള സിനിമയുണ്ട്. ഹോളിവുഡ് സിനിമ, ഇറാനിയൻ സിനിമ, ജാപ്പനീസ് സിനിമ, ഹിന്ദിസിനിമ, തമിഴ്സിനിമ, മലയാളസിനിമ - ടെലിവിഷൻ, ഇന്റർനെറ്റ് സിനിമ, മൊബൈൽ ഫോൺ തുടങ്ങിയ മാധ്യമങ്ങളിലേക്കുള്ള സിനിമയുടെ വ്യാപനം - വിവിധതരം സിനിമകൾ കലയെന്ന നിലയിലും വ്യവസായമെന്ന നിലയിലും - ചലച്ചിത്ര പ്രതിഭകൾ - എഡിൻ. എസ്. പോർട്ടർ, ഗ്രിഫിത്ത്, ചാർലി ചാപ്ലിൻ, ഐസൻസ്റ്റീൻ, പുഡോവ്കിൻ, ഡിസീക്ക, ഇൻഗ്മർ ബർഗ്മാൻ, കുറോസോവ, സത്യജിത്ത് റേ, ഋതിക്ക് ഘട്ടക്ക്, മൃണാൾ സെൻ, രാമു കാര്യാട്ട്, ജി. അരവിന്ദൻ, ജോൺ എബ്രഹാം, ഭരതൻ, പി. പത്മരാജൻ, അടൂർ ഗോപാലകൃഷ്ണൻ.

മൊഡ്യൂൾ : രണ്ട് (9 മണിക്കൂർ)

തിരക്കഥയുടെ പ്രസക്തി

തിരക്കഥയെ സംബന്ധിച്ച നിർവചനങ്ങൾ - തിരക്കഥയിലടങ്ങിയിരിക്കുന്ന ഘടകങ്ങളായ പ്രമേയം, ഇതിവൃത്തം, കഥാപാത്രങ്ങൾ, സംഭാഷണം, ദൃശ്യസൂചനകൾ, ശബ്ദസൂചനകൾ - ഈ ഘടകങ്ങൾകൊണ്ട് രൂപീകരിക്കുന്ന തിരക്കഥയുടെ ഭാഷ - തിരക്കഥയുടെ ഘടന - തിരക്കഥാരചനയ്ക്ക് ആശയം സ്വീകരിക്കുന്ന രീതികൾ - തിരക്കഥാരചനയുടെ മേഖലകൾ - തിരക്കഥാവായനയുടെ രീതികൾ.

മൊഡ്യൂൾ : മൂന്ന് (9 മണിക്കൂർ)

തിരക്കഥയും സിനിമയും

തിരക്കഥയിലെ ലിഖിതഭാഷ പരിവർത്തനപ്പെട്ട് സിനിമയിലെ ദൃശ്യഭാഷയാകുന്നു. സംവിധായകന്റെ പ്രസക്തി, സിനിമയിലെ അഭിനയം, സിനിമാഗാനം, സിനിമയിലെ പശ്ചാത്തലം, ദൃശ്യബിംബങ്ങളുടെ അവതരണം - വീക്ഷണദിശകൾ, ക്യാമറയുടെ ചലനരീതികൾ - സീൻ സീക്വൻസ് - ചലച്ചിത്രഭാഷ, സിനിമയും സംസ്കാരവും, തിരക്കഥാകൃത്തും സംവിധായകനും - അഭിനേതാവ് കഥാപാത്രമാകുന്നു.

മൊഡ്യൂൾ : നാല് (9 മണിക്കൂർ)

സിനിമയും സാഹിത്യവും

സാഹിത്യവുമായുള്ള സിനിമയുടെ ബന്ധമാണ് ഇവിടെ വിശകലനം ചെയ്യുന്നത്. സാഹിത്യകൃതികൾ സിനിമയാകുന്നു. സാഹിത്യകൃതി - തിരക്കഥ - സിനിമ ഇവിടെ സംഭവിക്കുന്ന പരിവർത്തനങ്ങൾ വിശകലനം ചെയ്യുക. കഥകൾ, നോവലുകൾ, നാടകങ്ങൾ തുടങ്ങിയവ സിനിമയായതിന്റെ പശ്ചാത്തലത്തിൽ മാധ്യമപരിവർത്തനത്തെപ്പറ്റി വിലയിരുത്തുക. അനുകല്പനപഠനങ്ങൾ- സ്വതന്ത്രസിനിമ - അനുകല്പനസിനിമ, പുനരാവിഷ്കാരസിനിമ മലയാളപരിസരത്തിൽ സാമാന്യമായി പഠിക്കുക. സിനിമയും ഇതരകലാരൂപങ്ങളും - സിനിമാസ്വാദനത്തിന്റെ രീതി - സിനിമയെപ്പറ്റിയുള്ള പഠനങ്ങൾ, നിരൂപണങ്ങൾ, സിദ്ധാന്തങ്ങൾ - സിനിമയിലെ പുതുപ്രവണതകൾ.

മൊഡ്യൂൾ : അഞ്ച് (36 മണിക്കൂർ)

തിരക്കഥയുടെ വായനയും സിനിമയുടെ കാഴ്ചയും

സെല്ലുലോയ്ഡ് എന്ന തിരക്കഥ വായിക്കുകയും സിനിമ കാണുകയും ചെയ്യുക. പ്രമേയം, ഇതിവൃത്തം, കഥാപാത്രങ്ങൾ, സംഭാഷണം, ശബ്ദസൂചനകൾ, ദൃശ്യസൂചനകൾ തുടങ്ങിയവ തിരക്കഥയിലും സിനിമയിലും സംഭവിച്ചിരിക്കുത് വിലയിരുത്തുക. സെല്ലുലോയ്ഡ് എന്ന സിനിമയുടെ സാമൂഹികസാംസ്കാരിക മേഖലകളെപ്പറ്റി ചർച്ച ചെയ്യുക.

പ്രദർശനം - ക്ലാസ്സിക് സിനിമകൾ

ദി കിഡ്	-	Charles Chaplin
ദി ബൈസിക്കിൾ തീവ്സ്	-	Vittorio De Sica
പഥേർ പാഞ്ചാലി	-	സത്യജിത്ത് റേ
ചെമ്മീൻ	-	രാമു കാര്യാട്ട്

സിനിമാ വിശകലനം

അനുകല്പന സിനിമകൾ

നിർമ്മാല്യം - എം.ടി. വാസുദേവൻ നായർ
(മൂലകഥ - പള്ളിവാളും കാൽച്ചിലമ്പും - എം.ടി. വാസുദേവൻ നായർ)

വിധേയൻ - അടൂർ ഗോപാലകൃഷ്ണൻ
(മൂലകൃതി - ഭാസ്കര പട്ടേലരും എന്റെ ജീവിതവും - സക്കറിയ)

പുനരാവിഷ്കാര സിനിമകൾ

നീലത്താമര	-	യൂസഫലി കേച്ചേരി (മൂലസിനിമ) ലാൽജോസ് (പുനരാവിഷ്കാരസിനിമ)
തേന്മാവിൻ കൊമ്പത്ത്	-	പ്രിയദർശൻ (മൂലസിനിമ)
മുത്തു	-	കെ.എസ്.രവികുമാർ (പുനരാവിഷ്കാരസിനിമ)

സ്വതന്ത്ര സിനിമകൾ

ചിന്താവിഷ്ടയായ ശ്യാമള	-	ശ്രീനിവാസൻ
101 ചോദ്യങ്ങൾ	-	സിദ്ധാർത്ഥ ശിവ

അസൈൻമെന്റ് - 1

1. സാഹിത്യകൃതികൾ സിനിമയാകുമ്പോൾ സംഭവിക്കുന്ന മാറ്റങ്ങൾ നിർമ്മാല്യം, വിധേയൻ എന്നീ സിനിമകളെ ആധാരമാക്കി പരിശോധിക്കുക.
2. പുനരാവിഷ്കാര സിനിമയുടെ സവിശേഷതകൾ നീലത്താമര, മുത്തു എന്നീ സിനിമകളെ ആധാരമാക്കി വിലയിരുത്തുക.
3. സ്വതന്ത്ര സിനിമയ്ക്ക് വിമർശനാത്മകമായി ആസ്വാദനം തയ്യാറാക്കുക.

   ചിന്താവിഷ്ടയായ ശ്യാമള, 101 ചോദ്യങ്ങൾ ഏതെങ്കിലും ഒന്ന് തിരഞ്ഞെടുക്കുക.

അസൈൻമെന്റ് - 2

വ്യത്യസ്തമായ പ്രമേയങ്ങളെ അവലംബിച്ച് പരമാവധി 10 മിനിറ്റ് ദൈർഘ്യമുള്ള ലഘുചിത്രങ്ങൾക്കുവേണ്ടി തിരക്കഥകൾ രചിക്കുക (ഒറ്റയായോ അഞ്ചുപേർ ചേർന്നുള്ള സംഘങ്ങളായോ അസൈൻമെന്റ് ചെയ്യാവുന്നതാണ്).

സഹായകഗ്രന്ഥങ്ങൾ, വെബ്സൈറ്റുകൾ

1. സിനിമ - വീഡിയോ ടെക്നിക് - ഡോ. മുരളീകൃഷ്ണ, ഡി. സി. ബുക്സ്, 2008.
2. ചിത്രം ചലച്ചിത്രം - മങ്കട രവിവർമ്മ, കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്, തിരുവനന്തപുരം, 2000.
3. ഡോക്യുമെന്ററി സിനിമ - എം. എം. വർക്കി, എൻ.ബി.എസ്, 1999.
4. കഥയും തിരക്കഥയും - ഡോ. ജോസ് കെ. മാനുവൽ, കൈരളി ബുക്സ്, കണ്ണൂർ, 2009.
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6. ചലച്ചിത്രപഠനങ്ങൾ - (എഡി:) പന്മന രാമചന്ദ്രൻ നായർ, കറന്റ് ബുക്സ്, കോട്ടയം, 2008.
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സെമസ്റ്റർ	**:**	**V**
കോഴ്സ് കോഡ്	**:**	**ML 1511.1**
ഓപ്പൺ കോഴ്സ്	**:**	**I**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**2**

കേരളീയകലകൾ

പഠനോദ്ദേശ്യം:

കലകളുടെ വിശാലമായ സൗന്ദര്യലോകത്തേക്ക് വിദ്യാർത്ഥികളെ ആനയിക്കുകയും അവരുടെ കലാവാസനകൾക്ക് ഉന്മേഷവും പ്രേരണയുമുണ്ടാക്കുകയും കലാസ്വാദനത്തിലൂടെ മാനസികമായ വികാസം സാധ്യമാക്കുകയും ചെയ്യുകയെന്നതാണ് ഈ കോഴ്സിന്റെ പ്രാഥമികോദ്ദേശ്യം. കേരളീയകലകളുടെ പൊതു അവലോകനത്തിലൂടെ അവയുടെ ഉള്ളിലേക്കിറങ്ങിക്കൊണ്ട് കേരളത്തിന്റെ കലാചരിത്രവും സംസ്കാരവും മനസ്സിലാക്കാനും വാക്കും വസ്തുവും ശരീരവും സമന്വയിക്കുന്ന കേരളീയഭാവനയുടെ ഔന്നത്യം തിരിച്ചറിയാനും വിദ്യാർത്ഥികളെ പ്രാപ്തരാക്കുക എന്നതിനാണ് ഊന്നൽ നല്കേണ്ടത്. അസൈൻമെന്റിന് ഏതെങ്കിലും കലാരൂപത്തിന്റെ അവതരണം നേരിൽക്കണ്ട് വിവരണം നല്കുന്നതിനും പ്രേരിപ്പിക്കാവുന്നതാണ്. പരസ്പരപൂരകങ്ങളാണെങ്കിലും കേരളീയകലകളെ സാമാന്യമായി മാധ്യമത്തെ അടിസ്ഥാനമാക്കി രണ്ടായി തിരിച്ചുകൊണ്ടുള്ള സമീപനമാണ് ഇവിടെ സ്വീകരിച്ചിരിക്കുന്നത്. ഓരോ വിഭാഗത്തിലും ഉൾപ്പെടുന്ന അനേകം കലകളുണ്ടെങ്കിലും പ്രധാനപ്പെട്ടവയെ പരിചയപ്പെടുത്തുകയെന്ന ഉദ്ദേശ്യത്തിലാണ് പേരുകൾ പരാമർശിക്കുന്നത്.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (36 മണിക്കൂർ)

ശരീരകേന്ദ്രിത കലകൾ

(1) കല - വ്യത്യസ്ത നിർവ്വചനങ്ങൾ - വിഭജനസമ്പ്രദായങ്ങൾ - സുകുമാര/സൗന്ദര്യാത്മക കലകൾ, സോപയോഗ/പ്രയോജനാത്മക കലകൾ, ദ്വിമാന/ത്രിമാന/അനേകമാന(multi-dimensional)കലകൾ, നിശ്ചല/ചലനാത്മക കലകൾ, ക്ലാസ്സിക/അനുഷ്ഠാന/വിനോദന കലകൾ, ദേശി, മാർഗ്ഗി എന്നിങ്ങനെയുള്ളവ - അറുപത്തിനാലു കലകൾ - കലകളുടെ വികാസചരിത്രം - കലകളുടെ വിവിധതരം ആവിഷ്കരണ മാധ്യമങ്ങൾ - ശരീരം, ഇതരവസ്തുക്കൾ - കലാപ്രയോജനം - കേരളീയ കലകളുടെ വൈവിധ്യം - സവിശേഷതകൾ.

(2) കേരളീയസംഗീതം - നാടൻ/വംശീയ/ആദിവാസി സംഗീതം - പാട്ടുരൂപങ്ങൾ - പാട്ടുകളുടെ വർഗ്ഗീകരണം - പ്രയോഗസന്ദർഭങ്ങൾ - സർപ്പംപാട്ട് (പുള്ളുവൻപാട്ട്), തോറ്റംപാട്ട്, ഓണപ്പാട്ട്, വില്പാട്ട്, താരാട്ടുപാട്ട്, കൃഷിപ്പാട്ട്, കൈകൊട്ടിക്കളിപ്പാട്ട്, മാപ്പിളപ്പാട്ട്, മാർഗ്ഗംകളിപ്പാട്ട്, ഗദ്ദികപ്പാട്ട് എന്നിവയുടെ സാമാന്യപരിചയം.

ശാസ്ത്രീയസംഗീതത്തിനു കേരളത്തിന്റെ സംഭാവന - ഇരയിമ്മൻ തമ്പി, സ്വാതിതിരുനാൾ, ആധുനികകാലത്തെ സംഗീതജ്ഞർ എന്നിവരെ പരിചയപ്പെടൽ.

കേരളത്തിലെ വാദ്യസംഗീതത്തിന്റെ വൈവിധ്യം - വിവിധതരം വാദ്യോപകരണങ്ങൾ - തുകൽ, തന്ത്രി, സുഷിര, ഘന വാദ്യങ്ങൾ - പഞ്ചവാദ്യം, തായമ്പക എന്നിവ.

(3) നൃത്തം - കേരളത്തിലെ വിവിധതരം നൃത്തരൂപങ്ങൾ - താളാത്മകമായ ആദിവാസി നൃത്തങ്ങൾ, അനുഷ്ഠാനരൂപങ്ങളോടും അഭിനയകലകളോടും ചേർന്നുള്ള നൃത്തങ്ങൾ, തിരുവാതിരകളി, ഒപ്പന, മാർഗ്ഗംകളി, മോഹിനിയാട്ടം തുടങ്ങിയവ.

(4) അഭിനയകലകൾ - വിവിധതരം അഭിനയരൂപങ്ങൾ - നൃത്യ, നാട്യവിന്യസനം - നാടൻ (വിനോദ, അനുഷ്ഠാന)കലകൾ, ശാസ്ത്രീയകലകൾ എന്നിവയുടെ വിവേചനം - കാക്കാരിശ്ശിനാടകം, പൊറാട്ടുനാടകം, ചവിട്ടു നാടകം, തെയ്യം, പടയണി, മുടിയേറ്റ്, കൂടിയാട്ടം, കഥകളി, തുള്ളൽ എന്നിവയുടെ പരിചയം - ഈ കലകളുടെ അഭിനയരീതികൾ, വേഷവിധാനങ്ങൾ എന്നിവയിലെ വ്യത്യാസങ്ങൾ.

(5) ആയോധനകല - കേരളത്തിന്റെ ആയോധനപാരമ്പര്യം - കളരിപ്പയറ്റ് - കളരിയുടെ വിവിധസമ്പ്രദായങ്ങൾ - തെക്കൻ, വടക്കൻ എന്നിവ - പരിശീലനരീതി - കളരിയുടെ ആരോഗ്യപരവും ചികിത്സാപരവുമായ സാധ്യതകൾ - കളരിയുമായി ബന്ധപ്പെട്ട സംസ്കാരവും സാഹിത്യവും - കളരിപ്പയറ്റിന്റെ സ്വാധീനം ഇതരകലകളിൽ.

(6) വചനകല - വാചികപ്രധാനമായ വിവിധതരം കലകളെ സാമാന്യമായി പരിചയപ്പെടുത്തൽ - പാഠകം, ചാക്യാർക്കൂത്ത്, ഹരികഥ, കഥാപ്രസംഗം എന്നിവ.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

വസ്തുകേന്ദ്രിത കലകൾ

(1) ചിത്രകല - കേരളീയമായ വിവിധതരം ചിത്രരചനാസമ്പ്രദായങ്ങൾ - ചിത്രരചനാമാധ്യമങ്ങൾ - ഗുഹാചിത്രങ്ങൾ, ചുവർചിത്രങ്ങൾ - വിവിധതരം കളമെഴുത്തുകൾ - അഭിനയകലകളിലെ മുഖത്തെഴുത്തുകൾ - രാജാ രവിവർമ്മ, കെ.സി.എസ്. പണിക്കർ, എം.വി.ദേവൻ തുടങ്ങിയവരുടെ സംഭാവനകൾ, നമ്പൂതിരിയുടെ രേഖാചിത്രങ്ങൾ എന്നിവ പരിചയപ്പെടുത്തണം.

(2) ശില്പകല – ശില്പകലാമാധ്യമങ്ങൾ– കല്ല്, മണ്ണ്, തടി, ദന്തം, ലോഹം തുടങ്ങിയവ – വിവിധതരം ശില്പങ്ങൾ – വിഗ്രഹം, പ്രതിമ, മറ്റ് അലങ്കൃത രൂപങ്ങൾ എന്നിങ്ങനെ – കേരളീയരായ പ്രമുഖശില്പികൾ.

(3) വാസ്തുവിദ്യ – കേരളീയപാരമ്പര്യം – ഗൃഹനിർമ്മാണത്തിന്റെ വിവിധ സമ്പ്രദായങ്ങൾ – നാലുകെട്ട്, എട്ടുകെട്ട് തുടങ്ങിയവ – വാസ്തുലക്ഷണം.

– ഭൂമിയുടെ തെരഞ്ഞെടുപ്പ്, ജലസാന്നിധ്യം, വാസ്തുപുരുഷൻ, വിവിധ കോണുകൾ, വിവിധമുറികൾ/വാതിലുകൾ എന്നിവയുടെ സ്ഥാനനിർണ്ണയം, വിശ്വാസങ്ങൾ, പരിഹാരങ്ങൾ എന്നിവ – ഗൃഹനിർമ്മാണത്തിന്റെ സാധാരണ സമ്പ്രദായങ്ങൾ, അവയുമായി ബന്ധപ്പെട്ട ഗണിതശാസ്ത്രം.

സഹായകഗ്രന്ഥങ്ങൾ

1. കേരളവും സംഗീതവും – എസ്. ഗുപ്തൻ നായർ.
2. കേരളത്തിലെ നാടൻസംഗീതം – ഡോ. എം. വി. വിഷ്ണുനമ്പൂതിരി.
3. തോറ്റംപാട്ടുകൾ ഒരു പഠനം – എം. വി. വിഷ്ണുനമ്പൂതിരി.
4. പുള്ളുവൻപാട്ടും നാഗാരാധനയും – എം. വി. വിഷ്ണുനമ്പൂതിരി.
5. ദക്ഷിണേന്ത്യൻ സംഗീതം – എ. കെ. രവീന്ദ്രനാഥ്.
6. മാപ്പിളപ്പാട്ട് പാഠവും പഠനവും – ബാലകൃഷ്ണൻ വള്ളിക്കുന്ന്, ഡോ. ഉമർ തറമേൽ.
7. ഇശലുകളുടെ ഉദ്യാനം – (എഡി.) ഡോ. ഉമർ തറമേൽ.
8. ഒപ്പന എന്ന വട്ടപ്പാട്ട് – വി. എം. കുട്ടി.
9. മാപ്പിളക്കലകൾ – (എഡി.) ഒ. എം. കരുവാരക്കുണ്ട്.
10. മാപ്പിള ഫോക്‌ലോർ – പ്രൊഫ. ബി. മുഹമ്മദ് അഹമ്മദ്
11. നാടൻകലകൾ നാടൻപാട്ടുകൾ – ഡോ. എം. വി. വിഷ്ണുനമ്പൂതിരി.
12. ഫോക്‌ലോർ – രാഘവൻ പയ്യനാട്.
13. കേരളഫോക്‌ലോർ – (എഡി.) രാഘവൻ പയ്യനാട്.
14. ഫോക്‌ലോർ നിഘണ്ടു – എം. വി. വിഷ്ണുനമ്പൂതിരി.
15. മോഹിനിയാട്ടം: ചരിത്രവും ആട്ടപ്രകാരവും – കലാമണ്ഡലം കല്യാണിക്കുട്ടിയമ്മ.
16. മോഹിനിയാട്ടം : ആട്ടപ്രകാരവും മുദ്രകളും – വേണു ജി., നിർമ്മലാ പണിക്കർ.
17. തെയ്യം – ഡോ. എം. വി. വിഷ്ണുനമ്പൂതിരി.
18. പടേനി – കടമ്മനിട്ട വാസുദേവൻപിള്ള.
19. പടേനിയിലെ പാളക്കോലങ്ങൾ – കടമ്മനിട്ട വാസുദേവൻപിള്ള.
20. ഐവർനാടകം – ചുമ്മാർ ചൂണ്ടൽ.
21. കാക്കാരിശ്ശി നാടകം – ജി. ഭാർഗ്ഗവൻപിള്ള.
22. പുരുഷാർത്ഥക്കൂത്ത് – വി. ആർ. കൃഷ്ണചന്ദ്രൻ.
23. തുള്ളൽ ദൃശ്യവേദിയിൽ – അയ്മനം കൃഷ്ണക്കൈമൾ.
24. ചവിട്ടുനാടകം – സെബീനാറാഫി.
25. കേരളത്തിലെ നാടോടിനാടകങ്ങൾ – ഡോ. എസ്. കെ. നായർ.
26. കൂത്തും കൂടിയാട്ടവും – അമ്മാമൻ തമ്പുരാൻ.
27. കഥകളി വിജ്ഞാനകോശം – അയ്മനം കൃഷ്ണക്കൈമൾ.
28. മലബാറിലെ തിറയാട്ടങ്ങൾ – സി. ഗോപാലൻ നായർ.

29. മുടിയേറ്റ് - ചുമ്മാർ ചൂണ്ടൽ.
30. മുടിയേറ്റ് നാടോടിനേരരങ്ങ് - സി. ആർ. രാജഗോപാലൻ.
31. തിരുവാതിരയും സ്ത്രീകളുടെ മറ്റു വ്രതാനുഷ്ഠാനങ്ങളും - ദ്രൗപദി ജി. നായർ.
32. കേരളത്തിലെ നാടൻകലകൾ - എ. കെ. നമ്പ്യാർ.
33. താളങ്ങൾ താളവാദ്യങ്ങൾ - എ. എസ്. എൻ. നമ്പീശൻ.
34. കേരളത്തിലെ താളമേളങ്ങൾ - (എഡി.) പ്രൊഫ. വി. അരവിന്ദാക്ഷൻ.
35. കേരളത്തിലെ സംഗീതോപകരണങ്ങൾ - ഡോ. രവിവർമ്മ സനൽകുമാർ തമ്പുരാൻ.
36. വാസ്തുശാസ്ത്രം ഒരു സമഗ്രപഠനം - ഡോ. പി. വി. ഔസേപ്പ്.
37. കേരളത്തിലെ ചുവർചിത്രകല - എം. ജി. ശശിഭൂഷൺ.
38. തോല്പാവക്കൂത്ത് - പി. ജി. പട്ടാമ്പി.
39. പൊറാട്ടുനാടകവും മറ്റും - ജി. ഭാർഗ്ഗവൻപിള്ള.

സെമസ്റ്റർ	:	**V**
കോഴ്സ് കോഡ്	:	**ML 1511.2**
ഓപ്പൺ കോഴ്സ്	:	**I**
സമയക്രമം	:	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**2**

തിരക്കഥാരചന : തത്വവും പ്രയോഗവും

പഠനലക്ഷ്യം

സിനിമ രൂപീകരിക്കാനുള്ള പാഠമെന്ന നിലയിലാണ് തിരക്കഥയുടെ പ്രഥമ അസ്തിത്വം. സിനിമ ഒരു കലാമാധ്യമവും വ്യവസായ ഉത്പന്നവുമായതോടെ അതിന്റെ നിർമ്മിതിക്ക് മാർഗ്ഗരേഖയായ തിരക്കഥയ്ക്കും പ്രസക്തിയേറി. ടെലിവിഷൻ, മൊബൈൽ ഫോൺ തുടങ്ങിയ മാധ്യമങ്ങൾ ദൃശ്യചാരുതയോടെ കഥാഖ്യാനം നിർവഹിക്കുന്ന കാലത്ത് അവയുടെ പാഠമെന്ന നിലയിൽ തിരക്കഥയ്ക്കും സവിശേഷമായ പ്രസക്തിയുണ്ടായി. തിരക്കഥയുടെ പഠനത്തിന് പ്രധാനമായും മൂന്ന് മേഖലകളാണുള്ളത്. തിരക്കഥയുടെ രചനാശാസ്ത്രം പഠിപ്പിക്കുന്ന രീതി, തിരക്കഥ പരിവർത്തനപ്പെട്ട് സിനിമയാകുന്ന രീതി, തിരക്കഥയെ സാഹിത്യമായി കണ്ട് വായിക്കുകയും, വിശകലനം ചെയ്യുകയും ചെയ്യുന്ന രീതി എന്നിവയാണ് പഠനമേഖലകൾ. തിരക്കഥയുടെ രചനക്ക് ഭാവനയ്ക്കും സർഗ്ഗാത്മകതയ്ക്കുമൊപ്പം പ്രായോഗികമായ കുറെ അറിവുകൾകൂടി ആർജ്ജിച്ചെടുക്കേണ്ടതുണ്ട്.

മൊഡ്യൂൾ : ഒന്ന്

സിനിമയുടെ പാഠമെന്ന നിലയിലുള്ള തിരക്കഥയുടെ പ്രസക്തി - താമർ ലെയിൻ, സെയ്ദ് ഫീൽഡ്, റെയ്മൺഡ് ജിം ഫ്രെൻഷാം തുടങ്ങിയവരുടെ തിരക്കഥാ നിർവചനങ്ങൾ- തിരക്കഥയിൽ അടങ്ങിയിരിക്കുന്ന പ്രധാന ഘടകങ്ങളായ പ്രമേയം, ഇതിവൃത്തം,

കഥാപാത്രങ്ങൾ, സംഭാഷണം, ദൃശ്യസൂചനകൾ, ശബ്ദസൂചനകൾ - തിരക്കഥയുടെ ഭാഷ - കഥ, നോവൽ, നാടകം തുടങ്ങിയ കൃതികളിൽ നിന്നും തിരക്കഥ പുലർത്തു വ്യത്യാസം. മലയാളത്തിലെ ഗ്രന്ഥരൂപത്തിൽ പ്രസിദ്ധീകരിച്ച തിരക്കഥകൾ.

മൊഡ്യൂൾ : രണ്ട്

ആശയസ്വീകരണത്തിനുള്ള മാർഗ്ഗങ്ങൾ - ആശയങ്ങളെ തിരക്കഥയുടെ രൂപീകരണത്തിനായി വികസിപ്പിച്ചെടുക്കുന്ന രീതി - തിരക്കഥയുടെ ഘടന, നാടകീയ ഘടന, ഇതിവൃത്തത്തിൽ അടങ്ങിയിരിക്കുന്ന സമയം, സ്ഥലം, സമൂഹം, സാമ്പത്തികം, രാഷ്ട്രീയം, നിയമം, രചനയുടെ വിവിധ തന്ത്രങ്ങൾ - മൂർദ്ധന്യത്തിന്റെ നിർമ്മിതി - കലാപരമായ പകർത്തിയെഴുത്ത് - വാണിജ്യപരമായ പകർത്തിയെഴുത്ത് - കലാസിനിമയുടെയും വാണിജ്യസിനിമയുടെയും തിരക്കഥകൾ - സാഹിത്യകൃതികൾ തിരക്കഥയാക്കുമ്പോൾ ശ്രദ്ധിക്കേണ്ട വസ്തുതകൾ.

മൊഡ്യൂൾ : മൂന്ന്

(1) തിരക്കഥാപഠനവും വിലയിരുത്തലും

വിശദപഠനം

തിരക്കഥ : പെരുവഴിയമ്പലം - പി. പത്മരാജൻ

(പ്രമേയം, ഇതിവൃത്തം, കഥാപാത്രങ്ങൾ, സംഭാഷണം, ദൃശ്യസൂചനകൾ, ശബ്ദസൂചനകൾ, തിരക്കഥയുടെ ഭാഷ, സീൻ, മൂർദ്ധന്യം തുടങ്ങിയ ഘടകങ്ങൾ വിശകലനം ചെയ്യുക.)

(2) തിരക്കഥാരചന

ഇഷ്ടപ്പെട്ട ഒരു കഥയിൽനിന്നോ സ്വന്തമായോ ഒരു തിരക്കഥ തയ്യാറാക്കുക.

സഹായകഗ്രന്ഥങ്ങൾ

1. തിരക്കഥാരചന, കലയും സിദ്ധാന്തവും - ജോസ് കെ. മാനുവൽ.
2. കഥയും തിരക്കഥയും - ജോസ്. കെ. മാനുവൽ, കൈരളി ബുക്സ്, കണ്ണൂർ.
3. കഥയും തിരക്കഥയും - ആർ. വി. എം. ദിവാകരൻ, ഒലിവ്, കോഴിക്കോട്.
4. തിരക്കഥ, സിനിമയുടെ ദൃശ്യപ്രകാശം - ഡോ. ഡൊമിനിക് ജെ. കാട്ടൂർ, കറന്റ് ബുക്സ്, കോട്ടയം.
5. മലയാളസിനിമാപഠനങ്ങൾ - വെങ്കിടേശ്വരൻ. ഡി.എസ്, ഡി.സി. കോട്ടയം.
6. ചലച്ചിത്രത്തിന്റെ ആഖ്യാനകം - ഡോ. ടി. ജിതേഷ്.
7. ഫിലിം ഡയറക്ഷൻ - സാജൻ തെരുവപ്പുഴ. സിഗ്നേച്ചർ ബുക്സ്, തൃശൂർ.
8. മലയാളസിനിമയും സാഹിത്യവും - മധു ഇറവങ്കര, ഡി.സി. ബുക്സ്,
9. തിരക്കഥാ സാഹിത്യം: സൗന്ദര്യവും പ്രസക്തിയും - ജോസ് കെ. മാനുവൽ.
10. സിനിമയിലെ ശരീരഭാഷ - ജോസ് കെ. മാനുവൽ, കറന്റ് ബുക്സ്, കോട്ടയം.
11. Screenplay - The Foundations of Screen Writing - Syd Field, Bantam Dell, New York, 2005.

സെമസ്റ്റർ	:	**V**
കോഴ്സ് കോഡ്	:	**ML 1511.3**
ഓപ്പൺ കോഴ്സ്	:	**I**
സമയക്രമം	:	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**2**

മലയാളപത്രപ്രവർത്തനം

പഠനോദ്ദേശ്യം

മലയാള പത്രപ്രവർത്തനമേഖല ഭാഷയ്ക്കും സംസ്കാരത്തിനും സാഹിത്യത്തിനും നൽകിയിട്ടുള്ള സംഭാവന നിസ്സീമമാണ്. ജനതയുടെ ഭാഷയെയും സംസ്കാരത്തെയും സർഗ്ഗചോദനകളെയും പരിപോഷിപ്പിക്കുന്നതിൽ പത്രമാധ്യമങ്ങൾ വലിയ പങ്ക് വഹിച്ചിട്ടുണ്ട്. കേരളത്തിൽ ഒരു പൊതുഭാഷ സൃഷ്ടിക്കുകയും വളർത്തിയെടുക്കുകയും ഭാഷയുടെ പ്രാദേശികഭേദങ്ങൾക്കപ്പുറത്ത് കേരളത്തെ ഒരുമിപ്പിച്ചു നിർത്തുകയും ചെയ്യുന്നതിൽ ഈ മാധ്യമം വഹിക്കുന്ന പങ്ക് വലുതാണ്. ഈ പശ്ചാത്തലത്തിൽ, ഭാഷയുടെയും സാഹിത്യത്തിന്റെയും പഠനത്തിൽ ഒഴിച്ചു കൂടാനാവാത്തതാണ് പത്രമാധ്യമ പഠനം.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (9 മണിക്കൂർ)

ജനസമ്പർക്കത്തിന് ഒരാമുഖം - ആശയവിനിമയവും ജനസമ്പർക്ക മാധ്യമവും - ജനസമ്പർക്കമാധ്യമങ്ങളുടെ വൈവിധ്യം - അച്ചടി, റേഡിയോ, ടെലിവിഷൻ, സിനിമ, ഇന്റർനെറ്റ് - വാർത്താവിനിമയ പ്രക്രിയ - ആധുനിക വാർത്താവിനിമയമാർഗ്ഗങ്ങൾ.

മൊഡ്യൂൾ : രണ്ട് (9 മണിക്കൂർ)

പത്രമാധ്യമത്തിന്റെ സവിശേഷ പ്രാധാന്യം - മലയാള പത്രപ്രവർത്തനത്തിന്റെ ഉത്ഭവവും വളർച്ചയും - ആദ്യകാലപത്രങ്ങൾ - മാസികകൾ - ആനുകാലിക പ്രസിദ്ധീകരണങ്ങൾ - സവിശേഷതകൾ.

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

വാർത്ത - വാർത്തയുടെ നിർവ്വചനം - വാർത്തയുടെ മൂല്യം - വാർത്താ സ്രോതസ്സുകൾ - വാർത്താബന്ധങ്ങൾ - വാർത്താവൈവിധ്യങ്ങൾ - വാർത്ത വരുന്നവഴി - വാർത്താ ഏജൻസികൾ - വാർത്താശേഖരണം - ആധുനിക സങ്കേതങ്ങൾ - റിപ്പോർട്ടിംഗ് രീതികൾ - ശൈലികൾ - പത്രഭാഷ - ഫീച്ചർ രചന, അഭിമുഖങ്ങൾ എന്നിവയുടെ രീതികൾ.

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

പത്രത്തിന്റെ നിർമ്മാണരീതികൾ - വിവിധ ഘട്ടങ്ങൾ - എഡിറ്റിങ്ങും രൂപകൽപനയും - ലേ-ഔട്ടിന്റെ പ്രാധാന്യം - പ്രധാന വാർത്തകൾ - തലക്കെട്ടുകൾ - വിവിധ പത്രങ്ങളുടെ ഒന്നാംപേജ് ഡിസ്പ്ലേ - താരതമ്യം ചെയ്തു പഠിക്കുക.

സഹായകഗ്രന്ഥങ്ങൾ

1. വാർത്ത : പത്രവും വാർത്തകളും - ജോയി തിരുമൂലപുരം, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
2. പത്രലോകം - ഒരു സംഘം ലേഖകർ, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
3. ആ ലോകം മുതൽ e ലോകം വരെ - ഡോ. ജെ. വി. വിളനിലം, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
4. മാധ്യമങ്ങളും മലയാളസാഹിത്യവും - കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
5. പത്രഭാഷ - കേരള പ്രസ് അക്കാദമി.
6. മാധ്യമ വിചിന്തനം - ഡോ. കെ. വി. തോമസ് / ഡോ. മാത്യു. ജെ. മുട്ടത്ത്, ലിപി പബ്ലിക്കേഷൻസ്.
7. മാറുന്ന ലോകം മാറുന്ന മാധ്യമലോകം - എൻ. പി. രാജേന്ദ്രൻ, മാതൃഭൂമി ബുക്സ്.
8. പത്രപ്രവർത്തനം, കഥയും പൊരുളും - മുരളി, മെലിൻഡ ബുക്സ്, തിരുവനന്തപുരം.
9. കേരളപത്രപ്രവർത്തനചരിത്രം - പുതുപ്പള്ളി രാഘവൻ, കേരളസാഹിത്യ അക്കാദമി.
10. മാധ്യമനയം ഇന്ത്യയുടെ സമഗ്രവികസനത്തിന് (എഡി.) ഡോ. ഐറിസ് കൊയ്ലിയോ/ഡോ. ലേഖാനരേന്ദ്രൻ.
11. ഫോർത്ത് എസ്റ്റേറ്റിന്റെ മരണം - എൻ. പി. രാജേന്ദ്രൻ, മാതൃഭൂമി ബുക്സ്.
12. പത്രധർമ്മം നിയമം - എൻ. പി. രാജേന്ദ്രൻ, വ്യൂ പോയിന്റ്, തിരുവനന്തപുരം.
13. ഭാഷയും മാധ്യമവും - വി. കെ. നാരായണൻ, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
14. വൃത്താന്ത പത്രപ്രവർത്തനം - സ്വദേശാഭിമാനി രാമകൃഷ്ണപിള്ള, കേരള പ്രസ് അക്കാദമി.
15. പത്രപ്രവർത്തനം ഭിന്നമുഖങ്ങൾ - കേരള പ്രസ് അക്കാദമി.
16. മാധ്യമങ്ങളും മലയാളസാഹിത്യവും - എം. വി. തോമസ്, കേരള സാംസ്കാരിക പ്രസിദ്ധീകരണ വകുപ്പ്.
17. Fundamentals of Journalism - Spencer Crump.
18. News Editing - Bruce Wesley.
19. Writing style - Washington Post.

സെമസ്റ്റർ	**:**	**V**
കോഴ്സ് കോഡ്	**:**	**ML 1511.4**
ഓപ്പൺ കോഴ്സ്	**:**	**I**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**2**

ചലച്ചിത്രപഠനം

പഠനപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന്

ചലച്ചിത്രകല

ആധുനികകാലത്തിന്റെ കല - ശ്രദ്ധേയമായ സിനിമാസിദ്ധാന്തങ്ങൾ - തിരക്കഥ - സംവിധാനം - അഭിനയം - ഛായാഗ്രഹണം, ചിത്രസംയോജനം, പശ്ചാത്തലസംഗീതം തുടങ്ങിയ ഘടകങ്ങളുടെ പ്രസക്തി. ഓരോ ദേശത്തിനും ഭാഷയ്ക്കും അവരുടെ സംസ്കാരത്തിനുമനുസരിച്ചുള്ള സിനിമയുണ്ട്. ഹോളിവുഡ് സിനിമ, ഇറാനിയൻ സിനിമ, ജാപ്പനീസ് സിനിമ, ഹിന്ദിസിനിമ, തമിഴ്സിനിമ, മലയാളസിനിമ - ടെലിവിഷൻ, ഇന്റർനെറ്റ് സിനിമ, മൊബൈൽഫോൺ തുടങ്ങിയ മാധ്യമങ്ങളിലേക്കുള്ള സിനിമയുടെ വ്യാപനം - വിവിധതരം സിനിമകൾ കലയെന്ന നിലയിലും വ്യവസായമെന്ന നിലയിലും സിനിമയുടെ പ്രസക്തി - ചലച്ചിത്രപ്രതിഭകൾ.

മൊഡ്യൂൾ : രണ്ട്

തിരക്കഥയുടെ പ്രസക്തി

തിരക്കഥയെ സംബന്ധിച്ച നിർവചനങ്ങൾ - തിരക്കഥയിലടങ്ങിയിരിക്കുന്ന ഘടകങ്ങളായ പ്രമേയം, ഇതിവൃത്തം, കഥാപാത്രങ്ങൾ, സംഭാഷണം, ദൃശ്യസൂചനകൾ, ശബ്ദസൂചനകൾ - ഈ ഘടകങ്ങൾ കൊണ്ട് രൂപീകരിക്കുന്ന തിരക്കഥയുടെ ഭാഷ - തിരക്കഥയുടെ ഘടന - തിരക്കഥാരചനയ്ക്ക് ആശയം സ്വീകരിക്കുന്ന രീതികൾ - തിരക്കഥാരചനയുടെ മേഖലകൾ - തിരക്കഥാവായനയുടെ രീതികൾ.

മൊഡ്യൂൾ : മൂന്ന്

തിരക്കഥയും സിനിമയും

തിരക്കഥയിലെ ലിഖിതഭാഷ പരിവർത്തനപ്പെട്ട് സിനിമയിലെ ദൃശ്യഭാഷയാകുന്നു. സംവിധായകന്റെ പ്രസക്തി, സിനിമയിലെ അഭിനയം, സിനിമാഗാനം, സിനിമയിലെ പശ്ചാത്തലം, ദൃശ്യബിംബങ്ങളുടെ അവതരണം - വീക്ഷണദിശകൾ, ക്യാമറയുടെ ചലനരീതികൾ - സീൻ സീക്വൻസ് - ചലച്ചിത്രഭാഷ, സിനിമയും സംസ്കാരവും, തിരക്കഥാകൃത്തും സംവിധായകനും - അഭിനേതാവ് കഥാപാത്രമാകുന്നു.

മൊഡ്യൂൾ : നാല്

തിരക്കഥയുടെ വായനയും സിനിമയുടെ കാഴ്ചയും

സെല്ലുലോയ്ഡ് എന്ന തിരക്കഥ വായിക്കുകയും സിനിമ കാണുകയും ചെയ്യുക. പ്രമേയം, ഇതിവൃത്തം, കഥാപാത്രങ്ങൾ, സംഭാഷണം, ശബ്ദസൂചനകൾ, ദൃശ്യസൂചനകൾ തുടങ്ങിയവ തിരക്കഥയിലും സിനിമയിലും സംഭവിച്ചിരിക്കുന്നത് വിലയിരുത്തുക. സെല്ലുലോയ്ഡ് എന്ന സിനിമയുടെ സാമൂഹിക സാംസ്കാരിക മേഖലകളെപ്പറ്റി ചർച്ചചെയ്യുക.

സിനിമാ വിശകലനം

സ്വതന്ത്ര സിനിമകൾ

ചിന്താവിഷ്ടയായ ശ്യാമള - ശ്രീനിവാസൻ

101 ചോദ്യങ്ങൾ - സിദ്ധാർത്ഥ ശിവ

അനുകല്പന സിനിമകൾ

നിർമ്മാല്യം - എം.ടി വാസുദേവൻ നായർ

(മൂലകഥ- പള്ളിവാളും കാൽച്ചിലമ്പും, എം.ടി. വാസുദേവൻ നായർ)

വിധേയൻ - അടൂർ ഗോപാലകൃഷ്ണൻ

(മൂലകൃതി- ഭാസ്കരപട്ടേലരും എന്റെ ജീവിതവും)

അസൈൻമെന്റ് - I

1. വ്യത്യസ്തമായ പ്രമേയങ്ങളെ അവലംബിച്ച് പരമാവധി 10 മിനിറ്റ് ദൈർഘ്യമുള്ള ലഘുചിത്രങ്ങൾക്കുവേണ്ടി തിരക്കഥകൾ രചിക്കുക. ഒറ്റയായോ അഞ്ചുപേർ ചേർന്നുള്ള സംഘങ്ങളായോ അസൈൻമെന്റ് ചെയ്യാവുന്നതാണ്.

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സെമസ്റ്റർ : ആറ്

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മാധ്യമലോകം

പഠനോദ്ദേശ്യം:

മാധ്യമങ്ങളുടെ അനന്ത സാധ്യതയുള്ള ലോകം വിദ്യാർത്ഥികൾക്ക് പരിചിതമാക്കുക എന്നതാണ് കോഴ്സിന്റെ പ്രധാനലക്ഷ്യം. ശാസ്ത്രീയവും യുക്ത്യധിഷ്ഠിതവുമായ ചിന്തയിലൂടെ വിവരസാങ്കേതികവിദ്യയുടെ കാലത്ത് ജീവിക്കുവാൻ പഠിതാക്കൾക്ക് അവസരം ഉണ്ടാവണം. നവീനവിജ്ഞാനം പകർന്നുനൽകുന്ന സ്രോതസ്സുകളെക്കുറിച്ച് വിദ്യാർത്ഥികളെ അഭിജ്ഞരാക്കുക, മാധ്യമങ്ങളുടെ വളർച്ചയിലൂടെ സമൂഹത്തിനു കൈവന്ന സാംസ്കാരികോന്നമനത്തെക്കുറിച്ച് അറിവുനൽകുക, റേഡിയോ, ടെലിവിഷൻ പരിപാടികളുടെ ആസ്വാദനത്തിനും വിലയിരുത്തലിനും വിദ്യാർത്ഥികളെ പ്രാപ്തരാക്കുക, പ്രതിഭാധനരായ കുട്ടികൾക്ക് മാധ്യമലോകത്തേക്കു കടന്നുവരാൻ പ്രചോദനമേകുക – ഇതെല്ലാം ഈ കോഴ്സിന്റെ ലക്ഷ്യങ്ങളാണ്.

രീതിശാസ്ത്രം

ഈ കോഴ്സിനെ അഞ്ചു മൊഡ്യൂളായി തിരിച്ചിരിക്കുന്നു. കാലഘട്ടത്തിന്റെയും സമൂഹത്തിന്റെയും പ്രവണതകളും ആവശ്യകതകളും വിദ്യാർത്ഥികൾക്ക് മനസ്സിലാക്കിക്കൊടുക്കുവാൻ സാധിക്കുന്ന രീതിയിൽ ക്ലാസ്സുകൾ ക്രമീകരിക്കുന്നത് ഉചിതമായിരിക്കും. ശാസ്ത്രവീക്ഷണവും യുക്തിപരതയുമുള്ള അദ്ധ്യാപകർക്ക് വിദ്യാർത്ഥികളുടെ പങ്കാളിത്തത്തോടെ ഈ കോഴ്സ് നന്നായി കൈകാര്യം ചെയ്യുവാൻ സാധിക്കും. കമ്പ്യൂട്ടർ, CD/DVD പ്രൊജക്ടർ, LCD സ്ക്രീൻ, സറൗണ്ട് സിസ്റ്റം എന്നിവയുള്ള ഒരു ഡിജിറ്റൽ ലാബ് മലയാളം ഡിപ്പാർട്ടുമെന്റിനോടു ചേർന്ന് സജ്ജീകരിക്കുന്നത് ഉചിതമായിരിക്കും.

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

പത്രമാധ്യമങ്ങൾ

അച്ചടി – ചരിത്രം

ആരംഭപ്രവർത്തനങ്ങൾ – ഗുട്ടൻബർഗ് – ലറ്റർ പ്രസ് – റോട്ടറിപ്രസ് – ഓഫ് സെറ്റ് പ്രസ് – സ്ക്രീൻപ്രിന്റിംഗ്. ആധുനികകാലത്തെ ഉപകരണങ്ങൾ (ഫോട്ടോ കോപ്പിയർ, ഇങ്ക്ജെറ്റ് പ്രിന്റർ, ഡോട്ട്മാട്രിക്സ് പ്രിന്റർ, ലേസർ പ്രിന്റർ) ഡിജിറ്റൽ പ്രസ് – 3D പ്രിന്റിംഗ്.

അച്ചടിയും പത്രപ്രവർത്തനവും

നവോത്ഥാനവും അച്ചടിയും – പത്രങ്ങളുടെ ഉദയം – പത്രമാധ്യമത്തിന്റെ പ്രാധാന്യം – ആദ്യകാല വിദേശപത്രങ്ങൾ – ആദ്യകാലത്തെ പ്രധാന ഇന്ത്യൻ പത്രങ്ങൾ – മലയാളപത്രങ്ങൾ – പ്രധാന മാസികകളും വാരികകളും – വിശേഷാൽപ്രതികൾ – ലിറ്റിൽ/ലെറ്റർ മാഗസിനുകൾ – വെബ് പത്രങ്ങൾ – എഡിറ്റോറിയലിന്റെ പ്രാധാന്യം – വിശ്വാസ്യത നഷ്ടമാകുന്ന നിലപാടുകൾ – നാലാംസ്തംഭം എന്ന ഉത്തരവാദം.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

ശ്രാവ്യ മാധ്യമങ്ങൾ

റേഡിയോ – റേഡിയോയുടെ കണ്ടുപിടിത്തം – മാർക്കോണി – പ്രക്ഷേപണത്തിന്റെ ആരംഭം – ചരിത്രം – ഇന്ത്യയിലെ ആദ്യ റേഡിയോപ്രക്ഷേപണം – റേഡിയോ പ്രക്ഷേപണം മലയാളത്തിൽ – കേരളം, ശ്രീലങ്ക (സിലോൺ) ഗൾഫ് നാടുകൾ – FM, SW, MW പ്രക്ഷേപണങ്ങൾ – ഹാം റേഡിയോ – വാണിജ്യ പ്രക്ഷേപണം – റേഡിയോ എന്ന സർക്കാർ മാധ്യമം – വാർത്ത – റേഡിയോയിലെ ജനക്ഷേമ പരിപാടികൾ – ജനപ്രിയ പരിപാടികൾ – റേഡിയോ നാടകം – സവിശേഷത – റേഡിയോയ്ക്കുവേണ്ടി എഴുതുമ്പോൾ – പ്രസാർഭാരതി – റേഡിയോയുടെ രണ്ടാംവരവ് – മാറുന്ന രീതികൾ.

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

ദൃശ്യ മാധ്യമങ്ങൾ

ടെലിവിഷൻ – സംപ്രേഷണത്തിന്റെ ആരംഭം – പ്രക്ഷേപണവും സംപ്രേഷ ണവും – ബ്രോഡ്കാസ്റ്റിംഗ്/ടെലികാസ്റ്റിംഗ് കമ്പനികൾ – ബിബിസി, ആർസിഏ, എൻബിസി – ഉപഗ്രഹസംപ്രേഷണം – കേബിൾ ചാനലുകൾ – ഒ.ബി.വാൻ – തത്സമയ സംപ്രേഷണം – ക്രോമാകീയിംഗ് – വാർത്താചാനലുകൾ – പ്രൈം ടൈം റേറ്റിംഗ് – പിക്ചർ ഇൻ പിക്ചർ – ഡി.ടി.എച്ച് – എൽസിഡി – എൽഈഡി. ടെലിവിഷൻ പരിപാടികൾ – സീരിയലുകളുടെ പൊതുസ്വഭാവം – ചലച്ചിത്രാധിഷ്ഠിത പരിപാടികൾ – റിയാലിറ്റിഷോ – ലൈവ് ഷോകൾ – അവതാരകർ – അവതാരകരുടെ ഭാഷ – ടി. വി. പരസ്യങ്ങൾ, ടെലിവിഷന്റെ സ്വാധീനം – ഗുണദോഷങ്ങൾ.

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

നവ മാധ്യമങ്ങൾ

ഇൻഫർമേഷൻ യുഗം – വിവരസാങ്കേതിക വിദ്യ ആശയവിനിമയരംഗത്ത് സൃഷ്ടിച്ച വിപ്ലവം, വേൾഡ് വൈഡ് വെബ് (WWW), ഇ-സാഹിത്യം, ഇ-പത്രങ്ങൾ, ഇ-മെയിൽ, ഇന്റർനെറ്റ് റേഡിയോ, വാർത്താധിഷ്ഠിത വെബ്സൈറ്റുകൾ, ഇ-ബുക്ക്, ബ്ലോഗ്, വെബ് പ്രസാധനം, ഇ-കൊമേഴ്സ്, സാമൂഹിക മാധ്യമങ്ങൾ – യൂ ട്യൂബ്, ഫേസ് ബുക്ക്, ടിറ്റർ, വാട്സ് അപ് – ട്രോൾ – സാമാന്യ പരിചയം.

മൊഡ്യൂൾ : അഞ്ച് (18 മണിക്കൂർ)

മാധ്യമ വിമർശനം

മാധ്യമ വിമർശനം - മാധ്യമങ്ങളുടെ ധാർമ്മികത - ജനപ്രിയ സംസ്കാരവും മാധ്യമങ്ങളും - പൊതുമണ്ഡലവും മാധ്യമങ്ങളും - നവമാധ്യമങ്ങളും സമൂഹവും - സാമൂഹിക മാധ്യമങ്ങളും ജനാധിപത്യവും - ഗുണങ്ങളും ദോഷങ്ങളും.

വിശദപഠനം

1. അധികാരവും മാധ്യമങ്ങളും - ബി. ആർ. പി. ഭാസ്കർ (മാധ്യമപഠനങ്ങൾ - എഡി. പന്മന രാമചന്ദ്രൻ നായർ).

സഹായകഗ്രന്ഥങ്ങൾ

1. മാധ്യമങ്ങളും മലയാളസാഹിത്യവും - കേരളഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
2. മാധ്യമങ്ങളും മലയാളസാഹിത്യവും - എം. വി. തോമസ്, കേരള സാംസ്ക്കാരിക പ്രസിദ്ധീകരണവകുപ്പ്.
3. വാർത്ത: പത്രവും വാർത്തകളും - ജോയി തിരുമൂലപുരം, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
4. പത്രപ്രവർത്തനം, ഭിന്നമുഖങ്ങൾ - കേരള പ്രസ് അക്കാദമി.
5. കേരളപത്രപ്രവർത്തനചരിത്രം - പുതുപ്പള്ളി രാഘവൻ, കേരളസാഹിത്യഅക്കാദമി.
6. മലയാളഭാഷയും ആഗോളവത്ക്കരണവും - കേരളസർവ്വകലാശാലാ പ്രസിദ്ധീകരണം.
7. കമ്പ്യൂട്ടർ പരിചയവും പ്രയോഗവും - ഡോ. അച്യുത്ശങ്കർ എസ്. നായർ, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
8. ആ ലോകം മുതൽ ഇ-ലോകം വരെ - ഡോ. ജെ. വി. വിളനിലം, കേരള ഭാഷ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
9. ഇൻഫർമേഷൻ ടെക്നോളജി - ഡോ. അച്യുത് ശങ്കർ എസ്. നായർ, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
10. ഇനി വായന, ഈ വായന - വി. കെ. ആദർശ്, ഡി. സി. ബുക്സ്.
11. സൈബർ മലയാളം - (എഡി.) സുനീത ടി. വി., കറന്റ് ബുക്സ്, തൃശ്ശൂർ.
12. ഫോർത്ത് എസ്റ്റേറ്റിന്റെ മരണം - എൻ. പി. രാജേന്ദ്രൻ, മാതൃഭൂമി ബുക്സ്.
13. ഇന്റർനെറ്റും യൂണികോഡും മലയാളഭാഷാപ്രശ്നങ്ങളും - ഡോ. മഹേഷ് മംഗലാട്ട്, മാതൃഭൂമി ആഴ്ചപ്പതിപ്പ്, 2009 ഫെബ്രുവരി 17.
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15. മാധ്യമവിചിന്തനം - ഡോ. കെ. വി. തോമസ്/ ഡോ. മാത്യു ജെ. മുട്ടത്ത്.
16. ന്യൂസ് ഡസ്കിലെ കാവിയും ചുവപ്പും - കമൽറാം സജീവ്, ഒലിവ് പബ്ലിക്കേഷൻ, കോഴിക്കോട്, 2014
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സെമസ്റ്റർ	**:**	**VI**
കോഴ്സ് കോഡ്	**:**	**ML 1642**
കോർ കോഴ്സ്	**:**	**XII**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 5 മണിക്കൂർ (18 ആഴ്ചയിൽ 90 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**4**

മലയാളവ്യാകരണം

പഠനോദ്ദേശ്യം

1. വർണ്ണം, അക്ഷരം, പദം, വാക്യം എന്നീ തലങ്ങളിൽ മലയാളത്തിന്റെ അടിസ്ഥാന സ്വഭാവം എന്തെന്ന് മനസ്സിലാക്കി തെറ്റുകൂടാതെ മലയാളം ഉപയോഗിക്കാൻ പ്രാപ്തരാക്കുക.
2. ഭാഷയുടെ അടിസ്ഥാന തത്ത്വങ്ങളിലൂന്നിയ വ്യാകരണപഠനത്തിലൂടെ ബിരുദ തല മലയാളപഠനം കരുത്തുറ്റതാക്കുക.
3. ഒരു ജീവൽഭാഷ എന്ന നിലയിൽ ചലനാത്മകമായ മലയാളഭാഷയും ഭാഷാ നിയമങ്ങളും നിരന്തരം മാറിക്കൊണ്ടിരിക്കുന്നു എന്ന വസ്തുത ബോധ്യ പ്പെടുത്തുക.
4. ഭാഷയെ വിശകലനം ചെയ്ത് ഭാഷാസ്വരൂപം നിർണ്ണയിക്കാൻ പ്രാപ്തരാക്കുക.
5. മലയാളഭാഷയെ അപഗ്രഥിച്ച് പ്രയോഗങ്ങളെ മനസ്സിലാക്കുക.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

ഭാഷയും വ്യാകരണവും - വ്യാകരണ നിർവ്വചനം - മലയാളഭാഷയും വ്യാകരണവും - മലയാളവ്യാകരണചരിത്രം.

അക്ഷരമാല - ധ്വനി - വർണ്ണം - അക്ഷരം - ലിപി - മലയാളത്തിലെ അക്ഷരമാല - അക്ഷരസംഖ്യ - അധികാക്ഷര നിരൂപണം (കേരളപാണിനീയത്തിലും ലീലാതിലക ത്തിലും) സംവൃതോകാരം - അകാരത്തിന്റെ ധ്വനിഭേദങ്ങൾ - അക്ഷരങ്ങളുടെ ഉച്ചാരണ പ്രക്രിയ - ഉച്ചാരണസ്ഥാനങ്ങൾ - ഉച്ചാരണരീതി - വർണ്ണങ്ങൾക്ക് പലമാതിരി ശ്രുതിയുണ്ടാകുന്നതിനുള്ള കാരണങ്ങൾ - വർണ്ണവികാരം - ഭാഷാപരിണാമം - ആറു നയങ്ങൾ - ലീലാതിലകത്തിലെ ഭാഷാ(കേരളഭാഷ)വിവരണങ്ങൾ. (ലീലാതിലകം രണ്ടാം ശില്പം).

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

ശബ്ദവിഭാഗം - വാചകം, ദ്യോതകം, നാമം, കൃതി, ഭേദകം, നിപാതം, അവ്യയം, ഗതി, ഘടകം, വ്യാക്ഷേപകം, പ്രകൃതി - പ്രത്യയങ്ങൾ എന്നിവ.
സന്ധി - സാമാന്യവിവരണം - പലതരം സന്ധിവിഭജനങ്ങൾ - ലോപസന്ധി, ആഗമസന്ധി, ദ്വിത്വസന്ധി, ആദേശസന്ധി - ലീലാതിലകത്തിലെ സന്ധിസൂത്രങ്ങൾ (ലീലാതിലകം മൂന്നാം ശില്പം).

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

നാമവിഭാഗം - ഭാഷയിലെ ലിംഗവ്യവസ്ഥ - പ്രത്യയങ്ങൾ - സമാസരൂപങ്ങൾ - നപുംസകരൂപസൃഷ്ടി. വചനവ്യവസ്ഥ - വചന പ്രത്യയങ്ങൾ. വിഭക്തി - വിഭക്തി നിർവ്വചനം - പ്രത്യയങ്ങൾ (ആഗമചരിത്രം വേണ്ട) - പുതിയ പേരുകൾ നല്കിയതിന്റെ ഔചിത്യം. വിഭക്ത്യാഭാസം, കാരകം - വിഭക്തി കാരകബന്ധം, തദ്ധിതം എന്നിവയുടെ സാമാന്യപരിചയം, ലീലാതിലകത്തിലെ പരഭാഗനിരൂപണം (രണ്ടാം ശില്പം).

മൊഡ്യൂൾ : നാല് (27 മണിക്കൂർ)

ക്രിയാവിഭാഗം: പ്രകൃതി (കേവലം, പ്രയോജകം), സ്വഭാവം (കാരിതം, അകാരിതം), കാലം (ഭൂത ഭാവി വർത്തമാനകാലരൂപങ്ങളും അവയുടെ പ്രത്യയങ്ങളും), പ്രകാരം, പ്രയോഗം (കർത്തരി, കർമ്മണി), മുറ്റുവിന - പറ്റുവിന - പറ്റുവിനകളുടെ വിഭജനം (പേരെച്ചം, വിനയെച്ചം), സകർമ്മകം - അകർമ്മകം, അനുപ്രയോഗം, നാമധാതു, ഖിലധാതു, കൃത്ത് (കൃതികൃത്ത്, കാരകകൃത്ത്) എന്നിവയെക്കുറിച്ചുള്ള സാമാന്യപരിജ്ഞാനം, നിഷേധപ്രകരണം.

മൊഡ്യൂൾ : അഞ്ച് (9 മണിക്കൂർ)

വാക്യവിചാരം - സമുച്ചയം - വികല്പം - അവയുടെ സജാതീയത - വാക്യത്തിലെ പദക്രമം - പൊരുത്തം - അന്യഭാഷാസ്വാധീനം മലയാളവാക്യഘടനയിൽ - വിവിധതരം വാക്യങ്ങൾ - ചൂർണ്ണിക, സങ്കീർണ്ണവാക്യം, മഹാവാക്യം- അന്വയം - അർദ്ധവാക്യങ്ങൾ - സമാസം - വിവിധ സമാസങ്ങൾ - സാമാന്യ വിവരണം.

വിശദപഠനം

1. കേരളപാണിനീയം : ഏ. ആർ. രാജരാജവർമ്മ.
2. ലീലാതിലകം - ഒന്ന്, രണ്ട്, മൂന്ന് ശില്പങ്ങൾ.

സഹായകഗ്രന്ഥങ്ങൾ

1. കേരളപാണിനീയ ഭാഷ്യം : സി. എൽ. ആന്റണി.
2. കേരള ഭാഷാ വിജ്ഞാനീയം : ഡോ. കെ. ഗോദവർമ്മ.
3. ഭാഷാപഠനങ്ങൾ : സി. എൽ. ആന്റണി.
4. കൈരളീശബ്ദാനുശാസനം : കെ. സുകുമാരപിള്ള.
5. മലയാണ്മയുടെ വ്യാകരണം : ജോർജ് മാത്തൻ.
6. മലയാളഭാഷാ വ്യാകരണം : ഡോ. ഹെർമ്മൻ ഗുണ്ടർട്ട്.
7. വ്യാകരണമിത്രം : ശേഷഗിരി പ്രഭു.
8. കേരളപാണിനീയം പാഠങ്ങൾ : സി. വി. വാസുദേവ ഭട്ടതിരി.
9. കേരള ഭാഷാ വ്യാകരണം : ഇ. വി. എൻ. നമ്പൂതിരി.
10. വ്യാകരണവിവേകം : സി. എൻ. മൂസത്.
11. വാക്യഘടന : ഇ. വി. എൻ. നമ്പൂതിരി.
12. മലയാള ഭാഷാ വ്യാകരണം ഒരു സമഗ്രപഠനം : പ്രൊഫ. ആദിനാട് ഗോപി.

13. ശബ്ദസൗഭഗം : ഫാ. ജോ കുന്നപ്പള്ളി.
14. ദ്രാവിഡ ഭാഷാശാസ്ത്രം : റോബർട്ട് കാൽഡ്വൽ (വിവ: എസ്. കെ. നായർ).
15. കേരളപാണിനീയം – വ്യാഖ്യാനവും വിചിന്തനവും: പ്രൊഫ. സുന്ദരം ധനുവച്ചപുരം.
16. ഭാഷാവ്യാകരണപഠനം – പ്രൊഫ. എസ്. അച്യുത വാര്യർ.

സെമസ്റ്റർ	**:**	**VI**
കോഴ്സ് കോഡ്	**:**	**ML 1643**
കോർ കോഴ്സ്	**:**	**XIII**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 5 മണിക്കൂർ (18 ആഴ്ചയിൽ 90 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**4**

മലയാളകവിത – ഉത്തരഘട്ടം

ഉത്തരകാവ്യമാലിക (കേരളസർവ്വകലാശാലാ പ്രസിദ്ധീകരണം)

ഉദ്ദേശ്യലക്ഷ്യങ്ങൾ

1. ഇരുപതാം നൂറ്റാണ്ടിന്റെ ആരംഭം മുതൽ ഇന്നോളം മലയാളകവിതയിലുണ്ടായ ഭാഷാപരവും ഭാവുകത്വപരവുമായ പരിണാമം മനസ്സിലാക്കുക.
2. മലയാളകവിതയിലെ നവോത്ഥാനാനന്തര പ്രവണതകളെക്കുറിച്ചു മനസ്സിലാക്കുക.
3. പാശ്ചാത്യകവിതാസമ്പർക്കത്തിന്റെ ഫലമായി മലയാളകവിതയുടെ രൂപത്തിൽ സംഭവിച്ച മാറ്റം ഗ്രഹിക്കുക.
4. പ്രതീകം, ബിംബകല്പന തുടങ്ങിയ ആവിഷ്കരണോപാധികളുടെ വിനിയോഗത്തെപ്പറ്റി അറിയുക.
5. ആധുനികതയുടെ കടന്നുവരവിനെ ചരിത്രപരമായും കാവ്യാപഗ്രഥനത്തിലൂടെയും തിരിച്ചറിയുക.
6. ആധുനികാനന്തരകവിതയുടെ സ്വഭാവം മനസ്സിലാക്കുക.
7. സമകാലിക മലയാളകവിതയെ പരിചയപ്പെടുക.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (27 മണിക്കൂർ)

കാല്പനിക കവിത – പൂർവ്വഘട്ടം

കാല്പനികപൂർവ്വകവിത – കാല്പനികത – ഭാവഗാനം – ഏ. ആർ. രാജരാജവർമ്മ – വിലാപകാവ്യപ്രസ്ഥാനം – ആധുനികതയുടെ ആദ്യകിരണങ്ങൾ – കവിത്രയം – ആശാൻ – ഉള്ളൂർ – വള്ളത്തോൾ – ഇതിവൃത്ത സ്വീകരണം – ദേശീയബോധം – സ്വാതന്ത്ര്യചിന്ത – കർമ്മവീര്യം – പൗരാണികത്വാഭിമാനം – നിയോക്ലാസ്സിക് അംശങ്ങൾ – ശില്പപരമായ സവിശേഷതകൾ – കവിതാവിവർത്തനം – പാരമ്പര്യവും ആധുനികതയും തമ്മിലുള്ള സംഘർഷം.

വിശദപഠനം

1. വീണപൂവ് - കുമാരനാശാൻ
2. പ്രേമസംഗീതം - ഉള്ളൂർ
3. ശിഷ്യനും മകനും - വള്ളത്തോൾ

മൊഡ്യൂൾ : രണ്ട് (9 മണിക്കൂർ)

കാല്പനിക കവിത: ഉത്തരഘട്ടം

കാല്പനികത - ഇടപ്പള്ളി - ചങ്ങമ്പുഴ - പാശ്ചാത്യകാവ്യരൂപങ്ങളുടെ സ്വാധീനം - വിഷാദം - പ്രണയം - മൃത്യു - വ്യത്യസ്ത പ്രമേയപരിസരങ്ങൾ - പാസ്റ്ററൽ എലിജി - കവിതയും സംഗീതവും - വൈയക്തികതയുടെ ആവിഷ്കരണം - സിംബലിസ്റ്റിക് മിസ്റ്റിക് പ്രസ്ഥാനങ്ങളുടെ സ്വാധീനം - കാല്പനികതയുടെ തരളഭാവങ്ങളിൽനിന്ന് ഗഹനതലങ്ങളിലേക്ക് - ആഖ്യാന കവിത - കവിതയുടെ ജീവിതാഭിമുഖ്യം.

വിശദപഠനം

1. കാവ്യനർത്തകി - ചങ്ങമ്പുഴ
2. എന്റെ വേളി - ജി. ശങ്കരക്കുറുപ്പ്
3. കണ്ണീർപ്പാടം - വൈലോപ്പിള്ളി
4. ഹനുമത്സേവ തുഞ്ചൻപറമ്പിൽ - ഇടശ്ശേരി
5. ഉദ്യാനപാലകൻ - പി. കുഞ്ഞിരാമൻ നായർ *

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

ഭാവാന്തരങ്ങൾ

കവിത - രാഷ്ട്രീയ - സാമൂഹിക വിമർശനം - പുരോഗമന സാഹിത്യ പ്രസ്ഥാനം - കാല്പനികതയ്ക്കെതിരെയുള്ള സമീപനം - യഥാതഥ രീതിയും കവിതയും - ദീർഘകാവ്യങ്ങളും ഖണ്ഡകാവ്യങ്ങളും - പ്രതിപാദനരീതിയിലെ കാല്പനിക വിരുദ്ധത - പുതിയ ഭാവുകത്വത്തിന്റെ അങ്കുരങ്ങൾ - കാല്പനികത്വത്തിന്റെ തുടർച്ചകൾ - ആധുനികതയിലേക്ക്.

വിശദപഠനം

1. ഉപ്പ് - ഒ. എൻ. വി
2. വനിതാകമ്മീഷണർ - സുഗതകുമാരി
3. യുഗളപ്രസാദൻ - വിഷ്ണുനാരായണൻ നമ്പൂതിരി

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

ആധുനിക കവിത

പാശ്ചാത്യ ആധുനികതയുടെ സ്വാധീനം - പുതിയ മധ്യവർഗത്തിന്റെ കവിത - വ്യക്തിത്വശിഥിലീകരണം - വിശ്വാസത്തകർച്ച - നഗരവൽക്കരണം - പുരാണ സന്ദർഭങ്ങളുടെ നവീനോപയോഗം - രൂപപരമായ ആധുനികതയിൽ നിന്ന് രാഷ്ട്രീയ

ആധുനികതയിലേക്ക് - വിപ്ലവകവിത ആഫ്രിക്കൻ - ലാറ്റിനമേരിക്കൻ കവിതകളുടെ സ്വാധീനം - ആധുനികതയുടെ കാലത്തുതന്നെ വഴിമാറി നടന്നവർ - ഉത്തരാധുനിക കവിതയിലേക്കുള്ള കാൽവയ്പ്.

വിശദപഠനം

1. മേഘരൂപൻ - ആറ്റൂർ
2. വഴി വെട്ടുന്നവരോട് - എൻ. എൻ. കക്കാട്.
3. ശാന്ത - കടമ്മനിട്ട
4. യാത്രപ്പാട്ട് - ഡി. വിനയചന്ദ്രൻ
5. ലൈബ്രേറിയൻ മരിച്ചതിൽ പിന്നെ - പി. പി. രാമചന്ദ്രൻ

മൊഡ്യൂൾ : അഞ്ച് (18 മണിക്കൂർ)

ആധുനികാനന്തര കവിത

സമകാലിക കവിതയിലെ വിവിധ പ്രവണതകൾ - സ്വത്വപരമായ നിലപാടുകൾ- പരിസ്ഥിതി - സ്ത്രീ - ദളിത് പ്രതിനിധാനം - മാധ്യമസ്വാധീനം - പുതുകവിതയുടെ രൂപപരമായ സവിശേഷതകൾ - ബഹുസ്വരതയുടെ ആവിഷ്കരണം.

വിശദപഠനം

1. അമ്മമാർ - എം. ബി. മനോജ്
2. അമ്മ മലയാളം - കുരീപ്പുഴ ശ്രീകുമാർ
3. മുറ്റമടിക്കുമ്പോൾ - അനിതാതമ്പി
4. ഇടതുകൈ - വീരാൻകുട്ടി
5. പാസ്‌വേഡ് - മോഹനകൃഷ്ണൻ കാലടി

സഹായകഗ്രന്ഥങ്ങൾ

1. മലയാള കവിതാസാഹിത്യചരിത്രം - ഡോ. എം. ലീലാവതി.
2. വർണ്ണരാജി - ഡോ. എം. ലീലാവതി.
3. കവിതാപഠനങ്ങൾ - (എഡി.) പ്രൊഫ. പന്മനരാമചന്ദ്രൻ നായർ.
4. കവിതയും ജനതയും - സച്ചിദാനന്ദൻ.
5. മുഹൂർത്തങ്ങൾ - സച്ചിദാനന്ദൻ.
6. നവോത്ഥാനാനന്തര മലയാളകവിത - ഡോ. എസ്. രാജശേഖരൻ.
7. കവിയുടെ കലാതന്ത്രം - ഡോ. ദേശമംഗലം രാമകൃഷ്ണൻ.
8. ആധുനികത മലയാള കവിതയിൽ - ഡോ. എൻ. അജയകുമാർ.
9. പുതുമൊഴിവഴികൾ - (ആമുഖം) - ആറ്റൂർ രവിവർമ്മ.
10. പെൺവഴികൾ - (ആമുഖം) - കെ. ജി. ശങ്കരപ്പിള്ള.
11. കവിതയുടെ ഗ്രാമങ്ങൾ - ഇ. പി. രാജഗോപാലൻ.
12. കവിതയും മനഃശാസ്ത്രവും - എം. എൻ. വിജയൻ.
13. മലയാളകവിത - ആധുനികാനന്തരം - ഡോ. സി. ആർ. പ്രസാദ്.

14. ഹരിതദർശനം – ആധുനികാനന്തര മലയാളകവിതയിൽ – ഡോ. സി. ആർ. പ്രസാദ്.
15. ഭാവഗീതത്തിന്റെ അടയാളങ്ങൾ മലയാളകവിതയിൽ – ഡോ. ആർ. എസ്. രാജീവ്
16. കാവ്യം അന്നരസമയം – ഡോ. പി. സോമൻ.
17. കവിതയുടെ രഥോത്സവം – ഡോ. അജയപുരം ജ്യോതിഷ്കുമാർ.
18. വാക്കിന്റെ വഴിച്ചന്തം – ഡോ. അജയപുരം ജ്യോതിഷ്കുമാർ.
19. കടമ്മനിട്ടയിലെ കവി – (എഡി.). കെ. എസ്. രവികുമാർ.
20. ഭാവുകത്വത്തിന്റെ വഴികൾ – എം. കൃഷ്ണൻ നമ്പൂതിരി.
21. കടലിൽ തങ്ങിയ കാന്തഭൂമി – ഡോ. ബി. വി. ശശികുമാർ.
22. ആധുനികതയുടെ പാഠങ്ങൾ – മലയാളകവിതയിലെ സ്ത്രീപക്ഷ രാഷ്ട്രീയം – യാക്കോബ് തോമസ്.
23. കവിതയുടെ ജീവചരിത്രം – കൽപ്പറ്റ നാരായണൻ.
24. തരിശുനിലത്തിലെ കാവ്യസഞ്ചാരികൾ – ഡോ. ടി. കെ. സന്തോഷ്കുമാർ.
25. കരിയിലക്കിളികൾ കലമ്പുന്നുണ്ട് – ഡോ. സി. ഉണ്ണിക്കൃഷ്ണൻ.
26. ഒ. എൻ. വി. പഠനം – (എഡി) കെ. ബി. ശെൽവമണി.
27. അക്കിത്തം: ആത്മഭാഷണങ്ങൾ – ഡോ. എൻ. പി. വിജയകൃഷ്ണൻ, ഗ്രീൻ ബുക്സ്, 2010.
28. ആറ്റൂർ വഴികൾ: കവിതാപഠനങ്ങൾ – വി. യു. സുരേന്ദ്രൻ (എഡി.), ഗ്രീൻ ബുക്സ്, 2016.
29. കളിയച്ഛന്റെ കാവ്യപാഠങ്ങൾ – ഡോ. എൻ പി. വിജയകൃഷ്ണൻ, ഗ്രീൻ ബുക്സ്.
30. അപൂർവ്വഹൃദയ സംവാദം – ഡോ. ആർ അശ്വതി.
31. ആത്മസംവാദം – ഡോ. എം. കൃഷ്ണൻ നമ്പൂതിരി, ഡോൺ ബുക്സ്.
32. ഉത്തരാധുനികകവിതാപഠനം – ഡോ. എം. എസ്. പോൾ, കേരളസാഹിത്യ അക്കാദമി.

സെമസ്റ്റർ	**:**	**VI**
കോഴ്സ് കോഡ്	**:**	**ML 1644**
കോർ കോഴ്സ്	**:**	**XIV**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**3**

നാടോടിവിജ്ഞാനീയം

പഠനോദ്ദേശ്യം

1. കേരളസംസ്കൃതിയും പാരമ്പര്യവുമായി ബന്ധപ്പെട്ട നാടോടി വിജ്ഞാനീയത്തെക്കുറിച്ച് അറിയാനുള്ള അവസരം ഒരുക്കുക.
2. നാടോടിവിജ്ഞാനീയം എന്ന പഠനശാഖയെ ഏറ്റവും പുതിയ ചിന്തകളുടെയും സമീപനത്തിന്റെയും വെളിച്ചത്തിൽ മനസ്സിലാക്കുക.
3. നാടൻ സംസ്കാരരൂപങ്ങളെ വിമർശനാത്മകമായി വിലയിരുത്തുക.

4. നാട്ടറിവുകളുടെ വ്യത്യസ്ത ജനുസ്സുകളും തരതമഭേദങ്ങളും പരിചയപ്പെടുക.
5. ഫോക്‌ലോർ ശേഖരണത്തിനുള്ള ശാസ്ത്രീയമായ പ്രയോഗവൈദഗ്ദ്ധ്യം നേടുക.
6. സാഹിത്യപഠനത്തിന് നാടൻ സാഹിത്യത്തിന്റെയും വാമൊഴി വഴക്കത്തിന്റെയും കരുക്കൾ പ്രയോജനപ്പെടുത്തുക.
7. ഫോക്‌ലോറിന്റെ സൗന്ദര്യശാസ്ത്രപരവും സാംസ്കാരികവുമായ ഘടകങ്ങൾ മനസ്സിലാക്കുക.
8. പഠനയാത്രകളിലൂടെ കേരളത്തിന്റെ സാംസ്കാരിക ബഹുസ്വരതയെ പരിചയ പ്പെടുക.

രീതിശാസ്ത്രം

വിദ്യാർത്ഥി കേന്ദ്രീകൃതമായ ഒരു പഠനരീതി ഈ കോഴ്സിലും അനുവർത്തിക്കണം. നാടോടിവിജ്ഞാനീയത്തിന്റെ വിശദാംശങ്ങൾ മനസ്സിലാക്കുന്നതോടൊപ്പം ഭാഷയിൽ നിന്ന് മാതൃകകൾ കണ്ടെത്തി, വിശകലനം ചെയ്ത് അറിവ് ആഴത്തിലുള്ളതാക്കാൻ വിദ്യാർത്ഥികൾ പ്രത്യേകം ശ്രദ്ധിക്കേണ്ടതാണ്.

സാംസ്കാരികമായും ചരിത്രപരമായും പ്രാധാന്യമുള്ള സ്ഥലങ്ങൾ സന്ദർശിച്ച് കേരളത്തിന്റെ നാടോടികലാപാരമ്പര്യവും സാംസ്കാരിക ബഹുസ്വരതയും പരിചയ പ്പെടാനും റിപ്പോർട്ടുകൾ തയ്യാറാക്കാനും വേണ്ട അവസരം വിദ്യാർത്ഥികൾക്ക് ഒരുക്കി ക്കൊടുക്കണം. അതിനുവേണ്ടി പഠനയാത്ര (സ്റ്റഡിടൂർ പ്രോഗ്രാം) സംഘടിപ്പിക്കണം. അതിനുള്ള സാമ്പത്തികസഹായം പ്ലാൻഫണ്ടിൽ നിന്നും അനുവദിക്കേണ്ടതാണ്.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

നാടോടിവിജ്ഞാനീയം - നിർവചനം - ഈ വിജ്ഞാനശാഖ രൂപപ്പെടാനിടയായ സാമൂഹിക - സാംസ്കാരിക പശ്ചാത്തലം - നാടോടിവിജ്ഞാനീയത്തിന്റെ ലക്ഷ്യവും വ്യാപ്തിയും - പഠനരീതികൾ - ഫീൽഡ് സയൻസ് എന്ന നിലയിൽ - പുതിയ പ്രവണതകൾ - ഫോക്‌ലോറിസം - നിയുക്ത ഫോക്‌ലോർ - നാഗരിക ഫോക്‌ലോർ - സമകാലിക പരിസരം - ജനപ്രിയകല - മാധ്യമങ്ങളും ഫോക്‌ലോറും - പരസ്യങ്ങൾ - ഫോക്‌ലോർ വർഗീകരണം - കേരളത്തിലെ നാടോടിവിജ്ഞാനീയം - വിവിധ വിഭാഗങ്ങൾ - പഠനചരിത്രം - സമാഹരണം - സംരക്ഷണം - ഫോക്‌ലോർ മ്യൂസിയം.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

സാമൂഹിക സംസ്കൃതി

സമൂഹവും ഫോക്‌ലോറും - കേരളത്തിലെ നാടോടി വിശ്വാസങ്ങൾ - ആചാരങ്ങൾ - അനുഷ്ഠാനങ്ങൾ - ആഘോഷങ്ങൾ - ഭൗതികജീവിതം - തൊഴിൽ - വസ്ത്രധാരണം പാർപ്പിടം - ഭക്ഷണരീതി - നാടൻ കൈവേലകൾ - കൃഷി - മീൻപിടിത്തം - നാടൻ കളികൾ - പ്ലാന്റ് ലോർ - ഇക്കോ ലോർ - സ്പീം ലോർ.

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

വാമൊഴി വഴക്കങ്ങൾ

കേരളത്തിലെ നാടോടി വാങ്മയങ്ങൾ - നാടൻപാട്ടുകൾ - വീരഗാനങ്ങൾ - തൊഴിൽപ്പാട്ടുകൾ - വിനോദഗാനങ്ങൾ - അനുഷ്ഠാനഗാനങ്ങൾ - നാടോടികഥാഗാനങ്ങൾ - നാടൻകഥകൾ - ഐതിഹ്യങ്ങൾ - പുരാവൃത്തങ്ങൾ - പഴഞ്ചൊല്ലുകൾ - കടങ്കഥകൾ - വാമൊഴിക്കഥകൾ - നാടോടിഭാഷണം.

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

നാടോടി രംഗകലാരൂപങ്ങൾ

ആഖ്യാനപരവും വിനോദപരവുമായ നൃത്തങ്ങൾ - സംഘനൃത്തങ്ങൾ - നാടോടി നാടകം - നാടോടി സംഗീതം - തെയ്യം പൂതനും തിറയും - കോമരം - സർപ്പം തുള്ളൽ - മുടിയേറ്റ് - കാളിയൂട്ട് - കളംപാട്ട് - ആദിവാസിനൃത്തം - തിരുവാതിര - ഒപ്പന - മാർഗംകളി - കാക്കാരിശ്ശി - കണ്യാർകളി - പുറാട്ട് - ഇവയെക്കുറിച്ചെല്ലാം സാമാന്യധാരണ നേടണം.

സഹായകഗ്രന്ഥങ്ങൾ

1. നാടോടിവിജ്ഞാനീയം - എം. വി. വിഷ്ണുനമ്പൂതിരി.
2. ഫോക്‌ലോർ - രാഘവൻ പയ്യനാട്.
3. കേരള ഫോക്‌ലോർ - രാഘവൻ പയ്യനാട്.
4. ഫോക്‌ലോർ പഠനം - സിദ്ധാന്തതലം - (എഡി.) എൻ. ഭക്തവത്സല റെഡ്ഡി.
5. ഫോക്‌ലോറിന് ഒരു പഠനപദ്ധതി - രാഘവൻ പയ്യനാട്.
6. നാടൻകലകൾ, നാടൻപാട്ടുകൾ - എം. വി. വിഷ്ണുനമ്പൂതിരി.
7. ഫോക്‌ലോർ നിഘണ്ടു - എം. വി. വിഷ്ണു നമ്പൂതിരി.
8. നമ്മുടെ ദൃശ്യകല - കെ. ആർ. പിഷാരടി.
9. നാട്ടരങ്ങ് - ജി. ഭാർഗവൻ പിള്ള.
10. നാടുമറന്ന നാട്ടുപഴമ - ആര്യനാട് സത്യൻ.
11. ഫോക്‌ലോർ കൃതിയും സ്മൃതിയും - കെ. എസ്. പ്രകാശ്.
12. ഫോക്‌ലോർ സിദ്ധാന്തവും പ്രയോഗവും - കെ. എം. ഭരതൻ.
13. ഫോക്‌ലോർ സങ്കേതങ്ങളും സങ്കല്പനങ്ങളും - രാഘവൻ പയ്യനാട്.
14. വാമൊഴിയുടെ സൗന്ദര്യശാസ്ത്രം - ഡോ. എൻ. അജിത്കുമാർ.

സെമസ്റ്റർ	**:**	**VI**
കോഴ്സ് കോഡ്	**:**	**ML 1651.1**
ഓപ്പൺ കോഴ്സ്	**:**	**II ഐച്ഛികം (Elective)**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**2**

താരതമ്യസാഹിത്യം

പഠനോദ്ദേശ്യം:

സാഹിത്യത്തിന്റെ സാമൂഹിക ബന്ധത്തിലും സാംസ്കാരികാടിത്തറയിലും ഊന്നുന്ന പഠനസമ്പ്രദായമാണ് താരതമ്യസാഹിത്യം. സാഹിത്യത്തെ ഉപകരണവും താരതമ്യത്തെ മാർഗ്ഗവും ആക്കുന്ന ഈ അന്വേഷണരീതിയുടെ അടിസ്ഥാനലക്ഷ്യം സംസ്കാരപഠന മാണ്. സാഹിത്യത്തിന്റെ ദേശീയവും അന്തർദ്ദേശീയവും ആയ ഊർജ്ജസ്സുകളെ തിരിച്ച റിയുക, ദേശ, കാല, ഭാഷ, രാഷ്ട്രപരമായ വ്യത്യസ്തതകൾക്കിടയിലും മാനവികമായ മൗലിക സാധാരണതകളെ കണ്ടെത്തുക, ദേശീയതയിൽ ചുവടുറപ്പിച്ചുകൊണ്ട് അന്തർദേശീയവീക്ഷണത്തിലേക്ക് വളരുക, ഭാരതത്തിന്റെ സാംസ്ക്കാരിക സവിശേ ഷതകളെ മനസ്സിലാക്കുക, സിദ്ധാന്തങ്ങൾ മനസ്സിലാക്കാനുള്ള ശേഷി കൈവരിക്കുക എന്നിവയാണ് ഈ കോഴ്സിന്റെ ലക്ഷ്യം.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

താരതമ്യസാഹിത്യം എന്ന പഠനശാഖയുടെ ഉത്ഭവവും വികാസവും - നവോ ത്ഥാനവും താരതമ്യസാഹിത്യവും - നവോത്ഥാനദശയിൽ പ്രകടമാവുന്ന ബോധ വികാസം - അന്യസംസ്കൃതികളോടുള്ള ആഭിമുഖ്യം - ഹ്യൂമനിസത്തിന്റെ വളർച്ച - താരതമ്യസാഹിത്യം : നിർവ്വചനങ്ങൾ - സ്വഭാവം - താരതമ്യസാഹിത്യം സംസ്കാരപഠന മാകുന്നതെങ്ങനെ? സ്വാധീനതാപഠനം - പ്രത്യക്ഷസ്വാധീനം - പരോക്ഷസ്വാധീനം.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

ദേശീയസാഹിത്യം (National Literature) - സാമാന്യസാഹിത്യം (General Literature) - വിശ്വസാഹിത്യം (World Literature).

പഠനതലങ്ങൾ

1. രൂപനിഷ്ഠം - സാഹിത്യരൂപങ്ങളുടെ വിഭജനവും വർഗ്ഗീകരണവും - അന്യ സ്വാധീനങ്ങൾ.
2. പ്രസ്ഥാനനിഷ്ഠം - പ്രസ്ഥാനങ്ങളും താരതമ്യവും - പ്രസ്ഥാനരൂപീകരണത്തിന്റെ സാമൂഹിക സാംസ്കാരിക പശ്ചാത്തലം.

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

താരതമ്യസാഹിത്യം - ഭാരതീയ സമീപനം - ഭാഷാപരവും സാംസ്കാരികവുമായ വൈവിധ്യം - പഠനസാധ്യതകൾ.

പ്രായോഗിക പഠനം

1. എലിജി റിട്ടൺ ഇൻ എ കൺട്രി ചർച്ച്യാർഡ് (തോമസ് ഗ്രേ) - ഒരു വിലാപം (വി. സി. ബാലകൃഷ്ണപ്പണിക്കർ).
2. പത്മാനദിയിലെ മുക്കുവർ - (മണിക് ബാനർജി) - ചെമ്മീൻ (തകഴി).
3. എ ഹംഗർ ആർട്ടിസ്റ്റ് (കാഫ്ക) - ജന്മദിനം (വൈക്കം മുഹമ്മദ് ബഷീർ).

സഹായകഗ്രന്ഥങ്ങൾ

1. ഭാരതീയ സാഹിത്യചരിത്രം - (എഡി.) ഡോ. കെ. എം. ജോർജ്.
2. താരതമ്യസാഹിത്യപീഠിക - കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്
3. താരതമ്യസാഹിത്യപരിചയം - (എഡി.) ചാത്തനാത്ത് അച്യുതനുണ്ണി.
4. താരതമ്യസാഹിത്യപ്രമാണങ്ങൾ - പി. ഒ. പുരുഷോത്തമൻ.
5. താരതമ്യസാഹിത്യം പുതിയ കാഴ്ചപ്പാടുകൾ - കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
6. സാഹിത്യപഞ്ചാനനന്റെ കൃതികൾ (വാല്മീകിയും ഹോമറും) - കേരള സാഹിത്യ അക്കാദമി.
7. സാഹിത്യനികഷം (ഷേക്സ്പിയറും കാളിദാസനും) - എം. ആർ. നായർ, മാതൃഭൂമി ബുക്സ്.
8. താരതമ്യസാഹിത്യം - പി. ഒ. പുരുഷോത്തമൻ, ജി. പദ്മറാവു: അമൂല്യ പബ്ലിക്കേഷൻസ്, കൊച്ചി.
9. Comparative Literature - Susan Bassnettie.
10. Studies in Comparative Literature - Ed. K. Ayyappa Panicker Bernard Femm.
11. Comparative Literary Studies - S. S. Praweer.
12. Comparative Literature & Literary Theory - Ulrich Weisselim.

സെമസ്റ്റർ	:	**VI**
കോഴ്സ് കോഡ്	:	**ML 1651.2**
ഓപ്പൺ കോഴ്സ്	:	**II ഐച്ഛികം (Elective)**
സമയക്രമം	:	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**2**

ഭാഷാസാഹിത്യസംവാദങ്ങൾ

ഭാഷയുടെയും സാഹിത്യത്തിന്റെയും വികാസത്തിനും പരിവർത്തനത്തിനും പല കാലങ്ങളിലുണ്ടാകുന്ന സംവാദങ്ങൾ കാരണമാകാറുണ്ട്. ഭാഷാസാഹിത്യമണ്ഡലങ്ങളെ ചലനാത്മകമാക്കാനും പുതിയതരം അന്വേഷണങ്ങൾക്കും കണ്ടെത്തലുകൾക്കും ആരോഗ്യകരവും കാലോചിതവുമായ മാറ്റത്തിനും സംവാദങ്ങൾ നിർണ്ണായകമായ

പങ്കുവഹിക്കുന്നുണ്ട്. ചിലപ്പോൾ എഴുത്തിന്റെ ദിശയെയോ മറ്റു ചിലപ്പോൾ ഭാവുകത്വത്തിന്റെ ദിശയെയോ മാറ്റിത്തീർക്കാനും സംവാദങ്ങൾ ഇടയാക്കുന്നു. സമരങ്ങൾ സമൂഹത്തെയെന്ന പോലെ സംവാദങ്ങൾ സാഹിത്യത്തെ പരിവർത്തിപ്പിക്കാം. ഭാഷയെയോ സാഹിത്യത്തെയോ സംബന്ധിച്ച പുതിയ അറിവുകൾ, സമീപനങ്ങൾ, സാമൂഹികമോ രാഷ്ട്രീയമോ ആയ ചില ആശയങ്ങളുടെ സ്വാധീനം എന്നിവയൊക്കെ സംവാദങ്ങളുണ്ടാകാൻ കാരണമാകാറുണ്ട്. സാഹിത്യത്തിന്റെ അടിസ്ഥാനപരമായ ഘടനയിലോ ഉദ്ദേശ്യലക്ഷ്യങ്ങളിലോ ക്രമേണയാണെങ്കിലും ചില തിരുത്തലുകളോ ചലനങ്ങളോ ഉണ്ടാക്കാൻ സംവാദങ്ങൾ കൊണ്ട് സാധിക്കാറുണ്ട്. വായനയുടെ ദിശാനിർണ്ണയനത്തിനുപോലും സംവാദങ്ങൾ വഴിതുറക്കാം.

മലയാളഭാഷയുടെയും സാഹിത്യത്തിന്റെയും മേഖലകളിൽ ഗവേഷണാത്മകവും ഉന്മേഷകരവുമായ ചലനങ്ങളുണ്ടാക്കുകയും പുതിയ വഴികളിലൂടെ സഞ്ചരിക്കാൻ പ്രേരിപ്പിക്കുകയും ചെയ്ത സംവാദങ്ങളുടെ പരിചയപ്പെടലാണ് ഈ കോഴ്സിലൂടെ ഉദ്ദേശിക്കുന്നത്. സാഹിത്യത്തെ നവീകരിക്കുന്നതിനാവശ്യമായ ഊർജ്ജസ്വലമായ ഇടപെടലുകളായി മാറിയ ഭാഷാസാഹിത്യസംവാദങ്ങളാണിവിടെ ഉൾപ്പെടുത്തുന്നത്. ഇത് മലയാളസാഹിത്യചരിത്രത്തിന്റെ വളർച്ചയുടെയും അഭിരുചിപരിണാമത്തിന്റെയും രേഖാചിത്രം കൂടി നല്കുന്നതാണ്. ചില സംവാദങ്ങൾ സ്വത്വബോധത്തെ പ്രകാശിപ്പിക്കുമ്പോൾ മറ്റു ചിലത് വ്യവസ്ഥാപിതമായ അധീശപ്രവണതകൾക്കു നേരെയുള്ള പ്രതിഷേധങ്ങളായും സാമൂഹികമോ ആശയപരമോ ആയ തുറസ്സുകളായും മാറുന്നതു കാണാം. പ്രതിഷേധവും പ്രതിരോധവും നവീനാശയങ്ങളും ഇടകലർന്ന സംവാദഭൂമിയിലൂടെയുള്ള സഞ്ചാരം, ഭാഷാസാഹിത്യമണ്ഡലങ്ങളിലെ പരിണാമത്തിന്റെ സ്വഭാവങ്ങളിലൊന്നിനെ ബോധ്യപ്പെടുത്തും. സംവാദത്തിന്റെയും ഇടപെടലിന്റെയും ക്രിയാത്മകമായ അവബോധം കുട്ടികളിൽ വളർത്താനും അത് ക്ലാസ്സ് മുറികളിൽ പ്രയോജനപ്പെടുത്താനും പ്രേരിപ്പിക്കണം.

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

ഭാഷാബദ്ധസംവാദങ്ങൾ

മലയാളഭാഷോല്പത്തിവാദങ്ങളുടെ സാമാന്യപരിചയം (പ്രധാനപ്പെട്ടവ മാത്രം) - തമിഴ്ജന്യവാദം, സംസ്കൃതജന്യവാദം, മിശ്രഭാഷാവാദം, സ്വതന്ത്രഭാഷാവാദം തുടങ്ങിയവ - ലീലാതിലകത്തിലൂടെ ഉയർന്നുവന്ന കൂന്തൽവാദം - കൂന്തൽവാദത്തിൽ പ്രകടമാകുന്ന മലയാളത്തിന്റെ സ്വത്വബോധം, സംവാദത്തിന്റെ താർക്കികരീതി - ദ്വിതീയാക്ഷരപ്രാസവാദം - പ്രാസവാദത്തിന്റെ കാരണങ്ങൾ, എഴുത്തിൽ രൂപമാണോ ഉള്ളടക്കമാണോ പ്രധാനമെന്ന തർക്കം, വായനക്കാർ നിരൂപകർ എഴുത്തുകാർ എന്നിവരുടെ ഇടപെടൽ, സാഹിത്യചർച്ചയിൽ ഒരു പൊതുമണ്ഡലത്തിന്റെ രൂപവത്കരണം, ഭാഷയിൽനിന്ന് ഭാവുകത്വചിന്തയിലേക്കുള്ള മാറ്റം, പുതിയ ഭാവുകത്വത്തിന്റെ കടന്നുവരവ് - മലയാളത്തിന്റെ ക്ലാസ്സിക്കൽപദവിയെ സംബന്ധിച്ച വിവാദങ്ങൾ - മലയാളത്തിന്റെ പഴക്കം, സംഘസാഹിത്യത്തിലുള്ള പങ്കാളിത്തം എന്നിവ.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

സാഹിത്യബദ്ധസംവാദങ്ങൾ

മലയാളസാഹിത്യവുമായി ബന്ധപ്പെട്ടുണ്ടായ സംവാദങ്ങൾ - കവിരാമായണവാദം - അതിനുപിന്നിലെ സാഹിതീയമായ നിലപാടുകൾ - ബാലാകലേശവാദം - നാടകത്തിന്റെ രൂപവും ഉള്ളടക്കവും ചർച്ചചെയ്യപ്പെടുന്നു - രൂപഭദ്രതാവാദം -

എഴുത്തിന്റെ രൂപത്തെ മുൻനിർത്തിയുള്ള ചർച്ച - കല കലയ്ക്കുവേണ്ടിയോ ജീവിത ത്തിനുവേണ്ടിയോ എന്ന വാദം - കലയുടെ അടിസ്ഥാനലക്ഷ്യത്തെ സ്പർശിക്കുന്ന ചർച്ച, എഴുത്തിലെ പ്രതിബദ്ധതാസങ്കല്പം - ഇസങ്ങൾക്കപ്പുറവും ഇസങ്ങൾക്കിപ്പുറവും - ആധുനികതാവാദം, ഉത്തരാധുനികതാവാദം എന്നിവയുടെ നിലപാടുകൾ, അവയുടെ സാംഗത്യത്തെയും പ്രസക്തിയെയും ചൊല്ലിയുള്ള ചർച്ചകൾ - ലീലാനിരൂപണം, ചിത്രയോഗനിരൂപണം എന്നിവ മുൻനിർത്തിയുണ്ടായ സംവാദങ്ങൾ - ചില അനുകരണ/ ചോരണവാദങ്ങൾ - കന്യാവനങ്ങൾ, ഒരു സങ്കീർത്തനം പോലെ എന്നിവയെപ്പറ്റിയു ണ്ടായവ - ഇത്തരം സംവാദങ്ങൾ സാഹിത്യമണ്ഡലത്തിലുണ്ടാക്കിയ പരിവർത്തനങ്ങൾ, നേട്ടങ്ങൾ.

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

സംവാദങ്ങൾക്കു പിന്നിലെ വ്യത്യസ്ത താത്പര്യങ്ങൾ

സാഹിത്യത്തെ മുൻനിർത്തിയുണ്ടായ ചില സംവാദങ്ങൾക്കു പിന്നിൽ സാമു ദായികവും വരേണ്യവുമായ താത്പര്യങ്ങളുണ്ടായിരുന്നുവെന്ന കാഴ്ചപ്പാട് - അവയുടെ പശ്ചാത്തലാവബോധം - മലയാള സാഹിത്യം ഇന്നത്തെ നിലയിൽ ജനാധിപത്യപരവും ബഹുസ്വരവുമായതിനു പിന്നിലെ സാഹിത്യബാഹ്യമായ പ്രതിസന്ധികളും പ്രതി രോധങ്ങളും - കവിരാമായണവാദം ജാത്യാധിപത്യത്തിനെതിരെയുള്ള സർഗ്ഗാത്മക കലഹമെന്ന നിലയിൽ - സാഹിത്യം അവർണ്ണരുടെകൂടി പ്രവർത്തനമണ്ഡലമായി അംഗീകരിപ്പിക്കാനുള്ള യത്നം - അതിന്റെ തുടർച്ചയായി പണിക്കർവാദം, ശൗണ്ഡിക വാദം എന്നിവയുടെ രൂപപ്പെടൽ - ബാലാകലേശവാദത്തെ തുടർന്നുണ്ടായ വ്യത്യ സ്താഭിപ്രായങ്ങൾ - പെണ്ണെഴുത്തിന്റെയും ദലിതെഴുത്തിന്റെയും ആശയങ്ങളുമായി ബന്ധപ്പെട്ടുണ്ടായ ലിംഗ, വർഗ്ഗ വിരുദ്ധനിലപാടുകൾ എന്നിവയുടെ പരിശോധന - സാഹിത്യബാഹ്യമെന്നു കരുതപ്പെടുന്ന സംവാദങ്ങൾ സാഹിത്യത്തിലുണ്ടാക്കുന്ന സംഘർഷങ്ങൾ, പരിവർത്തനങ്ങൾ.

സഹായകഗ്രന്ഥങ്ങൾ

1. ലീലാതിലകം - (വ്യാഖ്യാ.) ഇളംകുളം കുഞ്ഞൻപിള്ള.
2. ലീലാതിലകം - (വ്യാഖ്യാ.) ശൂരനാട്ടു കുഞ്ഞൻപിള്ള
3. കേരളസാഹിത്യചരിത്രം - ഉള്ളൂർ എസ്. പരമേശ്വരയ്യർ.
4. മധ്യകാലമലയാളം - ഡോ. പി. വി. വേലായുധൻപിള്ള.
5. കേരളഭാഷയുടെ വികാസപരിണാമങ്ങൾ - ഇളംകുളം കുഞ്ഞൻപിള്ള.
6. കേരളപാണിനീയം (പീഠിക) - ഏ. ആർ. രാജരാജവർമ്മ.
7. പൂർവ്വകേരളഭാഷ - കെ. എം. പ്രഭാകരവാര്യർ.
8. കൈരളിയുടെ കഥ - എൻ. കൃഷ്ണപിള്ള.
9. മലയാള കവിതാസാഹിത്യചരിത്രം - എം. ലീലാവതി.
10. സാഹിത്യചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - (എഡി.), കെ. എം. ജോർജ്.
11. പ്രാസവാദം - (സമ്പാ.) എസ്. കെ. വസന്തൻ.
12. വെണ്മണിപ്രസ്ഥാനം - അകവൂർ നാരായണൻ.
13. രൂപഭദ്രത - ജോസഫ് മുണ്ടശ്ശേരി.

14. ആധുനികസാഹിത്യം - എസ്. ഗുപ്തൻ നായർ.
15. എം. ഗോവിന്ദന്റെ ലേഖനങ്ങൾ - എം. ഗോവിന്ദൻ.
16. സി. ജെ.യുടെ ലേഖനങ്ങൾ - സി. ജെ. തോമസ്.
17. മലയാളസാഹിത്യവിമർശനം - സുകുമാർ അഴീക്കോട്.
18. തിരസ്കാരം - കെ. പി. അപ്പൻ.
19. ആധുനികതയുടെ ജീർണ്ണമുഖം - തായാട്ട് ശങ്കരൻ.
20. ആധുനികതയുടെ മധ്യാഹ്നം - നരേന്ദ്രപ്രസാദ്.
21. ആധുനികോത്തരതയുടെ കേരളീയപരിസരം - പി. കെ. പോക്കർ.
22. ആധുനികോത്തരം : വികലനവും വിമർശനവും - ഡോ. വി. സി. ശ്രീജൻ.
23. ദളിതപാതകൾ - (എഡി.) ബോബി തോമസ്.
24. സാഹിത്യവിവാദങ്ങളിലൂടെ - ഡോ. വി. ജയപ്രസാദ്
25. ഇസങ്ങൾക്കപ്പുറം - എസ്. ഗുപ്തൻനായർ.
26. ഇസങ്ങൾക്കിപ്പുറം - പി. ഗോവിന്ദപ്പിള്ള.
27. കേരളത്തിലെ പുരോഗമനസാഹിത്യപ്രസ്ഥാനത്തിന്റെ ചരിത്രം - എം. ആർ. ചന്ദ്രശേഖരൻ.
28. തെരഞ്ഞെടുത്ത പ്രബന്ധങ്ങൾ - എം. എസ്. ദേവദാസ്.

സെമസ്റ്റർ	:	**VI**
കോഴ്സ് കോഡ്	:	**ML 1651.3**
ഓപ്പൺ കോഴ്സ്	:	**II ഐച്ഛികം (Elective)**
സമയക്രമം	:	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**2**

കേരളീയകലകൾ

പഠനോദ്ദേശ്യം:

കലകളുടെ വിശാലമായ സൗന്ദര്യലോകത്തേക്ക് വിദ്യാർത്ഥികളെ ആനയിക്കുകയും അവരുടെ കലാവാസനകൾക്ക് ഉന്മേഷവും പ്രേരണയുമുണ്ടാക്കുകയും കലാസ്വാദനത്തിലൂടെ മാനസികമായ വികാസം സാധ്യമാക്കുകയും ചെയ്യുകയെന്നതാണ് ഈ കോഴ്സിന്റെ പ്രാഥമികോദ്ദേശ്യം. കേരളീയകലകളുടെ പൊതു അവലോകനത്തിലൂടെ അവയുടെ ഉള്ളിലേക്കിറങ്ങിക്കൊണ്ട് കേരളത്തിന്റെ കലാചരിത്രവും സംസ്കാരവും മനസ്സിലാക്കാനും വാക്കും വസ്തുവും ശരീരവും സമന്വയിക്കുന്ന കേരളീയഭാവനയുടെ ഔന്നത്യം തിരിച്ചറിയാനും വിദ്യാർത്ഥികളെ പ്രാപ്തരാക്കുക എന്നതിനാണ് ഊന്നൽ നല്കേണ്ടത്. അസൈൻമെന്റിന് ഏതെങ്കിലും കലാരൂപത്തിന്റെ അവതരണം നേരിൽക്കണ്ട് വിവരണം നല്കുന്നതിനും പ്രേരിപ്പിക്കാവുന്നതാണ്. പരസ്പരപൂരകങ്ങളാണെങ്കിലും കേരളീയകലകളെ സാമാന്യമായി മാധ്യമത്തെ അടിസ്ഥാനമാക്കി രണ്ടായി തിരിച്ചുകൊണ്ടുള്ള സമീപനമാണ് ഇവിടെ സ്വീകരിച്ചിരിക്കുന്നത്. ഓരോ വിഭാഗത്തിലും ഉൾപ്പെടുന്ന അനേകം കലകളുണ്ടെങ്കിലും പ്രധാനപ്പെട്ടവയെ പരിചയപ്പെടുത്തുകയെന്ന ഉദ്ദേശ്യത്തിലാണ് പേരുകൾ പരാമർശിക്കുന്നത്.

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (36 മണിക്കൂർ)

ശരീരകേന്ദ്രിത കലകൾ

(1) കല - വ്യത്യസ്ത നിർവ്വചനങ്ങൾ - വിഭജനസമ്പ്രദായങ്ങൾ - സുകുമാര/സൗന്ദര്യാത്മക കലകൾ, സോപയോഗ/പ്രയോജനാത്മക കലകൾ, ദ്വിമാന/ത്രിമാന/അനേകമാന(multi-dimensional)കലകൾ, നിശ്ചല/ചലനാത്മക കലകൾ, ക്ലാസ്സിക/അനുഷ്ഠാന/വിനോദന കലകൾ, ദേശി, മാർഗ്ഗി എന്നിങ്ങനെയുള്ളവ - അറുപത്തിനാലുകലകൾ - കലകളുടെ വികാസചരിത്രം - കലകളുടെ വിവിധതരം ആവിഷ്കരണ മാധ്യമങ്ങൾ - ശരീരം, ഇതരവസ്തുക്കൾ - കലാപ്രയോജനം - കേരളീയ കലകളുടെ വൈവിധ്യം - സവിശേഷതകൾ.

(2) കേരളീയസംഗീതം - നാടൻ/വംശീയ/ആദിവാസി സംഗീതം - പാട്ടു രൂപങ്ങൾ - പാട്ടുകളുടെ വർഗ്ഗീകരണം - പ്രയോഗസന്ദർഭങ്ങൾ - സർപ്പം പാട്ട് (പുള്ളുവൻപാട്ട്), തോറ്റംപാട്ട്, ഓണപ്പാട്ട്, വില്പാട്ട്, താരാട്ടുപാട്ട്, കൃഷിപ്പാട്ട്, കൈകൊട്ടിക്കളിപ്പാട്ട്, മാപ്പിളപ്പാട്ട്, മാർഗ്ഗംകളിപ്പാട്ട്, ഗദ്ദികപ്പാട്ട് എന്നിവയുടെ സാമാന്യപരിചയം.

ശാസ്ത്രീയസംഗീതത്തിനു കേരളത്തിന്റെ സംഭാവന - ഇരയിമ്മൻ തമ്പി, സ്വാതി തിരുനാൾ, ആധുനികകാലത്തെ സംഗീതജ്ഞർ എന്നിവരെ പരിചയപ്പെടൽ.

കേരളത്തിലെ വാദ്യസംഗീതത്തിന്റെ വൈവിധ്യം - വിവിധതരം വാദ്യോപകരണങ്ങൾ - തുകൽ, തന്ത്രി, സുഷിര, ഘന വാദ്യങ്ങൾ - പഞ്ചവാദ്യം, തായമ്പക എന്നിവ.

(3) നൃത്തം - കേരളത്തിലെ വിവിധതരം നൃത്തരൂപങ്ങൾ - താളാത്മകമായ ആദിവാസി നൃത്തങ്ങൾ, അനുഷ്ഠാനരൂപങ്ങളോടും അഭിനയകലകളോടും ചേർന്നുള്ള നൃത്തങ്ങൾ, തിരുവാതിരകളി, ഒപ്പന, മാർഗ്ഗംകളി, മോഹിനിയാട്ടം തുടങ്ങിയവ.

(4) അഭിനയകലകൾ - വിവിധതരം അഭിനയരൂപങ്ങൾ - നൃത്യ, നാട്യ വിന്യസനം - നാടൻ (വിനോദ, അനുഷ്ഠാന) കലകൾ, ശാസ്ത്രീയകലകൾ എന്നിവയുടെ വിവേചനം - കാക്കാരിശ്ശിനാടകം, പൊറാട്ടുനാടകം, ചവിട്ടു നാടകം, തെയ്യം, പടയണി, മുടിയേറ്റ്, കൂടിയാട്ടം, കഥകളി, തുള്ളൽ എന്നിവയുടെ പരിചയം - ഈ കലകളുടെ അഭിനയ രീതികൾ, വേഷവിധാനങ്ങൾ എന്നിവയിലെ വ്യത്യാസങ്ങൾ.

(5) ആയോധനകല - കേരളത്തിന്റെ ആയോധനപാരമ്പര്യം - കളരിപ്പയറ്റ് - കളരിയുടെ വിവിധ സമ്പ്രദായങ്ങൾ - തെക്കൻ, വടക്കൻ എന്നിവ - പരിശീലനരീതി - കളരിയുടെ ആരോഗ്യപരവും ചികിത്സാപരവുമായ സാധ്യതകൾ - കളരിയുമായി ബന്ധപ്പെട്ട സംസ്കാരവും സാഹിത്യവും - കളരിപ്പയറ്റിന്റെ സ്വാധീനം ഇതരകലകളിൽ.

(6) വചനകല - വാചികപ്രധാനമായ വിവിധതരം കലകളെ സാമാന്യമായി പരിചയപ്പെടുത്തൽ - പാഠകം, ചാക്യാർക്കൂത്ത്, ഹരികഥ, കഥാപ്രസംഗം എന്നിവ.

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

വസ്തുകേന്ദ്രിത കലകൾ

(1) ചിത്രകല - കേരളീയമായ വിവിധതരം ചിത്രരചനാസമ്പ്രദായങ്ങൾ - ചിത്രരചനാമാധ്യമങ്ങൾ - ഗുഹാചിത്രങ്ങൾ, ചുവർചിത്രങ്ങൾ - വിവിധ തരം കളമെഴുത്തുകൾ - അഭിനയകലകളിലെ മുഖത്തെഴുത്തുകൾ - രാജാ രവിവർമ്മ, കെ.സി.എസ്. പണിക്കർ, എം.വി.ദേവൻ തുടങ്ങിയവരുടെ സംഭാവനകൾ, നമ്പൂതിരിയുടെ രേഖാചിത്രങ്ങൾ എന്നിവ പരിചയപ്പെടുത്തണം.

(2) ശില്പകല - ശില്പകലാമാധ്യമങ്ങൾ - കല്ല്, മണ്ണ്, തടി, ദന്തം, ലോഹം തുടങ്ങിയവ - വിവിധതരം ശില്പങ്ങൾ - വിഗ്രഹം, പ്രതിമ, മറ്റ് അലങ്കൃത രൂപങ്ങൾ എന്നിങ്ങനെ - കേരളീയരായ പ്രമുഖശില്പികൾ.

(3) വാസ്തുവിദ്യ - കേരളീയപാരമ്പര്യം - ഗൃഹനിർമ്മാണത്തിന്റെ വിവിധ സമ്പ്രദായങ്ങൾ - നാലുകെട്ട്, എട്ടുകെട്ട് തുടങ്ങിയവ - വാസ്തുലക്ഷണം - ഭൂമിയുടെ തെരഞ്ഞെടുപ്പ്, ജലസാന്നിധ്യം, വാസ്തുപുരുഷൻ, വിവിധ കോണുകൾ, വിവിധമുറികൾ / വാതിലുകൾ എന്നിവയുടെ സ്ഥാനനിർണ്ണയം, വിശ്വാസങ്ങൾ, പരിഹാരങ്ങൾ എന്നിവ - ഗൃഹനിർമ്മാണത്തിന്റെ സാധാരണ സമ്പ്രദായങ്ങൾ, അവയുമായി ബന്ധപ്പെട്ട ഗണിതശാസ്ത്രം.

സഹായകഗ്രന്ഥങ്ങൾ

1. കേരളവും സംഗീതവും - എസ്. ഗുപ്തൻ നായർ.
2. കേരളത്തിലെ നാടൻസംഗീതം - ഡോ. എം. വി. വിഷ്ണുനമ്പൂതിരി.
3. തോറ്റംപാട്ടുകൾ ഒരു പഠനം - എം. വി. വിഷ്ണുനമ്പൂതിരി.
4. പുള്ളുവൻപാട്ടും നാഗാരാധനയും - എം. വി. വിഷ്ണുനമ്പൂതിരി.
5. ദക്ഷിണേന്ത്യൻ സംഗീതം - എ. കെ. രവീന്ദ്രനാഥ്.
6. മാപ്പിളപ്പാട്ട് പാഠവും പഠനവും - ബാലകൃഷ്ണൻ വള്ളിക്കുന്ന്, ഡോ. ഉമർ തറമേൽ.
7. ഇശലുകളുടെ ഉദ്യാനം - (എഡി.) ഡോ. ഉമർ തറമേൽ.
8. ഒപ്പന എന്ന വട്ടപ്പാട്ട് - വി. എം. കുട്ടി.
9. മാപ്പിളക്കലകൾ - (എഡി.) ഒ. എം. കരുവാരക്കുണ്ട്.
10. മാപ്പിള ഫോക്‌ലോർ - പ്രൊഫ. ബി. മുഹമ്മദ് അഹമ്മദ്.
11. നാടൻകലകൾ നാടൻപാട്ടുകൾ - ഡോ. എം. വി. വിഷ്ണു നമ്പൂതിരി.
12. ഫോക്‌ലോർ - രാഘവൻ പയ്യനാട്.
13. കേരള ഫോക്‌ലോർ - (എഡി.) രാഘവൻ പയ്യനാട്.
14. ഫോക്‌ലോർ നിഘണ്ടു - എം. വി. വിഷ്ണു നമ്പൂതിരി.
15. മോഹിനിയാട്ടം: ചരിത്രവും ആട്ടപ്രകാരവും - കലാമണ്ഡലം കല്യാണിക്കുട്ടിയമ്മ.
16. മോഹിനിയാട്ടം : ആട്ടപ്രകാരവും മുദ്രകളും - വേണു ജി., നിർമ്മലാ പണിക്കർ.
17. തെയ്യം - ഡോ. എം. വി. വിഷ്ണുനമ്പൂതിരി.
18. പടേനി - കടമ്മനിട്ട വാസുദേവൻ പിള്ള.
19. പടേനിയിലെ പാളക്കോലങ്ങൾ - കടമ്മനിട്ട വാസുദേവൻപിള്ള.
20. ഐവർനാടകം - ചുമ്മാർ ചൂണ്ടൽ.
21. കാക്കാരിശ്ശി നാടകം - ജി. ഭാർഗ്ഗവൻപിള്ള.
22. പുരുഷാർത്ഥക്കൂത്ത് - വി. ആർ. കൃഷ്ണചന്ദ്രൻ.
23. തുള്ളൽ ദൃശ്യവേദിയിൽ - അയ്മനം കൃഷ്ണക്കൈമൾ.
24. ചവിട്ടുനാടകം - സെബീനാറാഫി.
25. കേരളത്തിലെ നാടോടിനാടകങ്ങൾ - ഡോ. എസ്. കെ. നായർ.
26. കൂത്തും കൂടിയാട്ടവും - അമ്മാമൻ തമ്പൂരാൻ.
27. കഥകളി വിജ്ഞാനകോശം - അയ്മനം കൃഷ്ണക്കൈമൾ.
28. മലബാറിലെ തിറയാട്ടങ്ങൾ - സി. ഗോപാലൻ നായർ.

29. മുടിയേറ്റ് - ചുമ്മാർ ചൂണ്ടൽ.
30. മുടിയേറ്റ് നാടോടിനേരരങ്ങ് - സി. ആർ. രാജഗോപാലൻ.
31. തിരുവാതിരയും സ്ത്രീകളുടെ മറ്റു വ്രതാനുഷ്ഠാനങ്ങളും - ദ്രൗപദി ജി. നായർ.
32. കേരളത്തിലെ നാടൻകലകൾ - എ. കെ. നമ്പ്യാർ.
33. താളങ്ങൾ താളവാദ്യങ്ങൾ - എ. എസ്. എൻ. നമ്പീശൻ.
34. കേരളത്തിലെ താളമേളങ്ങൾ - (എഡി.) പ്രൊഫ. വി. അരവിന്ദാക്ഷൻ.
35. കേരളത്തിലെ സംഗീതോപകരണങ്ങൾ - ഡോ. രവിവർമ്മ സനൽകുമാർ തമ്പുരാൻ.
36. വാസ്തുശാസ്ത്രം ഒരു സമഗ്രപഠനം - ഡോ. പി. വി. ഔസേപ്പ്.
37. കേരളത്തിലെ ചുവർചിത്രകല - എം. ജി. ശശിഭൂഷൺ.
38. തോല്പാവക്കൂത്ത് - പി. ജി. പട്ടാമ്പി.
39. പൊറാട്ടുനാടകവും മറ്റും - ജി. ഭാർഗ്ഗവൻപിള്ള.

സെമസ്റ്റർ	:	**VI**
കോഴ്സ് കോഡ്	:	**ML 1651.4**
ഓപ്പൺ കോഴ്സ്	:	**II ഐച്ഛികം (Elective)**
സമയക്രമം	:	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**2**

തിരക്കഥാരചന : തത്ത്വവും പ്രയോഗവും

പഠനലക്ഷ്യം:

സിനിമ രൂപീകരിക്കാനുള്ള പാഠമെന്ന നിലയിലാണ് തിരക്കഥയുടെ പ്രഥമ അസ്തിത്വം. സിനിമ ഒരു കലാമാധ്യമവും വ്യവസായ ഉത്പന്നവുമായതോടെ അതിന്റെ നിർമ്മിതിക്ക് മാർഗ്ഗരേഖയായ തിരക്കഥയ്ക്കും പ്രസക്തിയേറി. ടെലിവിഷൻ, മൊബൈൽ ഫോൺ തുടങ്ങിയ മാധ്യമങ്ങൾ ദൃശ്യചാരുതയോടെ കഥാഖ്യാനം നിർവഹിക്കുന്ന കാലത്ത് അവയുടെ പാഠമെന്ന നിലയിൽ തിരക്കഥയ്ക്കും സവിശേഷമായ പ്രസക്തിയുണ്ടായി. തിരക്കഥയുടെ പഠനത്തിന് പ്രധാനമായും മൂന്ന് മേഖലകളാണുള്ളത്. തിരക്കഥയുടെ രചനാശാസ്ത്രം പഠിപ്പിക്കുന്ന രീതി, തിരക്കഥ പരിവർത്തനപ്പെട്ട് സിനിമയാകുന്ന രീതി, തിരക്കഥയെ സാഹിത്യമായി കണ്ട് വായിക്കുകയും, വിശകലനം ചെയ്യുകയും ചെയ്യുന്ന രീതി എന്നിവയാണ് പഠനമേഖലകൾ. തിരക്കഥയുടെ രചനക്ക് ഭാവനയ്ക്കും സർഗ്ഗാത്മകതയ്ക്കുമൊപ്പം പ്രായോഗികമായ കുറെ അറിവുകൾകൂടി ആർജ്ജിച്ചെടുക്കേണ്ടതുണ്ട്.

മൊഡ്യൂൾ - ഒന്ന്

സിനിമയുടെ പാഠമെന്ന നിലയിലുള്ള തിരക്കഥയുടെ പ്രസക്തി - താമർ ലെയിൻ, സെയ്ദ് ഫീൽഡ്, റെയ്മഡ് ജിം ഫ്രെൻഷാം തുടങ്ങിയവരുടെ തിരക്കഥാ നിർവചനങ്ങൾ - തിരക്കഥയിൽ അടങ്ങിയിരിക്കുന്ന പ്രധാന ഘടകങ്ങളായ പ്രമേയം, ഇതിവൃത്തം, കഥാപാത്രങ്ങൾ, സംഭാഷണം, ദൃശ്യസൂചനകൾ, ശബ്ദസൂചനകൾ - തിരക്കഥയുടെ

ഭാഷ – കഥ, നോവൽ, നാടകം തുടങ്ങിയ കൃതികളിൽ നിന്നും തിരക്കഥ പുലർത്തുന്ന വ്യത്യാസം. മലയാളത്തിലെ ഗ്രന്ഥരൂപത്തിൽ പ്രസിദ്ധീകരിച്ച തിരക്കഥകൾ.

മൊഡ്യൂൾ – രണ്ട്

ആശയസ്വീകരണത്തിനുള്ള മാർഗ്ഗങ്ങൾ – ആശയങ്ങളെ തിരക്കഥയുടെ രൂപീകരണത്തിനായി വികസിപ്പിച്ചെടുക്കുന്ന രീതി – തിരക്കഥയുടെ ഘടന, നാടകീയ ഘടന, ഇതിവൃത്തത്തിൽ അടങ്ങിയിരിക്കുന്ന സമയം, സ്ഥലം, സമൂഹം, സാമ്പത്തികം, രാഷ്ട്രീയം, നിയമം, രചനയുടെ വിവിധ തന്ത്രങ്ങൾ – മൂർദ്ധന്യത്തിന്റെ നിർമ്മിതി – കലാപരമായ പകർത്തിയെഴുത്ത് – വാണിജ്യപരമായ പകർത്തിയെഴുത്ത് – കലാസിനിമയുടെയും വാണിജ്യസിനിമയുടെയും തിരക്കഥകൾ – സാഹിത്യകൃതികൾ തിരക്കഥയാക്കുമ്പോൾ ശ്രദ്ധിക്കേണ്ട വസ്തുതകൾ.

മൊഡ്യൂൾ : മൂന്ന്

(2) തിരക്കഥാപഠനവും വിലയിരുത്തലും

വിശദപഠനം

തിരക്കഥ : പെരുവഴിയമ്പലം – പി. പത്മരാജൻ

(പ്രമേയം, ഇതിവൃത്തം, കഥാപാത്രങ്ങൾ, സംഭാഷണം, ദൃശ്യസൂചനകൾ, ശബ്ദസൂചനകൾ, തിരക്കഥയുടെ ഭാഷ, സീൻ, മൂർദ്ധന്യം തുടങ്ങിയ ഘടകങ്ങൾ വിശകലനം ചെയ്യുക.)

(3) തിരക്കഥാരചന

ഇഷ്ടപ്പെട്ട ഒരു കഥയിൽനിന്നോ സ്വന്തമായോ ഒരു തിരക്കഥ തയ്യാറാക്കുക.

സഹായകഗ്രന്ഥങ്ങൾ

1. തിരക്കഥാരചന, കലയും സിദ്ധാന്തവും – ജോസ് കെ. മാനുവൽ.
2. കഥയും തിരക്കഥയും – ജോസ്. കെ. മാനുവൽ, കൈരളി ബുക്സ്, കണ്ണൂർ.
3. കഥയും തിരക്കഥയും – ആർ. വി. എം. ദിവാകരൻ, ഒലിവ്, കോഴിക്കോട്.
4. തിരക്കഥ, സിനിമയുടെ ദൃശ്യപ്രകാശം – ഡോ. ഡൊമിനിക് ജെ. കാട്ടൂർ, കറന്റ് ബുക്സ്, കോട്ടയം.
5. മലയാളസിനിമാപഠനങ്ങൾ – വെങ്കിടേശ്വരൻ. ഡി.എസ്, ഡി.സി. കോട്ടയം.
6. ചലച്ചിത്രത്തിന്റെ ആഖ്യാനകം – ഡോ. ടി. ജിതേഷ്.
7. ഫിലിം ഡയറക്ഷൻ – സാജൻ തെരുവപ്പുഴ. സിഗ്നേച്ചർ ബുക്സ്, തൃശൂർ.
8. മലയാളസിനിമയും സാഹിത്യവും – മധു ഇറവങ്കര, ഡി.സി. ബുക്സ്.
9. തിരക്കഥാ സാഹിത്യം: സൗന്ദര്യവും പ്രസക്തിയും – ജോസ് കെ. മാനുവൽ.
10. സിനിമയിലെ ശരീരഭാഷ – ജോസ് കെ. മാനുവൽ, കറന്റ് ബുക്സ്, കോട്ടയം.
11. Screenplay - The Foundations of Screen Writing - Syd Field, Bantam Dell, New York, 2005.

സെമസ്റ്റർ	:	**VI**
കോഴ്സ് കോഡ്	:	**ML 1651.5**
ഓപ്പൺ കോഴ്സ്	:	**II ഐച്ഛികം (Elective)**
സമയക്രമം	:	**ആഴ്ചയിൽ 3 മണിക്കൂർ (18 ആഴ്ചയിൽ 54 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**2**

മലയാളപത്രപ്രവർത്തനം

പഠനോദ്ദേശ്യം

മലയാള പത്രപ്രവർത്തനമേഖല ഭാഷയ്ക്കും സംസ്കാരത്തിനും സാഹിത്യത്തിനും നൽകിയിട്ടുള്ള സംഭാവന നിസ്സീമമാണ്. ജനതയുടെ ഭാഷയെയും സംസ്കാരത്തെയും സർഗ്ഗചോദനകളെയും പരിപോഷിപ്പിക്കുന്നതിൽ പത്രമാധ്യമങ്ങൾ വലിയ പങ്ക് വഹിച്ചിട്ടുണ്ട്. കേരളത്തിൽ ഒരു പൊതുഭാഷ സൃഷ്ടിക്കുകയും വളർത്തിയെടുക്കുകയും ഭാഷയുടെ പ്രാദേശികഭേദങ്ങൾക്കപ്പുറത്ത് കേരളത്തെ ഒരുമിപ്പിച്ചു നിർത്തുകയും ചെയ്യുന്നതിൽ ഈ മാധ്യമം വഹിക്കുന്ന പങ്ക് വലുതാണ്. ഈ പശ്ചാത്തലത്തിൽ, ഭാഷയുടെയും സാഹിത്യത്തിന്റെയും പഠനത്തിൽ ഒഴിച്ചു കൂടാനാവാത്തതാണ് പത്രമാധ്യമ പഠനം.

പാഠ്യപദ്ധതി:

മൊഡ്യൂൾ : ഒന്ന് (9 മണിക്കൂർ)

ജനസമ്പർക്കത്തിന് ഒരാമുഖം - ആശയവിനിമയവും ജനസമ്പർക്ക മാധ്യമവും - ജനസമ്പർക്കമാധ്യമങ്ങളുടെ വൈവിധ്യം - അച്ചടി, റേഡിയോ, ടെലിവിഷൻ, സിനിമ, ഇന്റർനെറ്റ് - വാർത്താവിനിമയപ്രക്രിയ - ആധുനിക വാർത്താവിനിമയമാർഗ്ഗങ്ങൾ.

മൊഡ്യൂൾ : രണ്ട് (9 മണിക്കൂർ)

പത്രമാധ്യമത്തിന്റെ സവിശേഷ പ്രാധാന്യം - മലയാള പത്രപ്രവർത്തനത്തിന്റെ ഉത്ഭവവും വളർച്ചയും - ആദ്യകാലപത്രങ്ങൾ - മാസികകൾ - ആനുകാലിക പ്രസിദ്ധീകരണങ്ങൾ - സവിശേഷതകൾ.

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

വാർത്ത - വാർത്തയുടെ നിർവ്വചനം - വാർത്തയുടെ മൂല്യം - വാർത്താ സ്രോതസ്സുകൾ - വാർത്താബന്ധങ്ങൾ - വാർത്താവൈവിധ്യങ്ങൾ - വാർത്ത വരുന്നവഴി - വാർത്താ ഏജൻസികൾ - വാർത്താശേഖരണം - ആധുനിക സങ്കേതങ്ങൾ - റിപ്പോർട്ടിംഗ് രീതികൾ - ശൈലികൾ - പത്രഭാഷ - ഫീച്ചർ രചന, അഭിമുഖങ്ങൾ എന്നിവയുടെ രീതികൾ.

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

പത്രത്തിന്റെ നിർമ്മാണരീതികൾ - വിവിധ ഘട്ടങ്ങൾ - എഡിറ്റിങ്ങും രൂപകൽപനയും - ലേ-ഔട്ടിന്റെ പ്രാധാന്യം - പ്രധാന വാർത്തകൾ - തലക്കെട്ടുകൾ - വിവിധ പത്രങ്ങളുടെ ഒന്നാംപേജ് ഡിസ്പ്ലേ - താരതമ്യം ചെയ്തു പഠിക്കുക.

സഹായകഗ്രന്ഥങ്ങൾ

1. വാർത്ത : പത്രവും വാർത്തകളും - ജോയി തിരുമൂലപുരം, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
2. പത്രലോകം - ഒരു സംഘം ലേഖകർ, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
3. ആ ലോകം മുതൽ e ലോകം വരെ - ഡോ. ജെ. വി. വിളനിലം, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
4. മാധ്യമങ്ങളും മലയാളസാഹിത്യവും - കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
5. പത്രഭാഷ - കേരള പ്രസ് അക്കാദമി.
6. മാധ്യമ വിചിന്തനം - ഡോ. കെ. വി. തോമസ് / ഡോ. മാത്യു. ജെ. മുട്ടത്ത്, ലിപി പബ്ലിക്കേഷൻസ്.
7. മാറുന്ന ലോകം മാറുന്ന മാധ്യമലോകം - എൻ. പി. രാജേന്ദ്രൻ, മാതൃഭൂമി ബുക്സ്.
8. പത്രപ്രവർത്തനം, കഥയും പൊരുളും - മുരളി, മെലിൻഡ ബുക്സ്, തിരുവനന്തപുരം.
9. കേരളപത്രപ്രവർത്തനചരിത്രം - പുതുപ്പള്ളി രാഘവൻ, കേരള സാഹിത്യ അക്കാദമി.
10. മാധ്യമനയം ഇന്ത്യയുടെ സമഗ്രവികസനത്തിന് (എഡി.) ഡോ. ഐറിസ് കൊയ്ലിയോ /ഡോ. ലേഖാനരേന്ദ്രൻ.
11. ഫോർത്ത് എസ്റ്റേറ്റിന്റെ മരണം - എൻ. പി. രാജേന്ദ്രൻ, മാതൃഭൂമി ബുക്സ്.
12. പത്രധർമ്മം നിയമം - എൻ. പി. രാജേന്ദ്രൻ, വ്യൂ പോയിന്റ്, തിരുവനന്തപുരം.
13. ഭാഷയും മാധ്യമവും - വി. കെ. നാരായണൻ, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്.
14. വൃത്താന്ത പത്രപ്രവർത്തനം - സ്വദേശാഭിമാനി രാമകൃഷ്ണപിള്ള, കേരള പ്രസ് അക്കാദമി.
15. പത്രപ്രവർത്തനം ഭിന്നമുഖങ്ങൾ - കേരള പ്രസ് അക്കാദമി.
16. മാധ്യമങ്ങളും മലയാളസാഹിത്യവും - എം. വി. തോമസ്, കേരള സാംസ്കാരിക പ്രസിദ്ധീകരണ വകുപ്പ്.
17. Fundamentals of Journalism - Spencer Crump.
18. News Editing - Bruce Wesley.
19. Writing style - Washington Post.

ഉപപാഠപുസ്തകം - മലയാളം

(ബി. കോം ഡിഗ്രി പ്രോഗ്രാമിനുവേണ്ടി)

സെമസ്റ്റർ ഒന്ന്

സെമസ്റ്റർ	:	I
കോഴ്സ് കോഡ്	:	ML 1111.2
അഡീഷണൽ ലാംഗ്വേജ് കോഴ്സ്	:	I
സമയക്രമം	:	ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)
ക്രെഡിറ്റ്	:	4

നോവൽ, നാടകം, സഞ്ചാരസാഹിത്യം, തിരക്കഥ

പുസ്തകം : സാഹിത്യപഥം (കേരളസർവ്വകലാശാലാ പ്രസിദ്ധീകരണം)

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

നോവൽ

മലയാളനോവൽ - പ്രാരംഭരൂപങ്ങൾ - ആദ്യകാല എഴുത്തുകാർ - നോവലിന്റെ വികാസഘട്ടം - വിഭിന്ന നോവൽരൂപങ്ങൾ - എഴുത്തുകാർ. ആധുനിക വീക്ഷണം - കൃതികൾ - എഴുത്തുകാർ - സമകാലനോവൽ - സാമാന്യാവലോകനം.

വിശദപഠനം

ആടുജീവിതം : ബെന്യാമിൻ *

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

നാടകം

നാടകം എന്ന ദൃശ്യകലാരൂപം - സാഹിത്യരൂപം - മലയാള നാടകപാരമ്പര്യം - സംസ്കൃതനാടക വിവർത്തനങ്ങൾ - സംഗീത നാടകങ്ങൾ - സ്വതന്ത്രാഖ്യാനങ്ങൾ - പ്രഹസനങ്ങൾ - നാടകങ്ങളിലൂടെ സമുദായപരിഷ്ക്കരണം - പാശ്ചാത്യനാടക സ്വാധീനം - ഇതിഹാസ, പുരാണ പുനർവായനകൾ - തനതുനാടകം - പ്രൊഫഷണൽ നാടകവേദികൾ - നാടകവും സംഘടിത രാഷ്ട്രീയപ്രസ്ഥാനങ്ങളും - നാടകത്തിലെ പരീക്ഷണങ്ങൾ.

വിശദപഠനം :

നാൽക്കവല : കെ. ടി. മുഹമ്മദ് *

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

സഞ്ചാരസാഹിത്യം

മലയാളിയുടെ യാത്രകൾ നാട്ടിനുള്ളിലും പുറത്തും - മലയാളത്തിലെ ആദ്യകാല സഞ്ചാരകൃതികൾ - സഞ്ചാരസാഹിത്യവികാസം - യാത്രാവിവരണത്തിലെ സഞ്ചാരാനുഭവവും ദൃശ്യാനുഭവവും - സഞ്ചാരാനുഭവം സർഗാത്മകമാക്കിയ എഴുത്തുകാർ, കൃതികൾ.

വിശദപഠനം :

ബാലിദ്വീപ് : എസ്. കെ. പൊറ്റെക്കാട്.

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

തിരക്കഥ

സിനിമയുടെ പാഠമെന്ന നിലയിലുള്ള തിരക്കഥയുടെ പ്രസക്തി - കഥ, നോവൽ, നാടകം തുടങ്ങിയ കൃതികളിൽ നിന്നും തിരക്കഥ പുലർത്തുന്ന വ്യത്യാസം - മലയാളത്തിലെ ഗ്രന്ഥരൂപത്തിൽ പ്രസിദ്ധീകരിച്ച തിരക്കഥകൾ.

വിശദപഠനം :

കള്ളൻ പവിത്രൻ : പി. പത്മരാജൻ

സഹായകഗ്രന്ഥങ്ങൾ

1. കൈരളിയുടെ കഥ - പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള.
2. മലയാളനാടകസാഹിത്യചരിത്രം - പ്രൊഫ. ജി. ശങ്കരപ്പിള്ള.
3. മലയാള നാടകസാഹിത്യചരിത്രം - പ്രൊഫ. വയലാ വാസുദേവൻ പിള്ള.
4. മലയാള നോവൽ സാഹിത്യചരിത്രം - കെ. എം. തരകൻ.
5. മാറുന്ന മലയാള നോവൽ - കെ. പി. അപ്പൻ.
6. വിശ്വദർശനത്തിന്റെ വിചിത്രവീഥികൾ - ഡോ. ബി. പത്മനാഭപിള്ള.
7. ആധുനിക മലയാളസാഹിത്യചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ - എഡി. ഡോ. കെ. എം. ജോർജ്.
8. തിരക്കഥാരചന, കലയും സിദ്ധാന്തവും - ജോസ് കെ. മാനുവൽ.
9. കഥയും തിരക്കഥയും - ആർ. വി. എം. ദിവാകരൻ, ഒലിവ്, കോഴിക്കോട്.
10. മലയാളസിനിമാപഠനങ്ങൾ - വെങ്കിടേശ്വരൻ. ഡി.എസ്., ഡി.സി. കോട്ടയം.
11. ഒരു നോവലിന്റെ ലാവണ്യാനുഭവങ്ങൾ - (എഡി.) ആശ്രാമം ഭാസി.

സെമസ്റ്റർ	**:**	**II**
കോഴ്സ് കോഡ്	**:**	**ML 1211.2**
അഡീഷണൽ ലാംഗ്വേജ് കോഴ്സ്	**:**	**II**
സമയക്രമം	**:**	**ആഴ്ചയിൽ 4 മണിക്കൂർ (18 ആഴ്ചയിൽ 72 മണിക്കൂർ)**
ക്രെഡിറ്റ്	**:**	**4**

കവിത, കഥ, ഉപന്യാസം, വിവർത്തനം

പുസ്തകം : സർഗ്ഗഭാരതി (കേരളസർവ്വകലാശാലാ പ്രസിദ്ധീകരണം)

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന് (18 മണിക്കൂർ)

കവിത

മലയാളകവിതയുടെ വികാസപരിണാമഘട്ടങ്ങൾ - കവികൾ - കൃതികൾ.

വിശദപഠനം

1.	മനസ്വിനി	:	ചങ്ങമ്പുഴ കൃഷ്ണപിള്ള
2.	പൂതപ്പാട്ട്	:	ഇടശ്ശേരി
3.	മലതുരക്കൽ	:	വൈലോപ്പിള്ളി .

മൊഡ്യൂൾ : രണ്ട് (18 മണിക്കൂർ)

ചെറുകഥ

ആനുകാലികങ്ങളുടെ പ്രചാരം - മലയാള ചെറുകഥയുടെ വികാസ പരിണാമ ഘട്ടങ്ങൾ - കൃതികൾ - കഥാകൃത്തുക്കൾ.

വിശദപഠനം

1.	പൂവമ്പഴം	:	ബഷീർ
2.	പൊതിച്ചോറ്	:	കാരൂർ
3.	പെരുമഴയുടെ പിറ്റേന്ന്	:	എം.ടി. വാസുദേവൻ നായർ
4.	ഇതാ ഒരു ടെക്കി	:	ചന്ദ്രമതി
5.	നാലാം യാമം	:	എം. സുകുമാരൻ
6.	പന്തിഭോജനം	:	സന്തോഷ് ഏച്ചിക്കാനം .

മൊഡ്യൂൾ : മൂന്ന് (18 മണിക്കൂർ)

ഉപന്യാസം

ഉപന്യാസങ്ങളുടെ ആവിർഭാവം - ഉപന്യാസ സമാഹാരങ്ങൾ - ഉപന്യാസശാഖയെ സമ്പന്നമാക്കിയ എഴുത്തുകാർ - വിഷയവൈവിധ്യം - ഗദ്യാവിഷ്കരണത്തിലെ തെളിമ - വിഷയാപഗ്രഥനങ്ങൾ.

വിശദപഠനം

1. മനുഷ്യ നാരായങ്ങൾ - ഇ. വി. കൃഷ്ണപിള്ള
2. വ്യാസന്റെ ചിരി - കുട്ടിക്കൃഷ്ണമാരാർ
3. മലയാള സിനിമയുടെ സാഹിത്യബന്ധം - മധു ഇറവങ്കര
4. ചരിത്രത്തെ അഗാധമാക്കിയ ഗുരു - കെ. പി. അപ്പൻ
5. ഇ-വായനയുടെ പുതുലോകം - വി. കെ. ആദർശ്

മൊഡ്യൂൾ : നാല് (18 മണിക്കൂർ)

വിവർത്തനം

പദങ്ങൾ, ശൈലികൾ, ഔദ്യോഗികരേഖകൾ, ഉപന്യാസഭാഗങ്ങൾ, കവിതാഭാഗങ്ങൾ, പരസ്യങ്ങൾ, കഥാഭാഗങ്ങൾ എന്നിവ ഇംഗ്ലീഷിൽ നിന്ന് മലയാളത്തിലേക്കും മലയാളത്തിൽ നിന്ന് ഇംഗ്ലീഷിലേക്കും വിവർത്തനം ചെയ്യാൻ പരിശീലിപ്പിക്കണം.

സഹായകഗ്രന്ഥങ്ങൾ

1. മലയാളകവിതാസാഹിത്യചരിത്രം : ഡോ. എം. ലീലാവതി.
2. കവിതയിലെ പുതുവഴികൾ : നെല്ലിക്കൽ മുരളീധരൻ.
3. ചെറുകഥ ഇന്നലെ, ഇന്ന് : എം. അച്യുതൻ.
4. മലയാളചെറുകഥാസാഹിത്യചരിത്രം : ഡോ. എം. എം. ബഷീർ.
5. കൈരളിയുടെ കഥ : പ്രൊഫ. എൻ. കൃഷ്ണപിള്ള.
6. ശുദ്ധമലയാളം: പ്രൊഫ. പന്മന രാമചന്ദ്രൻനായർ.
7. വിവർത്തനം (ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്)
8. ഭരണശബ്ദാവലി (ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്)
9. മാനവിക ശബ്ദാവലി (ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്)
10. വാണിജ്യ ശബ്ദാവലി (ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്)
11. ഔദ്യോഗിക നിഘണ്ടു (ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്)
12. ഇംഗ്ലീഷ് മലയാളം നിഘണ്ടു : പി. രാമലിംഗം പിള്ള.
13. മലയാളം ഇംഗ്ലീഷ് നിഘണ്ടു : പി. രാമലിംഗം പിള്ള
14. വിവർത്തന വിചാരം : ഡോ. എൻ. ഇ. വിശ്വനാഥ അയ്യർ.

Career-related First Degree Programme under CBCS System

Group 2 - A

സെമസ്റ്റർ	:	**I**
കോഴ്സ് കോഡ്	:	**ML 1111.3**
ലാംഗ്വേജ് കോഴ്സ്	:	**II (അഡീഷണൽ ലാംഗ്വേജ് കോഴ്സ് I)**
സമയക്രമം	:	**ആഴ്ചയിൽ 5 മണിക്കൂർ (18 ആഴ്ചയിൽ 90 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**3**

ഗദ്യസാഹിത്യം

(പുസ്തകം: ഗദ്യഭാരതി - യൂണിവേഴ്സിറ്റി പ്രസിദ്ധീകരണം)

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന്

നോവൽ

മലയാളനോവൽ - പ്രാരംഭരൂപങ്ങൾ - ആദ്യകാല എഴുത്തുകാർ - നോവലിന്റെ വികാസഘട്ടം - വിഭിന്ന നോവൽരൂപങ്ങൾ - എഴുത്തുകാർ. ആധുനിക വീക്ഷണം - കൃതികൾ - എഴുത്തുകാർ - സമകാലനോവൽ - സാമാന്യാവലോകനം

വിശദപഠനം:

വൃദ്ധസദനം : ടി. വി. കൊച്ചുബാവ.

മൊഡ്യൂൾ : രണ്ട്

ചെറുകഥ

ആനുകാലികങ്ങളുടെ പ്രചാരം - മലയാള ചെറുകഥയുടെ വികാസ പരിണാമ ഘട്ടങ്ങൾ - കൃതികൾ - കഥാകൃത്തുക്കൾ.

വിശദപഠനം

1.	വെള്ളപ്പൊക്കത്തിൽ	:	തകഴി
2.	നെയ്പായസം	:	മാധവിക്കുട്ടി
3.	മണ്ണ്	:	സിതാര. എസ്.
4.	കർണ്ണപർവം	:	എസ്. ആർ. ലാൽ

മൊഡ്യൂൾ : മൂന്ന്

ഉപന്യാസം, പഠനം

ഉപന്യാസങ്ങളുടെ ആവിർഭാവം - ഉപന്യാസസമാഹാരങ്ങൾ - ഉപന്യാസശാഖയെ സമ്പന്നമാക്കിയ എഴുത്തുകാർ - വിഷയവൈവിധ്യം - ഗദ്യാവിഷ്കരണത്തിലെ തെളിമ - വിഷയാപഗ്രഥനങ്ങൾ

വിശദപഠനം

1.	സാഹിത്യത്തിലെ സ്ത്രീ	:	ജോസഫ് മുണ്ടശ്ശേരി
2.	കവിതയും പരിസ്ഥിതിയും	:	എസ്സ്. രാജശേഖരൻ.
3.	എഴുത്തുകാരനും പാരമ്പര്യവും	:	കെ. പി. അപ്പൻ.
4.	സ്പന്ദിക്കുന്ന അസ്ഥിമാടം	:	എം. കെ. സാനു (നക്ഷത്രങ്ങളുടെ സ്നേഹഭാജനം)
5.	ശൈലീദോഷങ്ങൾ (നല്ല ഭാഷ)	:	പ്രൊഫ. പന്മന രാമചന്ദ്രൻ നായർ *

മൊഡ്യൂൾ : നാല്

ജീവചരിത്രം, ആത്മകഥ, യാത്രാനുഭവം

ജീവചരിത്രം, ആത്മകഥ, യാത്രാനുഭവം - ഈ മൂന്ന് സാഹിത്യരൂപങ്ങളെയും പരിചയപ്പെടുത്തുക.

വിശദപഠനം

കണ്ണീരും കിനാവും : വി.ടി. ഭട്ടതിരിപ്പാട്.

മൊഡ്യൂൾ : അഞ്ച്

ഭാഷാശുദ്ധി, തർജ്ജമ, ഉപന്യാസരചന

വാക്യശുദ്ധി, പദശുദ്ധി, പൊതുവിഷയത്തെ ആസ്പദമാക്കി - ഉപന്യാസം. തർജ്ജമ - ഇംഗ്ലീഷിൽ നിന്നും മലയാളത്തിലേക്ക്.

സഹായകഗ്രന്ഥങ്ങൾ

1. നോവൽ സാഹിത്യചരിത്രം : ഡോ. കെ. എം. തരകൻ.
2. ആത്മകഥാസാഹിത്യം മലയാളത്തിൽ : ഡോ. നടുവട്ടം ഗോപാലകൃഷ്ണൻ.
3. ആത്മകഥാസാഹിത്യം മലയാളത്തിൽ : ഡോ. വിജയാലയം ജയകുമാർ.
4. യാത്രാവിവരണം - എം. കെ മാധവൻ നായർ (സാഹിത്യചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ, എഡി. ഡോ. കെ. എം. ജോർജ്).
5. സഞ്ചാരസാഹിത്യം - ഡോ. ടി. ജി. മാധവൻകുട്ടി.
6. സഞ്ചാരസാഹിത്യം മലയാളത്തിൽ - വി. രമേഷ്ചന്ദ്രൻ.
7. സമ്പൂർണ്ണ മലയാളസാഹിത്യചരിത്രം - (എഡി.) പന്മന രാമചന്ദ്രൻ നായർ.

സെമസ്റ്റർ	:	**II**
കോഴ്സ് കോഡ്	:	**ML 1211.3**
ലാംഗ്വേജ് കോഴ്സ്	:	**IV (അഡീഷണൽ ലാംഗ്വേജ് കോഴ്സ് II)**
സമയക്രമം	:	**ആഴ്ചയിൽ 5 മണിക്കൂർ (18 ആഴ്ചയിൽ 90 മണിക്കൂർ)**
ക്രെഡിറ്റ്	:	**3**

ദൃശ്യകലാസാഹിത്യം

പാഠ്യപദ്ധതി

മൊഡ്യൂൾ : ഒന്ന്

ആട്ടക്കഥ, തുള്ളൽസാഹിത്യം

കഥകളിയുടെ ഉത്ഭവവികാസപരിണാമങ്ങൾ - ആട്ടക്കഥാസാഹിത്യം - പ്രധാന ആട്ടക്കഥാകൃത്തുക്കൾ - തുള്ളൽപ്രസ്ഥാനം - ചരിത്രം - വികാസ പരിണാമങ്ങൾ - തുള്ളൽസാഹിത്യം - സാമാന്യപരിചയം.

വിശദപഠനം

1.	നളചരിതം ആട്ടക്കഥ	-	ഉണ്ണായിവാര്യർ, ഒന്നാംദിവസം ദൂതു പൂർണ്ണമാകുന്നതുവരെ.
2.	കല്യാണസൗഗന്ധികം	-	കുഞ്ചൻനമ്പ്യാർ (എങ്കിലോ പണ്ടു യുധിഷ്ഠിരൻ ഭീമനും ..... കാട്ടിൽപ്പരന്നതും കണ്ടു വൃകോദരൻ)

മൊഡ്യൂൾ : രണ്ട്

നാടകം

നാടകം എന്ന ദൃശ്യകല - സാഹിത്യരൂപം - മലയാള നാടക പ്രസ്ഥാനം - സാമാന്യാവലോകനം

വിശദപഠനം :

1.	ഭഗ്നഭവനം	-	എൻ. കൃഷ്ണപിള്ള
2.	ലേബർ റൂം	-	കെ.വി. ശ്രീജ

മൊഡ്യൂൾ : മൂന്ന്

തിരക്കഥാപഠനം

ചലച്ചിത്രനിർമ്മിതിയിൽ തിരക്കഥയ്ക്കുള്ള പ്രാധാന്യത്തെക്കുറിച്ച് സാമാന്യ ജ്ഞാനം നേടണം.

വിശദപഠനം

ഒരിടത്തൊരു ഫയൽവാൻ - പത്മരാജൻ

സഹായകഗ്രന്ഥങ്ങൾ

1. ആധുനിക സാഹിത്യചരിത്രം പ്രസ്ഥാനങ്ങളിലൂടെ (ആട്ടക്കഥ/തുള്ളൽ) : എഡി. ഡോ. കെ. എം. ജോർജ്ജ്.
2. കൈരളിയുടെ കഥ - എൻ. കൃഷ്ണപിള്ള.
3. മലയാളനാടകസാഹിത്യചരിത്രം - പ്രൊഫ. ജി. ശങ്കരപിള്ള.
4. മലയാളനാടകസാഹിത്യചരിത്രം - ഡോ. വയലാ വാസുദേവൻ പിള്ള
5. നാടകപഠനങ്ങൾ - പി. കെ. പരമേശ്വരൻ നായർ ട്രസ്റ്റ്.
6. നാടകം - ഒരു പഠനം - മാളൂബൻ പബ്ലിക്കേഷൻസ്.
7. കഥയും തിരക്കഥയും - ജോസ്. കെ. മാനുവൽ.
8. കഥയും തിരക്കഥയും - ആർ. വി. എം. ദിവാകരൻ.
9. കഥ, തിരക്കഥ, സിനിമ (പഠനം) - എം. ടി. വാസുദേവൻ നായർ.

21-11-2017ൽ നിലവിൽവന്ന ബോർഡ് ഓഫ് സ്റ്റഡീസ് മലയാളം (പാസ്സ്) ഭേദഗതിയായി നിർദ്ദേശിച്ചതും 6-4-2018ൽ ചേർന്ന അക്കാദമിക് കൗൺസിൽ അംഗീകരിച്ചതുമായ പാഠഭാഗങ്ങളാണ് നക്ഷത്രചിഹ്നമിട്ട് ചേർത്തിരിക്കുന്നത്.

Board of Studies in Mathematics (UG)
UNIVERSITY OF KERALA

First Degree Programme in MATHEMATICS under Choice Based Credit and Semester System

SYLLABUS for 2018 admission onwards

Structure of Core Courses

Sem	Course Code	Course title	Instr.hrs. per week	Credit
I	MM 1141	Methods of Mathematics	4	4
II	MM 1221	Foundations of Mathematics	4	3
III	MM 1341	Elementary Number Theory and Calculus – I	5	4
IV	MM 1441	Elementary Number Theory and Calculus – II	5	4
V	MM 1541	Real Analysis – I	5	4
	MM 1542	Complex Analysis – I	4	3
	MM 1543	Abstract Algebra – Group Theory	5	4
	MM 1544	Differential Equations	3	3
	MM 1545	Mathematics Software – LaTeX & SageMath (Practical Examination Only)	4	3
	MM 1551	Open Course	3	2
	——	Project preparation - From selecting the topic to presenting the final report	1	
VI	MM 1641	Real Analysis – II	5	4
	MM 1642	Complex Analysis – II	4	3
	MM 1643	Abstract Algebra – Ring Theory	4	3
	MM 1644	Linear Algebra	5	4
	MM 1645	Integral Transforms	4	3
	MM 1651	Elective Course	3	2
	MM 1646	Project		4

Structure of Open Courses

Sem	Course Code	Course title	Instr.hrs. per week	Credit
V	MM 1551.1	Operations Research	3	2
V	MM 1551.2	Business Mathematics	3	2
V	MM 1551.3	Basic Mathematics	3	2

Structure of Elective Courses

Sem	Course Code	Course title	Instr.hrs. per week	Credit
VI	MM 1661.1	Graph Theory	3	2
VI	MM 1661.2	Linear Programming with SageMath	3	2
VI	MM 1661.3	Numerical Analysis with SageMath	3	2
VI	MM 1661.4	Fuzzy Mathematics	3	2

Structure of the Complementary Courses

Complementary Course in Mathematics for First Degree Programme in Physics

Course Code	Sem.	Title of Course	Contact hrs/week	No. of Credits
MM 1131.1	1	Calculus with applications in Physics – I	4	3
MM 1231.1	2	Calculus with applications in Physics – II	4	3
MM 1331.1	3	Calculus and Linear Algebra	5	4
MM 1431.1	4	Complex Analysis, Special Functions and Probability Theory	5	4

Complementary Course in Mathematics for First Degree Programme in Chemistry

Course Code	Sem.	Title of Course	Contact hrs/week	No. of Credits
MM 1131.2	1	Calculus with applications in Chemistry – I	4	3
MM 1231.2	2	Calculus with applications in Chemistry – II	4	3
MM 1331.2	3	Linear Algebra, Probablity Theory & Numerical Methods	5	4
MM 1431.2	4	Differential Equations, Vector Calculus and Abstsract Algebra	5	4

Complementary Course in Mathematics for First Degree Programme in Geology

Course Code	Sem.	Title of Course	Contact hrs/week	No. of Credits
MM 1131.3	1	Algebra, Geometry and Trigonometry	4	3
MM 1231.3	2	Calculus and Linear Algebra	4	3
MM 1331.3	3	Complex Numbers, Algebra and Calculus	5	4
MM 1431.3	4	Basic Statistics and Differential Equations	5	4

Complementary Course in Mathematics for First Degree Programme in Statistics

Course Code	Sem.	Title of Course	Contact hrs/week	No. of Credits
MM 1131.4	1	Basic Calculus for Statistics	4	3
MM 1231.4	2	Advanced Differential and Integral Calculus	4	3
MM 1331.4	3	Fourier Series, Numerical Methods and ODE	5	4
MM 1431.4	4	Linear Algebra	5	4

Complementary Course in Mathematics for First Degree Programme in Economics

Course Code	Sem.	Title of Course	Contact hrs/week	No. of Credits
MM 1131.5	1	Mathematics for Economics I	3	2
MM 1231.5	2	Mathematics for Economics II	3	3
MM 1331.5	3	Mathematics for Economics III	3	3
MM 1431.5	4	Mathematics for Economics IV	3	3

Syllabus for the First Degree Programme in Mathematics of the University of Kerala

Semester I
Methods of Mathematics

CODE: MM 1141 — Instructional hours per week: 4
No.of credits: 4

In this paper, we quickly review the fundamental methods of solving problems viz. the limiting method, finding the rate of changes through differentiation method, and finding the area under a curve through the integration method.

Module I - Methods of Differential Calculus (36 Hours)

In the beginning of this module, the basic concepts of calculus like limit of functions especially infinite limits and limits at infinity, continuity of functions, basic differentiation, derivatives of standard functions, implicit differentiation etc. should be reviewed with examples.

The above topics which can be found in chapter 2 of text [1] **below are not to be included in the end semester examination.** A maximum of 5 hours should be devoted for the review of the above topics. After this quick review, the main topics to discuss in this module are the following:

Differentiating equations to relate rates, how derivatives can be used to approximate non-linear functions by linear functions, error in local linear approximation, differentials;

Increasing and decreasing functions and their analysis, concavity of functions, points of inflections of a function and applications, finding relative maxima and minima of functions and graphing them, critical points, first and second derivative tests, multiplicity of roots and its geometrical interpretation, rational functions and their asymptotes, tangents and cusps on graphs;

Absolute maximum and minimum, their behaviour on various types of intervals, applications of extrema problems in finite and infinite intervals, and in particular, applications to Economics;

Motion along a line, velocity and speed, acceleration, Position - time curve, Rolle's, Mean Value theorems and their consequences;

Indeterminate forms and L'Hôpital's rule;

The topics to be discussed in this module can be found in chapter 2,3 and 6 of text [1] *below.*

Module II - Methods of Integral Calculus (36 Hours)

The module should begin with revising integration techniques, like integration by substitution, fundamental theorem of calculus, integration by parts, integration by partial fractions, integration by substitition and the concept of definite integrals.

The above topics which can be found in chapter 4 and 7 of text [1] **below are not to be included in the end semester examination.** A maximum of 5 hours should be devoted for the review of the above topics.

After this quick review, the main topics to discuss in this module are the following:

Finding position, velocity, displacement, distance travelled of a particle by integration, analysing the distance-velocity curve, position and velocity when the acceleration is constant, analysing the free-fall motion of an object, finding average value of a function and its applications;

Area, volume, length related concepts : Finding area between two curves, finding volumes of some three dimensional solids by various methods like slicing, disks and washers, cylindrical shells, finding length of a plane curve, surface of revolution and its area;

Work done : Work done by a constant force and a variable force, relationship between work and energy;

Relation between density and mass of objects, center of gravity, Pappus theorem and related problems

Fluids, their density and pressure, fluid force on a vertical surface.

Introduction to Hyperbolic functions and their applications in hanging cables;

Improper integrals, their evaluation, applications such as finding arc length and area of surface.

The topics to be discussed in this module can be found in chapter 4, 5, 6 and 7 of text [1] *below.*

Text 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley& Sons

References

Ref. 1 – G B Thomas, R L Finney. *Calculus*, 9th Edition, Addison-Weseley Publishing Company

Ref. 2 – J Stewart. *Calculus with Early Transcendental Functions*, 7th Edition, Cengage India Private Limited

Semester II

Foundations of Mathematics

CODE: MM 1221 Instructional hours per week: 4
No.of credits: 3

The rigorous study of mathematics begins with understanding the concepts of sets and functions. After that, one needs to understand the way in which a mathematician formally makes statements and proves or disproves it. We start this course with an introduction to these fundamental concepts. Apart from that, the basic of vector calculus is to be revised before moving to more advanced topics.

Module I - Foundations of Logic and Proof (36 Hours)
The following are the main topics in this module :
Statements, logical connectives, and truth tables, conditional statements and parts of it, tautology and contradiction, using various quantifiers like universal and existential quantifiers in statements, writing negations, determining truth value of statements;

Proof : Various techniques of proof like inductive reasoning, counter examples, deductive reasoning, hypothesis and conclusion, contrapositive statements, converse statements, contradictions, indirect proofs;

Sets and relations: A review of basic set operations like union, intersection, subset, superset concepts, equality of sets, complements, disjoint sets, indexed family of sets and operations on such families, ordered pairs, relations on sets, cartesian products (finite case only), various types of relations (reflexive, symmetric, transitive, equivalence), partitions of sets;

Functions: domain, codomain, range of functions, one-one, onto, bijective functions, image, preimage of functions, composing functions and the order of composition, inverse functions, cardinality of a set, equinumerous (equipotent) sets
The topics to be discussed in this module can be found in chapter 1 and 2 of text [1] *below.*

Module II - Foundations of co-ordinate geometry (18 Hours)
The following are the main topics in this module :
Parametric equations of a curve, orientation of a curve, expressing ordinary functions parametrically, tangent lines to parametric curves, arc length of parametric curves;

Polar co-ordinate systems, converting between polar and rectangular co-ordinate systems, graphs in the polar co-ordinate system, symmetry tests in the polar co-ordinate system, families of lines, rays, circles, other curves, spirals;

Tangent lines to polar curves, arc length of the curve, area, intersections of polar curves;

Conic sections : definitions and examples, equations at standard positions, sketching them, asymptotes of hyperbolas, translating conics, reflections of conics, applications,

rotation of axes and eliminating the cross product term from the equation of a conic, polar equations of conics, sketching them, applications in astronomy such as Kepler's laws, related problems
The topics to be discussed in this module can be found in chapter 10 of text [2] *below.*

Module III - Foundations of vector calculus (18 Hours)
To begin with, the three dimesional rectangular co-ordinate system should be discussed and how distance is to be calculated between points in this sytem. Basic operations on vectors like their addition, cross and dot products should be introduced next. The concept of projections of vectors and the relation with dot product should be given emphasize. Equations of lines determined by a point and vector, vector equations in lines, equatins of planes using vectors normal to be should be discussed. Quadric surfaces which are three dimensinal analogues of conics should be discussed next. Various co-ordinate systems like cylindrical, spherical should be discussed next with the methods for conversion between various co-ordinate systems.
The topics to be discussed in this module can be found in chapter 11 of text [2] *below.*

Texts

Text 1 – S R Lay. *Analysis with an Introduction to Proof*, 5th Edition, Pearson Education Limited

Text 2 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

References

Ref. 1 – J P D'Angelo, D B West. *Mathematical Thinking - Problem Solving and Proofs*, 2nd Edition, Prentice Hall

Ref. 2 – Daniel J Velleman. *How to Prove it : A Structured Approach*, 2nd Edition, Cambridge University Press

Ref. 3 – Elena Nardi, Paola lannonne. *How to Prove it : A brief guide for teaching Proof to Year 1 mathematics undergraduates*, University of East Anglia, Centre for Applied Research in Education

Ref. 4 – G B Thomas, R L Finney. *Calculus*, 9th Edition, Addison-Weseley Publishing Company

Ref. 5 – J Stewart. *Calculus with Early Transcendental Functions*, 7th Edition, Cengage India Private Limited

Semester III

Elementary Number Theory and Calculus – I

CODE: MM 1341 Instructional hours per week: 5
No.of credits: 4

Towards beginning the study on abstract algebraic structures, this course introduces the fundamental facts in elementary number theory. Apart from that, calculus of vector valued functions and multiple integrals is also discussed.

Module I - Divisibility in integers (18 Hours)
The topic of elementary number theory is introduced for further developing the ideas in abstract algebra. The following are the main topics in this module :
The division algorithm, Pigeonhole principle, divisibility relations, inclusion-exclusion principle, base-b representations of natural numbers, prime and composite numbers, infinitude of primes, GCD, linear combination of integers, pairwise relatively prime integers, the Euclidean algorithm for finding GCD, the fundamental theorem of arithmetic, canonical decomposition of an integer into prime factors, LCM;

Linear Diophantine Equations and existence of solutions, Eulers Method for solving LDE's
The topics to be discussed in this module can be found in chapter 2 and 3 of text [2] *below.*

Module II - Vector valued functions (30 Hours)
Towards going to the calculus of vector valued functions, we define such functions. The other topics in this module are the following :
Parametric curves in the three dimensional space, limits, continuity and derivatives of vector valued functions, geometric interpretation of the derivative, basic rules of differentiation of such functions, derivatives of vector products, integrating vector functions, length of an arc of a parametric curve, change of parameter, arc length parametrizations, various types of vectors that can be associated to a curve such as unit vectors, tangent vectors, binormal vectors, definition and various formulae for curvature, the geometrical interpretation of curvature, motion of a particle along a curve and geometrical interpretation of various vectors associated to it, various laws in astronomy like Kepler's laws and problems
The topics to be discussed in this module can be found in chapter 12 of text [1] *below.*

Module III - Multivariable Calculus (42 Hours)
After introducing the concept of functins of more than one variable, the sketching of them in three dimensinal cases with the help of level curves should be discussed. Countours and level surface plotting also should be discussed. The other topics in this module are the following:
Limits and continuity of Multivariable functions, various results related to finding the limits and establishing continuity, continuity at boundary points, partial derivatives of

functions, partial derivative as a function, its geometrical interpretation, implicit partial differentiation, changing the order of partial differentiation and the equality conditions;

Differentiability of a multivariate function, differentiability of such a function implies its continuity, local linear approximations, chain rules - various versions, directional derivative and differentiability, gradient and its properties, applications of gradients;

Tangent planes and normal vectors to level surfaces, finding tangent lines to intersections of surfaces, extrema of multivariate functions, techniques to find them, critical and saddle points, Lagrange multipliers to solve extremum problems with constrains,
The topics to be discussed in this module can be found in chapter 13 of text [1] *below.*

Texts

Text 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Text 2 – Thomas Koshy. *Elementary Number Theory with Applications*, 2nd Edition, Academic Press

References

Ref. 1 – G B Thomas, R L Finney. *Calculus*, 9th Edition, Addison-Weseley Publishing Company

Ref. 2 – J Stewart. *Calculus with Early Transcendental Functions*, 7th Edition, Cengage India Private Limited

Ref. 3 – G A Jones, J M Jones. *Elementary Number Theory*, Springer

Semester IV

Elementary Number Theory and Calculus – II

CODE: MM 1441 Instructional hours per week: 5
No.of credits: 4

As in the previous semester, towards beginning the study on abstract algebraic structures, this course introduces the fundamental facts in elementary number theory. Apart from that, calculus of vector valued functions and multiple integrals is also discussed.

Module I - Congruence relations in integers (30 Hours)
Towards defining the congruence classes in $\mathbb{Z}$, we begin with defining the congruence relation. Its various properties should be discussed, and then the result that no prime of the form $4n + 3$ is a sum of two squares should be discussed. The other topics in this module are the following:
Defining congruence classes, complete set of residues, modulus exponentiation, finding reminder of big numbers using modular arithmetic, cancellation laws in modular arithmetic, linear congruences and existence of solutions, solving Mahavira's puzzle, modular inverses, Pollard Rho factoring method;

Certain tests for divisibility - The numbers here to test are powers of 2, 3, 5, 7, 9, 10, 11, testing whether a given number is a square;

Linear system of congruence equations, Chinese Remainder Theorem and some applications;

Some classical results like Wilson's theorem, Fermat's little theorem, Pollard $p - 1$ factoring method, Eulers' theorem,
The topics to be discussed in this module can be found in chapter 2 and 3 of text [2] *below.*

Module II - Multiple integrals (30 Hours)
Here we discuss double and triple integrals and their applications. The main topics in this module are the follwing:
Double integrals: Defining and evaluating double integrals, its properties, double integrals over non rectangular regions, determining limits of integration, revising the order of integration, area and double integral, double integral in polar coordinates and their evaluation, finding areas using polar double integrals, conversion between rectangular to polar integrals, finding surface area, surface of revolution in parametric form, vector valued function in two variables, finding surface area of parametric surfaces;

Triple integrals : Properties, evaluation over ordinary and special regions, determining the limits, volume as triple integral, modifying order of evaluation, triple integral in cylindrical co-ordinates, Converting the integral from one co-ordinate system to other;

Change of variable in integration (single, double, and triple), Jacobians in two variables.
The topics to be discussed in this module can be found in chapter 14 of text [1] *below.*

Module III - Vector Calculus (30 Hours)

After the differentiation of vector valued functions in the last semester, here we introduce the concept of integrating vector valued functions. Some important theorems are also to be discussed here. The main topics are the following :

Vector fields and their graphical representation, various type of vector fields (inverse-square, gradient, conservative), potential functions, divergence, curl, the $\bigtriangledown$ operator, Laplacian;

Integrating a function along a curve (line integrals), integrating a vector field along a curve, defining work done as a line integral, line integrals along piecewise-smooth curves, integration of vector fields and independence of path, fundamental theorem of line integrals, line integrals along closed paths, test for conservative vector fields, Green's theorem and applications;

Defining and evaluating surface integrals, their applications, orientation of surfaces, evaluating flux integrals, The divergence theorem, Gauss' Law, Stoke's theorem, applications of these theorems.

The topics to be discussed in this module can be found in chapter 15 of text [1] *below.*

Texts

Text 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Text 2 – Thomas Koshy. *Elementary Number Theory with Applications*, 2nd Edition, Academic Press

References

Ref. 1 – G B Thomas, R L Finney. *Calculus*, 9th Edition, Addison-Weseley Publishing Company

Ref. 2 – J Stewart. *Calculus with Early Transcendental Functions*, 7th Edition, Cengage India Private Limited

Ref. 3 – G A Jones, J M Jones. *Elementary Number Theory*, Springer

Semester V

Real Analysis – I

CODE: MM 1541 Instructional hours per week: 5
No.of credits: 4

In this course, we discuss the notion of real numbers, the ideas of sequence of real numbers and the concept of infinite summation in a formal manner. Many of the topics discussed in the first two modules of this course were introduced somewhat informally in earlier courses, but in this course, the emphasis is on mathematical rigor. A minimal introduction to the metric space structure of $\mathbb{R}$ is also included so as to serve as a stepping stone into the idea of abstract topological spaces. The course is mainly based on Chapters 1–3 of text [1].

All the chapters mentioned above contains a section titled *Discussions* in the beginning of the chapter. This section is intended only for motivating the students, and so should not be made as a part of the examination process.

Module I (25 Hours)

This module introduces the basic concepts about the real number system with some introduction to sets, functions, and proof techniques. The following are the main topics to be discussed: existence of an irrational number, the axiom of completeness, upper lower bounds of sets in $\mathbb{R}$, consequences of completeness like Archimedian property of real numbers, Density of $\mathbb{Q}$ in $\mathbb{R}$, existence of square roots, countability of $\mathbb{Q}$ and uncountability of $\mathbb{R}$, various cardinality results, Cantor's original proof for uncoubtability of $\mathbb{R}$, and Cantor's theorem on power sets.

The topics to be discussed in this module can be found in chapter 1 of text [1] *below. The first section 1.1 may be briefly discussed and is not meant for examination purposes.*

Module II (40 hours)

Students must have already encountered the idea of infinite series through the example of geometric progression. After discussing the rearrangement concept of infinite series, the following topics are to be introduced rigourously : Limit of a sequence, diverging sequences, examples, algebraic operations on limits, and order properties of sequences and limits, the Monotone Convergence Theorem, Cauchy's condensation test for convergence of a series, various other tests for the convergence series, the Bolzano-Weierstrass theorem, the Cauchy criterion for convergence of a sequence, rearrangement of absolutely convergent series.

The topics to be discussed in this module can be found in chapter 2 of text [1] *below. The first section 2.1 may be briefly discussed and is not meant for examination purposes.*

Module III (25 hours)

This module is intended to be a beginner for learning abstract metric spaces. To motivate the students, the Cantor set should be constructed and shown in the beginning. Then move to the topics open and closed sets in $\mathbb{R}$, and what about their complements, Compactness of sets (defined using sequential convergence), open covers and compactness, perfect and connected sets in $\mathbb{R}$, and finally the Baire's theorem.
The topics to be discussed in this module can be found in chapter 3 of text [1] *below. The first section 3.1 may be briefly discussed and is not meant for examination purposes.*

Texts

Text 1 – Stephen Abbot. *Understanding Analysis*, 2nd Edition, Springer

References

Ref. 1 – R G Bartle, D Sherbert. *Introduction to Real Analysis*, 3rd Edition, John Wiley & Sons

Ref. 2 – W. Rudin. *Principles of Mathematical Analysis*, Second Edition, McGraw-Hill

Ref. 3 – Terrence Tao. *Analysis I*, Hindustan Book Agency

Semester V

Complex Analysis – I

CODE: MM 1542 Instructional hours per week: 4
No.of credits: 3

Here we go through the basic complex function theory.

Module I (27 Hours)

Complex numbers : The algebra of Complex Numbers, Point Representation of Complex Numbers, Vectors and Polar forms, The Complex Exponential, Powers and Roots, Planar Sets

Analytic Functions : Functions of a complex variable, Limits and Continuity, Analyticity, The Cauchy Riemann Equations, Harmonic Functions

The topics to be discussed in this module can be found in chapter 1, sections 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 and chapter 2, sections 2.1, 2.2, 2.3, 2.4, 2.5 of text [1] *below.*

Module II (15 hours)

Elementary Functions : Polynomials and rational Functions (Proof of the theorem on partial fraction decomposition need not be discussed), The Exponential, Trigonometric and Hyperbolic Functions, The Logarithmic Function, Complex Powers and Inverse Trigonometric Functions.

The topics to be discussed in this module can be found in chapter 3, sections 3.1, 3.2, 3.3, 3.5 of text [1] *below.*

Module III (30)

Complex Integration : Contours, Contour Integrals, Independence of Path, Cauchy's Integral Theorem (Section 4.4a on deformation of Contours Approach is to be discussed, but section 4.4 b on Vector Analysis Approach need not be discussed), Cauchy's Integral Formula and Its Consequences, Bounds of Analytic Functions

The topics to be discussed in this module can be found in chapter 4, sections 4.1, 4.2, 4.3, 4.4a, 4.5 and 4.6 of text [1] *below.*

Texts

Text 1 – Edward B. Saff, Arthur David Snider. *Fundamentals of complex analysis with applications to engineering and science*, 3rd Edition, Pearson Education India

References

Ref. 1 – John H Mathews, Russel W Howell. *Complex Analysis for Mathematics and Engineering*, Jones and Bartlett Publishers

Ref. 2 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

Ref. 3 – James Brown, Ruel Churchill. *Complex Variables and Applications*, Eighth Edition, McGraw-Hill

Semester V

Abstract Algebra – Group Theory

CODE: MM 1543 Instructional hours per week: 5
No.of credits: 4

The aim of this course is to provide a very strong foundation in the theory of groups. All the concepts appearing in the course are to be supported by numerous examples mainly from the references provided.

Module I (30 Hours)
The concept of group is to be introduced before rigorously defining it. The symmetries of a square can be a starting point for this. After that, definition of group should be stated and should be clarified with the help of examples. After discussing various properties of groups, finite groups and their examples should be discussed. The concept of subgroups with various characterizations also should be discussed. After introducing the definition of cyclic groups, various examples, and important features of cyclic groups and results on order of elements in such groups should be discussed.
The topics to be discussed in this module can be found in chapter 1, 2 3 and 4 of text [1] *below.*

Module II (24 Hours)
This module starts with defining and analysing various properties permutation groups which forms one of the most important class of examples for non abelian, finite groups. After defining operations on permutations, their properties are to be discussed. To motivate the students, the example of check-digit scheme should be discussed (This section on check-digit scheme is not meant for the examinations). Then we proceed to define the notion of equivalence of groups viz. isomorphisms. Several examples are to be discussed for explaining this notion. The properties of isomorphisms are also to be discussed together with special classes of isomorphisms like automorphisms and inner automorphisms before finishing the module with the classic result of Cayley on finite groups.
The topics to be discussed in this module can be found in chapter 5 and 6 of text [1] *below.*

Module III (18 Hours)
In this module we prove one of the most important results in group theory which is the Langrange's theorem on counting cosets of a finite group. The concept of cosets of a group should be defined giving many examples before proving the Lagrange's theorem. As some of the applications of this theorem, the connection between permutation groups and rotations of cube and soccer ball should be discussed. The section on Rubik's cube and section on internal direct products need not be discussed.
The topics to be discussed in this module can be found in chapter 7 and 9 of text [1] *below.*

Module IV (18 Hours)

Here the concept of group homomorphisms should be defined with sufficient number of examples. After proving the first isomorphism theorem, the fundamental theorem of isomorphism should be introduced and proved. Classifying groups based on the fundamental theorem should be discussed in detail.
The topics to be discussed in this module can be found in chapter 10 and 11 of text [1] *below.*

Texts

Text 1 – Joseph Gallian. *Contemporary Abstract Algebra*, 8th Edition, Cengage Learning

References

Ref. 1 – D S Dummit, R M Foote. *Abstract Algebra*, 3rd Edition, Wiley

Ref. 2 – I N Herstein. *Topics in Algebra*, Vikas Publications

Semester V

Differential Equations

CODE: MM 1544 — Instructional hours per week: 3
No.of credits: 3

In this course, we discuss how differential equations arise in various physical problems and consider some methods to solve first order differential equations and second order linear equations. For introducing the concepts, text [1] may be used, and for strengthening the theoretical aspects, reference [1] may be used.

Module I - First order ODE (18 hours)
In this module we discuss first order equations and various methods to solve them. Sufficient number of exercises also should be done for understanding the concepts thoroughly. The main topics in this module are the following:
Modelling a problem, basic concept of a differential equation, its solution, initial value problems, geometric meaning (direction fields), seperable ODE, reduction to seperable form, exact ODEs and integrating factors, reducing to exact form, homogeneous and non homogeneous linear ODEs, special equations like Bernoulli equation, orthogonal trajectories, understanding the existence and uniqueness of solutions theorem.
The topics to be discussed in this module can be found in chapter 1 of text [1] *below.*

Module II - Second order ODE (18 hours)
As in the first module, we discuss second order equations and various methods to solve them. Sufficient number of exercises also should be done for understanding the concepts thoroughly. The main topics in this module are the following:
homogeneous linear ODE of second order, initial value problem, basis, and general solutions, finding a basis when one solution is known, homogeneous linear ODE with constant coefficients (various cases that arise depending on the characteristic equation), differential operators, Euler-Cauchy Equations, existence and uniqueness of solutions w.r. to wronskian, solving nonhomogeneous ODE via the method of undetermined coefficients, varius applications of techniques, solution by variation of parameters.
The topics to be discussed in this module can be found in chapter 2 of text [1] *below.*

Texts

Text 1 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

References

Ref. 1 – G. F. Simmons. *Differential Equations with applications and Historical notes*, Tata McGraw-Hill, 2003

Ref. 2 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 3 – Peter V. O' Neil. *Advanced Engineering Mathematics*, Thompson Publications, 2007

Semester V

Mathematics Software – LaTeX & SageMath

CODE: MM 1545 Instructional hours per week: 4
No.of credits: 3

Here we introduce two software which are commonly used by people working in Mathematics – a science typesetting software LaTeX, and a mathematical computation and visualization software SageMath. The aim of introducing LaTeX software is to enable students to typeset the project report which is a compulsory requirement for finishing their undergraduate mathematics programme succesfully. The aim of learning SageMath is to enable students to see how the computational techniques they have learned in the previous semesters can be put into action with the help of software so as to reduce human effort. Also, they should be able to use this software for further computations in their own in the forthcoming semester.

Module I - LaTeX for prearing a project report in Mathematics (36 Hours)

Graphical User Interface (GUI)/ Edtitor like Kile or TeXstudio should be used for providing training to the students. The main topics in this module are following:

Typesetting a simple article and compiling it;

How spaces are treated in the document;

Document layout : various options to be included in the `documentclass` command, page styles, splitting files into smaller files, breaking line and page, using boxes (like, `mbox`) to keep text unbroken across lines, dividing document in to parts like frontmatter, mainmatter, backmatter, chapters, sections, etc, cross referencing with and without page number, adding footnotes;

Emphasizing words with `\emph, \texttt, \textsl, \textit, \underline` etc.

Basic environments like `enumerate, itemize, description, flushleft, flusuright, center, quote, quotation`

Controlling enumeration via the `enumerate` package.

Tables : preparing a table and floating it, the longtable environment;

Typesetting mathematics : basic symbols, equations, operators, the `equation` environment and reference to it, the `displaymath` environment, exponents, arrows, basic functions, limits, fractions, spacing in the mathematics environments, matrices, aligning various objects, multi-equation environments, suppressing numbering for one or more equations, handling long equations, phantoms, using normal text in math mode, controlling font size, typesetting theorems, defintions, lemmas, etc, making text bold in math mode, inserting symbols and environments (`array, pmatrix` etc) using the support of GUIs;

Figures : Including JPG, PNG graphics with `graphicx` package, controlling width, height etc, floating figures, adding captions, the wrapfig package;

Adding references/bibliogrpahy and citing them, using the package `hyperref` to add and control hypertext links, creating presentations with `pdfscreen`, creating new commands;

Fonts : changing font size, various fonts, math fonts,

Spacing : changing line spacing, controlling horizontal, vertical spacing, controlling the margins using the geometry package, fullpage package

Preparing a dummy project with `titlepage`, acknowledgement, certificates, table of contents (using `\tableofcontents`), list of tables, table of figures, chapters, sections, bibliography (using the `thebibliography` environment). This dummy project should contain atleast one example from the each of the topic in the syllabus, and should be submitted for internal evaluation before the end semester practical examination.

Module II - Doing Mathematics with SageMath (36 hours)

Starting SageMath using a browser, how to use the sage cell server `https://sagecell.sagemath.org/`, how to use SageMathCloud, creating and saving a sage worksheet, saving the worksheet to an .sws file, moving it and re-opening it in another computer system;

Using sagemath as a calculator, basic functions (square root, logarithm, numeric value, exponential, trigonometric, conversion between degrees and radians, etc.);

Plotting : simple plots of known functions, controlling range of plots, controlling axes, labels, gridlines, drawing multiple plots on a single picture, *adding* plots, polar plotting, plotting implicit functions, contour plots, level sets, parametric 2D plotting, vector fields plotting, gradients;

Matrix Algebra : Adding, multiplying two matrices, row reduced echelon forms to solve linear system of equations, finding inverses of square matrices, determinants, exponentiation of matrices, computing the kernel of a matrix;

Defining own functions and using it, composing functions, multi variate functions;

Polynomials : Defining polynomials, operations on them like multiplication and division, expanding a product, factorizing a polynomial, finding gcd;

Solving single variable equations, declaring multiple variables, solving multi variable equations, solving system of non linear equations, finding the numerical value of roots of equations;

complex number arithmetic, finding complex roots of equations;

Finding derivatives of functions, higher order derivatives, integrating functions, definite and indefinite integrals, numerical integration, partial fractions and integration,

Combinatorcs & Number theory: Permutations, combinations, finding gcd, lcm, prime factorization, prime counting function, n^{th} prime funcion, divisors of a number, counting divisors, modular arithmetic;

Vector calculus : Defining vectors, operations like sum, dot product, cross product, vector valued functions, divergence, curl, multiple integrals;

Computing Taylor, McClaurins polynomials, minimization and Lagrange multipliers, constrained and unconstrained optimization;

Internal Evaluation : A dummy project report prepared in LaTeX should be submitted as assignment for internal evaluation for 5 marks. Another practical record should be submitted the content of which should be problems and their outputs evaluated using SageMath. This record should be awarded a maximum of 10 marks which is earmarked for the internal evaluation examination.

Problems to be included in the examination:

1. Find all local extrema and inflection points of a function
2. Traffic flow optimization
3. Minimum surface area of packaging
4. Newton's method for finding approximate roots
5. Plotting and finding area between curves using integrals
6. Finding the average of a function
7. Finding volume of solid of revolution
8. Finding solution for a system of linear equations
9. Finding divergence and curl of vector valued functions
10. Using differential calculus to analyze a quintic polynomials features, for finding the optimal graphing window
11. Using Pollard's $p - 1$ Method of factoring integers, to try to break the RSA cryptosystem
12. Expressing gcd of two integers as a combination of the integers (Bezout's identity)

References

Ref. 1 – Tobias Oetiker, Hubert Partl, Irene Hyna and Elisabeth Schlegl. *The (Not So) Short Introduction to LaTeX2e*, Samurai Media Limited (or available online at `http://mirrors.ctan.org/info/lshort/english/lshort.pdf`)

Ref. 2 – Leslie Lamport. *LaTeX: A Document Preparation System*, Addison-Wesley, Reading, Massachusetts, second edition, 1994

Ref. 3 – *LaTeX Tutorials—A Primer*, Indian TeX Users Group, available online at `https://www.tug.org/twg/mactex/tutorials/ltxprimer-1.0.pdf`

Ref. 4 – H. J. Greenberg. *A Simplified introduction to LaTeX*, available online at `https://www.ctan.org/tex-archive/info/simplified-latex/`

Ref. 5 – *Using Kile - KDE Documentation*, `https://docs.kde.org/trunk4/en/extragear-office/kile/quick_using.html`

Ref. 6 – *TeXstudio : user manual*, `http://texstudio.sourceforge.net/manual/current/usermanual_en.html`

Ref. 7 – *The longtable package - TeXdoc.net*, `http://texdoc.net/texmf-dist/doc/latex/tools/longtable.pdf`

Ref. 8 – *wrapfig - TeXdoc.net*, `http://texdoc.net/texmf-dist/doc/latex/wrapfig/wrapfig-doc.pdf`

Ref. 9 – *The geometry package*, `http://texdoc.net/texmf-dist/doc/latex/geometry/geometry.pdf`

Ref. 10 – *The fullpage package*, http://texdoc.net/texmf-dist/doc/latex/preprint/fullpage.pdf

Ref. 11 – *The SageMathCloud*, https://cloud.sagemath.com/

Ref. 12 – Gregory V. Bard. *Sage for Undergraduates*, American Mathematical Society, available online at http://www.gregorybard.com/Sage.html

Ref. 13 – Tuan A. Le and Hieu D. Nguyen. *SageMath Advice For Calculus* available online at http://users.rowan.edu/~nguyen/sage/SageMathAdviceforCalculus.pdf

Semester V

Operations Research (Open Course)

CODE: MM 1551.1 — Instructional hours per week: 3
No. of Credits: 2

Module I – Linear Programming (18 hours)
Formulation of Linear Programming models, Graphical solution of Linear Programs in two variables, Linear Programs in standard form - basic variable - basic solution- basic feasible solution -feasible solution, Solution of a Linear Programming problem using simplex method (Since Big-M method is not included in the syllabus, avoid questions in simplex method with constraints of $\geq$ or $=$ type.)

Module II – Transportation Problems (18 hours)
Linear programming formulation - Initial basic feasible solution (Vogel'sapproximation method/North-west corner rule) - degeneracy in basic feasible solution - Modified distribution method - optimalitytest.

ASSIGNMENT PROBLEMS: Standard assignment problems - Hungarian method for solving an assignment problem.

Module III – Project Management (18 hours)
Activity -dummy activity - event - project network, CPM (solution by network analysis only), PERT.

The topics to be discussed in this course can be found in text [1].

Texts

Text 1 – Ravindran, Philps, Solberg. *Operations Research- Principles and Practice*, 2nd Edition, Wiley India Pvt Ltd

References

Ref. 1 – Hamdy A. Taha. *Operations Research : An Introduction*, 9th Edition, Pearson

Semester V

Business Mathematics (Open Course)

CODE: MM 1551.2 — Instructional hours per week: 3
No. of Credits: 2

Module I – Basic Mathematics of Finance (18 hours)
Nominal rate of Interest and effective rate of interest, Continuous Compounding, force of interest, compound interest calculations at varying rate of interest, present value, interest and discount, Nominal rate of discount, effective rate of discount, force of discount, Depreciation.
(Chapter 8 of Unit I of text [1] - Sections: 8.1, 8.2, 8.3, 8.4. 8.5, 8.6, 8.7, 8.9)

Module II – Differentiation and their applications to Business and Economics (18 hours)
Meaning of derivatives, rules of differentiation, standard results (basics only for doing problems of chapter 5 of Unit 1)
(Chapter 4 of unit I of text [1] - Sections: 4.3, 4.4, 4.5, 4.6)
Maxima and Minima, concavity, convexity and points of inflection, elasticity of demand, Price elasticity of demand
(Chapter 5 of Unit I of text [1] - Sections: 5.1, 5.2, 5.3, 5.4, 5.5. 5.6, 5.7)
Integration and their applications to Business and Economics: Meaning, rules of integration, standard results, Integration by parts, definite integration (basics only for doing problems of chapter 7 of Unit 1 of text)
(Chapter 6 of unit I of text [1] - Sections: 6.1, 6.2, 6.4, 6.10, 6.11)
Marginal cost, marginal revenue, Consumer's surplus, producer's surplus, consumer's surplus under pure competition, consumer's surplus under monopoly
(Chapter 7 of unit I of text [1] - Sections: 7.1, 7.2, 7.3, 7.4, 7.5)

Module III – Index Numbers (18 hours)
Definition, types of index numbers, methods of construction of price index numbers, Laspeyer's price index number, Paasche's price index number, Fisher ideal index number, advantages of index numbers, limitations of index numbers
(Chapter 6 of Unit II of text [1] - Sections: 6.1, 6.3, 6.4, 6.5, 6.6, 6.8, 6.16, 6.17)
Time series: Definition, Components of time series, Measurement of Trend
(Chapter 7 of Unit II of text [1] - Sections: 7.1, 7.2, 7.4)

Texts

Text 1 – B M Agarwal. *Business Mathematics and Statistics*, Vikas Publishing House, New Delhi, 2009

References

Ref. 1 – Qazi Zameeruddin, et al . *Business Mathematics*, Vikas Publishing House, New Delhi, 2009

Ref. 2 – Alpha C Chicny, Kevin Wainwright. *Fundamental methods of Mathematical Economics*, 4th Edition, Mc-Graw Hill

Semester V

Basic Mathematics (Open Course)

CODE: MM 1551.3 Instructional hours per week: 3
No. of Credits: 2

This course is specifically designed for those students who might have not undergone a mathematics course beyond their secondary school curriculum. The structure of the course is so as to give an exposure to the basic mathematics tools which found a use in day today life, say in the fields general finance and basic sciences.

Module I : Basic arithmetic of whole numbers, fractions and decimals (24 hours)

Place Value of numbers, standard Notation and Expanded Notation, Operations on whole numbers : exponentiation, square roots, order of operations, computing averages, rounding, estimation, applications of estimation, estimating product of numbers by rounding, exponents, square roots, order of operations, computing averages;

Fractions: multiplication and division of fractions, applications, primes and composites, factorization, simplifying fractions to lowest terms, multiplication of fractions, reciprocal of fractions, division of fractions, operations of mixed fractions, LCM,

Decimal notation and rounding of numbers, fractions to decimals, multiplication of decimals, division of decimals, order of operations involving decimals,

Scientific notation of numbers, operations in scientific notations, square and cube roots of numbers, laws of exponents and logarithms

The topics to be discussed in this module can be found in chapters 1–3 of text [1] *and chapters 1 and 2 of* text [2] *below.*

Module II - Ratios, proportions, percents and the relation among them (15 hours)

Ratio and proportions : Simplifying ratios to lowest terms, ratios of mixed numbers, unit rates and cost, ratios and proportion, similar figures;

Percents: Fractions - decimals - percents, converting between these three relation with proportions, equations involving percents, increase and decrease in percent, finding simple and compound interests

The topics to be discussed in this module can be found in chapters 4, 5 of text [1] *below.*

Module III – Basic Statistics, Simple Equations (15 hours)

Basic Statistics : Data and tables, various graphs like bar graphs, pictographs, line graphs, frequency distributions and histograms, circle graphs (pie charts), interpreting them, circle graphs and percents, mean, median, mode, weighted mean

Solving simple equations, quadratic equations (real roots only), cubic equations, arithmetic geometric series, systems of two and three equations, matrices and system of equations

The topics to be discussed in this module can be found in chapters 9 of text [1] *and chapters 2, 3 of* text [2] *below.*

Texts

Text 1 – J Miller, M O'Neil, N Hyde. *Basic College Mathematics*, 2nd Edition, McGraw Hill Higher Education

Text 2 – Steven T Karris. *Mathematics for Business, Science and Technology*, 2nd Edition, Orchard Publications

References

Ref. 1 – Charles P McKeague. *Basic Mathematics*, 7th Edition, Cengage Learning

Semester V

Project preparation - From selecting the topic to presenting the final report

Instructional hours per week: 1

To complete the undergraduate programme, the students should undertake a project and prepare and submit a project report on a topic of their choice in the subject mathematics or allied subjects. The work on the project should start in the beginning of the 5th semester itself, and should end towards the middle of the 6th semester. This course (without any examination in the 5th semester, with a project report submissin and project viva in the 6th semester) is introduced for making the students understand various concepts behind undertaking such a project and preparing the final report. Towards the end of this course the students should be able to choose and prepare topics in their own and they should understand the layout of a project report.

To quickly get into the business, the first chapter of text [1] may be completely discussed. Apart from that, for detailed information, the other chapters in this book may be used in association with the other references given below. The main topics to discuss in this course are the following:

Quick overview : The structure of Dissertation, creating a plan for the Dissertation, planning the results section, planning the introduction, planning and writing the abstract, composing the title, figures, tables, and appendices, references, making good presentations, handling resources like notebooks, library, computers etc., preparing an interim report.

Topics in detail : Planning and Writing the Introduction, Planning and Writing the Results, Figures and Tables, Planning and Writing the Discussion, Planning and Writing the References, Deciding On a Title and Planning and Writing the Other Bits, Proofreading, Printing, Binding and Submission, oral examinations, preparing for viva, Taking the Dissertation to the Viva

Layout : Fonts and Line Spacing, Margins, Headers, and Footers, Alignment of Text, Titles and Headings, Separating Sections and Chapters

Texts

Text 1 – Daniel Holtom, Elizabeth Fisher. *Enjoy Writing Your Science Thesis or Dissertation – A step by step guide to planning and writing dissertations and theses for undergraduate and graduate science students*, Imperial College Press

References

Ref. 1 – Kathleen McMillan, Jonathan Weyers. *How to write Dissertations & Project Reports*, Pearson Education Limited

Ref. 2 – Peg Boyle Single. *Demystifying dissertation writing : a streamlined process from choice of topic to final text*, Stylus Publishing, Virginia

Semester VI

Real Analysis – II

CODE: MM 1641 Instructional hours per week: 5
No.of credits: 4

In the second part of the Real Analysis course, we focus on functions on $\mathbb{R}$, their continuity, existence of derivatives, and integrability. The course is mainly based on Chapters 4,5 and 7 of text [1].

All the chapters mentioned above contains a section titled *Discussions* in the beginning of the chapter. These sections are intended only for motivating the students, and so should not be made a part of the examination process.

Module I (35 Hours)

Here we move towards the basic notion of limits of functions and their continuity. Various version of definition of limits are to be discussed here. The algebra of limits of functions and the divergence criterion for functional limits are to be discussed next. The other topics to be discussed in this module are the discontinuity criterion, composition of functions and continuity, continuity and compct sets, results on uniform continuity, the intermediate value theorem, Monotone functions and their continuity.

The topics to be discussed in this module can be found in chapter 4 of text [1] *below. The first section 4.1 may be briefly discussed and is not meant for examination purposes.*

Module II (25 hours)

Here we discuss the derivative concept more rigorously than what was done in the previous calculus courses. After (re)introducing the definition of differentiability of functions, we verify that differentiability implies continuity. Algebra and composing of differentiable functions should be discussed next. The interior extremum theorem and Darboux's theorem should be discussed after that. The mean value theorems should be discussed and proved, and the module ends with L'Hospitals results. A continuous everywhere but notwhere differentiable function should be discussed, but it is not meant for the examination. It may be infact used for student seminars.

The topics to be discussed in this module can be found in chapter 5 of text [1] *below. The sections 5.1 and 5.4 may be briefly discussed and is not meant for examination purposes.*

Module III (30 hours)

In the last module, the theory of Riemann integration is to be discussed. Main topics to be included in this module are defining the Riemann integral using upper, lower Riemann sums, and the integrability criterion, continuity and the existence of integral, algebraic operations on integrable functions, (The results and examples on convergence of sequence of functions and integrability may be omitted), the fundamental theorem of calculus and its proof, Lebesgue's criterion for Riemann integrability.

The topics to be discussed in this module can be found in chapter 7 of text [1] *below. The first section 7.1 may be briefly discussed and is not meant for examination purposes.*

Texts

Text 1 – Stephen Abbot; *Understanding Analysis*, 2nd Edition, Springer

References

Ref. 1 – R G Bartle, D Sherbert ; *Introduction to real analysis*, 3rd Edition, John Wiley & Sons

Ref. 2 – W. Rudin, *Principles of Mathematical Analysis*, Second Edition, McGraw-Hill

Ref. 3 – Terrence Tao; *Analysis I*, Hindustan Book Agency

Semester VI

Complex Analysis – II

CODE: MM 1642 Instructional hours per week: 4
No.of credits: 3

Module I (32 Hours)
Series Representations for Analytic Functions : Sequences and Series, Taylor Series, Power Series, Mathematical Theory of Convergence, Laurent series, Zeros and Singularities, The point at Infinity. *The topics to be discussed in this module can be found in chapter 5, sections 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7 of* text [1] *below.*

Module II (20 Hours)
Residue Theory : The Residue Theorem, Trigonometric Integrals over $[0, 2\pi]$, Improper integrals of Certain functions over $[-\infty, \infty]$, Improper integrals involving Trigonometric Functions, Indented Contours
The topics to be discussed in this module can be found in chapter 6, sections 6.1, 6.2, 6.3, 6.4, 6.5 of text [1] *below.*

Module III (20 Hours)
Conformal Mapping : Geometric Considerations, Mobius Transformations
The topics to be discussed in this module can be found in chapter 7, sections 7.2, 7.3, 7.4 of text [1] *below.*

Texts

Text 1 – Edward B. Saff, Arthur David Snider. *Fundamentals of complex analysis with applications to engineering and science*, 3rd Edition, Pearson Education India

References

Ref. 1 – John H Mathews, Russel W Howell. *Complex Analysis for Mathematics and Engineering*, 6th Edition, Jones and Bartlett Publishers

Ref. 2 – Murray R Spiegel. *Complex variables: with an introduction to conformal mapping and its applications*, Schaum's outline.

Ref. 3 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

Ref. 4 – James Brown, Ruel Churchill. *Complex Variables and Applications*, Eighth Edition, McGraw-Hill

Semester VI

Abstract Algebra – Ring Theory

CODE: MM 1643 Instructional hours per week: 4
No.of credits: 3

After discussing the theory of groups thoroughly in the previous semester, we move towards the next higher algebraic structure rings. As in the last semester, all the new concepts appearing in the course is to be supported by numerous examples mainly from the references provided.

Module I (24 Hours)
The concept of rings, subrings with many examples should be discussed here. Next comes the definition and properties of integral domains, fields, and the characteristic of rings. Ideals, how factor rings are defined using ideals, should be explained next. The definition of prime and maximal ideals with examples should be discused after that.
The topics to be discussed in this module can be found in chapter 12, 13 and 14 of text [1] *below.*

Module II (24 Hours)
After introducing the definition of ring homomorphisms, their properties should be discussed. The field of quotients of an integral domain should be discussed next. The next topic is the definition and various properties of polynomial rings over a commutative ring. Various results on operations on polynomials such as division algorithm, factor theorem, remainder theorem etc should be discussed next. The definition and examples of PID's should be discussed next, before moving to the factorization of polynomials. Tests of irreducibility and reducibility and the unique factorization of polynomials over special rings should be discused. .
The topics to be discussed in this module can be found in chapter 15, 16 and 17 of text [1] *below.*

Module III (24 Hours)
In the last module, we introduce more rigorous topics like various type of integral domains. The divisibility properties of integral domains and definition of primes in a general ring should be introduced. Unique factorization domains and the Euclidean domains should be discussed next with examples. Results on these special integral domains are aslo to be discussed.
The topics to be discussed in this module can be found in chapter 18 of text [1] *below.*

Texts

Text 1 – Joseph Gallian; *Contemporary Abstract Algebra*, 8th Edition, Cengage Learning

References

Ref. 1 – D S Dummit, R M Foote; *Abstract Algebra*, 3rd Edition, Wiley

Ref. 2 – I N Herstein, *Topics in Algebra*, Vikas Publications

Semester VI

Linear Algebra

CODE: MM 1644 Instructional hours per week: 5
No.of credits: 4

The main focus of this course is to introduce linear algebra and methods in it for solving practical problems.

Module I (15 Hours)
This module deals with a study on linear equations and their geometry. After introducing the geometrical intrepretation of linear equations, following topics should be discussed: various operations on column vectors, technique of Gaussian elimination, operations involving elementary matrices, interchanging of rows using elementary matrices, triangular factorisation of matrices and finding inverse of matrices by the elimination method.
The topics to be discussed in this module can be found in chapter 1 of text [1] *below. The section 1.7 may be omitted.*

Module II (25 hours)
Towards the study of vector spaces, specifically $\mathbb{R}^n$, we define them with many examples. Subspaces are to be defined next. After discussing the idea of nullspace of a matrix. The solving linear equations (which was one to some extent in the first module) and finding solutions to non-homogeneous systems from the corresponding homogeneous systems. After this, linear independence and dependence of vectors, their spanning, basis for a space, its dimension concepts are to be introduced. The column, row, null, left null spaces of a matrix is to be discussed next. When inverses of a matrix exists related to its column/row rank should be discussed. Towards the end of this module, linear transformations (through matrices) and their properties are to be discussed. Types of transformations like rotations, projections, reflections are to be considered next.
The topics to be discussed in this module can be found in chapter 2 of text [1] *below. The section 2.7 on graphs and networks may be omitted.*

Module III (25 hours)
This module is intended for making the idea and concepts of determinants stronger. Its properties like what happens when rows are interchanged, linearlity of expansion along the first row, etc are to be discussed. Breaking a matrix into triangular, diagonal forms and finding the determinants, expansion in cofactors, their applications like solving system of equations, finding volume etc are to be discussed next.
The topics to be discussed in this module can be found in chapter 4 of text [1] *below.*

Module IV (25 hours)
Here we conclude our analysis of matrices. The problem of finding eigen values a matrix is to be introduced first. Next goal is to diagonalize a matrix. This concept should be

discussed first, and move to the discussion on the use of eigen vectors in diagonalization. Applications of finding the powers of matrices should be discussed next. The applications like the concept of Markov Matrices, Positive Matrices and their applications in Economics should be discussed. Complex matrices and operations on them are to be introduced next. The concept orthoganality of vectors may be required here from one of the previous sections in text [1] and it should be briefly introduced and discussed here. The module ends with similar matrices, and similarity transformation related ideas. How to diagonalize some special matrices like symmetric and Hermitial matrices are also to be discussed in this module.
The topics to be discussed in this module can be found in chapter 5 of text [1] *below. The section 5.4 on applications to differential equations may be omitted*

Texts

Text 1 – Gilbert Strang, *Linear Algebra and Its Applications*, 4th Edition, Cengage Learning

References

Ref. 1 – *Video lectures of Gilber Strang Hosted by MITOpenCourseware* available at `https://ocw.mit.edu/courses/mathematics/18-06-linear-algebra-spring-2010/video-lectures/`

Ref. 2 – Thomas Banchoff, John Wermer; *Linear Algebra Through Geometry*, 2nd Edition, Springer

Ref. 3 – T S Blyth, E F Robertson: *Linear Algebra*, Springer, Second Edition.

Ref. 4 – David C Lay: *Linear Algebra*, Pearson

Ref. 5 – K Hoffman and R Kunze: *Linear Algebra*, PHI

Semester VI

Integral Transforms

CODE: MM 1645 Instructional hours per week: 4
No.of credits: 3

After completing courses in ordinary differential equations and basic integral calculus, we see here some of its applications.

Module I (38 Hours)
Laplace Transforms : Laplace Transform. Linearity. First Shifting Theorem (s-Shifting), $s-$ Shifting: Replacing s by $s-a$ in the Transform, Existence and Uniqueness of Laplace Transforms, Transforms of Derivatives and Integrals. ODEs, Laplace Transform of the Integral of a Function, Differential Equations, Initial Value Problems, Unit Step Function (Heaviside Function), Second Shifting Theorem ($t-$Shifting) Time Shifting ($t-$Shifting): Replacing t by $t-a$ in $f(t)$, Short Impulses. Diracs Delta Function. Partial Fractions Convolution , Application to Nonhomogeneous Linear ODEs, Differentiation and Integration of Transforms, ODEs with Variable Coefficients, Integration of Transforms, Special Linear ODEs with Variable Coefficients, Systems of ODEs
The topics to be discussed in this module can be found in sections 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7 of text [1] below.

Module II (34 hours)
Fourier Series, Basic Examples, Derivation of the Euler Formulas, Convergence and Sum of a Fourier Series, Arbitrary Period. Even and Odd Functions. Half-Range Expansions From Period 2π to any Period $P = 2L$, Simplifications: Even and Odd Functions, Half-Range Expansions, Fourier Integral, From Fourier Series to Fourier Integral, Applications of Fourier Integrals, Fourier Cosine Integral and Fourier Sine Integral, Fourier Cosine and Sine Transforms, Linearity, Transforms of Derivatives, Fourier Transform, Complex Form of the Fourier Integral, Fourier Transform and Its Inverse, Linearity. Fourier Transform of Derivatives, Convolution.
The topics to be discussed in this module can be found in Sections 11.1, 11.2, 11.7, 11.8, 11.9 (Excluding Physical Interpretation: Spectrum and Discrete Fourier Transform (DFT),Fast Fourier Transform (FFT)) of text [1] below.

Texts

Text 1 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

References

Ref. 1 – Peter V. O' Neil, *Advanced Engineering Mathematics*, Thompson Publications, 2007

Ref. 2 – M Greenberg, *Advanced Engineering Mathematics*, 2nd Edition, Prentice Hall

Semester VI

Graph Theory (Elective)

CODE: MM 1661.1 Instructional hours per week: 3
No. of credits: 2

Overview of the Course: The course has been designed to build an awareness of some of the fundamental concepts in Graph Theory and to develop better understanding of the subject so as to use these ideas skillfully in solving real world problems.

Module I (27 Hours)

Basics : The Definition of a Graph, Graphs as Mathematical Models, other basic concepts and definitions, Vertex Degrees, Subgraphs, Paths and Cycles, The Matrix Representation of Graphs, Fusing graphs (The fusion algorithm for connectedness need not be discussed).

Trees and Connectivity : Definitions and Simple Properties of trees, Bridges, Spanning Trees, Cut Vertices and Connectivity *The topics in this module can be found in Chapter 1, Sections 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7 and 1.8, Chapter 2, Sections 2.1, 2.2, 2.3 and 2.6 of* text [1].

Module II (27 Hours)

Euler Tours and Hamiltonian Cycles : Euler Tours (Fleury's algorithm need not be discussed), The Chinese Postman Problem (Only Statement of the problem is to be discussed) , Hamiltonian Graphs, The Travelling Salesman Problem (Only Statement of the problem is to be discussed, The Two-Optimal Algorithm and The Closest Insertion Algorithm need not be discussed)

Planar Graphs : Plane and Planar Graphs, Euler's Formula, The Platonic Bodies, Kuratowski's Theorem (Without proof).

The topics in this module can be found in Chapter 3, Sections 3.1, 3.2, 3.3 and 3.4, Chapter 5, Sections 5.1, 5.2, 5.3 and 5.4 of text [1].

Texts

Text 1 – John Clark, Derek Allan Holton. *A first look at Graph Theory*, World Scientific

References

Ref. 1 – R Balakrishnan, Ranganatahan. *A Text Book of Graph Theory*, 2nd Edition, Springer

Ref. 2 – V Balakrishnan. *Graph Theory*, Schaums Outline

Ref. 3 – J A Body, U S R Murthy. *Graph Theory with Applications*, The Macmillan Press

Ref. 4 – Robin J Wilson. *Introduction to Graph Theory* 5th edition, Prentice Hall

Semester VI

Linear Programming with SageMath (Elective)

CODE: MM 1661.2 Instructional hours per week: 3
No. of credits: 2

This course is aimed at providing an introduction to linear programming and solving problems in it using very basic methods.

Note :

1. There should not be any problems to solve using the SageMath software in the End Semester Examination (ESE). The ESE should be based only on the theory and problems to be solved either manually or using a non programmable scientific calculator.
2. Students may be permitted to use non programmable scientific calculator in the end semester examination.
3. One of the internal evaluation examinations should be done using SageMath Software, as a practical examination.

Module I (18 Hours)

This module is aimed at providing a strong introduction to various type of problems that can be solved via linear programming. Main topics in this module are the following:
Introduction to linear programming through problems, basic underlying assumptions like Proportionality, Divisibility, Additivity, Certainty, more general problems, standard form of a linear program, conversion rules to arrive at such a form like Converting unrestricted variables, Converting inequality constraints, Converting maximization to minimization, their examples, standard linear programming terminology, examples on planning, transportation, assignment, workforce scheduling, portfolio optimization, Minimum Cost Flow Problem, Maximum Flow Problem.
The topics to be discussed in this module can be found in chapter 1 of text [1] *below.*

Module II (18 hours)

This module begins with the geometry of linear programming and later proceeds to the Fundamental Theorem of Linear Programming which is a basis for algorithm development for linear programs. The main topics in this module are the following:
Geometry of the Feasible Set, graphically representing the solution space, hyperplane, polyhedron, polytope, convex sets, geometry of optimal solutions, geometric characterisaion of optimality, extreme points and basic feasible solutions, generating basic feasible solutions, resolution theorem, fundamental theorem linear programming.
The topics to be discussed in this module can be found in chapter 2 of text [1] *below.*

Module III (18 hours)

Here we introduce the simplex method, which is an important method to solve linear programming problems. The main topics in this module are the following:
Introducing the simplex method, examples, adjacent basic feasible solutions, checking optimality of a basic feasible solution, direction-step length theorem, its application in developing the steps of simplex method, examples, finite termination under non-degeneracy, generating an initial basic feasible solution using two phase and Big M method, degeneracy and cycling, anti-cycling rules like Bland's rule, and lexicographic rules.
The topics to be discussed in this module can be found in chapter 3 of text [1] *below.*

All the problems in this course should be computationally also solved using the software SageMath. The references provided below, especially text [2] and chapter 4 of text [3] can be used mainly for this.

Texts

Text 1 – Roy H Kwon. *Introduction to Linear Optimization and extensions with MATLAB*, 4th Edition, CRC Press, New York

Text 2 – *Sage Reference Manual: Numerical Optimization, Release 7.6* by the Sage Development Team available online at `http://doc.sagemath.org/pdf/en/reference/numerical/numerical.pdf`

Text 3 – Gregory V. Bard. *Sage for Undergraduates*, American Mathematical Society, available online at `http://www.gregorybard.com/Sage.html`

References

Ref. 1 – Frederick S Hillier, Gerald J Lieberman. *Introduction to operations research*, 10th Edition, McGraw Hill Education

Ref. 2 – Paul R Thie, G. E. Keough. *An introduction to linear programming and game theory*, 3rd Edition, John Wiley & Sons

Ref. 3 – Wayne L Winston, *Operations Research Applications and Algorithms*, 4th Edition, Cengage Learning

Semester VI

Numerical Analysis with SageMath (Elective)

CODE: MM 1661.3 Instructional hours per week: 3
No. of credits: 2

This course is aimed at providing an introduction to Numerical analysis with particular emphasize to finding approximate solutions to problems like finding roots of equations, numerically evaluating differential and integral equations, finding polynomials from values that approximate a given function, solving systems of linear equations etc. SageMath can be used as the software for supporting computations.

Note :

1. There should not be any problems to solve using the SageMath software in the End Semester Examination (ESE). The ESE should be based only on the theory and problems to be solved either manually or using a non programmable scientific calculator.
2. Students may be permitted to use non programmable scientific calculator in the end semester examination.
3. One of the internal evaluation examinations should be done using SageMath Software, as a practical examination.

Module I (27 Hours)

General concepts in Numerical analysis : Introduction, Floating-Point Form of Numbers, Round off, Loss of Significant Digits, Errors of Numeric Results, Error Propagation, Basic Error Principle, Algorithm Stability.

Solution of Equations by Iteration : Fixed-Point Iteration for Solving Equations $f(x) = 0$, Newton's Method for Solving Equations $f(x) = 0$, Order of an Iteration Method Speed of Convergence, Convergence of Newton's Method, Secant Method for Solving $f(x) = 0$.

Interpolation : Lagrange Interpolation, Newton's Divided Difference Interpolation, Equal Spacing: Newton's Forward Difference Formula, Equal Spacing: Newton's Backward Difference Formula, Spline Interpolation,

The topics to be discussed in this module can be found in chapter 19, sections 19.1, 19.2,19.3,19.4 of text [1] *below.*

Module II (27 hours)

Numerical Integration and Differentiation : Rectangular Rule. Trapezoidal Rule, Simpson's Rule of Integration, Adaptive Integration, Gauss Integration Formulas Maximum Degree of Precision, Numeric Differentiation.

Numerical Methods for Ordinary Differential Equations : Methods for First-Order ODEs, Picard's Iteration Method, Euler's method (Numeric Method) , Improved Euler Method, Runge-Kutta Methods (RK Methods) of fourth order.

Numerical Methods in Linear Algebra : Linear Systems: Gauss Elimination, Linear Systems: LU-Factorization, Matrix Inversion, Cholesky's Method, GaussJordan Elimination. Matrix Inversion. Linear Systems: Solution by Iteration, GaussSeidel Iteration Method, Jacobi Iteration
The topics to be discussed in this module can be found in chapter 19 section 1.2 and Problem set 1.7 CAS PROJECT. 6 , Chapter 19 Sections 19.5, Chapter 20, Sections 20.1, 20.2, 20.3, Chapter 21 Sections 21.1, of text [1] *below.*

All the problems in this course should be computationally also solved using the software SageMath. The references provided below, especially text [2] and chapter 4 of text [3] can be used mainly for this.

Texts

Text 1 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

Text 2 – *Sage Reference Manual: Numerical Optimization, Release 7.6* by the Sage Development Team available online at `http://doc.sagemath.org/pdf/en/reference/numerical/numerical.pdf`

Text 3 – Gregory V. Bard. *Sage for Undergraduates*, American Mathematical Society, available online at `http://www.gregorybard.com/Sage.html`

References

Ref. 1 – Richard L Burden, J Douglas Faires. *Numerical Analysis*, 9th Edition, Cengate Learning

Ref. 2 – E Isaacson, H B Keller. *Analysis of Numerical Methods*, Dover Publications, New York

Ref. 3 – W. Cheney, D Kincaid. *Numerical Mathematics and Computing*, 6th Edition, Thomson Brooks/Cole

Semester VI

Fuzzy Mathematics (Elective)

CODE: MM 1661.4 — Instructional hours per week: 3
No. of credits: 2

Module I (18 hours)
FROM CRISP SETS TO FUZZY SETS: A PARADIGM SHIFT.Introduction-crisp sets: an overview-fuzzy sets: basic types and basic concepts of fuzzy sets, Fuzzy sets versus crisp sets, Additional properties of cuts, Representation of fuzzy sets.

Module II (18 hours)
OPERATIONS ON FUZZY SETS AND FUZZY ARITHMETIC:Operations on fuzzy sets-types of operations, fuzzy complements, fuzzy intersections, t-norms, fuzzy unions, t-conorms. Fuzzy numbers, Linguistic variables, Arithmetic operations on intervals, Arithmetic operations on fuzzy numbers.

Module III (18 hours)
FUZZY RELATIONS :Crisp versus fuzzy relations, projections and cylindric extensions, Binary fuzzy relations, Binary relations on a single set, Fuzzy equivalence relations.

The topics to be discussed in this module can be found in
Chapter 1: Sections 1.1 to 1.4
Chapter 2: Sections 2.1 and 2.2
Chapter 3: Sections 3.1 to 3.4 (proof of theorems 3.7, 3.8, lemma 3.1, 3.2, theorems 3.11,3.12 3.13 need not be discussed)
Chapter 4: Sections 4.1 to 4.4
Chapter 5: Sections 5.1 to 5.5
of text [1] *below.*

Texts

Text 1 – George J Klir, Yuan. *Fuzzy sets and fuzzy logic: Theory and applications*, Prentice Hall of India Pvt. Ltd., New Delhi, 2000

References

Ref. 1 – Klir G J and T Folger. *Fuzzy sets, Uncertainty and Information*, PHI Pvt.Ltd., New Delhi, 1998

Ref. 2 – H J Zimmerman. *Fuzzy Set Theory and its Applications*, Allied Publishers, 1996

Ref. 3 – Dubois D and Prade H. *Fuzzy Sets and Systems: Theory and Applications*, Ac.Press, NY, 1988

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Semester I

Mathematics – I
(Calculus with applications in Physics – I)
Code: MM 1131.1

Instructional hours per week: 4 No. of Credits:3

Module 1: Differentiation with applications to Physics (18 Hours)
(*The following topics should be quickly reviewed before going to advanced topics; students should be asked to do more problems from exercises, and these problems should be included in assignments:*) Differentiation of products of functions; the chain rule; quotients; implicit differentiation; logarithmic differentiation; Leibnitz theorem
The following topics in this module should be devoted more attention and time.
Special points of a function (especially, stationary points); curvature; theorems of differentiation – Rolles', Mean Value Theorems
The topics in this module can be found in chapter 2, sections 2.1.2, to 2.1.7, text [1] *(Review of ideas through problems), chapter 2, sections 2.1.8, 2.1.9, 2.1.10,* text [1]
More exercises related to the topics in this module can be found in chapter 2 and chapter 3 of reference [1].

Module 2: Integration with applications to Physics (18 Hours)
Integration by parts; reduction formulae; infinite and improper integrals; plane polar coordinates; integral inequalities; applications of integration (finding area, volume etc)
The topics in this module can be found in chapter 2, sections 2.2.8 to 2.2.13, text [1]
More exercises related to the topics in this module can be found in chapter 4, chapter 5 and chapter 7 of reference [1].

Module 3: Infinite series and limits (18 Hours)
Definition, Summation of series of various types (Arithmetic series; geometric series; arithmetico-geometric series; the difference method; series involving natural numbers; transformation of series) Convergence of infinite series (Absolute and conditional convergence; series containing only real positive terms; alternating series test)
Operations with series (Sum and product)
Power series (Convergence of power series; operations with power series)
Taylor series (Taylors theorem need not be proved, but the statement should be explained through problems); approximation errors; standard Maclaurin series
The topics in this module can be found in chapter 4, sections 4.1 to 4.6, text [1]
More exercises related to the topics in this module can be found in chapter 9 of reference [1] and chapter 1 of reference [2].

Module 4: Vector algebra (18 Hours)
Scalars and vectors, Addition and subtraction of vectors, Multiplication by a scalar, Basis vectors and components, Magnitude of a vector, Multiplication of vectors (Scalar product; vector product; scalar triple product; vector triple product), Equations of lines, planes and spheres, using vectors to find distances (Point to line; point to plane; line to line; line to plane)

The topics in this module can be found in chapter 7, sections 7.1 to 7.8, text [1]
More exercises related to the topics in this module can be found in chapter 11 of reference [1] and chapter 6 of reference [2].

Texts

Text 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

References

Ref. 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 2 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

Ref. 3 – George B Arfken, Hans J Weber, Frank E Harris. *Mathematical Methods for Physicists*, 7th Edition, Academic Press

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Semester II

Mathematics – II
(Calculus with applications in Physics – II)

Code: MM 1231.1

Instructional hours per week: 4 No. of Credits: 3

Module 1 : Complex numbers and hyperbolic functions (18 hours)
Basic operations (Addition and subtraction; modulus and argument; multiplication; complex conjugate; division), Polar representation of complex numbers (Multiplication and division in polar form), de Moivers theorem (trigonometric identities; finding the nth roots of unity; solving polynomial equations), Complex logarithms and complex powers, Applications to differentiation and integration, Hyperbolic functions (Definitions; hyperbolictrigonometric analogies; identities of hyperbolic functions; solving hyperbolic equations; inverses of hyperbolic functions;calculus of hyperbolic functions)
The topics in this module can be found in chapter 3, sections 3.1 to 3.7 of text [1]
More exercises related to the topics in this module can be found in chapter 6 of reference [1] and chapter 13 of reference [4].

Module 2 : Partial differentiation (18 Hours)
Basics, The total differential and total derivative, Exact and inexact differentials, theorems of partial differentiation, The chain rule, Change of variables, Taylors theorem for many-variable functions, Stationary values of many-variable functions, Stationary values under constraints
The topics in this module can be found in chapter 5, sections 5.1 to 5.9 of text [1]
More exercises related to the topics in this module can be found in chapter 13 of reference [1].

Module 3 : Multiple integrals (18 Hours)
Double integrals, Triple integrals, Applications of multiple integrals (Areas and volumes), Change of variables in multiple integrals – Change of variables in double integrals; evaluation some special infinite integrals, change of variables in triple integrals; general properties of Jacobians
The topics in this module can be found in chapter 6, sections 6.1 to 6.4 of text [1]
More exercises related to the topics in this module can be found in chapter 14 of reference [1].

Module 4 : Vector differentiation (18 Hours)
Differentiation of vectors , Composite vector expressions; differential of a vector, Integration of vectors, Space curves, Vector functions of several arguments, Surfaces, Scalar and vector fields
Vector operators, Gradient of a scalar field; divergence of a vector field; curl of a vector

field Vector operator formulae, Vector operators acting on sums and products; combinations of grad, div and curl, Cylindrical and spherical polar coordinates
The topics in this module can be found in chapter 10, sections 10.1 to 10.9 of text [1].
More exercises related to the topics in this module can be found in chapter 3 of reference [3].

Texts

Text 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

References

Ref. 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 2 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

Ref. 3 – George B Arfken, Hans J Weber, Frank E Harris. *Mathematical Methods for Physicists*, 7th Edition, Academic Press

Ref. 4 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

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Semester III

Mathematics – III
(Calculus and Linear Algebra)

Code: MM 1331.1

Instructional hours per week: 5 No. of Credits: 4

Module 1 : Ordinary Differential Equations (30 Hours)
First-order ordinary differential equations : General form of solution, First-degree first-order equations (Separable-variable equations; exact equations; inexact equations, integrating factors; linear equations; homogeneous equations; isobaric equations; Bernoullis equation; miscellaneous equations) Higher-degree first-order equations (Equations soluble for p; for x; for y; Clairaut's equation)

Higher-order ordinary differential equations : Linear equations with constant coefficients, (Finding the complementary function $y_c(x)$; finding the particular integral $y_p(x)$; constructing the general solution $y_c(x) + y_p(x)$; linear recurrence relations; Laplace transform method) Linear equations with variable coefficients (The Legendre and Euler linear equations; exact equations; partially known complementary function; variation of parameters; Green's functions; canonical form for second-order equations)

General ordinary differential equations – Dependent variable absent; independent variable absent; non-linear exact equations; isobaric or homogeneous equations; equations homogeneous in x or y alone; equations having $y = Ae^x$ as a solution
The topics in this module can be found in chapter 14 and chapter 15 of text [1]
More exercises related to the topics in this module can be found in chapter 1, 2 and 3 of reference [3].

Module 2 : Vector Integration – Line, surface and volume integrals (18 hours)
Evaluating line integrals; physical examples; line integrals with respect to a scalar Connectivity of regions, Greens theorem in a plane, Conservative fields and potentials, Surface integrals, Evaluating surface integrals; vector areas of surfaces; physical examples, Volume integrals, Volumes of three-dimensional regions, Integral forms for grad, div and curl, Green's theorems (without proof); other related integral theorems; physical applications, Stokes theorem and related theorems (without proof), Related integral theorems; physical applications
The topics in this module can be found in chapter 11 of text [1]
More exercises related to the topics in this module can be found in chapter 3 of reference [2].

Module 3 : Fourier series (18 Hours)
Basic definition, Simple Harmonic Motion and Wave Motion; Periodic Functions, Applications of Fourier Series, Average Value of a Function, Fourier Coefficients, Dirichlet Conditions, Complex Form of Fourier Series, Other Intervals, Even and Odd Functions, Parsevals Theorem, Fourier Transforms
The topics in this module can be found in chapter 7 of text [2]

More exercises related to the topics in this module can be found in chapter 11 of reference [3].

Module 4 : Basic Linear Algebra (24 Hours)

Matrices and row reduction, Determinants, Cramer's rule for solving system of equations, vectors, lines and planes, linear combinations, linear functions, linear operators, linear dependence and independence, special matrices like Hermitian matrices and formulas, linear vector spaces, eigen values and eigen vectors, diagonalizing matrices, applications of diagonalization

The topics in this module can be found in chapter 3 of text [2]

More exercises related to the topics in this module can be found in chapter 7 and 8 of reference [3].

Texts

Text 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

Text 2 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

References

Ref. 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 2 – George B Arfken, Hans J Weber, Frank E Harris. *Mathematical Methods for Physicists*, 7th Edition, Academic Press

Ref. 3 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

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Semester IV

Mathematics – IV
(Complex Analysis, Special Functions, and Probability Theory)

Code: MM 1431.1

Instructional hours per week: 5 No. of Credits: 4

Module 1 : Advanced Complex Analysis (36 Hours)
Functions of a complex variable, Analytic functions, the Cauchy-Riemann relations, Contour integrals Cauchy's theorem, Cauchy's integral formula, Laurent series, the residue theorem, methods of finding residues, evaluation of definite integrals using residue theorem, residues at infinity, conformal mapping and some of its applications.
The topics in this module can be found in chapter 14 of text [1]
More exercises related to the topics in this module can be found in chapter 14, 15, 16 and 17 of reference [4].

Module 2 : Special functions (18 Hours)
The Factorial Function, Definition of the Gamma Function; Recursion Relation, The Gamma Function of Negative Numbers, Some Important Formulas Involving Gamma Functions, Beta Functions, Beta Functions in Terms of Gamma Functions
The topics in this module can be found in chapter 11 of text [1]
More exercises related to the topics in this module can be found in chapter 13 of reference [3].

Module 3 : Probability and Statistics (36 Hours)
Basics, Sample Space, Probability Theorems, Methods of Counting Random Variables, Continuous Distributions, Binomial Distribution, The Normal or Gaussian Distribution, The Poisson Distribution
The topics in this module can be found in chapter 15, sections 15.1 to 15.9 of text [1]
More exercises related to the topics in this module can be found in chapter 23 of reference [3].

Texts

Text 1 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

References

Ref. 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

Ref. 2 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 3 – George B Arfken, Hans J Weber, Frank E Harris. *Mathematical Methods for Physicists*, 7th Edition, Academic Press

Ref. 4 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Chemistry

Semester I

Mathematics – I
(Calculus with applications in Chemistry – I)
Code: MM 1131.2

Instructional hours per week: 4 No. of Credits:3

Module 1: Differentiation with applications to Chemistry (18 Hours)
(*The following topics should be quickly reviewed before going to advanced topics; students should be asked to do more problems from exercises, and these problems should be included in assignments:*) Differentiation of products of functions; the chain rule; quotients; implicit differentiation; logarithmic differentiation; Leibnitz theorem
The following topics in this module should be devoted more attention and time.
Special points of a function (especially, stationary points); curvature; theorems of differentiation – Rolles', Mean Value Theorems
The topics in this module can be found in chapter 2, sections 2.1.2, to 2.1.7, text [1] *(Review of ideas through problems), chapter 2, sections 2.1.8, 2.1.9, 2.1.10,* text [1]
More exercises related to the topics in this module can be found in chapter 2 and chapter 3 of reference [1].

Module 2 : Complex numbers and hyperbolic functions (18 hours)
Basic operations (Addition and subtraction; modulus and argument; multiplication; complex conjugate; division), Polar representation of complex numbers (Multiplication and division in polar form), de Moivers theorem (trigonometric identities; finding the nth roots of unity; solving polynomial equations), Complex logarithms and complex powers, Applications to differentiation and integration, Hyperbolic functions (Definitions; hyperbolictrigonometric analogies; identities of hyperbolic functions; solving hyperbolic equations; inverses of hyperbolic functions;calculus of hyperbolic functions)
The topics in this module can be found in chapter 3, sections 3.1 to 3.7 of text [1]
More exercises related to the topics in this module can be found in chapter 6 of reference [1] and chapter 13 of reference [4].

Module 3: Basic vector algebra (18 Hours)
Scalars and vectors, Addition and subtraction of vectors, Multiplication by a scalar, Basis vectors and components, Magnitude of a vector, Multiplication of vectors (Scalar product; vector product; scalar triple product; vector triple product), Equations of lines, planes and spheres, using vectors to find distances (Point to line; point to plane; line to line; line to plane)
The topics in this module can be found in chapter 7, sections 7.1 to 7.8, text [1]
More exercises related to the topics in this module can be found in chapter 11 of reference [1] and chapter 6 of reference [2].

Module 4: Basic integration with applications to Chemistry (18 Hours)
Integration by parts; reduction formulae; infinite and improper integrals; plane polar coordinates; integral inequalities; applications of integration (finding area, volume etc)
The topics in this module can be found in chapter 2, sections 2.2.8 to 2.2.13, text [1]

More exercises related to the topics in this module can be found in chapter 4, 5 and 7 of reference [1].

Texts

Text 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

References

Ref. 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 2 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

Ref. 3 – George B Arfken, Hans J Weber, Frank E Harris. *Mathematical Methods for Physicists*, 7th Edition, Academic Press

Ref. 4 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Chemistry

Semester II

Mathematics – II
(Calculus with applications in Chemistry – II)

Code: MM 1231.2

Instructional hours per week: 4 No. of Credits: 3

Module 1 : Partial differentiation (18 Hours)
Basics, The total differential and total derivative, Exact and inexact differentials, theorems of partial differentiation, The chain rule, Change of variables, Taylors theorem for many-variable functions, Stationary values of many-variable functions, Stationary values under constraints
The topics in this module can be found in chapter 5, sections 5.1 to 5.9 of text [1]
More exercises related to the topics in this module can be found in chapter 13 of reference [1].

Module 2: Infinite series and limits (18 Hours)
Definition, Summation of series of various types (Arithmetic series; geometric series; arithmetico-geometric series; the difference method; series involving natural numbers; transformation of series) Convergence of infinite series (Absolute and conditional convergence; series containing only real positive terms; alternating series test)
Operations with series (Sum and product)
Power series (Convergence of power series; operations with power series)
Taylor series (Taylors theorem need not be proved, but the statement should be explained through problems); approximation errors; standard Maclaurin series
The topics in this module can be found in chapter 4, sections 4.1 to 4.6, text [1]
More exercises related to the topics in this module can be found in chapter 9 of reference [1] and chapter 1 of reference [2].

Module 3 : Vector differentiation (18 Hours)
Differentiation of vectors , Composite vector expressions; differential of a vector, Integration of vectors, Space curves, Vector functions of several arguments, Surfaces, Scalar and vector fields
Vector operators, Gradient of a scalar field; divergence of a vector field; curl of a vector field Vector operator formulae, Vector operators acting on sums and products; combinations of grad, div and curl, Cylindrical and spherical polar coordinates
The topics in this module can be found in chapter 10, sections 10.1 to 10.9 of text [1].
More exercises related to the topics in this module can be found in chapter 3 of reference [3].

Module 4 : Multiple integrals (18 Hours)
Double integrals, Triple integrals, Applications of multiple integrals (Areas and volumes), Change of variables in multiple integrals – Change of variables in double integrals; evaluation some special infinite integrals, change of variables in triple integrals; general properties of Jacobians
The topics in this module can be found in chapter 6, sections 6.1 to 6.4 of text [1]

More exercises related to the topics in this module can be found in chapter 14 of reference [1].

Texts

Text 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

References

Ref. 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 2 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

Ref. 3 – George B Arfken, Hans J Weber, Frank E Harris. *Mathematical Methods for Physicists*, 7th Edition, Academic Press

Ref. 4 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Chemistry

Semester III

Mathematics – III
(Linear Algebra, Probablity Theory & Numerical Methods)

Code: MM 1331.2

Instructional hours per week:5 No. of Credits: 4

Module 1 : Basic Linear Algebra (24 Hours)
Matrices and row reduction, Determinants, Cramer's rule for solving system of equations, vectors, lines and planes, linear combinations, linear functions, linear operators, linear dependence and independence, special matrices like Hermitian matrices and formulas, linear vector spaces, eigen values and eigen vectors, diagonalizing matrices, applications of diagonalization
The topics in this module can be found in chapter 3 of text [2]
More exercises related to the topics in this module can be found in chapter 7 and 8 of reference [3].

Module 2 : Probability and Statistics (36 Hours)
Basics, Sample Space, Probability Theorems, Methods of Counting Random Variables, Continuous Distributions, Binomial Distribution, The Normal or Gaussian Distribution, The Poisson Distribution
The topics in this module can be found in chapter 15, sections 15.1 to 15.9 of text [2]
More exercises related to the topics in this module can be found in chapter 23 of reference [2].

Module 3 : Numerical Methods (30 Hours)
Algebraic and transcendental equations (Rearrangement of the equation; linear interpolation; binary chopping; Newton-Raphson method)
Convergence of iteration schemes, Simultaneous linear equations (Gaussian elimination; Gauss-Seidel iteration; tridiagonal matrices) Numerical integration (Trapezium rule; Simpsons rule; Gaussian integration; Monte Carlo methods), Finite differences, Differential equations (Difference equations; Taylor series solutions; prediction and correction;Runge–Kutta methods; isoclines)
The topics in this module can be found in chapter 27, sections 27.1 to 27.6 of text [1]
More exercises related to the topics in this module can be found in reference [4].

Texts

Text 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

Text 2 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

References

Ref. 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 2 – George B Arfken, Hans J Weber, Frank E Harris. *Mathematical Methods for Physicists*, 7th Edition, Academic Press

Ref. 3 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

Ref. 4 – Richard L Burden, J Douglas Faires. *Numerical Analysis*, 9th Edition, Cengate Learning

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Chemistry

Semester IV

Mathematics-IV
(Differential Equations, Vector Calculus, and Abstsract Algebra)

Code: MM 1431.2

Module 1 : Ordinary Differential Equations (30 Hours)
First-order ordinary differential equations : General form of solution, First-degree first-order equations (Separable-variable equations; exact equations; inexact equations, integrating factors; linear equations; homogeneous equations; isobaric equations; Bernoullis equation; miscellaneous equations) Higher-degree first-order equations (Equations soluble for p; for x; for y; Clairaut's equation)

Higher-order ordinary differential equations : Linear equations with constant coefficients, (Finding the complementary function $y_c(x)$; finding the particular integral $y_p(x)$; constructing the general solution $y_c(x) + y_p(x)$; linear recurrence relations; Laplace transform method) Linear equations with variable coefficients (The Legendre and Euler linear equations; exact equations; partially known complementary function; variation of parameters; Green's functions; canonical form for second-order equations)

General ordinary differential equations – Dependent variable absent; independent variable absent; non-linear exact equations; isobaric or homogeneous equations; equations homogeneous in x or y alone; equations having $y = Ae^x$ as a solution
The topics in this module can be found in chapter 14 and chapter 15 of text [1]
More exercises related to the topics in this module can be found in chapter 1, 2 and 3 of reference [3].

Module 2 : Vector Integration – Line, surface and volume integrals (18 hours)
Evaluating line integrals; physical examples; line integrals with respect to a scalar Connectivity of regions, Greens theorem in a plane, Conservative fields and potentials, Surface integrals, Evaluating surface integrals; vector areas of surfaces; physical examples, Volume integrals, Volumes of three-dimensional regions, Integral forms for grad, div and curl, Green's theorems (without proof); other related integral theorems; physical applications, Stokes theorem and related theorems (without proof), Related integral theorems; physical applications
The topics in this module can be found in chapter 11 of text [1]
More exercises related to the topics in this module can be found in chapter 3 of reference [2].

Module 3: Abstract Algebra (42 Hours)
Definition of a group; examples of groups, Finite groups, Non-Abelian groups, Permutation groups, Mappings between groups, Subgroups Subdividing a group (Equivalence relations and classes; congruence and cosets; conjugates and classes)

Representation theory, Equivalent representations, Reducibility of a representation, The orthogonality theorem for irreducible representations Characters (Orthogonality property of characters), Counting irreps using characters (Summation rules for irreps), Con-

struction of a character table
The topics in this module can be found in chapter 28 and chapter 29, sections 29.3, 29.4, 29.5, 29.6, 29.7, 29.8 of text [1]
More exercises related to the topics in this module can be found in reference [5].

Texts

Text 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

References

Ref. 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 2 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

Ref. 3 – George B Arfken, Hans J Weber, Frank E Harris. *Mathematical Methods for Physicists*, 7th Edition, Academic Press

Ref. 4 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

Ref. 5 – David M Bishop. *Group theory and Chemistry*, Dover Publications

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Geology

Semester I
Mathematics-I
(Algebra, Geometry and Trigonometry)

CODE: MM 1131.3 — Instructional hours per week: 4
No. of Credits: 3 credits

Module 1 **: Preliminary algebra** (20 Hours)
Calculators and approximate numbers, exponents, scientific notation, roots and radicals, addition and subtraction of algebraic expressions, multiplication of algebraic expressions, division of algebraic expressions, solving equations: quadratic equations, solving them by factoring, completing the square, the quadratic formula, the graph of the quadratic function
The above topics can be found in chapter 1 and chapter 7 of text [1]

Module 2 : Plane Geometry (20 Hours)
Geometry : lines and angles, triangles, quadrilaterals, circles, measurement of irregular areas, solid geometric figures; plane analytic geometry : basic definitions, the straight line, the circle, the parabola, the ellipse, the hyperbola
The above topics can be found in chapter 2 and chapter 21 of text [1]

Module 3 : Basic Trigonometry (32 hours)
The trigonometric functions, angles, defining the trigonometric functions, values of the trigonometric functions, the right triangle, applications of right triangles, trigonometric functions of any angle, signs of the trigonometric functions, radians, applications of radian measure, vectors and oblique triangles, introduction to vectors, components of vectors, vector addition by components, applications of vectors, oblique triangles, the law of sines, graphs of $y = a\sin x$ and $y = a\cos x$, graphs of $y = a\sin bx$ and $y = a\cos bx$, graphs of $y = a\sin(bx + c)$ and $y = a\cos(bx + c)$, graphs of $y = \tan x$, $y = \cot x$, $y = \sec x, y = \csc x$, applications of the trigonometric graphs, Composite trigonometric curves
The above topics can be found in chapter 4, 8, 9 and 10 of text [1]

Texts

Text 1 – Allyn J Washington. *Basic technical mathematics with calculus*, 10th edition, Pearson

References

Ref. 1 – H Kruglak et al. *Theory and problems of basic Mathematics with applications to science and technology*, 2nd Edition, Schaum's Outline Series

Ref. 2 – Steven T Karris. *Mathematics for Business, Science, and Technology With MATLAB and Spreadsheet Applications*, 2nd Edition, Orchard Publications

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Geology

Semester II
Mathematics-II
(Calculus and Linear Algebra)

CODE: MM 1231.3 Instructional hours per week: 4
No. of Credits: 3

Module 1 : Exponential and logarithmic functions (12 Hours)
Exponential functions, logarithmic functions, properties of logarithms , logarithms to the base 10, natural logarithms, exponential and logarithmic equations
The above topics can be found in chapter 13 of text [1]

Module 2 : Basic Linear Algebra (20 hours)
Systems of linear equation; determinants, linear equations, graphs of linear functions, solving systems of two linear equations in two unknowns graphically, solving systems of two linear equations in two unknowns algebraically, solving systems of two linear equations in two unknowns by determinants, solving systems of three linear equations in three unknowns algebraically, solving systems of three linear equations in three unknowns by determinants,
Matrices: definitions and basic operations, multiplication of matrices, finding the inverse of a matrix, matrices and linear equations, gaussian elimination, higher-order determinants.
The above topics can be found in chapter 5 and 16 of text [1]

Module 3 : Sequences and series (10 hours)
Arithmetic sequences, geometric sequences, infinite geometric series, the binomial theorem
The above topics can be found in chapter 19 text [1]

Module 4 : Differentiation (30 hours)
Limits, the slope of a tangent to a curve, the derivative, the derivative as an instantaneous, rate of change, derivatives of polynomials, derivatives of products and quotients of func- tions, the derivative of a power of a function, differentiation of implicit functions, higher derivatives, tangents and normals, newtons method for solving equations, curvilinear motion, related rates, using derivatives in curve sketching, more on curve sketching, applied maximum and minimum problems, differentials and linear approximations Matrices: definitions and basic operations, multiplication of matrices, finding the inverse of a matrix, matrices and linear equations, gaussian elimination, higher-order determi- nants.
The above topics can be found in chapter 23 and 24 of text [1]

Texts

Text 1 – Allyn J Washington. *Basic technical mathematics with calculus*, 10th edition, Pearson

References

Ref. 1 – H Kruglak et al. *Theory and problems of basic Mathematics with applications to science and technology*, 2nd Edition, Schaum's Outline Series

Ref. 2 – Steven T Karris. *Mathematics for Business, Science, and Technology With MATLAB and Spreadsheet Applications*, 2nd Edition, Orchard Publications

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Geology

Semester III
Mathematics-III
(Complex Numbers, Algebra and Calculus)

CODE: MM 1331.3 Instructional hours per week: 5
No. of Credits: 4

Module 1 **: Complex Analysis** (15 Hours)
Complex numbers, basic definitions, basic operations with complex numbers, graphical representation of complex numbers, polar form of a complex number, exponential form of a complex number, products, quotients, powers, and roots of complex numbers
The above topics can be found in chapter 12 of text [1]

Module 2 : Solving equations and inequalities (25 hours)
The remainder and factor theorems, synthetic division, the roots of an equation, rational and irrational roots, inequalities, properties of inequalities, solving linear inequalities, solving nonlinear inequalities, inequalities involving absolute values, graphical solution of inequalities with two variables, linear programming
The above topics can be found in chapter 15 and 17 of text [1]

Module 3 : Integration (30 hours)
Antiderivatives, the indefinite integral, the area under a curve, the definite integral, numerical integration: the trapezoidal rule, simpsons rule, applications of the indefinite integral, areas by integration, volumes by integration, the general power formula, the basic logarithmic form, the exponential form, basic trigonometric forms, other trigonometric forms, inverse trigonometric forms, integration by parts, integration by trigonometric substitution, integration by partial fractions (various cases), integration by use of tables
The above topics can be found in chapter 25, 26 and 28 of text [1]

Module 4 : Expanding functions in series (20 hours)
Infinite series, Maclaurin series, operations with series, computations by use of series expansions, Taylor series, introduction to Fourier series
The above topics can be found in chapter 30 of text [1]

Texts

Text 1 – Allyn J Washington. *Basic technical mathematics with calculus*, 10th edition, Pearson

References

Ref. 1 – H Kruglak et al. *Theory and problems of basic Mathematics with applications to science and technology*, 2nd Edition, Schaum's Outline Series

Ref. 2 – Steven T Karris. *Mathematics for Business, Science, and Technology With MATLAB and Spreadsheet Applications*, 2nd Edition, Orchard Publications

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Geology

Semester IV
Mathematics-IV
(Basic Statistics and Differential Equations)

CODE: MM 1431 Instructional hours per week: 5
No. of Credits: 4

Module 1 : Basic Statistics (35 hours)
Probability and sample spaces, probability of success and failure, probability of independent and dependent events, probability of exclusive events, probability of inclusive events, conditional probability. descriptive versus inferential statistics, population and samples, parameters and statistics, quantitative and qualitative data, frequency distributions and graphical representation of the data, bar charts, pie chart, frequency distribution of large data sets, determining the class width, class relative frequency, cumulative frequency, histograms, measurements of central tendency, average or arithmetic mean, weighted mean, median, mode, measures of dispersion, sample range, variance, standard deviation, random variable, normal distribution, empirical rule, converting values into standard units,
The above topics can be found in chapter 21 and 22 of text [1]

Module 2 : Fitting Functions to Data (25 hours)
Curve fitting, linear regression, parabolic regression, covariance, correlation coefficient
The above topics can be found in chapter 12 of text [2]

Module 3 : Differential Equations (30 hours)
Differential equations, solutions of differential equations, separation of variables, integrating combinations, the linear differential equation of the first order, numerical solutions of first-order equations, elementary applications, higher-order homogeneous equations, auxiliary equation with repeated or complex roots, solutions of nonhomogeneous equations, applications of higher-order equations, laplace transforms, solving differential equations.
The above topics can be found in chapter 31 of text [1]

Texts

Text 1 – Allyn J Washington. *Basic technical mathematics with calculus*, 10th edition, Pearson

Text 2 – Steven T Karris. *Mathematics for Business, Science, and Technology With MATLAB and Spreadsheet Applications*, 2nd Edition, Orchard Publications

References

Ref. 1 – H Kruglak et al. *Theory and problems of basic Mathematics with applications to science and technology*, 2nd Edition, Schaum's Outline Series

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Statistics

Semester I
Mathematics-I
(Basic Calculus for Statistics)

CODE: MM 1131.4 — Instructional hours per week: 4
No. of Credits: 3

Module 1: Differential Calculus for Statistics (24 Hours)
(*The following topics should be quickly reviewed before going to advanced topics; students should be asked to do more problems from exercises, and these problems should be included in assignments:*) Differentiation of products of functions; the chain rule; quotients; implicit differentiation; logarithmic differentiation; Leibnitz theorem
The following topics in this module should be devoted more attention and time.
Special points of a function (especially, stationary points); curvature; theorems of differentiation – Rolles', Mean Value Theorems
The topics in this module can be found in chapter 2, sections 2.1.2, to 2.1.7, text [1] *(Review of ideas through problems), chapter 2, sections 2.1.8, 2.1.9, 2.1.10,* text [1]
More exercises related to the topics in this module can be found in chapter 2 and chapter 3 of reference [1].

Module 2: Infinite series and limits (24 Hours)
Definition, Summation of series of various types (Arithmetic series; geometric series; arithmetico-geometric series; the difference method; series involving natural numbers; transformation of series) Convergence of infinite series (Absolute and conditional convergence; series containing only real positive terms; alternating series test)
Operations with series (Sum and product)
Power series (Convergence of power series; operations with power series)
Taylor series (Taylors theorem need not be proved, but the statement should be explained through problems); approximation errors; standard Maclaurin series
The topics in this module can be found in chapter 4, sections 4.1 to 4.6, text [1]
More exercises related to the topics in this module can be found in chapter 9 of reference [1] and chapter 1 of reference [2].

Module 3: Integral Calculus for Statistics (24 Hours)
Integration by parts; reduction formulae; infinite and improper integrals; plane polar coordinates; integral inequalities; applications of integration (finding area, volume etc)
The topics in this module can be found in chapter 2, sections 2.2.8 to 2.2.13, text [1]
More exercises related to the topics in this module can be found in chapter 4, chapter 5 and chapter 7 of reference [1].

Texts

Text 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

References

Ref. 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 2 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

Ref. 3 – George B Arfken, Hans J Weber, Frank E Harris. *Mathematical Methods for Physicists*, 7th Edition, Academic Press

Ref. 4 – Andre I Khuri. *Advanced Calculus with Applications in Statistics*, 2nd Edition, Wiley Interscience

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Statistics

Semester II
Mathematics-II
(Advanced Differential and Integral Calculus)

CODE: MM 1231.4 — Instructional hours per week: 4
No. of Credits: 3

Module 1 : Partial differentiation (24 Hours)
Basics, The total differential and total derivative, Exact and inexact differentials, theorems of partial differentiation, The chain rule, Change of variables, Taylors theorem for many-variable functions, Stationary values of many-variable functions, Stationary values under constraints
The topics in this module can be found in chapter 5, sections 5.1 to 5.9 of text [1]
More exercises related to the topics in this module can be found in chapter 13 of reference [1].

Module 2 : Multiple integrals (24 Hours)
Double integrals, Triple integrals, Applications of multiple integrals (Areas and volumes), Change of variables in multiple integrals – Change of variables in double integrals; evaluation some special infinite integrals, change of variables in triple integrals; general properties of Jacobians
The topics in this module can be found in chapter 6, sections 6.1 to 6.4 of text [1]
More exercises related to the topics in this module can be found in chapter 14 of reference [1].

Module 3 : Special functions (24 Hours)
The Factorial Function, Definition of the Gamma Function; Recursion Relation, The Gamma Function of Negative Numbers, Some Important Formulas Involving Gamma Functions, Beta Functions, Beta Functions in Terms of Gamma Functions
The topics in this module can be found in chapter 11 of text [2]
More exercises related to the topics in this module can be found in chapter 13 of reference [4].

Texts

Text 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

Text 2 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

References

Ref. 1 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 2 – James Stewart, *Essential Calculus*, Thompson Publications, 2007.

Ref. 3 – Thomas and Finney, *Calculus and Analytic Geometry*, Ninth Edition, Addison-Wesley.

Ref. 4 – George B Arfken, Hans J Weber, Frank E Harris. *Mathematical Methods for Physicists*, 7th Edition, Academic Press

Ref. 5 – Peter V. O' Neil, *Advanced Engineering Mathematics*, ThompsonPublications, 2007

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Statistics

Semester III
Mathematics-III
(Fourier Series, Numerical Methods and ODE)

CODE: MM 1331.4 Instructional hours per week: 5
No. of Credits: 4

Module 1 : Fourier series (20 Hours)
Basic definition, Simple Harmonic Motion and Wave Motion; Periodic Functions, Applications of Fourier Series, Average Value of a Function, Fourier Coefficients, Dirichlet Conditions, Complex Form of Fourier Series, Other Intervals, Even and Odd Functions, Parsevals Theorem, Fourier Transforms
The topics in this module can be found in chapter 7 of text [2]
More exercises related to the topics in this module can be found in chapter 11 of reference [1].

Module 2 : Ordinary Differential Equations (35 Hours)
First-order ordinary differential equations : General form of solution, First-degree first-order equations (Separable-variable equations; exact equations; inexact equations, integrating factors; linear equations; homogeneous equations; isobaric equations; Bernoullis equation; miscellaneous equations) Higher-degree first-order equations (Equations soluble for p; for x; for y; Clairaut's equation)

Higher-order ordinary differential equations : Linear equations with constant coefficients, (Finding the complementary function $y_c(x)$; finding the particular integral $y_p(x)$; constructing the general solution $y_c(x) + y_p(x)$; linear recurrence relations; Laplace transform method) Linear equations with variable coefficients (The Legendre and Euler linear equations; exact equations; partially known complementary function; variation of parameters; Green's functions; canonical form for second-order equations)

General ordinary differential equations – Dependent variable absent; independent variable absent; non-linear exact equations; isobaric or homogeneous equations; equations homogeneous in x or y alone; equations having $y = Ae^x$ as a solution
The topics in this module can be found in chapter 14 and chapter 15 of text [1]
More exercises related to the topics in this module can be found in chapter 1, 2 and 3 of reference [1].

Module 3 : Numerical Methods (35 Hours)
Algebraic and transcendental equations (Rearrangement of the equation; linear interpolation; binary chopping; Newton-Raphson method)
Convergence of iteration schemes, Simultaneous linear equations (Gaussian elimination; Gauss-Seidel iteration; tridiagonal matrices) Numerical integration (Trapezium rule; Simpsons rule; Gaussian integration; Monte Carlo methods), Finite differences, Differential equations (Difference equations; Taylor series solutions; prediction and correction;Runge–Kutta methods; isoclines)
The topics in this module can be found in chapter 27, sections 27.1 to 27.6 of text [1]
More exercises related to the topics in this module can be found in reference [3].

Texts

Text 1 – K F Riley, M P Hobson, S J Bence. *Mathematical Methods for Physics and Engineering*, 3rd Edition, Cambridge University Press

Text 2 – Mary L Boas. *Mathematics Methods in the Physical Sciences*, 3rd Edition, Wiley

References

Ref. 1 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

Ref. 2 – H Anton, I Bivens, S Davis. *Calculus*, 10th Edition, John Wiley & Sons

Ref. 3 – Richard L Burden, J Douglas Faires. *Numerical Analysis*, 9th Edition, Cengate Learning

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Statistics

Semester IV
Mathematics-IV
(Linear Algebra)

CODE: MM 1431.4 Instructional hours per week: 5
No. of Credits: 4

Module 1: Vector Spaces over $\mathbb{R}$

- Vector in 3-space as an ordered triple of real numbers. Addition of two vectors and multiplication of a vector by a scalar. Algebra of vectors involving addition and scalar multiplication. The norm of a vector. The dotproduct and orthogonal vectors. Geometric interpretation of these concepts andtheir connection to the traditional method of representing a vector in terms ofstandard unit vectors.

- The $n-$tuple as a generalisation of ordered triple and the space $\mathbb{R}^n$of all $n-$tuples. Addition of two $n-$tuples and multiplication ofan $n-$tuple by a scalar. Listing of the algebraic properties of $\mathbb{R}^n$ thatmakes it a vector space. Dot product of $n-$tuples and orthogonality. The Cauchy-Schwarz inequality in $\mathbb{R}^n$.

- Sub space of $\mathbb{R}^n$. Geometric meaning of subspaces in $\mathbb{R}^2$.and $\mathbb{R}^3$. Linear dependence and independence of vectors in $\mathbb{R}^n$. Basis anddimension and the standard basis of $\mathbb{R}^n$. Orthogonal and orthonormal bases. Representation of an arbitrary vector in an orthonormal basis. The Gram-Schmidtorthogonalisation process.

Module 2: Theory of Matrices

- (Review only) basic concepts about matrices. Operations involving matrices,different types of matrices. Representation of a system of linear equation inmatrix form. Inverse of a matrix, Cramer's rule.

- The rows and columns of a matrix as elements of $\mathbb{R}^n$ for suitable n. Rank of a matrix as the maximum number of linearly independent rows/columns. Elementary row operations. Invariance of rank under elementary row operations. The Echelon form and its uniqueness. Finding the rank of a matrix by reducing to echelon form.

- Homogeneous and non-homogeneous system of linear equations. Resultsabout the existence and nature of solution of a system of equations in terms ofthe ranks of the matrices involved.

- The eigen value problem. Method of finding the eigen values and eigenvectors of a matrix. Basic properties of eigen values and eigen vectors. Eigen values and eigen vectors of a symmetric matrix. The result that theeigen vectors of a real symmetric matrix form an orthogonal basis of $\mathbb{R}^n$.

- Diagonalisable matrices. Advantages of diagonalisable matrices incomputing matrix powers and solving system of equations. The result that asquare matrix of order n is diagonalisabe (i) if and only if it has $n$linearly independent eigen vectors (ii) if it has n distinct eigen values. Method of diagonalising a matrix. Diagonalisation of real symmetric matrices.

- Quadratic forms in $\mathbb{R}^n$ and matrix of quadratic forms. Canonical formof a quadratic form and the principal axes theorem. Geometric meaning ofprinciple axes theorem for quadratic forms in $\mathbb{R}^2$. Use of these results inidentifying the type of a conic that a general second degree equation mayrepresent.

Module 3: Linear Transformations

- Linear transformations from $\mathbb{R}^n$ into $\mathbb{R}^m$. Matrix of alinear transformation relative to a given pair of bases and linear transformation defined by a matrix. Characterisation of linear transformationsfrom $\mathbb{R}^n$ into $\mathbb{R}^m$.

- Linear transformations from $\mathbb{R}^n$ into $\mathbb{R}^n$ and matix of such tranformations. Matrix representation of simple tranformations such asrotation, reflection, projection etc. on the plane. Relation between matricesof a given transformation relative to two different bases. Method of choosing a suitable basis in which the matrix of a given transformation has the particularly simple form of a diagonal matrix.

The topics for all the above modules in this semester can be found in text [1].

Distribution of instructional hours:

Module 1: 30 hours; Module 2: 30 hours; Module 3: 30 hours

Texts

Text 1 – David C. Lay, *Linear Algebra*, Thompson Publications, 2007

References

Ref. 1 – T S Blyth and E F Robertson: *Linear Algebra*, 2nd Edition, Springer,

Ref. 2 – Erwin Kreyszig. *Advanced Engineering Mathematics*, 10th Edition, Wiley-India

Ref. 3 – Peter V. O' Neil, *Advanced Engineering Mathematics*, Thompson Publications, 2007

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Economics

Semester I
Mathematics for Economics-I

CODE: MM 1131.5 — Instructional hours per week: 3
No. of Credits: 2

Overview of the course:
The complementary course intended for Economics students lays emphsis on the increased use of mathematical methods in Economics. The first Module of the first semester course discusses the basic concepts of functions, limits and continuity, which is essential to understand what is to follow in subsequent Modules. The second Module is on Differentiation. Applications to Economics abound in this area. The concepts should therefore be carefully motivated with suitable examples.

Module 1: Functions, Limits and Continuity

- Functions: Definition and examples of functions, domain and range of a function, graph of a function, notion of implicit and explicit functions, demand functions and curves, total revenue functions and curves, cost functions and curves, indifference function, indifference curves for flow of income over time.
- Limits and continuity of functions:Notion of the limit of a function with sufficient examples, algebra of limits (No proof), theorems on limits :$\lim_{x\to a}\frac{x^n-a^n}{x-a}=nx^{n-1}$, $\lim_{x\to 0}\frac{\sin x}{x}=1$,$\lim_{x\to 0}\frac{e^x-1}{x}=1$, $\lim_{x\to 0}\frac{a^x-1}{x}=\log a$, for $a>0$(No proof), definition and examples of continuous functions, discontinuity, examples, geometrical meaning of continuity

Module 2: Differentiation-I

- Differentiation: Differentiation of functions of one variable, derivative as a rate measure, rules of differentiation, derivative of a function at a point, product rule, quotient rule, function of a function rule, derivatives of standard functions, derivatives and approximate values, geometrical interpretation of the derivative, applications in economics (such as marginal revenue, marginal cost),

Texts

Text 1 - R G D Allen, *Mathematical Analysis for Economics*, AITBS Publishers, D-2/15. Krishnan Nagar, New Delhi

Text 2 - Taro Yamane, *Mathematics for Economists, An Elementary Survey*, PHI, New Delhi.

DISTRIBUTION OF INSTRUCTIONAL HOURS:

Module 1: 27 hours; Module 2: 27 hours

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Economics

Semester II
Mathematics for Economics-II

CODE: MM 1231.5 Instructional hours per week: 3

No. of Credits: 3

Overview of the course:
The first module on differentiation discusses differntials, increasing and decreasing functions and maxima and minima, along with several applications. The second module is on partial differentiation. It considers the maxima and minima of functions of two varibles and these are readily applied to problems in Economics.

Module 1: Differentiation-II

- Further differentiation:Successive derivatives of elementary functions, differentials and approximations, increasing and decreasing functions, turning points, points of inflexion, convexity of curves, maxima and minima of functions of one variable, the problem of average and marginal values,problems of monopoly and duopoly in economic theory.

Module 2: Partial Differentiation

- Partial Differentiation: Functions of several variables, Definition and examples partial differentiation of functions of two variables, maxima and minima of functions of many variables, Lagrangian multiplier method of maxima and minima of functions, illustrations from economics, geometrical interpretation of partial derivatives, total differentials, derivatives of implicit functions, higher order partial derivatives, homogeneous functions, applications(maxima and minima problems) in economics,

Texts

Text 1 - R G D Allen, *Mathematical Analysis for Economics*, AITBS Publishers, D-2/15. Krishnan Nagar, New Delhi

Text 2 - Taro Yamane, *Mathematics for Economists, An Elementary Survey*, PHI, New Delhi.

DISTRIBUTION OF INSTRUCTIONAL HOURS:

Module 1: 27 hours; Module 2: 27 hours

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Economics

Semester III
Mathematics for Economics-III

CODE: MM 1331.5 Instructional hours per week: 3
No. of Credits: 3

Overview of the course:

The course follows the trends set in the first two semester. Integration techniques, definite integrals and approximate integration are discussed in the first module, highlighting applications to Economics. Various infinite series form the content of the second module.

Module 1: Integration

- Integration : Integral as an antiderivative, integration by substitution, integration by parts, definition of the definite integral, definite integrals and approximate integration (Simpson's rule and trapezoidal rule),total cost, marginal cost, capitalisation of an income flow, law of growth, Domar's models on public debt and national income.

Module 2: Series

- Series: geometric, binomial, exponential and logarithmic series, Taylor's formula, Taylor series, extension to many variables.

Texts

Text 1 - R G D Allen, *Mathematical Analysis for Economics*, AITBS Publishers, D-2/15. Krishnan Nagar, New Delhi

Text 2 - Taro Yamane, *Mathematics for Economists, An Elementary Survey*, PHI, New Delhi.

DISTRIBUTION OF INSTRUCTIONAL HOURS:

Module 1: 27 hours; Module 2: 27 hours

University of Kerala
Complementary Course in Mathematics
for First Degree Programme in Economics

Semester IV
Mathematics for Economics-IV

CODE: MM 1431.5 — Instructional hours per week: 3
No. of Credits: 3

Overview of the course

The two modules in this course treat differential equations, the solutions of which are important in most mathematical models. First order differential equations are considered in the first module, whereas second order differenetial equations with constant coefficients, together with the Euler equation are dealt with in the second module.

Module 1: Differential Equations-I

- Differential Equations: Formulation of differential equations, geometrical interpretation of a differential equation representing a family of curves, First order equations, Linear equations, Variables separable, Homogeneous equations.

Module 2: Differential Equations-II

- Differential equations of higher order: Second order differential equations with constant coefficients with RHS as one of $x, e^{ax}, \sin ax, \cos ax$, Euler equations, applications in economics, Domar's capital expansion model, equilibrium of a market and stability of equilibriumof a dynamic market.

Texts

Text 1 - R G D Allen, *Mathematical Analysis for Economics*, AITBS Publishers, D-2/15. Krishnan Nagar, New Delhi

Text 2 - Taro Yamane, *Mathematics for Economists, An Elementary Survey*, PHI, New Delhi.

DISTRIBUTION OF INSTRUCTIONAL HOURS:

Module 1: 27 hours; Module 2: 27 hours

Revised Scheme & Syllabus - 2017

First Degree Programme in Music

Scheme of the courses

Sem	Course No.	Course title	Inst. Hrs per week	Credit	Total hours	Total credits
I	EN 1111	Language course I (English I)	5	4	25	17
	1111	Language course II (Additional Language I)	4	3		
	1121	Foundation course I (English)	4	2		
	MU 1141	Core course I (Theory I) Introduction to Indian Music	6	4		
	MU 1131	Complementary I (Veena)	3	2		
	SK 1131.3	Complementary course II	3	2		
II	EN 1211	Language course III (English III)	5	4	25	20
	EN1212	Language course IV (English III)	4	3		
	1211	Language course V (Additional Language II)	4	3		
	MU1241	Core course II (Practical I) Abhyasaganam & Sabhaganam	6	4		
	MU1231	Complementary III (Veena)	3	3		
	SK1231.3	Complementary course IV	3	3		
III	EN 1311	Language course VI (English IV)	5	4	25	21
	1311	Language course VII (Additional language III)	5	4		
	MU1321	Foundation course II	4	3		
	MU1341	Core course III (Theory II) Ragam	2	2		
	MU1342	Core course IV (Practical II) Varnams and Kritis I	3	2		
	MU1331	Complementary course V (Veena)	3	3		
	SK1331.3	Complementary course VI	3	3		
IV	EN 1411	Language course VIII (English V)	5	4	25	21
	1411	Language course IX (Additional language IV)	5	4		
	MU1441	Core course V (Theory III) Ragam, Talam and Vaggeyakaras	5	3		

	MU1442	Core course VI (Practical III) Varnams and Kritis II	4	4		
	MU1431	Complementary course VII (Veena)	3	3		
	SK1431.3	Complementary course VIII	3	3		
V	MU 1541	Core course VII (Theory IV) Composers & Lakshana grandhas	4	3	25	20
	MU1542	Core course VIII (Thoery V) Musical forms & Instruments	4	3		
	MU1543	Core course IX (Practical IV) Musical Forms	3	4		
	MU 1544	Core course X (Practical V) Group kritis & Manodharma sangeetam	4	4		
	MU1545	Core course XI (Practical VI) Kritis & Manodharma sangeetam	4	4		
	MU1551	Open course Simple Musical Forms	3	2		
		Record Book	3			
VI	MU1641	Core course XII (Theory VI) Technicalities of music	5	3	25	21
	MU1642	Core course XIII (Theory VII) Different streams of Music	5	4		
	MU 1643	Core course XIV (Practical VII) Musical forms & Manodharma sangeetam	5	4		
	MU 1644	Core course XV (Practical VIII) Musical forms and Manodharma Sangeetam II	4	4		
	MU 1661	Elective (Practical) Compositions of different composers	3	2		
	MU 1645	Concert	3	4		
				Total	150	120

KERALA UNIVERSITY

B A DEGREE PROGRAMME IN MUSIC – CBCSS

I SEMESTER

CORE COURSE –I

THEORY – I

INTRODUCTION TO INDIAN MUSIC

MU1141

Credits - 4

1. Musical terms:-
   a. Nada – Causation on sound – varieties of Nada
   b. Sruti – Definition of Sruti
   c. Swara and swara nomenclature
   d. Raga
   e. Arohana and avarohana
   f. Stayi
   g. Tala – Definition of the term Tala and names of Sapta talams
2. Distinctive features of Indian music, Music as a fine art.
3. Cultural, intellectual, spiritual and emotional values of music.
4. Musical instruments and their classification:-
   a. Monophonous and polyphonous
   b. Stringed, wind and percussion instruments
   c. Sruti vadyas and sangeeta vadyas

5. Construction and playing techniques of the following instruments with diagram :
   a. Tambura
   b. Veena
6. Musicography or Notation – Signs and symbols used in notation – Ability to notate a Geetam

COMPLEMENTARY COURSE (VEENA)

COURSE – I (MU1131)

Credits – 2

1. Sapta swaras in two degrees of speed
2. Sarali varisas (10) in one degree of speed
3. Janta varisas (4) in one degree of speed
4. Madhya stayi varisas

II SEMESTER

CORE COURSE - II

PRACTICAL- I

ABHYASA GANAM AND SABHA GANAM- MU 1241- (Credits – 4)

1. Swara exercises :-
   a) Sarali varisas – 10 (First 10 exercises as in Dakshinendyan Sangeetam)
   b) Janta varisas – 6 (First 6, including deergha swaras as in Dakshinendyan Sangeetam)
   c) Dhattu varisas – 1 (SMGM RGSR SMGR SRGM)
   d) Madhya stayi varisas
   e) Tara stayi varisa

2. Sapta tala alankaras in 3 mela and 2 janya ragas :- Mayamalavagaula, Kalyani, Sankarabharanam, Mohanam, Hamsadhvani in three degrees of speed with akara sadhakam.
3. Geetam – any 3
4. Jatiswaram – 1
5. Adi tala varnams – 3
6. Simple kritis in Mayamalavagaula, Hamsadhvani, Mohanam and Bilahari

COMPLEMENTARY COURSE –III -VEENA

MU 1231

Credit – 3

1. Alankaras in the following 5 ragas (in 2 degrees of speed):
   Mayamalavagaula, Sankarabharanam, Kalyani, Mohanam, Hamsadhvani

2. Geetams – any 2
3. Jatiswaram – 1

III SEMESTER

FOUNDATION COURSE – II

INFORMATICS – THEORY

MU 1321

Credits– 3

1. **Computer and its components**
   a. What is a computer
   b. Types of computer
   c. Evolution of computers
   d. Parts of modem, PC and their function - monitors, keyboard, mouse, CPU, CD drive, microphone, primary and secondary memories – RAM, hard disks and flash/thump drives, sound cards.
   e. Measure of memory – Byte, Kilobyte, Megabyte, Gigabyte
   f. Hardware and software
   g. Computer networks – basic ideas

2. **Internet awareness and blog creation**
   a. What is internet
   b. History of internet
   c. E-mail – various options, creating e-mails
   d. Websites – searching websites – Downloading music
   e. Creating blog
   f. Difference between websites and blog

3. **Fundamentals of digital recording system**
   a. Digital and analogue recording system
   b. Mono and stereo
   c. Track recording
   d. Components of digital recording system
   e. Clipping, editing and mixing

4. **Basic knowledge in music software**
   a. Define music software
   b. Daw – digital audio workstation
   c. Sequencing/composing software
   d. Notation software
   e. Vocal training software

5. **Cyber security**

CORE COURSE – III

THOERY – II- RAGAM

MU 1341

Credits– 2

1. Classification of ragas:
   a. Raga classification in general
      - Janaka- Janya
      - Ghana, naya, desya
      - Karnataka, desya
      - Sudha, chayalaga, sankeerna
      - Classification based on kampita swaras
      - Classification based on rasa
      - Classification based on ganakala
      - Allied ragas
      - Mitra ragas
   b. Janya raga classification
      - Vakra – varja
      - Upanga – Bhashanga
      - Nishadantya, Dhaivatantya, Panchamantya

2. 72 Melakartha scheme – Katapayadi formula – Bhuta sankhya
3. Trayodasa lakshana
4. Raga lakshana of the following ragas:
   a. Mayamalavaguala, b). Malahari, c). Hamsadhvani, d). Abhogi, e). Sankarabharanam, f). Kalyani, g). Mohanam, h). Pantuvarali, i). Saveri, j) Sudhasaveri
5. Mnemonics
6. Vadi, Samvadi, Anuvadi, Vivadi

CORE COURSE – IV

PRACTICAL – II – VARNAMS AND KRITIS – I

MU 1342

Credits– 2

1. Adi tala varnam – 1
2. Ata tala varnam – 1
3. Kritis in the following ragas:
   a. Sudhasaveri
   b. Arabhi
   c. Chakravakam
   d. Khamas
   e. Abhogi

f. Kedaram
g. Kalyani
h. Sankarabharanam
i. Pantuvarali
j. Saveri

COMPLEMENTARY COURSE - V (VEENA)

MU 1331

Credit – 3

1. Adi tala varnams – 2

IV SEMESTER

CORE COURSE – V

THEORY – III – RAGAM, TALAM AND VAGGEYAKARAS

MU 1441

Cedits - 3

1. Tala system of Carnatic music –
   a. Shadangas
   b. Sooladi sapta talas
   c. Scheme of 35 talas
   d. 175 talas
   e. Chappu tala and its varieties
2. Life sketch and contribution of the following vaggeyakaras :
   a. Purandaradasa
   b. Tyagaraja
   c. Muthuswami Deekshitar
   d. Syama sastri
   e. Swati Thirunal
3. Lakshana of the following ragas:
   a. Vasanta
   b. Bilahari
   c. Chakravakam
   d. Kambhoji
   e. Kanada
   f. Kedaram
   g. Khamas
   h. Natta
   i. Sree
   j. Bhairavi

CORE COURSE VI

PRACTICAL PAPER III

VARNAMS AND KRITIS – II

MU 1442

Credits – 4

1. Ata tala varnams – 2
2. Kritis in the following ragas:
   a. Surutti
   b. Kedaragaula
   c. Hamsanadam
   d. Sudha Dhanyasi
   e. Vasanta
   f. Gaula
   g. Kambhoji
   h. Kanada
   i. Sahana
   j. Mukhari

COMPLEMENTARY COURSE – VII (VEENA)

MU 1431

Credits – 3

1. Simple kritis – 2
2. Tanam in Natta
3. Ability to tune veena

V SEMESTER

CORE COURSE –VII – THEORY – IV
COMPOSERS AND LAKSHANA GRANDHAS
MU 1541
Credits– 3

1. Life sketch and contribution of the composers of Pre – Tyagaraja period:
   a. Jayadeva
   b. Kshetrajna
   c. Narayana Theertha
   d. Bhadrachalam Ramadas
2. An outline knowledge of the contents of the following lakshana grandhas:
   a. Natya Sastra
   b. Sangeeta Ratnakara
   c. Chaturdandi Prakasika
3. Lakshana of the following ragas:
   a. Anandabhairavi
   b. Gaula

c. Hindolam
d. Kharaharapriya
e. Madhyamavati
f. Nattakurinji
g. Poorvikalyani
h. Sahana
i. Surutti
j. Kedaragaula

4. Ability to notate an adi tala varnam

CORE COURSE – VIII

THEORY –V- MUSICAL FORMS AND INSTRUMENTS

MU 1542

Credits– 3

1. Musical forms:
   a. Technical forms and melodic forms
   b. Lakshanam of musical forms :- Geetam and its varieties, Jatiswaram, Swarajathi, Varnam and its varieties
2. Lakshanam of the following North Indian musical forms:
   a. Dhrupad
   b. Khyal
   c. Thumri
   d. Dhamar
   e. Tarana
   f. Tappa
   g. Dadra
   h. Ghazal
3. Construction and playing technique of the following instruments with diagram:
   a. Mridangam
   b. Violin
   c. Flute
4. Ability to notate kritis in the following ragas:
   a. Kalyani
   b. Sankarabharanam
   c. Mayamalavagaula
5. Life sketch and contribution of the following composers:
   a. Irayimman Thampi
   b. K.C.Kesava Pillai
   c. Neelakanta Sivan

CORE COURSE – IX

PRACTICAL PAPER – IV

MUSICAL FORMS

MU 1543

Credits– 4

1. Lakshana geetam – 1
2. Swarajathi – Bhairavi or Yadukula kambhoji
3. Kritis in the following ragas:
   a. Anandabhairavi
   b. Madhyamavati
   c. Todi
   d. Begada
   e. Bhairavi
   f. Natta

CORE COURSE – X

PRACTICAL PAPER – V

GROUP KRITIS AND MANODHARMA SANGEETAM

MU 1544

Credits– 4

1. One each of the following group kritis:
   a. Navaratri
   b. Navagraham
   c. Navaratna Malika
   d. Pancharatnam – Natta or Arabhi
2. Rendering of kalpana swaras in the following ragas:
   a. Bilahari
   b. Mayamalavagaula
   c. Mohanam
   d. Hamsadhvani
   e. Madhyamavati
   f. Vasanta

CORE COURSE – XI

PRACTICAL PAPER – VI

KRITIS AND MANODHARMA SANGEETAM

MU 1545

Credits - 4

1. Kritis in the following ragas:
   a. Poorvikalyani
   b. Nattakurinji
   c. Ritigaula
   d. Shanmukhapriya
   e. Kharaharapriya
2. Raga alapana, Niraval and kalpanaswaras in the following ragas:
   a. Kharaharapriya
   b. Pantuvarali
   c. Sankarabharanam
   d. Saveri

OPEN COURSE

SIMPLE MUSICAL FORMS

MU 1551

Credit - 2

1. Geetam – 2
2. Jatiswaram – 1
3. Tarangam – 1
4. Devarnamam – 1
5. Divyanamakriti – 1
6. Patriotic song – 1
7. Malayalam kriti or bhajan – 1
8. Western note of Deekshitar - 1

VI SEMESTER

CORE COURSE – XII

THEORY – VI – TECHNICALITIES OF MUSIC

MU 1641

Credits - 3

1. Gamakas – Dasavidha gamakas and Panchadasa gamakas

2. Manodharma sangeeta paddhathi – Raga alapana, Niraval, Kalpana swaram, Tanam, Pallavi

3. 22 srutis in brief:- Definition of sruti, its varieties- specifying ragas in which they occur – sruti chart – cycle of 3^{rd}, cycle of 4^{th} and cycle of 5^{th} , sruti jatis, complementary interval

4. Modal shift of tonic

5. Acoustics: -Pitch, Intensity, Timbre, Production and transmission of sound, Echo, Resonance, Laws of vibration of strings, Sympathetic vibration.

CORE COURSE – XIII

THEORY VII

DIFFERENT STREAMS OF MUSIC

MU 1642

Credits– 4

1. An outline knowledge of Kathakali music
    - Musical forms used in Kathakali – Padam, Slokam, Dandakam
    - Ragas and talas
    - Instruments used in Kathakali
    - Panchavadyam
2. Elementary principles of Western music -
    - Definition of melody and harmony
    - Outline knowledge of Staff notation
    - Notes and their duration
    - Types of clefs
3. Names of 10 Thats of Hindustani music and their corresponding ragas in Carnatic music
4. Folk music and its characteristics –
    - Classification of folk music – Refined and rustic
    - Outline knowledge of the following folk forms of Kerala
        a. Thiruvathira
        b. Kummi
        c. Vanchipattu

d. Pulluvan pattu

5.

A. Lakshana of the following musical forms:

- Kriti
- Keertana
- Ragamalika
- Padam
- Javali
- Thillana

B Outline knowledge of prosodical beauties used in kritis

- Adyakshara prasam
- Dvitiyakshara prasam
- Antyakshara Prasam,
- Anuprasam

6. Ability to notate the kritis in the following ragas:
   a. Hamsadhvani
   b. Kharaharapriya
   c. Mohanam

CORE COURSE XIV

PRACTICAL PAPER – VII

MUSICAL FORMS AND MANODHARMA SANGEETAM

MU 1643

Credits - 4

1. Ragamalika – 1
2. Padam – 1
3. Javali – 1
4. Thillana – 1
5. Ashtapadi – 1
6. Tarangam - 1
7. Alapana in the following ragas:
   a. Anandabhairavi
   b. Hindolam
   c. Mohanam
   d. Nattakurinji
   e. Arabhi

CORE COURSE XV

PRASCTICAL PAPER – VIII

MUSICAL FORMS AND MANODHARMA SANGEETAM – II

MU 1644

Credits - 4

1. A simple pallavi in two degrees of speed with niraval and kalpana swaras
2. Raga alapana, niraval and kalpana swaras for the following ragas:
   a. Bhairavi
   b. Kambhoji
   c. Poorvikalyani
   d. Kalyani
3. Kritis in the following ragas:
   a. Behag
   b. Hamsanandi
   c. Kapi
   d. Neelambari
   e. Sree
   f. Atana

ELECTIVE

PRACTICAL

COMPOSITIONS OF DIFFERENT COMPOSERS

MU 1661

Credits– 2

1. Irayimman Thampi
2. K.C.Kesava Pillai
3. Mahakavi Kuttamath
4. T.Lakshmana Pillai
5. Annamacharya
6. Papanasam Sivan
7. Neelakanta Sivan
8. Oothukkad Venkatasubbayyar
9. Kuttikunji Thankachi

CONCERT

MU 1645

Credits – 4

1. Adi tala varnam in two degrees of speed
2. A simple kriti
3. Kriti with alapana. Niraval, kalpana swara or thillana.
4. Any one of the musical forms – Padam, Javali, Bhajan, Thillana.

Our concert paper is equivalent to project of other subjects. As we have viva sessions in between practical papers, there is no need for a separate viva in concert paper. Hence instead of awarding the marks as 80 for practical and 20 for viva, the marks for this paper may be awarded as 100 for practical alone.

Reference:

1. South Indian book series- Vol 1 to 6 : Prof.P.Sambamoorthy
2. Splendour of South Indian Music : Dr.P.T.Selvadurai
3. Great composers vol I and II : Prof. P Sambamoorthy
4. Dakshinendian Sangitham vol 1-5 : Vidwan A.K. Ravindranath
5. Dictionary of South Indian Music : Prof. P Sambamoorthy
6. Sri Swathi Thirunal – Jeevithavum Krithikalum : Dr.V S. Sarma
7. Swathi Thirunal and His Music : Dr. S. Venkatasubramonya Iyer
8. Compositions of Maharaja Swathi Thirunal : T.K.Govinda Rao
9. Compositions of Mudduswami Deekshitar : "
10. Compositions of Tyagaraja : "
11. Lakshana grandhas in Music : Dr. S. Bhagyalekshmy

UNIVERSITY OF KERALA

First Degree Programme in Zoology

Choice Based Credit and Semester System

Scheme and Syllabus

With effect from 2010 admission

Core Courses
Foundation Course II
and
Open Courses

First Degree Programme in Zoobgy

Table I. Scheme of Instruction and Evaluation

Semester	Course Code	Study Component	Instructional hrs/week		Credit	Duration of Uty. exam	Evaluation		Total Credit
			T	P			CE	ESE	
I	EN1111	English I	5		4	3hrs	25%	75%	16
	1111	Additional Language I	4		3	3hrs	25%	75%	
	EN1121	Foundation Course I	4		2	3hrs	25%	75%	
	CH1131.4	Complementary Course I	2		2	3hrs	25%	75%	
		Complementary Course Practical of CH1131.4		2	–	–	–	–	
	BO1131	Complementary Course II	2		2	3hrs	25%	75%	
		Complementary Course Practical of BO1131		2	–	–	–	–	
	ZO1141	Core Course I	3		3	3hrs	25%	75%	
		Core Course Practical I of ZO1141		1	–	–	–	–	
II	EN1211	English II	4		3	3hrs	25%	75%	17
	EN1212	English III	5		4	3hrs	25%	75%	
	1211	Additional Language II	4		3	3hrs	25%	75%	
	ZO1221	Foundation Course II	3	1	3	3hrs	25%	75%	
	CH1231.4	Complementary Course III	2		2	3hrs	25%	75%	
		Complementary Course Practical of CH1231.4		2	–	–	–	–	
	BO1231	Complementary Course IV	2		2	3hrs	25%	75%	
		Complementary Course Practical of BO1231		2	–	–	–	–	

First Degree Programme in Zoology

Scheme of Instruction and Evaluation

Semester	Course Code	Study component	Instructional hrs/week		Credit	Duration of Uty. Exam	Evaluation		Total Credit
			T	P			CE	ESE	
III	EN1311	English IV	5		4	3hrs	25%	75%	**17**
	1311	Additional Language III	5		4	3hrs	25%	75%	
	CH1331.4	Complementary Course V	3		3	3hrs	25%	75%	
		Complementary Course Practical of CH1331.4		2	–	–	–	–	
	BO1331	Complementary Course VI	3		3	3hrs	25%	75%	
		Complementary Course Practical of BO1331		2	–	–	–	–	
	ZO1341	Core Course II	3		3	3hrs	25%	75%	
		Core Course Practical I of ZO1341		2	–	–	–	–	
IV	EN1411	English V	5		4	3hrs	25%	75%	**25**
	1411	Additional Language IV	5		4	3hrs	25%	75%	
	CH1431.4	Complementary Course VII	3		3	3hrs	25%	75%	
	CH1432.4	Complementary Course Practical of CH1131.4,CH1231.4,CH1331.4 &CH1431.4		2	4	3hrs	25%	75%	
	BO1431	Complementary Course VIII	3		3	3hrs	25%	75%	
	BO1432	Complementary Course Practical of BO1131,BO1231,BO1331 & BO1431		2	4	3hrs	25%	75%	
	ZO1441	Core Course III	3		3	3hrs	25%	75%	
		Core Course -Practical I of ZO1441		2	-	-	-	-	

First Degree Programme in Zoology

Scheme of Instruction and Evaluation

Semester	Course Code	Study component	Instructional hrs/week		Credit	Duration of Uty. Exam	Evaluation		Total Credit
			T	P			CE	ESE	
V	ZO1541	Core Course IV Practical I of ZO1141, ZO1341& ZOI441	-	-	4	3hrs	25%	75%	**22**
	ZO1542	Core Course V	5		4	3hrs	25%	75%	
	ZO1543	Core Course VI	4		4	3hrs	25%	75%	
	ZO1544	Core Course VII	4		4	3hrs	25%	75%	
	ZO1545	Core Course VIII Practical II of ZO1542,1543&1544		5	4	3hrs	25%	75%	
	1551	Open Course I	3		2	3hrs	25%	75%	
		Project		3	–	–	–	–	
		Field Study		1	–	–	–	–	
VI	ZO1641	Core Course IX	5		4	3hrs	25%	75%	**23**
	ZO1642	Core Course X	4		4	3hrs	25%	75%	
	ZO1643	Core Course XI	4		3	3hrs	25%	75%	
	ZO1644	Core Course XII Practical III of ZO1641		3	3	3hrs	25%	75%	
	ZO1645	Core Course XIII Practical IV of ZO1642 & ZO1643		3	3	3hrs	25%	75%	
	ZO1651.1/ ZO1651.2/ ZO1651.3	Open Course II	3		2	3hrs	25%	75%	
	ZO1646	Project and Field Study		3	4	Viva-voce	–	100%	

T-Theory, P-Practical, CE-Continuous Evaluation, ESE-End Semester Evaluation

First Degree Programme in Zoology

Table II. Scheme of Instruction of Core Courses, Foundation Course II and Open Courses

Course number	Course Code	Course Title	Semester I			Semester II			Semester III			Semester IV			Semester V			Semester VI			Total	
			Contact Hours		Credit	Contact Hours		Credit	Contact Hours		Credit	Contact Hours		Credit	Contact Hours		Credit	Contact Hours		Credit	Contact Hours	Credit
			T	P		T	P		T	P		T	P		T	P		T	P			
C.C. I	ZO1141	Methodology and Perspectives of Science and Zoology	3		3																3	3
F.C. II	ZO1221	General Informatics and Bioinformatics				3	1	3													4	3
C.C. II	ZO1341	Animal Diversity I							3		3										3	3
C.C. III	ZO1441	Animal Diversity II										3		3							3	3
C.C. IV	ZO1541	Practical I of ZO1141,ZO1341 & ZO1441		1						2			2				4				5	4
C.C. V	ZO1542	Cell Biology and Molecular Biology													5		4				5	4
C.C. VI	ZO1543	Genetics and Biotechnology													4		4				4	4
C.C. VII	ZO1544	Immunology & Microbiology													4		4				4	4
C.C. VIII	ZO1545	Practical II of ZO1542,ZOI543 & ZO1544														5	4				5	4
O.C. I	1551	(Offered by other disciplines)													3		2				3	2
C.C. IX	ZO1641	Physiology and Biochemistry																5		4	5	4
C.C. X	ZO1642	Developmental Biology & Experimental Embryology																4		4	4	4
C.C. XI	ZO1643	Ecology, Ethology, Evolution and Zoogeography																4		3	4	3
C.C. XII	ZO1644	Practical III of ZO1641																	3	3	3	3
C.C. XIII	ZO1645	Practical IV of ZO1642 & ZO1643																	3	3	3	3
O.C. II	ZO1651.1/ZO1651.2/ZO1651.3	(Any one of the courses)																3		2	3	2
C.C.XIV	ZO1646	Project														3			3		7	4
		Field study														1						

C.C.- Core Course, F.C.-Foundation Course, O.P.-Open Course, T -Theory, P-Practical

First Degree Programme
Semester V

Zoology Open Course I
Offered to students of other disciplines

Table III. Scheme of Instruction of Open Course I

Semester	Course Code	Course Title	Instructional hours/week	Credits
V	ZO1551.1	Public Health and Hygiene	3	2
	ZO1551.2	Human Health and Sex education		
	ZO1551.3	Human diseases and their management		

First Degree Programme in Zoology
Semester VI

Zoology Open Course II
Offered to students of Zoology Programme

Table IV. Scheme of Instruction of Open Course II

Semester	Course Code	Course Title	Instructional hours/week	Credits
VI	ZO1651.1	Economic Zoology : Vermiculture and Apiculture	3	2
	ZO1651.2	Ornamental Fish Production and management.		
	ZO1651.3	Dairy farming and Broiler farming		

First Degree Programme in Zoology

Table V. Scheme of question paper – Theory Courses

Type of Questions	Question No.	Nature of questions	Weightage
I. Objective	1 – 4	Fill in the blanks	1
	5 – 8	Match the following	1
	9 – 12	Multiple choice	1
	13 – 16	True or False	1
II. Short Answer (Answer any eight)	17		1x8 = 8
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
III. Short Essay (Answer any 5)	28		2x5 = 10
	29		
	30		
	31		
	32		
	33		
	34		
	35		
IV. Long Essay (Answer any 2)	36		4x2 = 8
	37		
	38		
Total			30

First Degree Programme in Zoology

Table VI. Scheme of question paper - Practical

Type of Questions	Weightage
I. Major Dissection / Experiment	4
II. Minor Dissection / Experiment	3
III. Spotters	10
IV. Record	3
Total	20

Table VII. Consolidation of Grade of a course

Evaluation	Grade	Grade points (G)	Weightage (W)	Weighted grade points (GxW)
CE			1	
ESE			3	
Total			4	

Grade of Course Total weighted grade points / Total weightage =

CE - Continuous Evaluation, ESE - End Semester Evaluation

UNIVERSITY OF KERALA

First Degree Programme in Zoology

Choice Based Credit and Semester system

(*With effect from 2010 admission*)

Scheme of Instruction

First Degree Programme in Zoology is under Choice Based Credit and Semester system (CBCS). The duration of the Programme is three years consisting of six semesters. The duration of each semester is five months (18 weeks) inclusive of the days of examinations. There will be 90 working days and a minimum of 450 hours of instruction in a semester. An academic year will have two semesters. Odd semesters are from June to October and even semesters from December to April and one month each semester break in November and May. The total number of credits of the Programme is 120. The total number of courses is 37.

The language courses are distributed over the first four semesters. Foundation course I (English) is in the first semester and Foundation course II in the second semester.

Core courses - Zoology courses – are offered in all the semesters except in the second semester. Hours for Project are distributed over the fifth and sixth semesters and that for the Field study on fifth semester. Students of First Degree Programme in Zoology can choose Open course I offered by any department other than Zoology is in the fifth semester. While Open course II, offered by the Department of Zoology is in the sixth semester. Complementary courses on allied subjects are in the first four semesters.

The scheme of Instruction and Evaluation of study components of First Degree Programme in Zoology is given in the Table I.

Course number, Course Code, Course title and scheme of instruction of Core Courses, Foundation Courses, Open Courses and Project is given in Table II.

Foundation course II (Course Code: ZO1221)

Foundation Course II – General Informatics and Bioinformatics - is in the second semester. It has 72 instructional hours. 54 hours are for theory (3hours/ week) and 18 hours for practical (1hour/ week). Credit is 3. (No ESE for the practical).

Core courses

Core Courses are offered by the parent department. The total number of core courses is fourteen - nine theory courses, four practical courses and one Project and Field Study Course. The Core Course I (Course Code: ZO1141) is prescribed for the first semester and Core Course II (Course Code: ZO1341) for the third semester and Core Course III (Course code: ZOI441) for fourth semester are theory courses, each having 54 hours of instruction (3 hours/ week) and 3 credits. The Core Course IV (Course Code: ZO1541) is Practical I of theory courses ZO1141, ZO1341 and ZO1441. The practical hours are distributed one in the first and two each in the third and fourth semesters. Total credits allotted for Practical I is 4. ESE of Practical I is at the end of V semester. Core Course V

(Course Code: ZO1542) of fifth semester has 90 hours (5hours/ week) and 4credits. Core Course VI (Course Code: ZO1543) and Core Course VII (Course Code: ZO1544) of fifth semester are of 72hours (4 hours/ week) and with 4 credits each. Core Course VIII (Course code: ZO1545) is Practical II of theory Core Courses ZO1542, ZO1543 and ZO1544 has 5 hours in fifth semester. End Semester examination of Practical II is at the end of the fifth semester and 4 credits. Theory Core Course IX (Course Code: Z1641) of sixth semester is of 90 hours (5hours/ week) and 4 credits. Theory Core Courses X (Course Code: ZO1642) and XI (Course Code: ZO1643) of sixth semester are of 72 hours in syllabus (4 hours/ week) with 4 and 3 credits respectively. Core Courses XII (Course Code: ZO1644) is Practical III of Core Course ZO1641 and Core Course XIII (Course Code: ZO1645) is Practical IV of Core Courses ZO1642 and ZO1643. Three hours and three credits are allotted for both courses. Core Course XIV (Course Code ZO1646) is the Project and Field study. In the fifth semester 3 hours are allotted for Project and one hour for the Field study. In the sixth semester also 3 hours are there for the Project. ESE for this course is at the end of the sixth semester and four credits.

Open Courses

Open Course I

Students of First Degree Programme have the freedom to choose Open Course I offered by any disciplines other than the parent department. The students of First Degree Programme in Zoology has to choose Open Course I offered by departments other than Zoology.

Open Course I in the fifth semester offered by the Department of Zoology is for the students of other disciplines. It has 54 hours (3hours/ week) and 2 credits. Three courses are designed for Open Course I. An institution can choose any one of the following courses.

Open Course I

Course Code	Title of course
ZO1551.1	Public Health and Hygiene
ZO1551.2	Human Health and Sex Education
ZO1551.3	Human diseases and their management

The scheme of instruction of Open Course I is given in Table III.

Open Course II

Open Course II is for the students of First Degree Programme in Zoology. Instructional hours are in the sixth semester. 54 hours (3hours/ week) and 2credits are allotted for it. Three courses are prepared for Open Course II. An Institution can choose any one of the following courses.

Open Course II

Course Code	Title of the course
ZOI651.1	Economic Zoology - Vermiculture and Apiculture
ZOI651.2	Ornamental Fish Production and management
ZOI651.3	Dairy farming and Broiler farming

The scheme of instruction of Open Course II is given in Table IV.

Project and Field study (Course Code: ZO1646)

Core courses include a compulsory Project and Field study. Three hours each are given for project in the fifth and sixth semesters. One hour for the Field study in the fifth semester. The Course Code is ZO1646 and credits 4. There is no Continuous Evaluation for this course.

Scheme of Evaluation

Evaluation of all theory and practical courses involve Continuous Evaluation (CE) and End Semester Evaluation (ESE). The proportion of the grade of CE and ESE 1:3. CE is for 25% and ESE for 75%. All theory courses have ESE at the end of the corresponding semesters. But Practical courses have ESE at the end of fifth semester and at the end of sixth semester only. Both Continuous Evaluation and End Semester Evaluation are carried out with direct grading. The system of five point grade scale adopted is given in Table A

Table A. Five point scale of direct grading

Grade	Performance	Grade points	Grade Range
A	Excellent	4	3.50 to 4.00
B	Very Good	3	2.50 to 3.49
C	Good	2	1.50 to 2.49
D	Average	1	0.50 to 1.49
E	Below Average	0	0.00 to 0.49

I. Continuous Evaluation (CE)

Continuous Evaluation of each course will be done by the faculty member who is engaging the course. CE is based on the student's attendance, performance in the class tests, seminars / assignments and records of practical. Assignments and answer scripts are to be returned to the students after evaluation. Tabulated statement of CE must be put up on the department notice board prior being dispatched to the University.

The process of Continuous Evaluation must be transparent. Monitoring of the First Degree Programme is done by committees at three levels – Department Level Monitoring Committee (DLMC), College Level Monitoring Committee (CLMC) and University Level Monitoring Committee (ULMC). DLMC consists of the Head of the Department and all teachers of the Department. They monitor the conduct of courses and CE. The Head of the Department be the Chair person and a teacher selected by the DLMC from among the members is the Convener. College Level Monitoring Committee will consider the complaints not redressed by the DLMC.

CE of Theory courses (Weightage 4)

The different components considering for CE of theory courses and corresponding weightage are given in the Table B.

Table B. Components and weightage for CE of theory course

Sl. No.	Component	Weightage
1.	Attendance	1
2.	2 Class tests	2
3.	Seminar/ Assignment	1
Total		4

1. **Attendance** (Weightage 1)

The allotment of grades for attendance is given in Table C.

Table C. Grading of attendance

Attendance	Grade
Above 90%	A grade
86% to 90%	B grade
81% to 85%	C grade
75% to 80 %	D grade
Attendance up to 75%	E grade

A student with attendance below 75% cannot appear for the ESE.

2. Two Class Tests (Weightage 2)

Two class tests shall be conducted for each course during the semester. Average grades of the tests are considered for CE. Weightage for this is 2. Question pattern of ESE can be adopted for test papers. Grading process is similar to that of ESE.

3. Seminar/ Assignment (Weightage 1)

Each student is required to do one seminar or one assignment for each course. Certain topics for seminars/ assignments are given after the syllabus of each course. These topics are denoted for CE only. Seminar is to be graded based on the way of presentation, matter content, etc. These factors can be graded on the five-point scale as given in Table A.

Assignment is to be graded based on timely submission, content, etc. on the five-point scale as given in Table A.

CE of Practical courses: (Weightage 4)

The different components considering for CE of Practical courses and corresponding weightage are given in the Table D.

Table D. Components and weightage for CE of Practical course

Sl. No.	Component	Weightage
1.	Attendance	1
2.	Performance	1
3.	One Class test	1
4.	Record	1
Total		4

1. **Attendance**: (Weightage 1) same as given for theory CE in Table C.

2. **Performance in laboratory** : (Weightage 1) Grade the students in the five-point scale as given for theory (Table A).

3. **Class test**: (Weightage 1) One class test shall be conducted for a practical course during a semester. Grading process is similar to that of ESE.
   For Practical I (Course Code: ZO1541) instead of class test consider the two compulsory assignments given in the syllabus.

4. **Record:** (Weightage 1) Record is to be assessed taking into account the following points – timely presentation, content, accuracy of diagrams and neatness. Record grading is also on the five-point scale as given for theory (Table A).

Model tabulation sheets for Continuous Evaluation score of theory and practical courses are appended herewith.

First Degree Programme in Zoology

Continuous Evaluation Grade– Theory: Weightage 4

Component	Grade	Grade Points (G)	Weightage (W)	Weighted Grade Point (G x W)
Attendance			1	
Class test			2	
Seminar/Assignment			1	
Total			4	

First Degree Programme in Zoology

Continuous Evaluation Grade– Practical: Weightage 4

Component	Grade	Grade Point (G)	Weightage (W)	Weighted Grade Point (G x W)
Attendance			1	
Performance			1	
Class test			1	
Record			1	
Total			4	

II. End Semester Evaluation (ESE) (Conducted by the University)

A. Theory

All theory courses have End Semester Examination at the end of the corresponding semester. The duration of examination is 3 hours per course. Weightage of theory ESE is 30. Grading is according to the five point scale. The question paper for ESE of theory courses will be prepared by the Board of External Examiners appointed by the University.

The Scheme of Instruction and Evaluation of First Degree Programme in Zoology are given in Table I.

The scheme of question paper of Theory Course with weightage is given in Table V.

B. Practical:

End Semester Examination of Practical I (Course Code: ZO1541) and Practical II (Course Code: ZO1545) will be held at the end of the fifth semester. Practical III (Course Code: ZO1644) and Practical IV Course Code: ZO1645) will be held at the end of the sixth semester. The duration of examination is 3 hours. Weightage of Practical ESE is 20. The question papers for the conduct of ESE of Practical will be prepared by the Board of Examiners appointed by the University. Practical examination is to be conducted by a team of two external examiners. A batch may contain a maximum of 15 candidates per session of the exam.

The scheme of question paper of Practical Course with weightage is given in Table VI.

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C. Record

Each Practical Course has a record book. Candidates must submit the record of the corresponding Practical Course on the day of the end semester examination before the External Examiners for ESE. Candidates without certified record book are not allowed to appear for the examination.

D. Project and Field study

Reports related to project work and Field study are evaluated by the External Examiners on the next day after the End Semester Examination of Practical IV at the end of sixth semester. Total weightage for ESE is 20.

Viva-Voce

Viva-Voce includes presentation of the Project report and testing of the student's knowledge on the project work and general biological topics based on questions asked. Maximum time of ten minutes can be taken for evaluating a candidate.
The distribution of weightage is given below.

Project Report	7
Viva-voce	8
Field study Report	5
Total	20

Consolidation of Grade of a course having Continuous Evaluation and End Semester Evaluation in 1:3 proportion is given in Table VII.

First Degree Programme
Semester I
Zoology Core Course I
Methodology and Perspectives of Science and Zoology

Course code – ZO1141
No. of Credits – 3 **Total hours 54**

Aim of the course

To introduce the methodology and perspectives of Science in general so as to enable the students to systematically pursue Zoology in relation to other disciplines that come under the rubric of science.

Objectives of the course

- To learn the fundamental characteristics of science as a human enterprise
- To understand how science works
- To study to apply scientific methods independently

Methodology of Science **35hrs**

Module I **3hrs**

Introduction to scientific studies: scientific knowledge – laws, disciplines and revolutions

Module II **8hrs**

Methods, Tools and Experimentation: hypothesis, theories and laws in science, Hypothetico-deductive and inductive models, simulations and virtual testing, observations, evidences and proofs.

Module III **10hrs**

Scientific instruments and techniques: microscopes-light microscopes, dark-field, fluorescent microscope and centrifuges (self study), phase-contrast microscope, electron microscopes-TEM and SEM, colorimeter, spectrophotometer, pH meter, chromatography, electrophoresis; Microtome and histological staining techniques, Robotics.

Module 1V **14hrs**

Data handling in Science: design of experiments-observation, data collection, nature and types of data (typical examples), treatment of data, data interpretation, significance of statistical tools in data interpretation, errors and inaccuracies, instrumental errors and variables, human errors.

Data presentation: tables, graphs (line graphs, frequencies polygon, frequency curve and ogives) and diagrams(bar and pie); statistical testing- null hypothesis, test of significance (t-test), statistics based acceptance or rejection of a hypothesis (chi-square); deduction of scientific correlation, patterns and trends.

Ethics in science: (brief account only), scientific information-depositories of scientific information- primary, secondary and digital sources; sharing of knowledge, transparency and honesty; danger or preconceived ideas. Reporting of observational and experimental data, human bias, biased observations, influence of observer on observations, publications and patents, Plagiarism

Methodology of Zoology **19hrs**

Module V **6hrs**

Nature and scope of Zoology: branches of Zoology, opportunities for further studies in zoology, websites for zoology studies

Module V1 **13hrs**

Introduction to Zoology, taxonomy-definition, history, new trends and importance, mention molecular taxonomy. Components of classification, Taxonomic hierarchy- taxon, category and rank. Linnaean hierarchy, nomenclature, principles of nomenclature. International Code of Zoological Nomenclature (ICZN), rules of nomenclature, requisites – uni, bi and tri-nomialism. Species, species concept and approach, taxonomic aids.

Suggested topics for assignments / seminars

1. Different types of microscopes,
2. Different types of centrifuges,
3. Collection of different local fauna and analysis of data,
4. Designing of an experiment of own interest
5. Construction of bar diagram, histogram, pie diagram, frequency curve, frequency polygon
6. Collect and identify five local fauna with systematic position.

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First Degree Programme
Semester II
Zoology Foundation course II
General Informatics and Bioinformatics

Course code – ZO1221
No. of Credits - 3 **Total hours 54**

Aim of the course
To expand basic informatics skill and attitudes relevant to the emerging society and also to equip the student to effectively utilize the digital knowledge resources for the study of Zoology

Objectives of the course
- To review the basic concepts and functional knowledge in the field of informatics
- To create awareness about nature of the emerging digital knowledge society
- To create awareness about social issues and concerns in the use of digital technology
- To learn the nature, application and scope of Bioinformatics

General Informatics **36hrs**

Module I **6hrs**
Overview of Information Technology: features of the modern Personal Computer and Peripherals, computer networks and internet, introduction to mobile phone technology, purchase of technology, license, guarantee, warranty, overview of operating system and major application softwares.

Module II **12hrs**
Knowledge skills for Higher Education : data information and knowledge, knowledge management – Internet as a knowledge repository, academic search techniques, creating your cyber presence, open access initiatives, open access publishing models. basic concepts of IPR, copyrights and patents, plagiarism, introduction to use of IT in teaching and learning, case study of educational softwares. Academic services – INFLIBNET, NICNET, BRNET

Module III **10hrs**
Social Informatics : IT and society – Issues and Concerns – digital divide, IT and development, new opportunities and new threats, cyber ethics, cyber crime, security, privacy issues, cyber addictions, information overload; health issues – guide lines for proper usage of computers, internet and mobile phones. Localization issues – IT and regional languages – IT for the disabled, the free software debate.

Module IV **8hrs**
IT @ Service of society: e-governance application and state level, overview of IT application in medicine, healthcare, business, commerce, industry, defense, law, crime detection, publishing, communication, resource management, weather forecasting, education, film and media, futuristic IT – artificial Intelligence, virtual Reality

Bioinformatics **18 hrs**

Module V **9 hrs**

Definition, Nature & Scope of Bioinformatics - Contrast between Bioinformatics and Computational Biology; Key Bio-sequences in Molecular Biology - DNA, RNA and Amino-acid sequences -Popular Databases in Bioinformatics - NCBI, DDJB, PDB, OMIM; BLAST & FASTA sequence file formats, Approach of Comparative Biology based on sequence comparison - The basic idea of sequence comparison (algorithms not required) - idea of scoring matrices

Module VI **9 hrs**

The Blast search engine - important features - Idea of Multiple sequence alignment – Proteomics: Basic ideas of Protein Structure prediction- Concept of Homology Modeling- Idea of Molecular Phylogenetics - advantages and computational procedure (only description of use of a package such as Phylip)- Basic concepts of computer Aided Drug Discovery- General description of drug discovery pipeline- concept of Personalized medicine; Bioinformatics tools: (i)Molecular Visualization Software - Rasmol (Basic features only) - (ii) ORF finding (iii) gene finding, (iii) BLAST (iv) Hydrophobicity Prediction (v) Single Nucleotide Polymorphism (SNP) prediction using GENSNIP

Practical **Total hours 18**

(No ESE for practical)

a) Download a specified sequence from NCBI and search with it in BLAST and report results with comments.

b) Download molecular structure data files of DNA, Sugar, Water etc and inspect them through Rasmol. Make one measurement each on these molecules (distance, angles etc).

c) Download a specified DNA sequence from NCBI and identify ORF & genes, if any, in it.

(d) Download a specified AA sequence from NCBI and plot its hydrophobicity profile.

(e) Demonstrate SNP prediction using GENSNIP.

Suggested topics for assignments/ seminars

1. Conduct of an experiment to demonstrate the use of BLAST
2. Visit KEGG data base and retrieve the list of completed genome project
3. Compare the traditional Phylogenetic methods with the Molecular Phylogenetics
4. Visit NCBI, EMBL, DDBJ, PDB. List out the salient features of them.
5. Write a report on various phases of Computer Aided Drug Discovery.
6. From internet locate some success stories of Computer Aided Drug Discovery
7. Write brief note on recent development of System Biology and Synthetic Biology.
8. Down load the human chromosome I in fasta format and cut a portion of the

sequence, using gene finding tool predict the gene present.

9. Write a brief note on different Phylogenetic tree building methods.

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First Degree Programme
Semester III
Zoology Core Course II
Animal Diversity I

Course code – ZO1341
No. of Credits – 3 **Total hours 54**

Aim of the course

To provide the students with an in-depth knowledge of the diversity in form, structure and habits of invertebrates.

Objectives of the course

- To learn the basics of systematics and understand the hierarchy of different categories.
- To learn the diagnostic characters of each phyla through brief studies of typical examples.
- To obtain an overview of economically important invertebrate fauna

ModuleI

Introduction, Two kingdom classification and Whittaker's five kingdom classification. Advantages and disadvantages of five kingdom classification. (self study)

Module II **10hrs**

Kingdom Protista: general characters, structure and zoological importance and systematic position of *Actinophrys, Noctiluca, Paramecium* and *Opalina*. Parasitic protozoans- morphology, life history, pathogenicity and prophyllaxis of *Entameoba histolytica*, *Trypanosoma gambiense* and *Plasmodium vivax*.

Module III **8hrs**

Kingdom Animalia: Outlines of classification – Subkingdom Mesozoa, Subkingdom Parazoa, Subkingdom Eumetazoa. Levels of organization– cellular, tissue, organ. Divisions of Eumetazoa- Radiata, Bilateria, Acoelomata, Pseudocoelomata, Eucoelomata, Protostomia, Deuterostomia. Sub kingdom Mesozoa- general charactors, eg. *Rhopalura*. Sub kingdom Parazoa - general characters and mention the classes of Porifera- Calcispongia, eg.*Sycon*; Hydrospongia, eg. *Euplectella;* Desmospongia, eg. *Spongilla*.

Module IV **4hrs**

Phylum Coelenterata: General characters (self study). Classes-Hydrozoa eg. *Obelia, Physalia;* Scyphozoa eg. *Aurelia, Rhizostoma*; Anthozoa eg. sea anemone, *Madrepora*. General topic - Polymorphism in coelenterates.

Module V **7hrs**

Phylum Platyhelminthes: General characters (self study). Classes- Turbellaria eg. *Bipalium*; Trematoda eg. *Fasciola*; Cestoda, eg. *Teania solium*.

Phylum Nematoda: general characters (self study), eg. *Ascaris, Ancylostoma, Enterobius, Wuchereria.*

Phylum Annelida: General characters (self study). Type- Earthworm (self study). Classes-

Polychaeta eg. *Aphrodite, Arenicola*; Oligochaeta eg. *Nereis*, Heteroneries; Hirudinaria eg. leech. General topic - Vermiculture (brief account)

Module VI **16 hrs**

Phylum Arthropoda: General characters (self study), Type- *Penaeus*. Mention the classes. eg. cockroach, *Limulus, Eeupagurus, Sacculina*, termite, honey bee, scorpion.
Phylum Onychophora: general characters, eg. *Peripatus*. General topic: Apiculture, sericulture.

Module VII **9 hrs**

Phylum Mollusca: General characters (self study), Classes- Monoplacophora, eg. *Neopilina;* Amphineura, eg. *Chiton;* Aplecophora, eg. *Neomenia*, Gastropoda eg. *Pila;* Scaphopoda, eg. *Dentalium*; Pelicypoda eg. *Perna, Terido*; Cephalopoda, eg. *Sepia, Octopus*. General topic- Economic importance of mollusca - emphasis on pearl culture.
Phylum Echinodermata: General characters (self study) Classes- Asteroidea, eg. *Asterias;* Ophiuroidea, eg. *Ophiothrix;* Echinoidea, eg. *Echinus*; Holothuroidea, eg. Sea cucumber, Crinoidea, eg. Sea lily.

Suggested topics for assignments / seminars

1. Parasitic Protozoa
2. Corals and coral reefs
3. Polymorphism in Cnidaria
4. Life history of *Fasciola*
5. Nematode parasites (any three)
6. Economic importance of earthworm and vermiculture
7. Economic importance of molluscs
8. Mussel culture
9. Pearl culture
10. Economic importance of insects
11. Insect pests of crop plants
12. Social insects
13. Mosquitoes- morphological differences and diseases
14. Crustacean larvae.

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First Degree Programme
Semester IV
Zoology Core Course III
Animal Diversity II

Course Code – ZO1441
No. of credits – 3 **Total hours 54**

Aim of the course
To provide the students with an in-depth knowledge of the diversity in form, structure and habits of invertebrates.

Objectives of the course
- To learn the general characteristics and classification of different classes of vertebrates
- To get an understanding of the vertebrate evolutionary tree
- To understand general aspects of applied interest

Module I **6hrs**
Introduction, Phylum Chordata: general characters and their classification into three subphyla (self study). Subphylum Urochordata- general characters, Class Larvacea eg. *Oikopleura*; Class Ascidiacea eg.*Ascidia* (Mention retrogressive metamorphosis) and Class Thaliacea eg. *Salpa*. Subphylum Cephalochordata-general characters, eg. *Amphioxus*

Module II **10 hrs**
Subphylum Vertebrata: general characters, Division 1 Agnatha -general characters, Class Cyclostomata eg.*Petromyzon*, Class Ostracodermi; Division 2 Gnathostomata-general characters, Classification into Super class Pisces and Tetrapoda. Super class Pisces- general characters and classification, Class Placodermi, Class Chondrichthyes, Sub class Elasmobranchii eg. *Narcine,* Sub class Holocephali eg.*Chimaera*; Class Osteichthyes-
Sub class Choanichthyes- Order1 Crossoptergii eg *Latimeria*, Order 2 Dipnoi eg.

Protopterus, Subclass Actinopterygii-Super order Chondrostei eg *Acipenser*.
Super order Holostei eg *Lepidosteus*, Super order Teleostei eg *Anabas, Clarius, Saccobranchus, Ophiocephalus, Echeneis.* General topic: Accessory respiratory organs in fishes.

ModuleIII **5hrs**

Super class Tetrapoda: Salient features, Class Amphibia - general characters (self study). Classification- Order Urodela eg .*Amblystoma*, Order Anura eg. *Hyla, Bufo, Rana*
Order Apoda eg. *Ichthyophis*. General topic: Parental care in amphibia.

Module IV **9hrs**

Class Reptilia - general characters (self study). Classification - Subclass Anapsida - Order Chelonia eg. *Chelone*; Subclass Parapsida eg *Ichthyosaurus*; Subclass Diapsida- Order Rhynchocephalia eg. *Sphenodon*, Order Squamata- Suborder Lacertilia eg.*Calotes, Chamaeleon, Draco , Hemidactylus*, Suborder Ophidia eg. *Naja naja, Vipera, Bungarus, Enhydrina, Ptyas, Lycodon, Tropidonotus, Dryophis, Typhlops* and *Eryx johni*, Suborder Crocodilia eg. *Crocodilus, Alligator*; Subclass Synapsida eg *Cynognathus*. General topic: Identification of poisonous and non-poisonous snakes.

Module V **5hrs**

Class Aves- general characters (self study). Classification- Subclass Archeornithes eg .*Archeopteryx*; Subclass Neornithes- Super order Paleognathae eg.*Sruthio* and *Emu*,
Super order Neognathae eg .Grey heron, Vulture, Kite, *Pavo*, Koel, Owl, Woodpecker, Crow. General topic: Migration in birds.

Module VI **19hrs**

Class Mammalia – Detailed study: Anatomy of *Homo sapiens*. General characters and classification of Class Mammalia - Subclass Prototheria eg. *Tachyglossus;* Subclass Metatheria eg. *Macropus*; Subclass Eutheria - Order Insectivora eg. *Paraechinus*, Order Dermoptera eg. *Galeopithecus*, Order Chiroptera eg.*Pteropus*, Order Primates eg. *Loris*, Orangutan, Order Carnivora eg. *Leo* sps, *Felis domesticus*, *Canis familiaris*, *Herpestus*, Order Cetacea eg. *Delphinus*, Order Perissodactyla eg. *Equus*, Order Artiodactyla eg . *Camelus*, *Hippopotamus*, Order Proboscidia eg. *Elephas*. Order 10 Sirenia eg. *Dugong*, Order Hyracoidea eg. *Procavia*, Order Rodentia eg.*Rattus*, Order Lagomorpha eg. *Oryctolagus*, Order Edentata eg. *Dasypus novemcinctus* (Armadillo), Order Pholidota eg. *Manis*, Order Tubilidentata eg. *Orycteropus*.
General topic: Dentition in mammals

Topics for assignments / seminars

1. Migration in fishes.
2. Parental care in fishes.
3. Caudal fin in fishes
4. Snake venom and its uses.
5. Volant adaptations of birds.
6. Adaptations of feet and beak of birds.
7. Economic importance of mammals.
8. Mammalian resources of the forests of Kerala.

9. Flying mammals.
10. Endangered mammals.

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First Degree Programme
Zoology Core Course IV
Practical I - Methodology and Perspectives of Science and Zoology, Animal Diversity I and Animal Diversity II

Course Code – ZO1541
No. of credits – 4

Aim of the course

To provide a hands on training experience in anatomy through simple dissection and mountings

Objectives of the course

- To familiarize students with conventional organ system in common, easily available animals.
- To emphasize the adage that 'seeing is believing' typical examples and economically important specimen (preserved) to be studied.
- To study and carry out routine clinical analysis of blood and urine.

Methodology and Perspectives of Zoology

Study of the following instruments

1. Compound microscope

2. Centrifuge
3. Colorimeter
4. Microtome
5. pH Meter

Biostatistics

Graphs, Tables, Histogram, Pie diagram
mean, median, mode, standard deviation and standard error
students' t- test and chi- square test

Animal Diversity I

Minor Practicals - any four.

1. Nereis – parapodium
2. Earthworm – body setae
3. Cockroach – salivary apparatus in situ
4. Cockroach – mouth parts
5. Honey bee – mouth parts / mosquito - mouth parts
6. Prawn – appendages

Major Practical – any two

1. Earthworm – nervous system
2. Cockroach – nervous system
3. Prawn – nervous system

Taxonomy

Identification and classification of the following specimens

1. Protista – *Actinophrys, Noctiluca, Pramecium, Opalina* – any 2
2. Phylum Porifera – *Euplectella, Spongilla* - any 1
3. Phylum Cnidaria – *Hydra, Obelia, Physalia, Aurelia,* Sea anemone,Madrepora – any 3
4. Phylum Nematoda – *Ascaris* male and female (entire)
5. Phylum Platyhelminthes – *Bipalium, Fasciola, Teania solium* – any 1
6. Phylum Annelida – Earthworm, *Nereis*, Leech, *Aphrodite, Arenicola* – any 1
7. Phylum Onychophora – *Peripatus*
8. Phylum Arthropoda – Cockroach, *Limulus, Eupagurus, Sacculina*, Honey bee, *Lepisma*, Scorpion – any 3
9. Phylum Mollusca – Chiton, *Pila, Xancus, Dentalium, Perna, Mytilus, Teredo, Sepia, Octopus*. – any 2
10. Phylum Echinodermata – Starfish, Brittle star, Sea urchin, Sea cucumber, Sea lily – any 2

Animal Diversity II

Minor practical

Fishes - placoid scales of *Scoloidon* and cycloid and ctenoid scales of *Anabas*

Osteology

Human limb bones, girdles, typical vertebra, atlas, axis, thoracic and lumbar vertebrae and lower jaw.

Turtle - carapace and plastron.

Taxonomy

Prochordates –*Amphioxus (entire)*

Pisces - 2 cartilaginous fishes, 2 fishes with accessory respiratory organs, 2 edible fishes and 2 culture fishes.

Amphibia - any 3 (representing the three orders).

Reptilia - 2 poisonous and 2 non -poisonous snakes, *Draco, Chamaelon*

Aves - Different feathers, Pigeon.

Mammals - Bat

Compulsory assignment for practical

Animal Diversity I (5% of practical CE)
Students shall collect any 2 invertebrates/parasites/pests specimens and prepare a brief note including taxonomy and submit for evaluation.
Animal Diversity II (5% of practical CE)
Students shall collect any two local fish and prepare a brief note including taxonomy and submit for evaluation.

First Degree Programme
Semester V
Zoology Core course V
Cell Biology and Molecular Biology

Course code – ZO1542
No. of credits – 4 **Total hours 90**

Aim of the course

To educate the student on the fundamental structure, biochemistry and function of the cell and the principles of molecular biology and gene manipulation

Objectives of the course

- To study the ultra-structure of prokaryotic and eukaryotic cells
- To study the nature, replication and modification of the genetic material of eukaryotes
- To obtain a broad concept of gene expression and regulation

Cell Biology **50 hrs**

Module I **38 hrs**

History, development and scope of cell biology, discovery of cells; cell theory and its modern version (self study).
Cell and its components: basic types of cells- prokaryotic and eukaryotic,

nature and comparison (self study)
Ultra structural organization and functions: Plasma membrane- ultra structure- fluid mosaic model , functions of plasma membrane, trans-membrane transport. Cell communication- cell signaling and signal transduction, basic elements involved.
Mitochondria- structure, functions, mention oxidative phosphorylation and electro transport chain.
Endoplasmic reticulum - morphology, types, functions and formation.
Golgi bodies - morphology, types, functions (role in secretion) and formation.
Lysosomes- morphology, mention major groups of enzymes, classification, polymorphism and functions.
Microbodies - morphology, major enzymes, peroxisomes and glyoxisomes functions. Ribosomes - different types, subunits, functions.
Proteosomes - structure, ubiquitin - tagged protein degradation.
Centrioles and basal bodies- structure and functions.
Cytoskeleton- microtubules, microfilaments and intermediate filaments- examples and functions.
Interphase nucleus - gross structure and functions; nuclear envelope- pores and pore complexes; nuclear lamina, formation of NE; nucleoplasm- nature and importance.
Nucleolus - structure, nucleolar cycle, nucleolar organizer and functions.
Chromatin - euchromatin and heterochromatin, nucleosomes, unit fibre, solenoid fibre, and higher order of organization, condensation and coiling.
Chromosome - structure of a typical metaphase chromosome; giant chromosomes- polytene chromosomes, lamp brush chromosomes; endomitosis.

Module II **8hrs**

Cell Division: cell cycle- G_1, S, G_2, and M phases (mention G_0, and D_0 stages and their significances); amitosis (brief account only). Mitosis (self study). Meiosis: description of all stages, synaptonemal complex, significance

Module III **2hrs**

Biology of cancer: characteristics of cancer cells, dedifferentiation of cancer cells, theories of cancer, carcinogenesis, oncogenes and tumor suppressor genes

Module IV **2hrs**

Aging: cellular and other changes, apoptosis, causes of aging, mention free radicals and superoxide dismutase (SOD), theories of aging.

Molecular Biology **40 hrs**

Module V **16hrs**

Introduction: history, development and scope.
Nature of genetic material: search for the genetic material, Griffith's experiment, transformation, contributions of Avery, Mac Leod and Mc Carty, Conrat & Stern's experiment with TMV, Hershey & Chase's experiment, transduction.
Composition and structure of nucleic acids - Watson - Crick model of DNA, clover leaf model of tRNA, different types of DNA and RNA; DNA replication in prokaryotes and eukaryotes - Semi-conservative method, Messelson & Stahl experiment, replication machinery and mechanism; modification and repair of DNA.

Module VI **15hrs**

Gene Expression: contributions of Garrod, one gene – one enzyme hypothesis, one gene one polypeptide hypothesis, central dogma of Molecular Biology, central dogma reverse, co-linearity of genes and gene products.

Genetic code - deciphering / cracking the GC, characteristics of GC, codon assignment and wobble hypothesis.

Mention contributions of Nirenberg and his associates, Khorana and his associates. Transcription of RNAs - RNA polymerases, transcription factors, mechanism of transcription, post-transcriptional modifications of mRNA, rRNA and tRNA, reverse transcription, translation – machinery and mechanism; post translational modification of proteins; role of chaperones in protein normal folding and protection

Module VII **5 hrs**

Gene regulation: in prokaryotes (inducible and repressive systems); operon concept – Lac operon and Trp operon

Module VIII **4hrs**

Bacterial Recombination: transformation, conjugation and transduction (general and specialized transduction)

Suggested topics for assignments / seminars

1. Basic properties of cells
2. A brief history of studies on plasma membrane structure
3. Role of Ca++ in signal transduction
4. Chemical components of: a) Endoplasmic reticulum b) Golgi bodies c) Lysosomes d) Ribosomes
5. Models of ribosome structure
6. Lysosomes and storage diseases
7. Phenylketonuria
8. Alkaptonuria
9. Albinism

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First Degree Programme
Semester V
Zoology Core Course VI
Genetics and Biotechnology

Course Code – ZO1543
No. of credits – 4 **Total hours 72**

Aim of the course

To educate the students on the underlying genetic mechanism operating in man and state of the art bio-techniques

Objectives of the course

- To learn the mechanism of crossing over and inheritance patterns in man.
- To understand the principles and techniques involved in DNA technology and get an overview of modern techniques like PCR, Hybridoma technology, gene therapy and human cloning

Genetics 37 hrs

Module 1 8hrs

Introduction, Mendel and his experiments, relevance of Mendel's principles in modern genetics (self study); genetic terminology-gene, allele, genotype, phenotype, genome; wild type and mutant type , test cross, back cross and reciprocal cross.

Interaction of genes: Allelic, incomplete dominance, lethal and co-dominance,non- allelic, complementary gene action (self study); Co-epistasis, dominant (feather coat) and recessive (coat colour), polygenic action (skin colour), pleiotropism(one example). Multiple alleles-ABO Blood group system, Rh group and its inheritance.

Module II **8hrs**

Linkage, crossing over and recombination**:** Linked genes, linkage groups, chromosome theory of linkage, factors affecting linkage, crossing over and recombination, mechanism, kinds and factors affecting crossing over and its significance. Chromosome mapping (brief account only).

Sex Linkage**:** Characteristics of sex linked inheritance, sex linked inheritance of man (colour blindness and haemophilia), incompletely sex linked genes , holandric genes, sex limited genes and sex influenced genes.

Module III **8hrs**

Sex Determination**:** Environmental factors on sex determination, mention genic balance theory, chromosome theory of sex determination, chromosomal mechanism of sex determination,(XX-XY, XX-XO,ZZ-ZW), sex determination in man, role of Y chromosome , Barr bodies, dosage compensation and Lyon hypothesis. Chromosome mosaicism. Mention inter sex, gynandromorph and hermaphrodite.

Module IV **6hrs**

Mutation**:** Types of mutations - somatic, germinal, spontaneous, induced, autosomal and allosomal, euploidy and aneuploidy. Gene mutation, molecular basis of mutation,induced mutation- chemical, ionizing and non ionizing.

Module V **3hrs**

Cytoplasmic inheritance**:** Mitochondrial DNA, kappa particles in paramecium, maternal effects in Drosophila.

Module VI **4hrs**

Human Genetics**:** Karyotyping, normal chromosome compliment, pedigree analysis, chromosomal anomalies in man, autosomal (eg. Down syndrome, Edwards syndrome), allosomal (eg. Klinefelters syndrome, Turner's syndrome)

Biochemical genetics**:** Human biochemical genetics, biochemical pathway of phenyl alanine, tyrosine metabolism in normal man. Disorders-Phenylketonuria, Alkaptonuria, Tyrosinosis and Albinism.

Biotechnology **35 hrs**

Module VII **9hrs**

Introduction-Scope of biotechnology, emerging branches of biotechnology.

Genetic engineering and recombinant DNA technology, techniques in gene cloning, restriction endonucleases, ligases, major steps in cutting and joining of DNA , tools used in recombinant DNA technology, vectors, plasmids, probes, linkers, host cells, transformation and detection of recombinant molecules.

Module VIII **6hrs**

Genomic library, construction of genomic library and cDNA library, Polymerase Chain Reaction-basic steps and applications of PCR ,DNA sequencing (Sanger method, Automated sequencing), patenting DNA sequences.

Module IX **5hrs**

Blotting Techniques: Southern, Northern and Western blotting, DNA fingerprinting.

Module X **6hrs**

Human Genome Project, hybridoma technology and monoclonal antibodies;gene transfer techniques (chemical treatment, electroporation, lipofection, microinjection, retro viral vector method, embryonic stem cell method and shot gun method); transgenic microbes, plants and animals.

Module XI **4hrs**

Gene therapy: somatic gene therapy and germ line gene therapy; gene doping and its implications; DNA vaccines; Human cloning –therapeutic and reproductive cloning.

Module XII **5hrs**

Practical applications of biotechnology-in medicine, agriculture, industry, pollution control, forensics and judiciary. Potential hazards of biotechnology.
Bio-ethics - problems and solutions. Biotechnology in future.

Suggested topics for assignments / seminars

1. Mendel's laws.
2. Blood groups.
3. Intersexes, hermaphrodites, and gynandromorphs.
4. Genetic counseling
5. Human Genome Project.
6. Applications of DNA fingerprinting.
7. Ethical and social issues of Biotechnology.
8. Complimentary gene action.
9. Incomplete dominance.
10. Chemical mutagens in food.

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First Degree Programme
Semester V
Zoology Core course VII
Immunology and Microbiology

Course code – ZO1544
No. of credits – 4 **Total hours 72**

Aim of the course

To update the student on the scope and importance of clinical immunology and create an awareness about the inherent dangers of microbes

Objectives of the course

- To enable the student to understand the principles and mechanisms of immunology
- To learn the malfunctioning and disorders of the immune system
- To get a broad understanding of microbes and their economic importance with special reference to pathogenic forms.

Immunology **37 hrs**

Module I **2hrs**

Introduction, history, development and scope.

Module II **3hrs**

Immunity: definition, classification of immunity. Innate (non-specific)– species, racial and individual IM with examples, acquired (specific)– active IM (natural and artificial) with examples, passive IM (natural and artificial) examples.

Module III **6 hrs**

Immune system: organs and tissues of the immune system. Primary (central) - thymus, bone marrow, bursa of Fabricii; secondary (peripheral)- spleen, lymph nodes, MALT etc. Cells- lymphocytes – T cells and B cells – formation, development and maturation; plasma cells and null cells – natural killer cells, killer cells, lymphokine - activated killer cells; phagocytes / macrophages; antigen presenting cells – macrophages, B-lymphocytes, dendrite cells, Langerhans cells; follicular dentrite cells, neutrophils, eosinophils, basophils, mast cells. Mitogens – mention only

Module IV **14hrs**

Antigens (immunogens) (Ag): definition, complete antigens, haptens, antigenic determinants or epitopes; antibodies (Immoglobulins)- definition, general structure of Ig, Ig determinants, physico-chemical properties of Ig, classes of Ig- G, M, A, D, E; mention abnormal Igs; antigen – antibody reactions- mechanism (mention zone phenomenon), precipitation reactions, agglutination reactions, complement fixation, neutralization, opsonisation (brief accounts only)

Complement system: definition, general features, major histocompatibility complex (MHC) (brief account only). Immune response- definition, types of immune responses- humoral immune response (antigen mediated immunity - AMI) and cellular immune response (cell

mediated immunity - CMI) in detail, induction of CMI, mention cytokines, define immunological memory, immunological tolerance and immune suppression

Module V **12 hrs**

Hyper sensitivity / allergy: definitions, classification- types I, II and III (Brief accounts only); immuno deficiency diseases (ID)- definition, primary IDs, disorders of immune mechanism (humoral, cellular and combined IDs), disorders of complements, disorders of phagocytosis, mention one example each, secondary IDs - mention example, an account of Acquired Immune Deficiency Syndrome (AIDS); Auto immunity-definition, mechanism, mention AI diseases; transplantation immunity-definition, classification of transplants, graft versus host reactions;,graft rejection, mechanism of graft rejection, factors affecting graft survival; Immunisation and vaccination- definitions, vaccines; types of immunization- active immunization- killed and live attenuated vaccines, microbial extracts, vaccine conjugates, toxoids, recombined vaccines, DNA vaccines; passive immunization- pooled normal human Igs, specific Igs (hyper antisera); combined immunization

Microbiology **35 hrs**

Module VI **14 hrs**

Introduction: history, development and scope Importance of microbes in various ways- beneficial, harmful, ecological and others.

Classification of microbes/ particles: broad classification- viruses- different groups, examples; mention viroids and prions, *Mycoplasmas, Rickettsiae* and *Chlamydiae*; Bacteria: 1. Archaea – significance of extreme life forms(*Methanoarchaea*, extreme halophiles and thermophiles); Eubacteria (=Bacteria) Major groups of Eubacteria: Bergey's system of classification; modern methods classification of Eubacteria (outline only with familiar examples)- Nonphotosynthetic proteobacteria:- (Fermentative Rods and Vibrios) ex. *Vibrio, Pasteurella* (oxidative rods and cocci) eg. *Pseudomonas, Azotobacter, Rhizobium;*

Chemo-lithotrophic bacteria:- eg. nitrifying, sulphur and iron bacteria;

Firmicutes (eg. Staphylococcus) and Actinobacteria (Coryneform bacteria);

Phototrophic bacteria (Cyanobacteria); Algae-(details not expected)

Protista- different groups- examples: *Plasmodium, Giardia*; Fungi- Mention different groups – example *Candida*. Structure of a bacteriophage and a typical bacterium

Module VII **9 hrs**

Applied microbiology: various fields: emphasis on environmental, agricultural, medical, biotechnological, industrial and strategic fields

Module VIII **12 hrs**

Symbiotic microbes: microbes with other microbes, microbes with plants

microbes with animals; microbe – human host interactions, normal human microbiota of various organs- mention any 3 examples, pathogenic mic robes – mention any 3 examples, microbial toxins – mention any 2 examples.

Microbial diseases in man (of skin, respiratory system etc.)- viral – chicken pox, measles, cold, herpes, hepatitis, poliomyelitis; bacterial – diphtheria, pneumonia, leprosy, ornithosis; fungal – aspergillosis, candidiasis and others – malaria

Suggested topics for assignments / seminars

1. Factros affecting innate immunity
2. Defense mechanisms of the body against infections
3. Factors affecting antibody production
4. Theories of antibody production
5. Organ transplantation
6. Immunisation and vaccination
7. Anticeptics and antibiotics
8. Sterilisation and disinfection
9. Anaphylaxis
10. Inflammation and fever
11. Blood transfusion and safety
12. Timing of vaccination: National Immunization Schedule

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First Degree Programme
Zoology Core course VIII
Practical II - Cell Biology and Molecular Biology, Genetics and Biotechnology and Immunology and Microbiology

Course Code – ZO1545
No. of credits – 4

Aim of the course
To expertise the student to carry out routine hematological and microbiological techniques

Objectives of the course
1) To prepare and observe chromosomal arrangements during cell division
2) To study chromosomal aberrations in man
3) To gain of broad knowledge of conventional biotechnological procedures
4) To perform routine blood analysis.

Cell Biology and Molecular Biology
1. Staining of prokaryotic cells: (a) *Lactobacillus* from curd (b) Nitrogen fixing bacteria (*Rhizobium*) from root nodules of legumes
2. Staining of eukaryotic cells: buccal epithelial cells (observe Barr body)
3. Study of cell organelles
4. Mitosis: stages in onion (*Allium cepa*) root meristem (squash preparation)
5. Calculation of mitotic index and metaphase index in root meristem of *Allium cepa*
6. Meiosis: stages in testis of grass hopper (demonstration only)
7. Giant chromosomes in Diptera: (*Drosophila Chironomus* larvae) salivary gland cells (demonstration only)

Genetics

1. Study of monohybrid cross using coloured beads.
2. Study of normal chromosome compliment and karyotype of man.
3. Study of genetic syndromes and abnormal karyotypes of man

(Klinefelter's syndrome, Turner's syndrome, Down syndrome and Edward syndrome).

4. Study of Barr body and its significance (in stained buccal epithelial cells).
5. Construction of Pedigree chart.
6. Study of phenotypic characters of male and female Drosophila.

Biotechnology

1. DNA extraction
2. Polymerase Chain Reaction
3. Southern blotting and Northern blotting
4. Gene cloning

(Demonstration in the Department / Visit to research institute / CD display)

Immunology and Microbiology

1. Collection of blood, and study of the effect of anticoagulant.
2. Total and differential count of blood cells.
3. ABO and Rh systems of blood grouping.
4. Microscopic observation and study of stained preparations of any two microbes

First Degree Programme
Semester VI
Zoology Core Course IX
Physiology and Biochemistry

Course Code – ZO1641
No. of credits – 4 **Total hours 90**

Aim of the course
To improve the student's perspective of health and biology through in-depth study of human physiology

Objectives of the course
- To study the different system and the inherent disorders/ deficiencies involved therein.
- To learn the structure and functions of bio-molecules and their role in metabolism

Physiology **60 hrs**

Module I **6hrs**
Nutritional Physiology: general introduction, types of nutrition, mechanical and chemical changes of food in the alimentary canal, balanced diet, nutritional disorders – PEM , vitamin deficiency , deficiency of iron, iodine and calcium, lifestyle diseases, role of fibres, nervous and hormonal control of digestion

Module II **8 hrs**
Circulatory Physiology: Blood- Composition and functions of blood plasma and formed elements, blood groups, mechanism of blood clotting, intrinsic and extrinsic pathways, disorders of blood clotting, anticoagulants, heartbeat, conducting system and pace maker, pulse and blood pressure, clinical significance, control of cardiac activity, common cardio

vascular diseases – arteriosclerosis, atherosclerosis, Myocardial infarction, electrocardiogram, angiogram, angioplasty. Lymph and lymphatic system (brief account)

Module III **8 hrs**
Respiratory Physiology: Gas exchange, respiratory pigments- structure of haemoglobin, transport of O_2- Oxyhaemoglobin curve, Bohr effect, transport of CO_2 -carbonic acid, carbamino haemoglobin, bicarbonate and chloride shift, regulation of respiration – neural and chemical; respiratory disturbances – apnoea, dyspnoea, hypoxia, hypo and hyper capnia, asphyxia, carbon monoxide poisoning, bronchitis, asthma. Physiological effects of smoking.

Module IV **8hrs**
Renal Physiology: Nephron – structure, urine formation, counter-current multiplier system,

role of kidney in osmoregulation, composition of urine, abnormal constituents of urine, regulation of kidney functions, renal disorders – nephritis, haematurea, renal calculi, acidosis and alkalosis – Dialysis and kidney transplantation.

Module V **8 hrs**

Muscle Physiology: Brief account of types of muscles, fast and slow twitch muscles, red and white muscles. Ultra structure of striated muscle fibre, muscle proteins, simple muscle twitch, summation, tetanus, tonus, All or None law, fatigue, oxygen debt, rigor mortis. Physiological and biochemical events in muscle contraction.

Module VI **6 hrs**

Nerve Physiology: Neurons – structure, types of neuron (self study). Synapse and types of synapse, nerve impulse propagation, synaptic transmission. Reflex action, refractory period, neuro transmitters, electro encephalo gram. Nerve disorders – epilepsy, Alzheimer's disease, Parkinson's disease.

Module VII **5 hrs**

Sensory Physiology: Structure of eye and ear (self study). Physiology of vision, visual elements and pigments, photo chemistry of vision. Eye defects – myopia, hyperopia, presbyopia, astigmatism, cataract. Structure of ear and mechanism of hearing, hearing impairments – deafness, labyrinthine disease. Olfactory, gustatory and tactile sense organs

Module VIII **3hrs**

Reproductive physiology: Male and female reproductive organs (self study). Reproductive cycles, puberty, adolescence, pregnancy, parturition, lactation and birth control.

Module IX **8hrs**

Endocrinology: Endocrine glands in man, hormones and disorders, feed-back mechanism, mechanism of hormonal activity.

Biochemistry **30hrs**

Module X **8hrs**

Biomolecules: micromolecules, macromolecules, water, buffer systems and importance; Carbohydrates-structure, classification- monosaccharides (trioses, tetroses, pentoses, hexoses, aldoses, ketoses), disaccharides and polysaccharides (homo and hetero polysaccharides); biological functions of carbohydrates.

Lipids- classification- simple lipids, (neutral fats and waxes), conjugated lipids (phospho lipids, sphingo lipids, glyco lipids, lecithins, cephalins, cerebrosides, gangliosides), derived lipids (fatty acids, steroids, prostaglandins), biological functions of lipids.

Proteins - classification of proteins, amino acids- basic structure, structure of protein- primary, secondary tertiary and quaternary structures, haemoglobin as atypical protein, biological functions of proteins.

Module XI **16hrs**

Metabolism: Carbohydrate metabolism – glycogenesis, glycogenolysis, hexose monophosphate shunt, metabolic pathway of glucose- glycolysis, Kreb's cycle, electron transport series, chemi-osmotic theory, energetic; hormonal control of carbohydrate metabolism.

Lipid metabolism – hydrolysis of lipid, beta oxidation, mention alpha and omega oxidation of fatty acids, hormonal control of lipid metabolism, hormonal control of lipid metabolism.
Protein metabolism – deamination, transamination, formation of urea, hormonal control of protein metabolism.

Module XII **6hrs**

Enzymes: Chemical nature, mechanism of enzyme action, factors affecting enzyme activity, kinetics of enzyme action, Michaelis – Menten equation, iso enzymes, co-enzyme, co-factors, enzyme activation and inhibition.

Topics for assignments / seminars

1. Amino Acids
2. Nucleic Acids
3. Enzymes and their Classification
4. Nutrients
5. Vitamin deficiency diseases – symptoms and diagnosis
6. Hormone deficiency diseases – symptoms and diagnosis
7. Body temperature and its osmoregulation.
8. Human brain
9. Instruments used for the diagnosis of circulatory disorders.
10. Kidney related diseases and their diagnostic instruments.
11. Brain related diseases and their diagnostic tools.
12. Submission of endocrine glands of mammals (goat, cow, buffalo, pig) description.
13. Submission of models of diagnostic instruments with description.

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First Degree Programme
Semester VI
Zoology Core Course X
Developmental Biology and Experimental Embryology

Course code – ZO1642
No. of credits – 4 **Total hours 72**

Aim of the course

To familiarize the student with the principle of developmental biology and provide him a bird's eye view of sophisticated embryological techniques

Objectives of the course

- To study the various stages involved in the developing embryo
- To study the initial developmental procedures involved in *Amphioxus*, Frog and chick
- To procure information on state - of- the art experimental procedures in embryology.

Developmental biology **57hrs**

Module I **4 hrs**

Introduction, historical perspective (brief account), theories- Preformation, Epigenesis, Recapitulation and Germplasm. Subdivisions of Developmental biology.

Spermatogenesis and oogenesis, structure of Graafian follicle, typical egg and sperm. Polarity of egg, egg envelops; classification of eggs based on different criteria.

Module II **8hrs**

Fertilization: Agglutination, sperm penetration, activation of egg, amphimixis; physiological and biochemical changes during and after fertilization. Parthenogenesis- introduction, natural and artificial parthenogenesis, arrhenotoky and thelytoky, obligatory and facultative, significance of parthenogenesis.

Module III **9hrs**

Cleavage: types of cleavage - holoblastic and meroblastic; patterns of cleavage – radial, bilateral, spiral, rotational; cell lineage in Planocera (brief account only). Morula formation in microlecithal, mesolecithal, macrolecithal eggs; blastulation - introduction, different types of blastula – stereo blastula, coeloblastula, discoblastula, periblastula, blastocyst. Presumptive organ forming areas and fate maps, eg. amphioxus, frog, construction of fate maps.

Module IV **3hrs**

Gastrulation: introduction, brief account of morphogenetic movements – epiboly and emboly (invagination, involution, infiltration, ingression, delamination, convergence, divergence) concept of germ layers, derivatives of germ layers.

Module V **5 hrs**

Cell differentiation : totipotency, pleuripotency and unipotency of embryonic cells. Determination and differentiation in embryonic development. Gene action, drosophila as a model organism (brief account only), Homeotic genes and Hox genes.

ModuleVI **25hrs**

Development: Amphioxus - cleavage, blastulation, gastrulation, neurogenesis, notogenesis, mesoderm and coelom formation.

Frog -cleavage, blastulation, gastrulation, organogeny – development of brain, eye, heart; metamorphosis - ecological, morphological and physiological changes and hormonal control.

Chick - cleavage, blastulation, gastrulation, study of 24 hrs chick embryo; development of extra- embryonic membranes in chick.

Man - implantation, pregnancy, parturition. Placentation in mammals – different types of placenta, functions.

Module VII **3hrs**

Teratology: definition, causes, infections, drugs and chemicals, metabolic imbalance, ionizing radiation, malnutrition, autoimmunization.

Experimental embryology

Module VIII **15hrs**

Spemann's constriction experiments, organizers and embryonic induction, transplantation experiments involving optic cup, nuclear transplantation experiments in amphibians. In vitro fertilization and embryo transfer experiments in farm animals, In vitro fertilization and embryo transfer experiments in man and test tube babies; cloning experiments in animals-mammals; prenatal diagnosis and sex determination methods – amniocentesis chorionic villus sampling, ultra sound scanning. Embryonic and adult stem cell research and stem cell therapy.

Suggested topics for assignments / seminars

1. Human male and female reproductive organs.
2. Larval forms of invertebrates.
3. Metamorphosis in insects.
4. Regeneration in animals
5. Cloning experiments in animals.
6. Transgenic animals.
7. Stem cell research.
8. Comparative account on cleavage, blastulation, gastrulation in different animals.
9. Embryonic development of an invertebrate.

References

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First Degree Programme
Semester VI
Zoology Core Course XI
Ecology, Ethology, Evolution and Zoogeography

Course Code – ZO1643
No. of credits – 3 **Total hours 72**

Aim of the course
To enhance the student's concept of nature and her resources and appreciating the process and product of organic evolution

Objectives of the course
- To learn the principles, applications and management of environmental science.
- To study the inherent morphological and physiological bases of behavioural pattern exhibited by vertebrates.
- To get an exhaustive knowledge of organic evolution with special reference to man.

Ecology **24hrs**

Module I
Components of ecosystem: Environmental factors - abiotic factors, light, temperature, soil, water, air; biotic factors- autotrophs, phagotrophs and saprotrophs; ecosystem interaction and inter-relationship between biotic and abiotic factors, the cybernetic nature and the stability of the ecosystem.
Pond as an ecosystem (self study)

Module II **5hrs**

Biogeochemical cycles: Basic types of biogeochemical cycles - gaseous cycle-carbon and nitrogen cycles, mention sedimentary cycles (P and S), recycling pathways and recycle index.
Limiting Factors- basic concepts- Leibig's law of minimum, Shelford's law of tolerance, combined concept of limiting factors, Light and temperature as limiting factors.

Module III **5hrs**

Habitat Ecology: Biosphere classification- lithosphere, hydrosphere and atmosphere-
physical features, fauna and their adaptations of aquatic, terrestrial and marine habitats (self study)
Population ecology: Properties of population- density, natality, mortality, age distribution, biotc potential, environmental resistance and carrying capacity, population growth forms, J and S shaped curves, emigration, immigration and migration, population fluctuation.
Community ecology**:** Definition and characters, species diversity; stratification; dominance; ecotone and edge effect; ecological indicators; community periodicity, succession (self study)

Module IV **5hrs**

Anthropogenic impact on ecosystem**:** Ionizing radiation and radioisotopes, ionizing radiation and human health, radiation accidents and other exposures, disposal of radioactive wastes, pesticides like DDT, endosulphan, furadan, insect repellants , e-wastes. Monitoring of pollutants – physical, chemical and biological.

Module V

Wild life conservation and management**:** Significance, causes of extinction, concepts of threatened species, red data book, IUCN, WWF, CITES, Green Environment and Green peace; protected areas, biosphere reserves, national parks and sanctuaries in India, forests in India, desertification, deforestation, carbon trading; importance of mangroves in coastal ecosystems- conservation and management (self study)

Module VI **9hrs**

Environmental biotechnology**:** Biotechnological methods of pollution detection, biotechnological methods in pollution abatement, bioremediation, biotechnology and biodegradation, genetically engineered microbes in bio-treatment of waste, eco-friendly bio-products for environmental health, bio-piracy, bio-pesticides and bio-fertilizers, organic farming and its merits. Green chemistry – designing a Green synthesis, basic principles of Green chemistry.

Ethology **12hrs**

Module VII **12hrs**

History and scope of ethology: Motivation- models of motivation (Lorenz's psycho-hydraulic model and Deutsch's model); learning- types of learning (imprinting, habituation, conditioned reflex, unconditioned reflex, latent learning); neural mechanisms in behavior-role of hypothalamus and other brain centers, hormones and behavior; sociobiology- social groups – merits and demerits, properties of organized societies, social groups in mammals,

social stress. Pheromones and chemical communications, human pheromones.

Evolution **26 hrs**

Module VIII

Theories of organic evolution: Lamarck's theory, it's criticism (Weisman's germplasm theory) Darwin's theory of natural selection (mention the contributions of Wallace). Mutation theory (self study)

Module IX **4hrs**

Geological timescale, fossils, fossilization, paleontological evidences of evolution, fossil dating and significance of fossils.

Module X **12 hrs**

Modern concept of organic evolution: (Neo Darwinism) - genetic basis of evolution- gene pool, gene frequency, mutation, role of mutation in evolution, neutral mutation (Kimura), genetic drift, genetic equilibrium; factors affecting genetic equilibrium and Hardy – Weinberg law.

Natural selection: types of selection (brief account of the observation in *Biston betularia*), isolation and isolating mechanisms; speciation- sympatric speciation and allopatric speciation. Hybridization- adaptive radiation with special reference to Darwin's finches.

Module XI **10hrs**

Tempo of Evolution**:** Gradualism vs Punctuated equilibrium, rates of evolution- Bradytely and Tachytely, Gould's and Eldridge's contributions, orthogenesis and orthoselection, anagenesis and cladogenesis.

Evolution of man: Organic and cultural, examples of trends in human evolution, fossil men- brief accounts of Parapithecus, Propliopithecus, Dryopithecus, Ramapithecus, Australopithecus, Neanderthal, Cromagnon and Modern man.

Zoogeography **10 hrs**

Module XII **4hrs**

Animal Distribution**:** Geographic distribution of animals-cosmopolitan distribution, discontinuous distribution, bipolar distribution and isolated distribution, factors affecting animal distribution, barriers to animal distribution- physical and biological barriers.

Module XIII **6hrs**

Zoogeographical Realms**: (**brief account of each realm mention the areas included, physical features and fauna) Palaearctic region, Australian region, Ethiopian region, Nearctic region, Oriental region and Neotropical region. Biogeographial classification of India- Western Ghats, Eastern Ghats and Himalayas. Insular Fauna**:** Brief account of oceanic islands and continental islands (with one example each)

Suggested topics for assignments / seminar

1. Biodiversity of sacred groves of Kerala.
2. Mangroves of Kerala and their importance.
3. Wild life sanctuaries of Kerala.
4. Depleting water resources of Kerala
5. Sand mining and related problems.
6. Threatened animals of India.
7. Pheromones and behaviour.
8. Origin of life.
9. Mesozoic reptiles.

References

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First Degree Programme
Zoology Core Course XII
Practical III - Physiology and Biochemistry

Course Code - ZO1644
No. of credits – 3

Aim of the course
To demonstrate basic principles in physiology

Objectives of the course
- To learn clinical procedures for blood & urine analysis
- To make the student skillful in simple biochemical laboratory procedures.

1. Preparation of blood smear and study of blood cells of man.
2. Kymograph apparatus and explanation of simple muscle twitch.

3. Measurement of oxygen consumption of cockroach using Fen's respirometer.
4. Study of tonicity of blood cells
5. Urine analysis for the detection of abnormal constituents – glucose, albumin
6. Detection of excretory products – ammonia (Nessler's test), urea (Ammonia generation/ Biuret test) and uric acid (Phosphotungstic acid test)
7. Paper chromatographic separation of amino acids
8. Estimation of haemoglobin of blood using Haemoglobinometer.
9. Effect of temperature / pH on salivary amylase activity
10. Isolation of casein from milk.
11. Digestion of starch and separation of maltose by dialysis.

First Degree Programme
Zoology Core Course XIII
Practical IV - Developmental Biology and Experimental Embryology and Ecology, Ethology, Evolution and Zoogeography

Course Code – ZO1645
No. of credits - 3

Developmental Biology and Experimental Embryology

1. Study of different types of eggs - Amphioxus, frog, chick, man- based on models/charts.
2. Study of blastula - Amphioxus, frog- slide / model
3. Study of gastrula – frog-yolk plug stage - slide / model.
4. Mounting of 24hrs/48hrs chick blastoderm.
5. Study of placenta – any two types.
6. Sperm motility in fish (zebra fish)
7. Embryonic development of the egg of zebra fish (demonstration only)

Ecology, Ethology, Evolution and Zoogeography

1. Estimation of dissolved oxygen
2. Estimation of CO2
3. Primary productivity using dark and light bottle
4. Turbidity using Secchi disc
5. Estimation of hardness of three different water samples.
6. Extraction of soil organisms- Berlese funnel, Baerman's funnel
7. Construction of food web
8. Study of ecological adaptations – any three
9. Study of marine plankton – any three
10. Measurement of pH of different water samples using pH meter, pH paper and indicator solution.
11. Alarm pheromones in ants.
12. Mention the contribution of Darwin and Lamark.
13. Study different zoogeographical realms with fauna.

First Degree Programme

Semester V

Zoology Open Course I

Public Health and Hygiene

Course Code – ZO1551.1

No. of credits – 2 **Total hours 54**

Aim of the course

To make the student aware of the essentials of public health and sanitation thereby warding off diseases and uplifting the living standards of the community

Objectives of the course

- To learn the principles of nutrition and dietetics
- To understand the ill effects of modern lifestyle
- To study the advantages of being hygienic

Module I **6hrs**

Introduction: Scope and importance of the study; balanced diet, diet control for diabetics, cholesterol etc., concept of energy, calories, daily food intake as per occupation, pregnancy and lactation, probiotics and nutriceuticals. Dietary requirements of infants, pre-school children, school children, adults and geriatric care. Malnutrition and over nutrition – obesity

and weight control; defects of modern food habits – fast food, soft drinks, ice-creams and broiler chicken.

Module II **4hrs**

Adulteration of food: food hygiene – hygiene of milk, meat, fish, eggs, fruits and vegetables, common food adulterants – harmful effects and their detection, food additives, fortification of food; Food Adulteration Act and its stringent implementation

Module III **18hrs**

Health Hazards: Health dynamicity – definition, spectrum, factors influencing health, health as a medium of socio-economic development. Diseases – concept, terminologies, disease cycle, mode of transmission. Preventive methods including vaccination and its schedule. Common food borne and water borne diseases (gastroenteritis, jaundice, cholera, salmonellosis, travellers' diarrhoea and *Escherichia coli* infection, typhoid) – causative agents, symptoms, prevention and control. Emerging diseases, sexually transmitted infections – AIDS, genital herpes, hepatitis B, syphilis, gonorrhoea – causative agents, symptoms, modes of transmission and prevention. Dengue, chikunguniya, rat fever (general methods of mosquito control and the need to prevent mosquito breeding in and around our homes). Lifestyle habits – excessive usage of T.V., computer, mobile phones, two wheelers, and their impacts on health. Lack of physical exercise and its deleterious effects on the body and mind

Module IV **6hrs**

Health Education: Definition, objectives, principles and methods of health education, ill-effects of smoking, alcoholism and drug abuse (emphasis should be given to pan masala, amphetamines, hashish, opium, brown sugar, pethedine). Population control and family welfare, use of contraceptives. Blood donation –basics of ABO, blood grouping including Rh factor. Genetic incompatibility and consanguineous marriages.

Module V **12hrs**

Mental Health: Definition by WHO and necessity of mental well being, major depressive disorders, substance abuse, schizophrenia, obsessive compulsive disorders, domestic violence, causes for lost years of healthy life, strategies for prevention and possible interventions, childhood mental disorders and illnesses, gulf widow syndrome, stress reduction and management (importance of yoga)

Module VI **8hrs**

Hygiene: Definition, personal hygiene- body odour, oral hygiene, grooming, feminine hygiene, sleep hygiene, hand washing, toiletry. Social hygiene – clean living movements, occupational hygiene, food and cooking hygiene, medical hygiene, excessive hygiene.

Suggested topics for assignments / seminars

1. Medical camps maybe conducted in colleges and students can have routine blood tests and grouping done.
2. Extension activities – Community programmes may be arranged for alcoholics and students may form self-help groups for extending social support.
3. Awareness programmes – Drinking water sources may be tested for possible contamination and classes on sanitation may be arranged for the local people.
4. Case studies based on public hygiene.
5. Survey of mental illness and symptoms among children of mentally retarded schools.
6. Effect of alcoholism on the social life in a community
7. Impact of tobacco addiction on the life of farmers

References

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- Swaminathan S. Principles of Nutrition and Dietetics.

First Degree Programme

Semester V

Zoology Open Course I

Human Health and Sex Education

Course Code – ZO1551.2
No. of credits – 2 **Total hours 54**

Aim of the course
To redress problem associated with health and sex thereby promoting fitness and well being.

Objectives of the course

- To make the student understand the importance of good health.
- To educate the student on clean sexual habits thereby warding off sexually transmitted diseases.

Module I **14hrs**

Introduction to health, health as a state of wellbeing, health awareness, Immunity-immunization and vaccination, factors affecting health- food, balanced diet, food supplements, pathogens, pollution, sleep, exercise and stress. Physical health, reproductive health, adolescence, senescence. Mental health- mental illness and disabilities, symptoms and prevention of mental illness; alcoholism, tobacco addiction, de-addiction, lifestyle diseases. Community health- health centres, role of health centres. Spiritual health, yoga and meditation.

Module II **8hrs**

Human reproductive system: Male reproductive system- structural details of testis and accessory structures, functions of testis, semen, hormonal control. Female reproductive system- structure of ovary, accessory structures, puberty, reproductive cycles and hormonal control, menstrual cycle, gestation period, hysterectomy, menopause.

Module III **7hrs**

Events of human reproduction: Gametogenesis- spermatogenesis and oogenesis, ovulation, fertilization, embryonic development, parturition

Module IV **12hrs**

Human intervention in reproduction: Contraception and birth control-barrier method, hormonal methods, natural methods, sterilization, termination of pregnancy. Infertility-male and female infertility, causes and treatment for infertility. Assisted Reproductive Techniques-IVF, GIFT, ZIFT, Donor Insemination (DI). Artificial Insemination by Donor (AID), Artificial Insemination by Husband or partner (AIH). Surrogacy, SUZI (sub-zonal insemination), MIST (micro insemination sperm transfer)

Module V **6hrs**

Sexually transmitted diseases: Syphilis, genital warts, chlamydia, chancroid, trichomoniasis, gonorrhea, genital herpes, AIDS

Module VI **7hrs**

Sex education: Adolescent sexual activity, teenage pregnancy, sexual harassment, sexual awareness and policies (legal aspects), lesbian and gay sex, bisexual, transgender youth, adolescent stress management

Suggested topics for assignments / seminars

1. A survey of lifestyle diseases in a locality
2. A study on sexually transmitted diseases registered in a hospital

3. A survey of vaccination in village, town and city

4. Impact of yoga and meditation on health

5. A survey of contraceptive methods prevalent among village and city people.

6. A comparison of the affects of sexual harassment among school and college students.

7. A survey of adolescent sexual activities in a city or town.

References

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- The Complete Manual of Fitness and Well-being. The Reader's Digest Association, Inc. Pleasantville, New York / Montreal.
- Guyton & Hall.Textbook of Medical Physiology.

First Degree Programme
Semester V
Zoology Open Course I
Human diseases and their management

Course Code – ZO1551.3
No. of credits – 2 **Total hours 54**

Aim of the course
To instill in the students the need to manage communicable diseases thereby creating a healthy society

Objectives of the course
- To learn the various modes and agents of disease transmission

- To learn the causative factors of non communicable diseases

Module I **4hrs**

Introduction: Health-WHO definition, individual and community health, importance of individual health, history of human diseases, human diseases, cultural and social factors in health and diseases, differences in health and diseases.

Module II **6hrs**

Environment and health: Basic health requirements in the environment.
Water – sources and uses of water, water pollution, water-borne diseases and purification of water. Housing- basic human requirement- sanitation- nature and methods of purification of water. Air- composition and cause of discomfort- need for proper ventilation, removal of refuse- disposal and utilization of excreta (biogas).

Module III **4hrs**

Lifestyle choice for healthier life: Diet and health, exercise and health, alcohol, tobacco and drugs, sex and health, computers and health, mobile phone and health, psychological health

Module IV **3hrs**

Communicable diseases: Classification of communicable diseases. Defense mechanism – immunity (natural, acquired)

Module V **4hrs**

Viral Infections: Brief account of virus, chickenpox, poliomyelitis, rabies, yellow fever, dengue fever, mumps, influenza, measles, encephalitis, hepatitis ,HIV infection and AIDS – causes ,symptoms, prevention and cure.

Module VI **4hrs**

Bacterial Infections: Brief account of bacteria, dysentery, cholera, tuberculosis, tetanus, diphtheria, septicemia, scarlet fever, typhoid, plague; STD and leprosy –
causes, symptoms, prevention and cure.

Module VII **4hrs**

Protozoan Infections: Brief account of protozoans - amoebiasis, leishmaniasis, trichomonasis, malaria - causes, symptoms, prevention and cure.

Module VIII **4hrs**

Worm Infections: Brief account of platyhelminthes and nematods, cysticercosis, taeniasis, ascariasis, ancylostomiasis, encephalitis, enterobiasis and dracanculosis – causes, symptoms, prevention and cure.

Module IX **3hrs**

Vector borne diseases: Vector – identification of vectors – dengu, filaria, kala azar, Japanese encephalitis, chikungunya- causes, symptoms, prevention and cure.

Module X **4hrs**

Non-communicable diseases: Hereditary and congenital diseases – haemophilia, diabetes mellitus, hypertension, muscular dystrophia, some types of cancer. Immunological diseases – allergy, autoimmune diseases. Deficiency diseases – scurvy, pellagra, beriberi,

xerophthalmia, rickets. Cardiovascular diseases-causes, symptoms, prevention and treatment.

Module XI **4hrs**

Mental health: Meaning, definition, history, characteristics of a mentally healthy person. Types of mental illness – causes, symptoms and prevention – major mental illness (schizophrenia, paranoia), minor mental Illnesses (anxiety, phobia, obsessive compulsive neuroses)

Module XII **8hrs**

Basic viewing techniques- endoscopy examination techniques: Blood- total count, differential count, ESR, immune function tests, blood clotting test, routine blood chemistry, blood cholesterol test, hormone tests; urine- routine urine chemistry; cell and tissue test- pap test, sputum test, biopsy, histopathology; genetic tests- amniocentosis, chorionic villi sampling; imaging techniques- X – ray, ultrasound scannig, CT scan, MRI scan, SPECT scanning, PET scanning;

Module XIII **2hrs**

Role of yoga in management of common diseases.

Suggested topics for assignments/ seminars

Epidemiological study of the above diseases.
Questionnaire has to be prepared . Students has to be grouped in 10. Each student will have to visit 25 houses and record the observations. The data of 10 students (250 Houses) has to be tabulated, studied and interpreted.
Every year the study, if possible, has to carry out in the same houses or to the same locality. This follow up survey will be very useful

References

- Abraham Verghese. (1996). Introduction to Psychiatry. BI Publication Pvt. Ltd.
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- Mary L M, Mark Zelman, Paul Holdway; Human Diseases – A Systematic Approach.
- Park, K. (2005). Textbook of Prevention and Social Medicine, Jebelpur, Banarids.

- .Park, J., E., and Park, K. Textbook of Preventive and Social Medicine.
- Swami Styananda Saraswathi,Swami Karam: Yogic Management of Common Diseases.

First Degree Programme
Semester VI
Zoology Open Course II
Economic Zoology - Vermiculture and Apiculture

Course Code – ZOI651.1
No. of credit – 2 **Total hours 54**

Aim of the course
To promote self employment and self reliance among educated youth

Objectives of the course
- To learn the basic procedure and methodology of vermiculture
- To learn the scope and methodology of apiculture.

Vermiculture **24 hrs**

Module I **6 hrs**
Introduction: definition and scope of vermiculture. Nature and species of earthworms: habit categories – epigeic, endogeic and anecic, indigenous and exotic species (*Eudrillus eugeniae/Eisenia foetidae/Perionyx excavatus/ Lampito mauritii*), identification of the above four species based on morphological characters.

Module II **10 hrs**
Methodology of vermicomposting: step by step methodology – containers for culturing, raw materials required, preparation of bed, environmental pre-requisites, feeding, harvesting, and storage of vermicompost. Advantages of composting, precautions to be taken to prevent attack by pests and pathogens.

Module III **8 hrs**
Vermicompost profile and applied aspects: physical, chemical and biological parameters of

vermicast, vermin enrichment, economic uses of vermiculture (biofertilizer, waste disposal, vermiwash, poultry feed, vermi-remediation etc.

Apiculture **30hrs**

Module IV **8hrs**

Introduction and Scope: Definition and significance of the study. Caste system and Social behavior; common species of honeybees used, organization of bee colony, social life and adaptations of honeybees.

Module V **12hrs**

Bee keeping methods and equipments: indigenous methods, extraction appliances, extraction of honey from the comb and processing, management and maintenance of an apiary, bee pastures

Module VI **10hrs**

Diseases and economics: diseases (bacterial, fungal, protozoan, acarine, brood diseases), preventive and curative measures. Use of honey, bees wax, bee venom, nutrient profile of honey, marketing strategies.

Suggested topics for assignments / seminars

Vermiculture

1. Report of field visits to commercial/professional units
2. Feasibility of maintaining a vermicomposting plant in the College maybe worked out
3. Awarenes s programmes on waste management through vermicomposting may be conducted for the local residence associations

Apiculture

1. Report of field visits

References

1. Cherian & Ramachandran Bee keeping in *South Indian* Govt. Press, Madras.
2. Gupta, K.C. Romance of bee keeping. Khadi Paristhan, Calicut.
3. Mary Appelhof. Worms eat my Garbage.
4. Mishra R.C. Perspectives in Indian Apiculture
5. Sathe, T.V. Vermiculture and Organic farming.

First Degree Programme

Semester VI

Zoology Open Course II

Ornamental fish production and management

Course Code – ZO1651.2
No. of credits - 2 **Total hours 54**

Aim of the course

To make the student aware of the vast potentials involved in ornamental fish farming and trading

Objectives of the course

- To learn the scientific method of setting an aquarium
- To learn the culture breeding and marketing techniques of common indigenous ornamental fishes

Module 1 **6 hrs**

Importance and history of aquarium fish keeping. Design and construction of aquaria: aquarium fabrication- shape, size, volume, type of glass tank, cutting of glass, preparation of glass tank, strengthening and supporting of tank, fitting of tanks into room settings; aquarium floor setting – type and size of pebbles, gravels, granites used for bed setting and its advantages. Filters- biological, chemical and mechanical. Aquarium accessories like aerators, decorative, lighting, heating and feeding trays.

Module II **3hrs**

Water quality management in aquarium systems – sources of water, containers, storage, temperature, pH, dissolved carbon dioxide, ammonia, hardness, turbidity and ozone in aquarium.

Module III **5hrs**

Aquarium plants: Uses of aquarium plants, different varieties of plants like submerged plants (tubers, rooted plants, cutting plants) and emerged plants , indoor plants and outdoor plants , selection of plants, planting techniques, propagation and maintenance of aquarium plants. Advantages of natural plants over artificial plants.

Module IV **9hrs**

Fresh water ornamental fishes : Common ornamental fishes- indigenous and exotic species; Identification and biology of the common ornamental fishes. *Cyprinus carpio* (koi carp), *Molliensia sphenops* (black molly lyre tail), *Poecilia reticulate* (guppy), *Poecilia latipinna*, *Xiphophorous helleri* (red sword tail) *Xiphophorous maculates* (red platy) *Pterophyllum scalare altum* (angel fish) *Carassius auratus* (red oranda) *Betta splendens* (Siamese fighting fish) *Trichogaster leeri* (pearl gourami). Live bearers and egg layers. Sexual dimorphism in ornamental fishes.

Module V **6hrs**

Breeding and rearing of common ornamental fishes. Conditions for breeding- pH, temperature and sex ratio. Brood stock management- selection of brooders, maintenance and management of brood stocks. Selective breeding and hybridization techniques. Induced breeding. Colour enhancement techniques.

Module VI **6hrs**

Aquarium maintenance- Setting up of a freshwater community tank and its maintenance. Food and feeding - live feed and formulated feed. Preparation and culture of live feed (Artemia, Infusoria, Spirulina). Control of algal growth, snails and other predators. Common disease of ornamental aquarium fishes - their causative agents - virus, bacteria, fungi, protozoa and nematode; symptoms, treatment and prophylactic measures.

Module VII **10hrs**

Indigenous ornamental fishes - Common indigenous ornamental fishes. Identification and biology of the common ornamental fishes. Cyprinids *Puntius denisonii* (red line torpedo fish),*Puntius fasciatus* (melan barb), *Puntius filamentosus* (Indian tiger barb), *Puntius curmuca* (red tailed silver shark) , *Danio malabaricus* (Malabar danio) ;Loaches (*Nemacheilus triangularis*(Zodiac loach), *Lepidocephalus thermalis* (Malabar loach) ; Cichlids: *Etroplus maculatus* (yellow and orange chromides), *E . suratensis* (pearl spot), Anabantids: *Anabas testudineus* (climbing perch)and Catfishes : *Horabagrus brachysoma* (Yellowish catfish), *H . nigricollaris* (White collared imperial catfish).

Module VIII **4hrs**

Marine aquarium: preparation and maintenance of common marine ornamentals (Fishes, Crustaceans, Mollusks and Echinoderms). Collection, packing and transportation and marketing of indigenous ornamental fishes. Post harvest

technology

Module IX **5hrs**

Constraints of farming and export of ornamental fishes: Convention on biodiversity; procedures for starting an export firm; training methods and entrepreneurship; funding agencies.

Suggested topics for assignments / seminars

1. Indigenous fishes of Kerala
2. Indigenous ornamental fishes of India
3. Feeding habits of fishes
4. Nutritional requirement in fishes
5. Aquarium plants
6. Preparation of Community tank.
7. Fish diseases
8. Predators in a fish pond.
9. Environmentally and genetically induced abnormalities in ornamental fishes.
10. Economic importance of ornamental fishes.

References

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First Degree Programme

Semester VI

Zoology Open Course II

Dairy farming and Broiler farming

Course Code – ZO1651.3
No. of credits – 2 **Total hours 54**

Aim of the course
To promote and encourage the students to take up animal husbandry instead of crawing for white collar jobs

Objectives of the course
- To aid white revolution by improving the breeds of cattle
- To learn the proper and scientific methodology behind poultry farming

Dairy farming **27 hrs**

Module I **7hrs**
Breeds of livestock and dairy farm: Breeds of Taurus (exotic) dairy cattle, breeds of zebu (Indian) cattle, breeds of dairy buffaloes; present status of dairy farming; planning to establish dairy farm, location of farm, different housing systems, dairy buildings, space requirements, economically setting a small farm.

Module II **5hrs**
Nutritive values of common feeds, commercial and mixed feeds: Feeding and providing feed - feeds rich in minerals , feeds rich in protein , live stock tonics - hormones , thyroprotein , stilbestrol , urea for dairy cattle, toxic feeds, food-poisoning - Balancing the dairy ration - general rule for feeding dairy herd.

Module III **4hrs**
Mechanism of reproduction: Male reproductive organs, female reproductive organs, role of hormones in male reproduction, role of hormones in female reproduction; care and management of newborn animals.

Module IV **6hrs**
Artificial insemination: Advantages of artificial insemination over natural breeding, limitation of A.I, problems under Indian conditions; collection of semen - electro ejaculation, dilution of semen and cryopreservation, insemination , cleaning and sterilization of apparatus. Common parasites in India and cure methods - External parasites and pest, reproductive diseases, milk borne diseases.

Module V **5hrs**
Preparation and marketing of dairy products: Determining quality of milk, choosing market outlet, assembling dairy products from farms, co-operative action among creameries, hauling milk to city markets; Marketing fluid milk (i) Specific gravity of milk (ii) determination of specific gravity with a lactometer (iii) pasteurization of milk (iv) advantages of pasteurization; determining cost of distribution.

Broiler farming **27 hrs**

Module VI **5hrs**

History, contribution to remove protein deficiency, role of broiler farm in urban and rural areas, employment potential, export potential. Poultry breeds, broiler strains available in India, day old chicks and their maintenance, hatchery potential; parental stocks and their maintenance

Module VII **5hrs**

Poultry house, site, space requirement, types of houses-cage and deep-litter system, equipment for feeding and watering, lighting for poultry houses, ventilation.

Module VIII **5hrs**

Nutrition of poultry birds, nutritional requirements according to age, starter feed, finisher feed, feed formulation. Availability of raw material for feed; use of antibiotics, aminoacids and minerals.

Module IX **5hrs**

Brooding and rearing baby chicks, types of brooders, vaccination, summer management and monsoon management.

Module X **7hrs**

Diseases and health management, common diseases caused by viruses, bacteria and worms, ranikhet, fowl pox, worms and other parasites, toxicosis and account of aspergillus, aflotoxin, Salmonella; deworming and insecticide treatment; machanised dressing methods; cold storage, avoiding aflotoxin.

Suggested topics for assignments / seminars

Dairy farming

1. Breeds of Taurus (exotic) dairy cattle, Breeds of zebu (Indian) cattle, Breeds of dairy buffaloes.
2. Planning to establish dairy farm.
3. Setting a small farm.
4. Feeding and providing feed to dairy animals.
5. General rule for feeding dairy herd.
6. Role of hormones in male reproduction.
7. Role of hormones in female reproduction.
8. Care and management of newborn animals.
9. Advantages of Artificial insemination over natural breeding.
10. Common parasites in India and cure methods - External parasites and pest.
11. Reproductive diseases - Milk borne diseases.
12. Determining quality of milk.
13. Marketing fluid milk.

Broiler farming

1. Role of broiler farm to remove protein deficiency.
2. Role of broiler farm in employment potential and export potential.
3. Day old chicks and their maintenance.

4. Parental stocks and their maintenance.
5. Setting up of broiler farming.
6. Feed formulation. Availability of raw material for feed; Use of antibiotics, aminoacids and minerals.
7. Brooding and rearing baby chicks.
8. Summer management and monsoon management.
9. Diseases and health management.

References

Dairy farming

- Banerji, G.C. A text book of Animal husbandry, 1998. Oxford & IBH.
- ICAR. Handbook of Animal Husbandry, 1990/97, ICAR, PUSA.

Broiler farming

- Gnanamani. Profitable Poultry Farming.
- Banerji, G.C. Poultry. Oxford & IBH.

First Degree Programme
Semester VI
Zoology Project and Field study

Course Code – ZOI646
No. of credit – 4

Project

Aim of the course

To develop an aptitude for research in Zoology

Objective of the course

To inculcate proficiency to identify appropriate research topic and presentation

Specifications

Topics of biological interest can be selected for the project.

Project is to be done by a group not exceeding 10 students.

Every student should submit typed (A4 paper, 12 Font, 1.5 Space), spirally bind project report in duplicate to the department on the day of the examination of Practical II.

A copy duly attested by the supervising teacher and the Head of the Department must be placed for ESE before a board of two Examiners.

The viva-voce based on the Project is conducted individually.

Project topic once chosen shall not be repeated by any later batches of students.

The project report may contain the following sections

1. Preliminary (Title page, declaration, Certificate of the supervising teacher, content etc.)

2. Introduction with relevant literature review and objective

3. Materials and Methods

4. Result

5. Discussion

6. Conclusion / Summary

7. References.

Field study

A total of eighteen hours (1hour/week) are allotted to field study in the fifth semester. Field study of 4 days is compulsory. Students are directed to visit one research institute and one wild life sanctuary / ecosystem / museum / zoo, preferably with in the state of Kerala. Scientifically prepared hand written study tour report must be submitted by each student for ESE on the day of the examination of Practical II.