

**SACRED HEART COLLEGE (AUTONOMOUS)**

**DEPARTMENT OF ZOOLOGY**

**BACHELOR OF SCIENCE IN ZOOLOGY**

**Course plan**

**Academic Year 2018-19**

**Semester 4**

## COURSE STRUCTURE

COURSE CODE	TITLE OF THE COURSE	NO. HRS./ WEEK	CREDITS	TOTAL HRS./SEM
15U4CCENG6	EVOLUTION OF THE PHILOSOPHY OF SCIENCE	5	4	90
15U4CCHIN4A	CULTURE AND CIVILIZATION OF INDIA	5	4	90
15U4CCFRN4A	AN ADVANCED COURSE IN FRENCH II	5	4	90
15U4CCSAN4A	HISTORICAL SURVEY OF SANSKRIT LITERATURE AND KERALA CULTURE	5	4	90
15U1CCMAL4A	ഗദ്യം രചനാപരിചയം	5	4	72
15U4CRZOO04	APPLIED ZOOLOGY	3	3	54
15U4CPBOT4	ANATOMY AND APPLIED BOTANY	3	3	54
15U4PCHE4.2	ADVANCED BIO-INORGANIC CHEMISTRY	3	3	54

## COURSE PLAN

PROGRAMME	BSC Zoology	SEMESTER	4
COURSE CODE AND TITLE	15U4CCENG6: Evolution of the Philosophy of Science	CREDIT	4
HOURS/WEEK	5	HOURS/SEM	90
FACULTY NAME	RAJESH JAMES.		

<b>COURSE OBJECTIVES</b>
To appreciate the role of science in all walks of life and the treatment of its themes in various literary formats
To critically engage with literary texts written in different languages and later translated into English.
To promote a new way of thinking which will encompass both science and literature
To facilitate communication between both science and literature
To apply the unfathomable power of literature and science in their writings and creative endeavors.

<b>SESSION</b>	<b>TOPIC</b>	<b>Learning Resources</b>	<b>Value Additions</b>	<b>Remarks</b>
<b>What is Science- George Orwell</b>				
1	What is Science	Text	Lecture/interaction	
2	What is Science	Text	Discussion	
3	What is Science	Text	Reflections	
4	What is Science	Text	Discussion	
5	What is Science	Text	Quiz	
<b>The Origin of Science-Will Durant</b>				

6	The Origin of Science	Text	Lecture/interaction	
7	The Origin of Science	Text	Discussion	
8	The Origin of Science	Text	Reflections	
9	The Origin of Science	Text	Discussion	
10	The Origin of Science	Text	Discussion	
11	The Origin of Science	Text	Quiz	
<b>The Scientific Outlook-C V Raman</b>				
12	The Scientific Outlook	Text	Lecture/interaction	
13	The Scientific Outlook	Text	Discussion	
14	The Scientific Outlook	Text	Reflections	
15	The Scientific Outlook	Text	Reflections	
16	The Scientific Outlook	Text	Discussion	
17	The Scientific Outlook	Text	Discussion	
18	The Scientific Outlook	Text	Quiz	
<b>Our Picture of the Universe – Stephen Hawking</b>				
19	Our Picture of the Universe	Text	Lecture/interaction	
20	Our Picture of the Universe	Text	Discussion	
21	Our Picture of the Universe	Text	Reflections	
22	Our Picture of the Universe	Text	Reflections	
23	Our Picture of the Universe	Text	Discussion	
24	Our Picture of the Universe		Discussion	
<b>Our Ancestors – Carl Sagan</b>				
25	Our Ancestors	Text	Lecture/interaction	
26	Our Ancestors	Text	Discussion	
27	Our Ancestors	Text	Reflections	
28	Our Ancestors	Text	Reflections	

29	Our Ancestors	Text	Discussion	
30	Our Ancestors		Quiz	
<b>Literature and Science-Aldous Huxley</b>				
30	Literature and Science	Text	Lecture/interaction	
31	Literature and Science	Text	Discussion	
32	Literature and Science	Text	Reflections	
33	Literature and Science	Text	Reflections	
34	Literature and Science	Text	Discussion	
35	Literature and Science	Text	Discussion	
36	Literature and Science	Text	Quiz	
<b>Literature and Ecology- William Rueckert</b>				
37	Literature and Ecology	Text	Lecture / interaction	
38	Literature and Ecology	Text	Lecture	
39	Literature and Ecology	Text	Interaction	
40	Literature and Ecology	Text	Lecture	
41	Literature and Ecology	Text	Discussion	
42	Literature and Ecology	Text	Interaction	
43	Literature and Ecology	Text	Discussion	
44	Literature and Ecology	Text	Discussion	
45	Literature and Ecology	Text	Quiz	
<b>Science and Society – Albert Einstein</b>				
46	Science and Society	Text	Lecture / interaction	
47	Science and Society	Text	Lecture	
48	Science and Society	Text	Interaction	
49	Science and Society	Text	Lecture	
50	Science and Society	Text	Discussion	

51	Science and Society	Text	Interaction	
52	Science and Society	Text	Discussion	
53	Science and Society	Text	Lecture / interaction	
54	Science and Society	Text	Quiz	
<b>A Little Bit of What You Fancy – Desmond Morris</b>				
55	A Little Bit of What You Fancy	Text	Lecture	
56	A Little Bit of What You Fancy	Text	Analysis	
57	A Little Bit of What You Fancy	Text	Reflections	
58	A Little Bit of What You Fancy	Text	Discussions	
<b>Unit 2: Moxon's Master – Ambrose Bierce</b>				
59	Moxon's Master	Text	Lecture	
60	Moxon's Master	Text	Analysis	
61	Moxon's Master	Text	Reflections	
62	Moxon's Master	Text	Discussions	
63	Moxon's Master	Text	Interaction	
<b>The Stolen Bacillus – H.G.Wells</b>				
64	The Stolen Bacillus	Text	Lecture	
65	The Stolen Bacillus	Text	Analysis	
66	The Stolen Bacillus	Text	Reflections	
67	The Stolen Bacillus	Text	Discussions	
68	The Stolen Bacillus	Text	Quiz	
<b>EPICAC – Kurt Vonnegut</b>				
69	EPICAC	Text	Lecture	
70	EPICAC	Text	Analysis	
71	EPICAC	Text	Reflections	
72	EPICAC	Text	Discussions	

<b>The Comet – JayantNarlikar</b>				
73	The Comet	Text	Lecture	
74	The Comet	Text	PPT/Video	
75	The Comet	Text	Analysis	
76	The Comet	Text	Discussion	
<b>The Last War – Neil Grant</b>				
77	The Last War – Neil Grant	Text	Lecture	
78	The Last War – Neil Grant	Text	PPT/Video	
79	The Last War – Neil Grant	Text	Analysis	
80	The Last War – Neil Grant	Text	Discussion	
<b>Cyberscripture Part 1 : Unplugged- G L Horton</b>				
81	Cyberscripture Part 1 : Unplugged	Text	Lecture	
82	Cyberscripture Part 1 : Unplugged	Text	PPT/Video	
83	Cyberscripture Part 1 : Unplugged	Text	Analysis	
84	Cyberscripture Part 1 : Unplugged	Text	Discussion	
85	Cyberscripture Part 1 : Unplugged	Text	Lecture	
86	Cyberscripture Part 1 : Unplugged	Text	PPT/Video	
87	Cyberscripture Part 1 : Unplugged	Text	Analysis	
88	Cyberscripture Part 1 : Unplugged	Text	Discussion	
<b>Revision</b>				
89	Syllabus	Text	Quiz/ Interaction	
90	Syllabus	Text	Quiz / Interaction	

### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc.)
1	By February	Prepare a review of any book/Article that inspired you most

### References

Philosophy of Science

### COURSE PLAN

PROGRAMME	BACHELOR OF SCIENCE - ZOOLOGY	SEMESTER	4
COURSE CODE AND TITLE	15U4CCHIN4A-CULTURE AND CIVILIZATION OF INDIA	CREDIT	4
HOURS/WEEK	5	HOURS/SEM	90
FACULTY NAME	Dr. MINIPRIYA R, SYAMLAL M.S		

### COURSE OBJECTIVES

To identify the socio-cultural aspects of literary works in different periods.
To recognise the social significance of a literary work in any language.
To identify the relation between society and literature and analyse the cultural changes.
To develop creative thinking capacity through Essays.
To connect the cultural trends to literary forms.



SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
<b>MODULE I</b>				
1	Sanskriti Ki Kahani Introduction About The Author	Lecture/PPT		
2	Sanskriti Ki Kahani	Lecture		
3	Sanskriti Aur Apsanskriti Introduction about the Author	Lecture/PPT		
4	Sanskriti Aur Apsanskriti	Lecture/Discussion		
5	Sanskriti Ki Kahani	Lecture		
6	Sanskriti Ki Kahani	Lecture/PPT		
7	Sanskriti Aur Apsanskriti	Lecture/Discussion		
8	Sanskriti Aur Apsanskriti	Interaction		
9	Sanskriti Ki Kahani	Lecture		
10	Sanskriti Ki Kahani	Lecture/Discussion		
11	Sanskriti Aur Apsanskriti	Lecture		
12	Sanskriti Aur Apsanskriti	Interaction	Seminar	
13	Sanskriti Ki Kahani	Lecture		
14	Sanskriti Ki Kahani	Lecture		
15	Revision	Lecture/Discussion		
16	Sanskriti Aur Apsanskriti	Interaction	Seminar	
17	Sanskriti Aur Apsanskriti	Lecture/PPT		
18	Revision	Interaction	Seminar	
19	Bharateeya Sanskriti Introduction about the Author	Lecture/PPT		
20	Bharateeya Sanskriti	Lecture		
21	Ham Sanskriti Mei Nahi Vikruti Mei Vikasit Ho Rehe Hain Introduction About The Author	Lecture/PPT		
22	Bharateeya Sanskriti	Lecture		
23	Bharateeya Sanskriti	Lecture/Discussion		
24	Ham Sanskriti Mei Nahi Vikruti Mei Vikasit Ho Rehe Hain	Lecture/PPT		
25	Bharateeya Sanskriti	Lecture		
26	Bharateeya Sanskriti	Lecture/Discussion	Seminar	
27	Revision	Lecture		
28	Revision	Lecture/Discussion		
29	Revision	Interaction		
30	<b>CIA I ( 1 Hr Exam )</b>			
<b>MODULE II</b>				
31	Bharateeya Sanskriti	Lecture		
32	Ham Sanskriti Mei Nahi Vikruti Mei Vikasit Ho Rehe Hain	Lecture/Discussion		
33	Ham Sanskriti Mei Nahi Vikruti Mei Vikasit Ho Rehe Hain	Lecture		
34	Bharateeya Sanskriti	Lecture/Discussion		
35	Bharateeya Sanskriti	Lecture/Discussion		
36	Revision	Interaction		

37	Ham Sanskruti Mei Nahi Vikruti Mei Vikasit Ho Rehe Hain	Lecture		
38	Revision	Lecture/Discussion		
39	Loktantra Ek Dharma Hai Introduction About The Author	Lecture/PPT		
40	Loktantra Ek Dharma Hai	Lecture		
41	Loktantra Ek Dharma Hai	Lecture/Discussion		
42	Atankwad Aur Hum Introduction About The Author	Lecture/Discussion		
43	Atankwad Aur Hum	Lecture/Discussion		
44	Loktantra Ek Dharma Hai	Lecture		
45	Loktantra Ek Dharma Hai	Lecture/Discussion	Seminar	
46	Atankwad Aur Hum	Discussion		
47	Atankwad Aur Hum	Lecture/Discussion		
48	Atankwad Aur Hum	Lecture		
49	Loktantra Ek Dharma Hai	Lecture		
50	Loktantra Ek Dharma Hai	Lecture/Discussion		
51	Revision	Discussion		
52	Atankwad Aur Hum	Lecture		
53	Atankwad Aur Hum	Lecture/Discussion		
54	Atankwad Aur Hum	Lecture/PPT		
55	Mahanom Ka Manwantar Introduction About The Author	Lecture/Discussion		
56	Mahanom Ka Manwantar	Discussion		
57	Atankwad Aur Hum	Lecture/PPT		
58	Atankwad Aur Hum	Lecture		
59	Revision	Lecture/Discussion	Seminar	
60	Mahanom Ka Manwantar	Lecture		
61	Mahanom Ka Manwantar	Lecture/Discussion		
62	<b>CIA II (2 Hrs Exam)</b>			
<b>MODULE III</b>				
63	Keral Itihas Ke Jharokhe Se Introduction About The Author	Lecture/PPT		
64	Keral Itihas Ke Jharokhe Se	Lecture		
65	Keral Itihas Ke Jharokhe Se	Lecture/Discussion		
66	Mahanom Ka Manwantar	Lecture		
67	Mahanom Ka Manwantar	Lecture/Discussion		
68	Keral Itihas Ke Jharokhe Se	Lecture		
69	Mahanom Ka Manwantar	Lecture		
70	Samajik Kranti Ka Agradoot Sree Narayan Guru Introduction About The Author	Lecture/PPT		
71	Samajik Kranti Ka Agradoot Sree Narayan Guru	Lecture		
72	Sabhyata Ka Rahasya Introduction About The Author	Lecture/PPT		
73	Sabhyata Ka Rahasya	Lecture		
74	Sabhyata Ka Rahasya	Lecture/Discussion	Seminar	

75	Samajik Kranti Ka Agradoot Sree Narayan Guru	Lecture		
76	Samajik Kranti Ka Agradoot Sree Narayan Guru	Lecture		
77	Sabhyata Ka Rahasya	Lecture/Discussion		
78	Sabhyata Ka Rahasya	Lecture/Discussion		
79	Samajik Kranti Ka Agradoot Sree Narayan Guru	Lecture/PPT		
80	Samajik Kranti Ka Agradoot Sree Narayan Guru	Lecture/Discussion	Seminar	
81	Dalit Andolan Aur Ayyankali Introduction about the Author	Lecture		
82	Dalit Andolan Aur Ayyankali	Lecture/Discussion		
83	Dalit Andolan Aur Ayyankali	Lecture		
84	Dalit Andolan Aur Ayyankali	Lecture/Discussion		
85	Dalit Andolan Aur Ayyankali	Lecture		
86	Dalit Andolan Aur Ayyankali	Lecture/Discussion	Seminar	
87	Seminar			
88	Seminar			
89	Revision			
90	Evaluation of the course			

## INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines (B.Sc. Zoology)

SL NO	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	Assignment (February)	Review of a lesson based on the textbook and reference, Writing (Individual)
2	Seminar (February)	Presentation on a given topic based on the text book and reference – oral (Individual)

## GROUP ASSIGNMENTS/ACTIVITIES – Details & Guidelines

SL NO	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	January	Analyse an essay based on the text book. (Group Discussion).
2	January	Write a general essay based on cultural studies. (Group Activity).

### References

- Adhunik Sahitya Ki Pravritiyan, Dr. Namvar Singh, Lokbharati Prakashan, New Delhi .
- Sanskruti Ka Tana Bana, Dr. Abha Gupta Thakur, Vani Prakashan, New Delhi .

### Web resource references:

- [epustakalay.com](http://epustakalay.com)
- [www.hindikunj.com](http://www.hindikunj.com)

## COURSE PLAN

PROGRAMME	ZOOLOGY	SEMESTER	4
COURSE CODE AND TITLE	15U4CCFRN4A – AN ADVANCED COURSE IN FRENCH II	CREDIT	4
HOURS/WEEK	5	HOURS/SEM	90

COURSE OBJECTIVES
To understand the basic concepts of French language including grammar, vocabulary and sentence structure
To understand the basic communication skills necessary for living in France and French speaking countries.
To describe oneself and ones surroundings using a repertory of words and expressions in a simple and structured grammatical manner.
To develop business communication skills
To express an issue of concern including topics like environmental, social or health issues, enumerate its causes and consequences and suggest solutions
To understand the mannerisms, culture and tradition of France and Francophone countries and compare it to one's own country and develop co-cultural feeling
To understand and appreciate the history of France and Francophone countries and compare it to one's own country
To understand the special features of France including gastronomy, social institutions, politics, the present French scenario and compare it to one's own country

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
<b>MODULE I</b>				
1	Revision of French Basics	Role play, games	Video	
2	French Basics	Chalk n talk		
3	French Basics	Chalk and Talk		
4	French Basics	Chalk and Talk		
5	French Basics	Chalk and Talk		
6	French Basics	Chalk and Talk		
7	French Basics	Chalk and Talk	Video	
8	French Basics	Chalk and Talk		
9	Describe a personality	Lecture		
10	Edith Piaf	lecture		
11	Interview a personality	Communication skills		
12	Interview with Edith Piaf	Oral		
13	famous people in your country	Oral		
14	Narrate the life of a person of your choice	Communication Skills		
15	Describe a locality	Communication Skills	Video	
16.	Describe a locality in your country	Role play		

17.	Grammar – relative pronoun	Lecture, games		
18.	Sentence construction using relative pronoun	Games		
19.	Artistic movements	Debate/Discussion		
20	Reading Comprehension	Understanding Skills		
21.	Reading Comprehension	Understanding Skills		
22.	Reading Comprehension	Understanding Skills		
23.	Vocabulary building	Games		
24	Artistic movements	seminar	Video	
25	Artistic movements	Expression oral		
26.	Female artists French culture	Discussion		
27	Female artists in India	Discussions		
28	Female artists in India	Discussions ICT		
29	French culture –	Discussions, comparison		
30	Class test of Unit 1			
<b>MODULE II</b>				
31	Describe weather	Game		
32	Weather forecast	Role play		
33	Weather forecast in your country	Lecture	Video	
34	Causes and consequences of an issue	Games, Role plays		
35	Describe ways of protecting environment	discussion		
36	Vocabulary Building	Games		
37	Global warming, green house effect	Lecture		
38	Sentence Construction	Games		
39	Grammar-futur tense	Roleplay, listening exercise		
40	Describe future food habits	Roleplay		
41	Describe future food habits	Lecture , role play		
42	Cities in transition	Debate	Video	
43	Recycling	Games		
44	Intercultural aspect	Lecture/Discussion		
45	Revision			
46	Revision			
47	Revision			
48	Revision			
49	Revision			
50	Revision			
51	Revision			
<b>CIA-1</b>				
52	Discussion of CIA			
53	Vocabulary Building	Games		
<b>MODULE III</b>				
54	Organizing a party	PPT/Lecture		
55	Writing an invitation	PPT/Lecture		
56	Positive and negative reply to an invitation	PPT/Lecture		
57	Vocabulary- body parts	PPT		
58	Vocabulary-parts of the body,	Music, GAMES		

	expressing pain			
59	Explain problem which you face	Lecture/Role play		
60	Mail on seeking advice, describing a problem	Role play		
61	Telephonic conversation	Role play		
62	Vocabulary Building	Games		
63	Posting on a problem which you face	Roleplay		
64	Giving advice/grammar-imperative	Chalk and talk, roleplay		
65	webdoctor	Communication skills		
66	Writing a mail and receiving response	Communication Skills		
67	French Culture -Vacation sports	PPT/Discussion		
68	Sports in India	Debate	Video	
69	Advantages of doing sports	Debate/Discussion		
70	Famous authors- Moliere	Discussion		
71	Clown – life of a clown	Discussion		
CIA II				
<b>MODULE IV</b>				
72	French language in the world	Chalk and talk		
73	French language in the world	Role play		
74	Information on francophone countries	Role play		
75	Describe a place, its past, its present and future	Discussion		
76	Vocabulary Building	Games, Music		
77	French movie	Audio visual		
78	French Movie	Audio Visual		
79	Francophone literature	Chalk n talk/Reading Comprehension		
80	Francophone literature	Discussion		
81	Francophone literature	Discussion		
82	Francophone literature	Discussion		
83	Francophone literature	Discussion		
84	Revision			
85	Revision			
86	Revision			
87	Revision			
88	Revision			
89	Revision	discussion		
90	Revision	discussion		

### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	By February	Writing a resume of a francophone novel and its author
2		roleplays

### References

Version Originale, site web

### COURSE PLAN

PROGRAMME	BACHELOR OF SCIENCE,ZOOLOGY	SEMESTER	4
COURSE CODE AND TITLE	15U4CCSAN4A: HISTORICAL SURVEY OF SANSKRIT LITERATURE AND KERALA CULTURE	CREDIT	4
HOURS/WEEK	5	HOURS/SEM	90
FACULTY NAME	Dr.VIJAYARAJAN K.U		

### COURSE OBJECTIVES

Students familiarize the Culture and Civilization
Students understand the influence of Epic and in Indian Literature
Students get an awareness about Indian classical poetic tradition
Students familiarize the Mahakavyas and It's Influence
Students identify the values and philosophy in Sanskrit literature
Students get an awareness about Indian Philosophers and renovators in Kerala
Understand the tools to beautify the literature through Drama and Translation
Students identify the richness of Indian Literature



SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
<b>MODULE I</b>				
1	Introducing the importance of epic	Lecture	Video	
2	Valmiki's Ramayana	Discussion		
3	Ramayana story	Lecture		
4	Development of Ramayana	Lecture		
5	Seven kandas	Lecture		
6	Arguments of Prof.Jacobi	Chalk n talk		
7	Addition of two kandas	Lecture		
8	The date of ramayana	Chalk n talk		
9	Balakanda, Ayodhyakanda	Lecture		
10	Aaranyakanda, kishkindakanda	Lecture		
11	Sundarakanda, Yudhakanda	Discussion		
12	Utharakanda	Discussion	Video	
13	Influence of Ramayana in Indian literature	PPT/Lecture		
14	Mahabharatham-Introduction	PPT/ Lecture		
15	Eighteen Parvas	PPT/ Lecture		
16	The date of mahabharatham	PPT/Lecture		
17	First stage - jayam	Chalk n talk		
18	Second stage -Bharatham	Lecture		
19	Third Stage -mahabharatham	Lecture	Video	
20	Authorship of Mahabharatham	Lecture		
21	The numbers of sloka –More than 1 lakh	Game		
22	The content of Bharatham	Game		
23	Moralities in Bharatham	PPT/Lecture		
24	Bhagavad Geetha	PPT/Lecture		
25	The influence of Bharatham in later Indian literature	Lecture		
26	Harivamsham	Lecture		
<b>CIA-1</b>				
27	Purusharthas	Lecture		
28	The Fifth veda	Chalk n talk		
29	Commentary on Bharatham	Chalk n talk		
30	Revision		Video	
<b>MODULE II</b>				
31	Introduction -Panchamahakavyas	Lecture		
32	Kumarasambava	Lecture		
33	Content of Kumarasambava			
34	Raghuvamsha	Lecture		
35	Content of Raghuvamsha	Lecture		
36	Kiratharjuneeyam	Lecture		
37	Content of Kiratharjuneeyam	Lecture	Video	
38	Shishupalavadham	PPT/Lecture		
39	Content of Shishupalavadham	PPT/Lecture		
40	Naishadhacharitham	PPT/Lecture		

41	Content of Naishadhacharitham	Lecture		
42	The importance of mahakavya	Lecture		
43	The authors of mahakavya	Chalk n talk		
44	Revision			
<b>MODULE III</b>				
45	Swapnavasavadatham	Discussion		
46	Content	PPT/Lecture		
47	Prathijnayaugandharayanam	PPT/ Lecture		
48	Content	PPT/Lecture		
49	Malavikaagnimithram	PPT/Lecture		
50	Vikramorvasheeyam	PPT/ Lecture		
51	Abhijnanashakunthalam	PPT/Lecture	Video	
52	Content	PPT/Lecture		
53	Venisamharam	PPT/Lecture		
54	Mrichakatikam	Lecture		
55	Uthararamacharitham	Lecture		
56	Ashcharyachudamani	PPT/Lecture		
57	Subhadradhananjayam	PPT/Lecture		
58	The Influence of Dramas	PPT/Lecture		
59	Revision			
<b>MODULE IV</b>				
60	Shankaracharya	Lecture		
61	Keralavarma Valiya koyi Thampuran	Lecture		
62	Poorna Saraswathy	Chalk n talk		
63	Sree Narayana guru	Lecture		
64	Chattambi Swamikal	Lecture	Group discussion	
65	A.R.Rajarajavarma	Lecture		
66	P.C.Devasya	PPT/Lecture		
67	K.N.Ezhuthachan	PPT/Lecture		
68	Dr.P.K.Narayana Pillai	PPT/Lecture		
69	Melpathoor Narayana Bhattathiri	PPT/Lecture		
70	Sukumara Kavi	Lecture		
71	I.C Chacko	Lecture		
72	Revision			

### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	15/01/2019	Kerala Philosophers
2	21/01/2019	The philosophy of Bhagavad Gita

**GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines**

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	04/02/2019	The Influence of Epics in Indian society
2	24/02/2019	Mahakavyas and Indian literature

**References**

- 1.A Short History of Sanskrit Literature, T.K. Ramachandra Iyer
- 2.Sanskrita Sahitya Caritram, ed. K. Kunjunni Raja and M.S. Menon, Kerala Sahitya Academi, Trissur
- 3.Sanskrita Bhasayum Sahityavum, T.P. Balakrishnan
- 4.History of Sanskrit Literature, A B Keith
- 5.Facets of Indian Culture, P C Muralimadhavan

**COURSE PLAN-**

PROGRAMME	<b>B.Sc.ZOOLOGY</b>	SEMESTER	4
COURSE CODE & TITLE	15U1CCMAL4A ഗദ്യം രചനാപരിചയം	CREDITS	4
HOURS/WEEK	5	HOURS/SEM	90
FACULTY NAME	<b>VISHNU RAJ P. Dr. JUSTINA K AUGUTINE</b>		

COURSE OUTCOMES
ഭാഷ, എഴുത്ത്, രചനാപരിശീലനം എന്നീ ശേഷികളെ മനസിലാക്കുക
ഉപന്യാസരചനാതത്വങ്ങൾ, പാദവാക്യഘടന എന്നീ ശേഷികളെ മനസിലാക്കുക
സാഹിത്യനിരൂപണം, രാഷ്ട്രീയദർശനം, മാധ്യമപഠനം എന്നിങ്ങനെ വിവിധങ്ങളായ ഗദ്യവ്യവഹാരങ്ങളുടെ മികച്ച മാതൃകകൾ പരിചയപ്പെടുത്തുക
വായനാഭിരുചി വർദ്ധിപ്പിക്കുക
വ്യാവഹാരിക തലത്തിൽ മാതൃഭാഷാപ്രയോഗിക്കുവാനുള്ള കഴിവ് നേടുക

Session	Topic	Teaching method	Learning Resources	Remarks
<b>Module I</b>				
1	ഭാഷാചരിത്രം -ആമുഖം	Lecturing	സാഹിത്യചരിത്രങ്ങൾ	
2	ഭാഷാചരിത്രം -ആമുഖം	Lecturing	സാഹിത്യചരിത്രങ്ങൾ	
3	ക്രിയാത്മക രചന	Discussion	Text	
4	ക്രിയാത്മക രചന	Reading	Text	
5	സർഗാത്മകരചന	Demonstrating	Text	
6	സർഗാത്മകരചന	Lecturing		
7	സർഗാത്മകരചന	Discussion	Text	
8	ഭാഷാപ്രയോഗങ്ങൾ	Demonstrating	Text	
9	ഭാഷാപ്രയോഗങ്ങൾ	Reading	Text	
10	ഭാഷാപ്രയോഗങ്ങൾ	Discussion	Text	
11	വാക്യരചന	Demonstrating	സാഹിത്യചരിത്രങ്ങൾ	
12	വാക്യരചന	Discussion	Text	
13	വാക്യരചന	Discussion	Text	
14	മാനകഭാഷ	Reading	സാഹിത്യചരിത്രങ്ങൾ	
15	മാനകഭാഷ	Demonstrating	Text	
16	ഭാഷാഭേദങ്ങൾ	Discussion	Text	
17	ഭാഷാഭേദങ്ങൾ	Discussion	Text	
18	വാക്യം യുക്തിയും	Demonstrating	Text	
19	വിമർശനാത്മക ചിന്ത	lecturing	Text	
20	വിമർശനാത്മക ചിന്ത	Discussion		
21	വിമർശനാത്മക ചിന്ത	Discussion	Text	
22	സന്ധികാര്യം	lecturing	Text	
23	സന്ധികാര്യം	Discussion	Text	
24	സന്ധികാര്യം	Discussion		
25	അർത്ഥപരിണാമം	lecturing	Text	
26	അർത്ഥപരിണാമം	Discussion	Text	
27	വിവർത്തനം	lecturing	Text	
28	വിവർത്തനം	Discussion		
29	ചിഹ്നം	Lecturing	Text	
30	ചിഹ്നം	Lecturing		
31	നവപാഠങ്ങൾ	Discussion	Text	
32	ഭാഷയുടെ ഘടന	Lecturing	Text	
33	സ്ഥല പേരുകളുടെ രൂപമാറ്റം	Reading	Text	
34	പത്രഭാഷ	Discussion		
35	യന്ത്ര ഏഴുത്ത്	Discussion	Text	
36	ഉപന്യാസരചന	Lecturing	Text	

		<b>Module II</b>		
37	മഹാകവിയുടെ ശിൽപ്പശാലയിൽ	Reading	Text	
38	മഹാകവിയുടെ ശിൽപ്പശാലയിൽ	Discussion		
39	മഹാകവിയുടെ ശിൽപ്പശാലയിൽ	Discussion	Text	
40	മതനവീകരണം മതനിരപേക്ഷത	Lecturing Discussion	Text	
41	മതനവീകരണം മതനിരപേക്ഷത	Reading	Text	
42	പെൺവഴി രചനയുടെ മെയ്യും ഉയിരും	Discussion		
43	ജനനാന്തരസൗഹൃദങ്ങൾ	Discussion	Text	
44	പെൺവഴി രചനയുടെ മെയ്യും ഉയിരും	Lecturing	Text	
45	ജനനാന്തരസൗഹൃദങ്ങൾ	Lecturing	Text	
46	ജനനാന്തരസൗഹൃദങ്ങൾ	Reading	Text	
47	ജനനാന്തരസൗഹൃദങ്ങൾ	Discussion	Text	
		<b>Module III</b>		
48	സാവിത്രിയുടെ മൈന	Discussion	Text	
49	സാവിത്രിയുടെ മൈന	Reading Discussion	Text	
50	സാവിത്രിയുടെ മൈന	Discussion	Text	
51	നാനോടെക്നോളജി	Lecturing	Text	
52	നാനോടെക്നോളജി	Discussion	Text	
53	നാനോടെക്നോളജി	Lecturing	Text	
54	വി .ടി യുടെ വീട് ലോകം	Reading Discussion	Text	
55	വി .ടി യുടെ വീട് ലോകം	Discussion	Text	
56	വി .ടി യുടെ വീട് ലോകം	Discussion	Text	
57	നവോത്ഥാനത്തിന്റെ പാഠങ്ങൾ	Lecturing	Text	
58	നവോത്ഥാനത്തിന്റെ പാഠങ്ങൾ	Discussion		
59	നവോത്ഥാനത്തിന്റെ പാഠങ്ങൾ	Lecturing Discussion	Text	
60	കേരളഹോക്ലോർ	Reading	Text	
61	കേരളഹോക്ലോർ	Lecturing	Text	
62	കേരളഹോക്ലോർ	Discussion	Text	
63	കേരളഹോക്ലോർ	Discussion	Text	
64	കേരളഹോക്ലോർ	Reading	Text	
65	കേരളഹോക്ലോർ	Reading	Text	
66	കേരളഹോക്ലോർ	Lecturing	Text	

67	കേരളഫോക്ലോർ	Reading	Text	
68	കേരളഫോക്ലോർ	Lecturing	Text	
69	കേരളഫോക്ലോർ	Reading	Text	
70	കലയും സമൂഹവും	Discussion	Text	
71	കലയും സമൂഹവും	Discussion	Text	
72	കലയും സമൂഹവും	Discussion	Text	
73	സംവാദം	Discussion	Text	
74	സംവാദം	Discussion	Text	
75	സംവാദം	Discussion	Text	
		<b>Module IV</b>		
76	വർത്തമാന പത്രം വായനക്കുമുൻപുള്ള വർത്തമാനങ്ങൾ	Discussion	Text	
77	വർത്തമാന പത്രം വായനക്കുമുൻപുള്ള വർത്തമാനങ്ങൾ	Discussion	Text	
78	വർത്തമാന പത്രം വായനക്കുമുൻപുള്ള വർത്തമാനങ്ങൾ	Discussion	Text	
79	കാലാവസ്ഥാ മാറ്റവും തീരദേശ ജൈവവൈവിധ്യവും	Discussion	Text	
80	കാലാവസ്ഥാ മാറ്റവും തീരദേശ ജൈവവൈവിധ്യവും	Discussion	Text	
81	കാലാവസ്ഥാ മാറ്റവും തീരദേശ ജൈവവൈവിധ്യവും	Discussion	Text	
82	കാലാവസ്ഥാ മാറ്റവും തീരദേശ ജൈവവൈവിധ്യവും	Discussion	Text	
83	Revision	Discussion	Text	
84	സെമിനാർ	Presentation	Text	
85	സെമിനാർ	Discussion	Text	
86	സെമിനാർ	Presentation	Text	
87	സെമിനാർ	Discussion	Text	
88	സെമിനാർ	Presentation	Text	
89	സെമിനാർ	Discussion	Text	
90	Evaluation of course	Discussion	Text	

### ASSIGNMENTS

Sl no	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	By February	ഉപന്യാസരത്നങ്ങൾ വിവരിക്കുക
2		മലയാളഭാഷയും കേരളീയ സമൂഹവും

### SEMINAR

	Date of submission/completion	Topic of semiar & Nature of seminar (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	By February	പാഠഭാഗങ്ങളുടെ അവതരണം
2		പാഠഭാഗങ്ങളുടെ അവതരണം

**Reference :**

1. സമ്പൂർണ്ണ മലയാള സാഹിത്യചരിത്രം - എഡിറ്റർ : പന്മന രാമചന്ദ്രൻ നായർ
2. മലയാളത്തിന്റെ ഭാവി - കെ. സേതുരാമൻ
3. എഴുത്തിന്റെ വഴികൾ - എം. ജി. യൂണിവേഴ്സിറ്റി പ്രസിദ്ധീകരണം
4. ഗദ്യവിതാനം - എം. ജി. യൂണിവേഴ്സിറ്റി പ്രസിദ്ധീകരണം

## COURSE PLAN

PROGRAMME	<b>BACHELOR OF ZOOLOGY</b>	SEMESTER	4
COURSE CODE AND TITLE	<b>15U4CRZOO04: CORE COURSE 4 APPLIED ZOOLOGY</b>	CREDIT	3
HOURS/WEEK	3	HOURS/SEM	54
FACULTY NAME	RAAGAM P M., MONCEY VINCENT, RAJU M. K.		

COURSE OBJECTIVES
To explain the applied aspects of Zoology through the practice of cultivation of selected groups of animals
To examine the classification and selection criteria for suitable fish/shellfish for aquaculture
To discuss the importance of sericulture, vermiculture and apiculture for sustainable development
To apply the potential of sericulture, vermiculture and apiculture, in entrepreneurship
To explain the methodologies used for increasing the productivity from sericulture, vermiculture and apiculture

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
<b>MODULE I- AQUACULTURE</b>				
1	Traditional methods of aquaculture	PPT/Lecture	Video	
2	Advantages and salient features of aquaculture	PPT/Lecture		
3	Types of aquaculture	PPT/Lecture		
4	Biotic and abiotic factors of water	PPT/Lecture	Video	
5	Importance of Algae in Aquaculture	PPT/Lecture		
6	Common cultivable fish species of Kerala			
7	Economic importance and morphology of <i>Catla</i> , <i>Rohu</i> , <i>Mrigal</i> , <i>Cyprinus carpio</i> , <i>Etroplus</i> & <i>Tilapia</i>			
8	Economic importance and morphology of <i>Penaeus indicus</i> , <i>P. monodon</i> , <i>Perna viridis</i> / <i>Perna indicus</i> , <i>Pinctada fucata</i> .			
9	Pond culture- Construction	PPT/Lecture	Video	
10	Pond culture-Management	PPT/Lecture		
11	Carp culture	PPT/Lecture		
12	Composite fish culture	PPT/Lecture		
13	Integrated Fish Culture	PPT/Lecture		
14	Induced breeding of fishes	PPT/Lecture		
15	Important Fish Diseases	PPT/Lecture		
16	Fish preservation and processing.	PPT/Lecture		
17	Aquarium management	PPT/Lecture		
18	Setting up of an Aquarium	PPT/Lecture	Video	
19	Common species of Aquarium fishes.	PPT/Lecture		
20	Prawn culture	PPT/Lecture		



21	Prawn seed production	PPT/Lecture		
22	Mussel culture	PPT/Lecture		
23	Pearl culture- Introduction- Pearl formation	PPT/Lecture		
24	Pearl culture and harvesting	PPT/Lecture		
<b>MODULE II-SERICULTURE</b>				
25	Introduction to Sericulture			
26	Types of silk	PPT/Lecture		
27	Four species of silkworms	PPT/Lecture		
28	Description of species	PPT/Lecture		
29	Life history of <i>Bombyx mori</i>	PPT/Lecture		
30	Silkworm Rearing Techniques	PPT/Lecture		
31	Mounting of worms	PPT/Lecture		
32	Harvesting and stifling of cocoons	PPT/Lecture		
33	Properties of silk	PPT/Lecture		
34	Silkworm diseases	PPT/Lecture		
35	Silkworm diseases	PPT/Lecture		
36	Preventive and control measures			
CIA-1				
<b>MODULE III- VERMICULTURE</b>				
37	Species of Earthworms suitable for vermiculture.	Lecture		
38	Reproduction and Life Cycle of Earthworms	Lecture		
39	Factors affecting vermiculture	PPT/Lecture		
40	Physical and chemical effects	PPT/Lecture		
41	Vermicomposting, Site Selection, Preparation of pit	PPT/Lecture		
42	Maintenance and Monitoring of vermicomposting unit	Lecture		
<b>MODULE IV- APICULTURE</b>			10 Hours	
43	Introduction and Scope of Apiculture	PPT/Lecture		
44	Species of Honey bees.	PPT/Lecture		
45	Species of Honey bees used in Kerala	PPT/Lecture		
46	Organization of honeybee colony	Lecture		
47	Social life and Reproduction of Honey Bees	Lecture		
48	Bee keeping methods	PPT/Lecture		
49	Bee keeping methods and equipments	PPT/Lecture		
50	Apiary management and maintenance	PPT/Lecture		
51	Bee pasturage	PPT/Lecture		
52	Byproducts from apiculture and their uses.	Lecture		
53	Diseases of honey bees and control measures.	PPT/Lecture		
54	Pests of honey bees and control measures.	PPT/Lecture		

### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual – Written/Presentation – Graded or
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		Non-graded etc)
1	20/01/2019	Common ornamental fishes
2	23/01/2019	Exotic ornamental fishes
3	02/02/2019	Silk rearing
4	16/02/2019	Vermicomposting

#### **GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines**

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
<b>1</b>	15/02/2019	Maintenance of Aquaculture tank and Quail culture cage
<b>2</b>	27/02/2019	Maintenance of Bees and Vermicomposting

#### **References**

Aquaculture, TVR Pillai

Applied Zoology, Academia publishers

Zoological Society of Kerala, Study materials- Animal Breeding and Husbandry

Applied Zoology; (2002) Published by Zoological Society of Kerala

Sudheeran, M.S. & John P.C., 1989 Economic Zoology (Prathibha Publ., Kottayam)

Venkitaraman, P.R., 1983, Text Book of Economic Zoology (Sudarsana Publ. Cochin)

Shukla G.S., & Upadhyay V.B., Economic Zoology (Rastogi Publ. Meerut)

Sastry, N.S.R. Farm Animal Management & Poultry Production.

Sastry N.S.R.: Farm Animal Management & Poultry Production. Vikas.

Singh H & Mossa: Livestock & Poultry Production, PHI.

Campbell, J.R. & Lasley, J.R: The Science of Animals that serve Mankind. TMH. Eckles, C.R. Combs, W.B. & Macy, H.: Milk & Milk Products. Tata MGH. ICARD: Handbook of Animal Husbandry, 1990/97, ICAR, Pusa, N.d.

**COURSE PLAN: 2018- 19**

PROGRAMME	COMPLEMENTARY BOTANY FOR BACHELOR OF SCIENCE IN ZOOLOGY	SEMESTER	4
COURSE CODE AND TITLE	15U4CPBOT4 <b>ANATOMY AND APPLIED BOTANY</b>	CREDIT	Theory -3 Practical -1
HOURS/WEEK	5	HOURS/SEM	Theory - 54 Practical - 36
COURSE TEACHER	<b>Dr. Giby Kuriakose</b>		

**COURSE OBJECTIVES**

To identify and Define cell organelles, the nonliving inclusions, tissues, meristems and the anatomical structural organization in plants

To understand primary, secondary and anomalous thickening in plants

To know and identify the ecological adaptations of various types of plants

To understand different methods of plant breeding and crop improvement

To define and understand various principles and methods in horticulture practices and plant tissue culture

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
	<b>Module 1: Anatomy</b>			
	<b>Module 1-Unit 1: Plant Cell</b>			
1	Anatomy Introduction	Lecture		
2	The Cell Components	PPT and Lecture		
3	Living inclusions of the cell	Lecture		
4	Non-Living inclusions of the cell	Lecture		
5	Ultra Structure of the cell Wall	PPT and Lecture		
6	Cell Wall Formation	Lecture; Chalk and board		
	<b>Module 1-Unit 2: Tissues</b>			
7	Simple Tissues	Lecture; Chalk and board		
8	Complex Tissues	Lecture; Chalk and board		
9	Meristems	Lecture; Chalk and board		
10	Meristematic Tissues - Types	Lecture; Chalk and board		
11	Meristematic Tissues - Apical Meristem: Shoot and Root	Lecture; Chalk and board		
12	Theories on Meristematic tissues	Lecture; Chalk and board		
	<i>Distribution of Assignment Topics</i>			
	<b>Module 1-Unit 3: Cambium</b>			
13	Origin of Cambium	Lecture; Chalk and board		
14	Structure of Cambium	Lecture; Chalk and board		
15	Function of cambium with an explanation on the role of cambium in wound healing	Lecture; Chalk and board		
	<b>Module 1-Unit 4: Primary Structure</b>			
16	Primary structure of Dicot Stem	Lecture; Chalk and board		
17	Primary structure of Monocot Stem	Lecture; Chalk and board		
18	Primary structure of Dicot Root	Lecture; Chalk and board		
19	Primary structure of Monocot Root	Lecture; Chalk and board		
	<b>Module 1-Unit 5: Secondary thickening</b>			
20	Functioning of cambium at the time of Secondary thickening	Lecture; Chalk and board		

21	Secondary thickening in stem	Lecture; Chalk and board		
22	Secondary thickening in root	Lecture; Chalk and board		
23	Secondary Structure of wood: Growth rings, heart wood and sap wood; hard wood and soft wood; ring porous wood and diffuse porous wood	PPT/Lecture; Chalk and board		
24	Anomalous secondary thickening in Bignonia.	Lecture; Chalk and board		
	<b>Module 1-Unit 6: Anatomy of Leaf</b>			
25	Anatomy of Dicot leaf	Lecture; Chalk and board		
26	Anatomy of Monocot leaf	Lecture; Chalk and board		
	<b>Module 1-Unit 7: Ecological Anatomy</b>			
27	Morphological and anatomical adaptations of Hydrophytes (Nymphaea)	Lecture; Chalk and board		
28	Morphological and anatomical adaptations of Xerophytes (Nerium),	Lecture; Chalk and board		
29	Morphological and anatomical adaptations of Halophytes (Avicinia/ Rhizophora)	Lecture; Chalk and board		
30	Morphological and anatomical adaptations of Epiphytes (Vanda),	Lecture; Chalk and board		
31-42	Plant Anatomy Practical	Lab work	Laboratory Experiments	
	<b>Module 2- Applied Botany</b>			
	<b>Module 2-Unit 1: Plant breeding</b>			
43	Definition and objectives of plant breeding	PPT/Lecture		
	<b>Module 2-Unit 2: Asexual Reproduction in Plants</b>			
44	Apomixis; Apospory,	PPT/Lecture		
45	Diplospory and Adventive embryony	PPT/Lecture		
46	Parthenogenesis,	PPT/Lecture		
47	Parthenocarpy and Polyembryony	PPT/Lecture		
	<b>Module 2-Unit 3: Crop Improvement</b>			
48	Plant introduction	PPT/Lecture		
49	Plant Selection	PPT/Lecture		

50	Hybridization	PPT/Lecture		
	<b>Module 2-Unit 4: Advanced methods of plant breeding</b>			
51	Mutation breeding	PPT/Lecture		
52	Polyploidy breeding	PPT/Lecture		
	<b>Module 2-Unit 3: Horticultural practices</b>			
53	propagation through cutting, layering, budding and grafting	PPT/Lecture		
	<b>Module 2-Unit 3: Plant tissue culture</b>			
54	Principle, composition of culture media, autoclave and laminar air flow, sterilization of explant	PPT/Lecture		
55	Callus induction, organogenesis, somatic embryogenesis, production of artificial seeds.	PPT/Lecture		
56-58	Applied Botany Practical	Lab Experiments		

#### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

Sl. No.	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc.)
1	16-12-2018	Anatomy – Structural and functional aspects of plant anatomy including drawings
2	02-01-2019	Applied Botany – Recent developments in the field of plant breeding, tissue culture, etc.

#### References

1. Christopher, E.P. 1958. *Introductory Horticulture*. McGraw – Hill, New York.
2. Esau, K. 1965. *Plant Anatomy*. Wiley, New York.
3. Fahh. 1985. *Plant Anatomy*. Pergamon Press, Oxford.
4. Hartman, H.T. and D.E. Kester. 1991. *Plant Propagation – Principles and Practices*. Prentice – Hall of India, New Delhi.
5. Kumar, N. 1994. *Introduction to Horticulture*. Rajalakshmi Publications, Nagercoil.
6. Pandey, B.P. 1984. *Plant Anatomy*. S. Chand and Company, New Delhi.
7. Vasishta, V.C. 1978. *Plant Anatomy*. S. Nagin and Company, Jallundhur.

### COURSE PLAN

PROGRAMME	COMPLEMENTARY CHEMISTRY FOR BACHELOR OF SCIENCE IN ZOOLOGY	SEMESTER	4
COURSE CODE AND TITLE	15U4CPCHE4.2: ADVANCED BIO-INORGANIC CHEMISTRY	CREDIT	3
HOURS/WEEK	3	HOURS/SEM	54
FACULTY NAME	Dr. Vidya Lekshmi K. P., Dr. Aswathy R., & Mrs. Maria Linsha		

COURSE OBJECTIVES
To examine the classification and properties of amino acids
To illustrate the structure and functions of proteins
To examine the fundamentals of chromatographic techniques
To demonstrate the classification, properties and structure of carbohydrates
To evaluate the fundamentals of vitamins, hormones, steroids and lipids
To analyse the basics of natural products
To illustrate the properties of heterocyclic compounds

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
<b>MODULE I: Amino Acids and Proteins: Dr. Vidya Lekshmi K. P</b>				
1	Amino acids, Classification of amino acids	Lecture	video	
2	Chemical properties of amino acid	Lecture		
3	Separation of amino acids	Lecture		
4	Synthesis amino acids (glycine and alanine)	Lecture	video	
5	Synthesis amino acids (phenyl alanine)	Lecture		
6	Peptides, peptide bonds, polypeptides	PPT/Lecture		
7	Proteins, Classification of proteins	Lecture		
8	Prosthetic group, properties of proteins	Lecture		
9	Denaturation of proteins	Lecture		
10	Structure of proteins	Lecture		
11	Structure of proteins	PPT/Lecture		
12	Revision	Discussion		
<b>MODULE II: Chromatographic Techniques: Dr. Vidya Lekshmi K. P</b>				
13	Chromatographic Techniques, classifications	PPT/Lecture		
14	Principle and uses: $R_f$ values Column chromatography, Thin layer chromatography (TLC), Paper chromatography (PC):	Lecture		

15	Gas chromatography(GC)	Lecture		
16	High Performance Liquid chromatography (HPLC)	Lecture		
17	Ion Exchange chromatography (IEC)	Lecture		
18	Revision	Discussion		
	<b>MODULE III: Carbohydrates: Dr. Aswathy R</b>			
19	Carbohydrates, classification	PPT/Lecture		
20	Preparation and properties of glucose	PPT/Lecture		
	CIA-1			
21	Preparation and properties of fructose	Lecture		
22	Preparation and properties of sucrose	PPT/Lecture		
23	Haworth configuration of $\alpha$ -D glucose and $\beta$ -D glucose, $\alpha$ -D fructose, $\beta$ -D fructose, maltose and cellobiose	Lecture		
24	Mutarotation	PPT/Lecture		
25	Conversion of glucose to fructose and vice-versa	Lecture		
26	Structure of starch and cellulose	Lecture		
27	Industrial applications of cellulose	Lecture		
28	Revision	PPT/Lecture	video	
	<b>MODULE IV: Vitamins, Steroids, Hormones, and lipids: Dr. Aswathy R &amp; Mrs. Maria Linsha</b>			
29	Vitamins, Structure and biological activity of Vitamin A, B and C	PPT/Lecture		
30	Steroids	PPT/Lecture		
31	Cholesterol	PPT/Lecture		
32	Bile acids	Lecture		
33	Lipids, simple and complex lipids	Lecture		
34	Analysis of oils and fats – acid value, saponification value, iodine value	Lecture		
35	Role MUFA and PUFA in preventing heart disease	Lecture		
36	Revision	Discussion		
37	Hormones	PPT/Lecture		
38	Steroid hormones, Peptide hormones	PPT/Lecture		
39	Amine hormones, Artificial hormones	PPT/Lecture		
40	Revision	Discussion		
	<b>MODULE VI: Natural Products: Maria Linsha</b>			
41	Terpinoids, Essential oils: isolation	Lecture		
42	Isoprene rule. Citral, geraniol, natural rubber	Lecture		
	CIA – II			
43	Alkaloids: isolation, properties	PPT/Lecture		
44	Structure of coniine, nicotine, piperine	Lecture		
45	Revision	Lecture		
	<b>MODULE VII: Heterocyclic Compounds: Maria Linsha</b>			
46	Aromaticity	PPT/Lecture		
47	Huckel rule	Lecture		
48	Structure of furan, indole, pyridine, pyrimidine, purine	Lecture		
49	Aromaticity of furan, indole, pyridine	PPT/Lecture		



50	Aromaticity of pyrimidine, purine	PPT/Lecture		
51	Preparation, properties: furan, pyridine	Lecture		
52	Preparation, properties: indole	PPT/Lecture		
53	Preparation, properties: purine and pyrimidine	PPT/Lecture		
54	Revision	PPT/Lecture		

#### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	09/12/2018	Uses of carbohydrates
2	07/01/2019	Short note on chromatographic techniques

#### References

- L. Finar, Organic Chemistry, Vol. 1 & 2, 6th Edition, Pearson.
- K. S. Tewari, N. K. Vishnoi, A Text Book of Organic chemistry, 3rd edition, Vikas publishing House Pvt. Ltd ,2006.
- Rastogi, Biochemistry, Tata McGraw –Hill Publication, 1996.
- R. A. Day Junior, A.L. Underwood, Quantitative Analysis, 5th edn. Prentice Hall of India Pvt. Ltd. New Delhi, 1988(Chapters 17, 18).
- Vogel's Text Book of Quantitative Chemical Analysis, J. Mendham, R. C. Denney, J.D.
- Barnes, M. Thomas, 6th edn. Pearson Education (2003).
- R. Gopalan, Analytical Chemistry, S. Chand and Co., New Delhi.