

**SACRED HEART COLLEGE (AUTONOMOUS)**

**Department of Botany**

**BACHELOR OF BOTANY**

**Course plan**

**Academic Year 2018 - 19**

**Semester 4**

### COURSE PLAN

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

### COURSE OBJECTIVES

Appreciate the role of science in all walks of life and the treatment of its themes in various literary formats

Critically engage with literary texts written in different languages and later translated into English.

Promote a new way of thinking which will encompass both science and literature

Facilitate communication between both science and literature

Apply the unfathomable power of literature and science in their writings and creative endeavors.

## COURSE PLAN

SESSIO N	TOPIC	Learning Resources	Value Additions	Remarks
<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	-6
90	Syllabus	Text	Quiz / Interaction	-6

#### **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	<b>B.Sc. BOTANY</b>	SEMESTER	4
COURSE CODE & TITLE	15U4CCMAL4A ഗദ്യം രചനാപരിചയം	CREDITS	4
HOURS/WEEK	5	HOURS/SEM	90
FACULTY NAME	<b>VISHNU RAJ P. Dr. JUSTINA K AUGUTINE</b>		

**COURSE OBJECTIVES**

- ഭാഷ ,എഴുത്ത് , രചനാപരിശീലനം എന്നീ ശേഷികളെ മനസിലാക്കുക
- ഉപന്യാസരചനാതത്വങ്ങൾ ,പാദവാക്യഘടന എന്നീ ശേഷികളെ മനസിലാക്കുക
- സാഹിത്യനിരൂപണം ,രാഷ്ട്രീയദർശനം ,മാധ്യമ പഠനം 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	വാക്കും 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		Text	
26	അർത്ഥപരിണാമം	lecturing		
27	അർത്ഥപരിണാമം	Discussion	Text	
28	വിവർത്തനം	lecturing	Text	
29	വിവർത്തനം	Discussion		
30	ചിഹ്നം	Lecturing	Text	
31	ചിഹ്നം	Lecturing		
32	നവപാഠങ്ങൾ	Discussion	Text	
33	ഭാഷയുടെ ഘടന		Text	
34	സ്ഥല പേരുകളുടെ രൂപമാറ്റം	Lecturing		
35	സ്ഥല പേരുകളുടെ രൂപമാറ്റം	Reading	Text	
36	പത്രഭാഷ	Discussion		
37	യന്ത്ര ഏഴുത്ത്	Discussion	Text	
38	ഉപന്യാസരചന	Lecturing	Text	
<b>Module II</b>				
39	മഹാകവിയുടെ ശിൽപ്പശാലയിൽ	Discussion	Text	
40	മഹാകവിയുടെ ശിൽപ്പശാലയിൽ	Reading		
41	മഹാകവിയുടെ ശിൽപ്പശാലയിൽ	Discussion	Text	
42	മഹാകവിയുടെ ശിൽപ്പശാലയിൽ	Discussion		
43	മതനവീകരണം മതനിരപേക്ഷത	Lecturing Discussion	Text	
44	മതനവീകരണം മതനിരപേക്ഷത	Reading	Text	
45	പെൺവഴി രചനയുടെ മെയ്യും ഉയിരും	Discussion		
46	ജനനാന്തരസൗഹൃദങ്ങൾ	Discussion	Text	
47	പെൺവഴി രചനയുടെ മെയ്യും ഉയിരും	Lecturing	Text	
48	ജനനാന്തരസൗഹൃദങ്ങൾ	Lecturing	Text	
49	ജനനാന്തരസൗഹൃദങ്ങൾ	Reading	Text	
50	ജനനാന്തരസൗഹൃദങ്ങൾ	Discussion	Text	
<b>Module III</b>				
51	സാവിത്രിയുടെ മൈന	Discussion	Text	
52	സാവിത്രിയുടെ മൈന	Reading Discussion	Text	
53	സാവിത്രിയുടെ മൈന	Discussion	Text	
54	നാനോടെക്നോളജി	Lecturing	Text	
55	നാനോടെക്നോളജി	Discussion	Text	
56	നാനോടെക്നോളജി	Lecturing	Text	
57	വി.ടി യുടെ വീട് ലോകം	Reading	Text	

		Discussion		
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	കേരളഹോക്ലോർ	Reading	Text	
68	കേരളഹോക്ലോർ	Lecturing	Text	
69	കേരളഹോക്ലോർ	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	28-01-2019	ഉപന്യാസതത്വങ്ങൾ വിവരിക്കുക
2	10-02-2019	മലയാളഭാഷയും കേരളീയ സമൂഹവും

### SEMINAR

	Date of submission/completion	Topic of semiar & Nature of seminar (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	21-01-2019	പാഠഭാഗങ്ങളുടെ അവതരണം
2	19-02-2019	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	BACHELOR OF SCIENCE - BOTANY	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 know 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 Sanskruti Introduction about the Author	Lecture/PPT		
20	Bharateeya Sanskruti	Lecture		
21	Ham Sanskruti Mei Nahi Vikruti Mei Vikasit Ho Rehe Hain Introduction About The Author	Lecture/PPT		
22	Bharateeya Sanskruti	Lecture		
23	Bharateeya Sanskruti	Lecture/Discussion		
24	Ham Sanskruti Mei Nahi Vikruti Mei Vikasit Ho Rehe Hain	Lecture/PPT		
25	Bharateeya Sanskruti	Lecture		
26	Bharateeya Sanskruti	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 Sanskruti	Lecture		
32	Ham Sanskruti Mei Nahi Vikruti Mei Vikasit Ho Rehe Hain	Lecture/Discussion		
33	Ham Sanskruti Mei Nahi Vikruti Mei Vikasit Ho Rehe Hain	Lecture		
34	Bharateeya Sanskruti	Lecture/Discussion		
35	Bharateeya Sanskruti	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. Botany)

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	BACHELOR OF SCIENCE, BOTANY	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

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

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
<b>MODULE I</b>				
1	Introducing the importance of epic	Lecture		
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		
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		
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			
<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		
38	Shishupalavadham	PPT/Lecture		
39	Content of Shishupalavadham	PPT/Lecture		
40	Naishadhacharitham	PPT/Lecture		
41	Content of Naishadhacharitham	Lecture		
42	The importance of mahakakavya	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		,7
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 Thampuram	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/ACTIVITIES – 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	BACHELOR OF SCIENCE IN BOTANY	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, policis, 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		
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		
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		
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		
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		
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		
43	Recycling	Games		

44	Intercultural aspect	Lecture/Discussion		
45	Revision			
46	Revision			
47	Revision			
48	Revision			
49	Revision			
50	Revision			
51	Revision			
	CIA-1			
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, expressing pain	Music, GAMES		
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		
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	03-01-2019	Writing a resume of a francophone novel and its author
2	10-02-2019	roleplays

### **References**

Version Originale, site web

## COURSE PLAN

PROGRAMME	<b>BACHELOR OF BOTANY</b>	SEMESTER	4
COURSE CODE AND TITLE	<b>15U4CRBOT4 PLANT ANATOMY AND ANGIOSPERM MORPHOLOGY</b>	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	54
FACULTY NAME	Fr. Jose John, Giby Kuriakose		

### COURSE OBJECTIVES

- To understand the plant cell structure in a detailed manner
- To understand the tissue level organization in plant system
- To compare the morphological features of angiosperms
- To carry out the plant anatomical specimen preparations
- To compare different inflorescence and fruit types in plant kingdom

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
1	Interdisciplinary applications: - Histotaxonomy, Histochemistry, Pharmacognosy	PPT	video	
2	Interdisciplinary applications: - Physiological Anatomy, Ecological Anatomy, Evolutionary trends in plant anatomy	Lecture		
3	Study of Cell wall: Gross structure of primary and secondary cell walls	Presentation/Chalk and Board		
4	Study of Cell wall: Simple and bordered pits. Structure and function of plasmodesmata.	Lecture		
5	Submicroscopic structure of cell wall- Cellulose, micelle, micro fibril and macro fibril. Different types of Cell wall thickening in tracheary elements	Presentation/Chalk and Board		
6	Extra cell wall thickening materials: - Lignin, cutin, suberin and callose. Origin of cell wall	Presentation/Chalk and Board		
7	Growth of Cell wall- Apposition and intussusceptions – cavities & ducts, schizogenous & lysigenous developments	Presentation/Chalk and Board		

8	Non-living inclusions in plant cell: - Reserve food materials -carbohydrate (starch), protein (Aleurone grain) and lipids (fats and oil)	Presentation/Chalk and Board		
9	Secretory products- pigments, enzymes and nectar. Metabolic byproducts: - tannin, gums, resins, essential oils, mucilage, latex, mineral crystals and alkaloids	Presentation/Chalk and Board		
10	Internal Assessment	MCQ/ Written		
11	Permanent Tissue: - Structure and function of simple tissues.	Presentation/Chalk and Board		
12	Permanent Tissue: - Structure and function of complex tissues.	Presentation/Chalk and Board		
13	Distribution and function of mechanical tissues in plants.	Presentation/Chalk and Board		
14	Plant fibres-economic importance.	Presentation/Chalk and Board		
15	Secretory tissues: - a). External secretory tissue- glands and nectaries, b). Internal secretory tissues- laticifers.	Presentation/Chalk and Board		
16	Meristematic tissue- definition, structure, function and classification	Presentation/Chalk and Board		
17	Apical organization and theories; Shoot apex- Apical cell theory, Histogen theory and Tunica-Corpus theory.	Chalk and Board/ Lab		
18	Root apex - Histogen theory and Korper-Kappe theory.	Chalk and Board/ Lab		
19	Anomalous secondary structure: Bougainvillea stem and Bignonia stem	Chalk and Board/ Lab		
20	Anomalous secondary structure: Dracaena stem.	Chalk and Board/ Lab		
21	Internal Assessment	Written		
<b>PRACTICAL</b>				
1	Cell types and tissues.	Laboratory Work		
2	Non-living inclusions – starch grains, cystolith, raphides, aleurone grains.	Laboratory Work		
3	Primary structure of Dicot stem	Laboratory Work		
4	Primary structure of Monocot stem	Laboratory Work		
5	Primary structure of Dicot root	Laboratory Work		
6	Primary structure of Monocot root	Laboratory Work		
7	Stomatal types: - anomocytic, anisocytic, paracytic, diacytic and grass type.	Laboratory Work		
8	Secondary structure of Dicot stem	Laboratory Work		
9	Secondary structure of Dicot root	Laboratory Work		
10	Anomalous secondary structure of Bougainvillea stem	Laboratory Work		
11	Anomalous secondary structure of Bignonia stem	Laboratory Work		
12	Anomalous secondary structure of Dracaena stem	Laboratory Work		



13	Internal Assessment/ Model	Laboratory Work		
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## References

1. Eames A J, McDaniel (1976). An introduction to plant Anatomy. Tata McGraw-Hill, New Delhi
2. Edred John, Henry Corner (1976). The seeds of dicotyledons (Vol. I, II). Cambridge University Press.
3. Ella Werker (1997). Seed Anatomy. Borntreager. University of Michigan
4. Elizabeth G Cutter (1978). Plant Anatomy Part I & II. Clive and Arnald Ltd.
5. Esau K (1977). Anatomy of seed plants. Wiley and sons.
6. Fahn A. (1997). Plant anatomy. Aditya Publishers. New Delhi
7. Metcalf C R, Chalk L (1983). Anatomy of the dicotyledons: Wood structure and conclusion of the general introduction. Oxford University press
8. Reghu C P (2002). Structural features of Rubber wood. Rubberwood Processing and utilization in India. Ganesh Publications, Bangalore
9. Wardrop A B (1964). Reaction wood Anatomy in Arborescent angiosperms. Formation of wood in forest trees (Ed, Zimmerman). Academic press, New York.

## COURSE PLAN

PROGRAMME	<b>BACHELOR OF BOTANY</b>	SEMESTER	4
COURSE CODE AND TITLE	<b>15U4CPZ004: COMPLEMENTARY COURSE 4 APPLIED ZOOLOGY</b>	CREDIT	3
HOURS/WEEK	3	HOURS/SEM	54
FACULTY NAME	Dr Fr JOBY.M,J ; ROSEMARY REYNOLDS ; Dr GISHA SIVAN		

## COURSE OBJECTIVES

- To apply aquaculture management practices for developing entrepreneurial skills.
- To apply aquarium fish management practices for developing entrepreneurial skills.
- To apply sericulture management practices for developing entrepreneurial skills.
- To apply apiculture management practices for developing entrepreneurial skills.
- To apply vermiculture management practices for developing entrepreneurial skills.
- To apply pearl culture management practices for developing entrepreneurial skills.

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	Cultivable fish species	PPT/Lecture	Video	
5	Biotic and abiotic factors of water	PPT/Lecture		
6	Pond culture- Construction	PPT/Lecture	Video	
7	Pond culture-Management	PPT/Lecture		
8	Carp culture	PPT/Lecture		
9	Composite fish culture	PPT/Lecture		
10	Integrated Fish Culture	PPT/Lecture		
11	Induced breeding of fishes	PPT/Lecture		
12	Important Fish Diseases	PPT/Lecture		
13	Fish preservation and processing.	PPT/Lecture		
14	Aquarium management	PPT/Lecture		
15	Different types of Aquarium	PPT/Lecture		
16	Setting up of an Aquarium	PPT/Lecture		
17	Common species of Aquarium fishes.	PPT/Lecture		
18	Marine Ornamental fishes	PPT/Lecture		
19	Breeding of ornamental fishes	PPT/Lecture		
20	Types of breeders in ornamental fishes	PPT/Lecture		
21	Prawn culture	PPT/Lecture		
22	Mussel culture	PPT/Lecture		
23	Pearl culture	PPT/Lecture		
24	CIA I			
<b>MODULE II-SERICULTURE</b>				
25	Types of silk	PPT/Lecture		
26	Four species of silkworms	PPT/Lecture		
27	Life history of <i>Bombyx mori</i>	PPT/Lecture		
28	Silkworm Rearing Techniques	PPT/Lecture		
29	Mounting of worms	PPT/Lecture		
30	Harvesting and extraction of silk	PPT/Lecture		
31	Silkworm diseases	PPT/Lecture		
32	Silkworm diseases	PPT/Lecture		
33	Preventive measures	PPT/Lecture		
34	control measures	PPT/Lecture		
<b>MODULE III- VERMICULTURE</b>				
35	Species of Earthworms suitable for vermiculture.	Lecture		
36	Reproduction and Life Cycle of Earthworms	Lecture		
37	Factors affecting vermiculture	PPT/Lecture		
38	Vermicomposting, Site Selection, Preparation of pit	PPT/Lecture		
39	Maintenance and Monitoring of vermicomposting unit	PPT/Lecture		

<b>MODULE IV- APICULTURE</b>				
40	Introduction and Scope of Apiculture	PPT/Lecture		
41	Species of Honey bees.	PPT/Lecture		
42	Species of Honey bees used in Kerala	PPT/Lecture		
43	Organization of honeybee colony.	Lecture		
44	Bee keeping methods	Lecture		
45	Bee keeping methods.	PPT/Lecture		
46	Bee keeping equipments	PPT/Lecture		
47	Apiary management	PPT/Lecture		
48	Apiary maintenance.	PPT/Lecture		
49	Byproducts of honey bees and their uses.	Lecture		
50	<b>CIA - II</b>			
51	Diseases of honey bees and control measures.	PPT/Lecture	Video	
52	Bee pasturage	PPT/Lecture		
53	Pests of honey bees	PPT/Lecture		
54	control measures	PPT/Lecture		

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

	Date of completion	Topic of Assignment & Nature of assignment (Individual – Written/Presentation – Graded or Non-graded etc)
1	8/1/2019	Common ornamental fishes
2	15/1/2019	Exotic ornamental fishes

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

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	5/2/2019	Maintenance of Aquaculture tank and Apiary

#### **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

PROGRAMME	B. Sc. Botany	SEMESTER	4
COURSE CODE AND TITLE	15U4CPCHE4.2: ADVANCED BIO-ORGANIC CHEMISTRY	CREDIT	3
HOURS/WEEK	3	HOURS/SEM	54
FACULTY NAME	Dr. Midhun Dominic C D, Dr. Arun Gopi, Dr. Ramakrishnan S		

### COURSE OBJECTIVES

- To understand the classification and properties of amino acids
- To study the classification, properties and structure of carbohydrates
- To know fundamentals of vitamins, hormones, steroids and lipids
- To understand the importance of heterocyclic compounds
- To analyse the basics of natural products
- To examine the fundamentals of chromatographic techniques

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
<b>MODULE I: Amino Acids and Proteins</b>				
1	Amino acids, Classification of amino acids	Lecture/PPT	video	
2	Chemical properties of amino acid	Lecture/PPT		
3	Separation of amino acids	Lecture/PPT		
4	Synthesis amino acids (glycine and alanine)	Lecture/PPT	video	
5	Synthesis amino acids (phenyl alanine)	Lecture/PPT		
6	Peptides, peptide bonds, polypeptides	PPT/Lecture		
7	Proteins, Classification of proteins	Lecture/PPT		
8	Prosthetic group, properties of proteins	Lecture/PPT		
9	Denaturation of proteins	Lecture/PPT		

10	Structure of proteins-Primary	Lecture/PPT		
11	Structure of proteins-Secondary and Tertiary	PPT/Lecture		
12	Revision	Discussion		
<b>MODULE II: Carbohydrates</b>				
13	Carbohydrates, classification	PPT/Lecture		
14	Preparation and properties of glucose	PPT/Lecture		
15	Preparation and properties of fructose	PPT/Lecture		
16	Preparation and properties of sucrose	PPT/Lecture		
17	Haworth configuration of $\alpha$ -D glucose and $\beta$ -D glucose, and $\alpha$ -D fructose.	PPT/Lecture	video	
18	Haworth configuration of $\beta$ -D fructose, maltose and cellobiose	PPT/Lecture	video	
19	Mutarotation	PPT/Lecture		
20	Conversion of glucose to fructose and vice-versa	PPT/Lecture		
21	Structure of starch and cellulose	PPT/Lecture		
22	Industrial applications of cellulose	PPT/Lecture		
CIA - I				
<b>MODULE III: Vitamins, Steroids, Hormones and Lipids</b>				
23	Structure and biological activity of Vitamin A, B, and C	PPT/Lecture		
24	Steroids	PPT/Lecture	video	
25	Cholesterol	PPT/Lecture		
26	Bile acids	PPT/Lecture		
27	Simple and complex lipids	Lecture		
28	Isolation and properties of lipids	PPT/Lecture		
29	Analysis of oils and fats, acid value, saponification value, iodine value	Lecture		
30	Role MUFA and PUFA in preventing heart disease	Lecture		
31	Hormones	Lecture		
32	Steroid hormones, peptide hormones	PPT/Lecture	video	
33	Amine hormones, artificial hormones			
34	Revision	Discussion		
CIA - II				
<b>MODULE IV: Natural Products</b>				
35	Terpenoids, Essential oils: isolation	PPT/Lecture		
36	Isoprene rule. Citral, geraniol, natural rubber	PPT/Lecture		
37	Alkaloids: isolation, properties	PPT/Lecture		
38	Structure of coniine, nicotine, piperine	PPT/Lecture		
39	Revision	Discussion		
<b>MODULE V: Heterocyclic Compounds</b>				
40	Aromaticity	PPT/Lecture	video	
41	Huckel rule	PPT/Lecture	video	
42	Structure of furan, indole, pyridine	PPT/Lecture		
43	Structure of pyrimidine, purine	PPT/Lecture		
44	Aromaticity of furan, indole, pyridine	PPT/Lecture		
45	Aromaticity of pyrimidine, purine	PPT/Lecture		

46	Preparation, properties: pyridine	PPT/Lecture		
47	Preparation, properties: indole	PPT/Lecture		
48	Preparation, properties: purine, pyrimidine	PPT/Lecture		
<b>MODULE VI: Chromatographic Techniques</b>				
49	Chromatographic Techniques, classifications	PPT/Lecture		
50	Principle and uses: R <sub>f</sub> values Column chromatography, Thin layer chromatography (TLC), Paper chromatography (PC):	PPT/Lecture		
51	Gas chromatography(GC)	PPT/Lecture	video	
52	High Performance Liquid chromatography (HPLC)	PPT/Lecture		
53	Ion Exchange chromatography (IEC)	PPT/Lecture		
54	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	02/11/2018	Medicinal application of natural products
2	07/12/2018	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.
- C. N. R. Rao, University General Chemistry, Macmillan.
- G. T. Austin, Shreve's Chemical process Industries, 5th edition, McGraw Hill, 1984.
- G. R. Chatwal, Synthetic Drugs, Himalaya Publishing House, Bombay, 1995.
- J. Ghosh, A Textbook of Pharmaceutical Chemistry, S. Chand & Co Ltd., 1997.
- Bhat S.V., Nagasampagi, B.A. & Sivakumar M., Chemistry of Natural Products, Narosa, 2005.