

**SACRED HEART COLLEGE (AUTONOMOUS)**

**Department of Chemistry**

**BACHELOR OF SCIENCE IN CHEMISTRY**

**Course plan**

**Academic Year 2014 -15**

**Semester One**

### COURSE STRUCTURE

<b>Course Code</b>	<b>Title Of The Course</b>	<b>No. Hrs./ Week</b>	<b>Credits</b>	<b>Total Hrs./Sem</b>
U1CCENG1	Communication Skills in English	5	4	90
U1CCENG2	Reading Literature in English	4	3	72
U1CCHIN1A	Prose and Drama	4	4	72
U1CCFRN1A	French Language and Communication Skills I	4	4	72
U1CCSAN1A	Drama, Poetry and Alankara	4	4	72
U1CCMAL1A	Kadha, Novel	4	4	72
U1CRCHE1	Theoretical and Inorganic Chemistry I	2	2	36
U1CPPHY1	Properties of Matter, Mechanics and Particle Physics	2	2	36
U1CPMAT1	Differential Calculus and Trigonometry	4	3	60

**COURSE PLAN (COURSE 1)**

<b>PROGRAMME</b>	<b>BSC CHEMISTRY</b>	<b>SEMESTER</b>	<b>1</b>
<b>COURSE CODE AND TITLE</b>	<b>U1CCENG1: COMMUNICATION SKILLS IN ENGLISH</b>	<b>CREDIT</b>	<b>3+1</b>
<b>HOURS/WEEK</b>	<b>5</b>	<b>HOURS/SEM</b>	<b>90</b>

**COURSE OBJECTIVES**

Understand the mechanics of English language and comprehend the meaning of simple narrations, announcements and instructions.

Make inferences about the implications of statements from stress and tone recognize the various registers of speech.

Listen to formal presentations and prepare lecture notes in the appropriate format.

Use English for a variety of speaking contexts including conversations, presentations, speeches, discussions and negotiations.

Critically evaluate presentations, narrations, speeches and analyse and evaluate their content and respond to them appropriately.

Creatively respond to one's surroundings in the form of drama, poetry, narrations, and songs, and perform them before an audience.

<b>SESSI ON</b>	<b>TOPIC</b>	<b>LEARNING RESOURCES</b>	<b>ACTIVITY</b>	<b>REMARKS</b>
<b>MODULE I</b>				
<b>MODULE – I : Speech Sounds</b>				
1	Introduction to Communication Skills	Course book	Lecture	
2	Phonemic symbols	Audio	Q & A	
3	Vowels	Audio	Q & A	
4	Consonants	Audio	Q & A	
5	Vowels	Audio	Q & A	

6	Consonants	Audio	Q & A	
7	Syllables	Course book	Exercises	
8	Syllables	Audio	Q & A	
9	Syllables	Audio	Q & A	
10	Word stress	Audio	Q & A	
11	Word stress	Course book	Exercises	
12	Word stress	Course book	Exercises	
13	Word stress	Audio	Q & A	
14	Stress in polysyllabic words	Audio	Q & A	
15	Stress in polysyllabic words	Course book	Exercises	
16	Stress in polysyllabic words	Course book	Exercises	
17	Stress in words used as different parts of speech	Audio	Q & A	
18	Stress in words used as different parts of speech	Audio	Q & A	
19	Stress in words used as different parts of speech	Lecture		
<b>MODULE II : Listening</b>				
20	Sentence stress	Course Book	Lecture	
21	Sentence stress	Audio	Q& A	
22	Sentence stress	Audio	Q& A	
23	Sentence stress	Lecture	Exercises	
24	Weak forms and strong forms	Audio	Q & A	
25	Weak forms and strong forms	Audio & Lecture	Exercises	
26	Weak forms and strong forms	Lecture	Exercises	

27	Intonation	Lecture	Exercises	
28	Intonation	Audio	Q & A	
<b>Internal Assessment Test 1</b>				
30	Awareness of different accents	Video	Q & A	
31	Awareness of different accents	Audio/Video	Q & A	
32	Awareness of different accents	Audio/Video	Q & A	
<b>MODULE- III: Speaking</b>				
33	American English	Course Book	Lecture	
34	American English	Audio	Discussion	
35	American English	Audio	Discussion	
36	American English	Audio	Exercises	
37	British and Indian English	Course Book	Discussion	
38	British and Indian English	Audio	Discussion	
39	British and Indian English	Audio	Discussion	
40	British and Indian English	Audio	Discussion	
<b>Unit II: Academic Listening &amp; Note-taking</b>				
41	Influence of the mother tongue	Course Book	Lecture	
42	Influence of the mother tongue	Course book	Exercises	
43	Influence of the mother tongue	Audio	Exercises	
44	Influence of the mother tongue	Audio	Exercises	
45	Active listening	Audio	Exercises	
46	Active listening	Audio	Exercises	

47	Barriers to listening	Audio	Exercises	
48	Barriers to listening	Audio	Exercises	
<b>MODULE III</b>				
<b>Unit 1 – Art of Small Talk</b>				
49	Seminar Presentation	Course book	Lecture	
50	Listening and note taking	Course book	Exercises	
51	Listening and note taking	Audio	Q & A	
52	Listening and note taking	Course book	Q & A	
53	Listening and note taking	Course book	Exercises	
54	Listening to announcements	Audio	Exercises	
55	Listening to announcements	Course book	Exercises	
56	Listening to announcements	Course book	Exercises	
57	Listening to announcements	Course book	Exercises	
<b>Unit II: Transactional Conversation</b>				
59	Listening to news on the radio and television	Course book	Exercises	
60	Listening to news on the radio and television	Course book	Exercises	
61	Listening to news on the radio and television	Course book	Exercises	
62	Word stress and rhythm	Course book	Exercises	

63	Word stress and rhythm	Course book	Exercises	
64	Pauses and sense groups	Course book	Exercises	
65	Pauses and sense groups	Course book	Exercises	
66	Pauses and sense groups	Course book	Exercises	
67	Falling and rising tones	Course book	Exercises	
68	Falling and rising tones	Course book	Exercises	
69	Falling and rising tones	Course book	Exercises	
<b>Unit III: Telephone Conversation</b>				
70	Fluency and pace of delivery	Course book	Lecture	
71	Internal Examination	Course book	Exercises	
72	Art of small talk	Course book	Exercises	
<b>Internal Assessment 2</b>				
<b>MODULE IV</b>				
<b>Unit 1: Presentation</b>				
73	Participating in conversations	Course book	Lecture	
74	Participating in conversations	Discussion	Exercises	
75	Participating in conversations	Course book	Lecture	

76	Making a short formal speech	Course book	Discussion	
77	Participating in conversations	Course book	Discussion	
78	Describing people	Course book	Discussion	
79	Describing people	Course book	Discussion	
80	Place, events and things	Course book	Lecture	
81	Group discussion skills and telephone skills	Course book	Discussion	
82	Reading: theory and Practice -----	Course book	Discussion	
83	Scanning - Surveying a textbook using an index	Course book	Discussion	
84	Reading with a purpose – making predictions	Course book	Discussion	
<b>MODULE – IV: Reading</b>				
85	Understanding text structure	Course book	Lecture	
86	Locating main points – Making inferences	Course book	performance	
87	Reading graphics	Course book	performance	
88	Reading critically	Course book	performance	
89	Reading for research	Course book	performance	
90	Reading for research			



### ASSIGNMENTS

No.	Date	Topic of Assignment & Nature of assignment (Individual/ Group – Written/ Presentation – Graded or Non-graded etc)
1	Mid of semester	Write a note on your bus trip the college & present it before the class.
2	Mid of semester	Write a descriptive note on the sights and sounds of the college canteen + presentation before the class
3	Mid of semester	Write an interesting conversation you listened to recently and present it before the class with your partner.
4	Mid of semester	Identify a passage from any textbook or magazine, underline a pair of consonant sounds and read the same in the class giving special emphasis to the pair of sounds chosen
5	Mid of semester	Write a description of the Lakeview ground
6	Mid of semester	Describe the college auditorium
7	Mid of semester	Describe the sights and sounds in the portico of the college on any given day
8	Mid of semester	Describe the aquarium in the portico
9	Mid of semester	Narrate your experiences of any day on the campus

### REFERENCES

V.Sasikumar, P Kiranmai Dutt and Geetha Rajeevan, Communication Skills in English. Cambridge University Press and Mahatma Gandhi University.

### FURTHER READING

Sl.No	Title	Author	Publisher & Year
1	A Course in Listening and Speaking I & II	Sasikumar V.,Kiranmai Dutt and Geetha Rajeevan	New Delhi: CUP, 2007
2	Study Listening: A Course in Listening to Lectures and Note-taking	Tony Lynch	New Delhi: CUP, 2008
3	Study Speaking: A Course in Spoken English for Academic Purposes	Anderson, Kenneth, Joan Maclean and Tony Lynch	New Delhi: CUP, 2008

4	Study Reading: A Course in Reading Skills for Academic Purposes	Glendinning, Eric H. and Beverly Holmstrom	New Delhi: CUP, 2008
5	Communication Studies	Sky Massan	Palgrave Macmillan
6	Effective Communication for Arts and Humanities Students	Joan Van Emden and Lucinda Becker	Palgrave Macmillan

**COURSE 2**

<b>PROGRAMME</b>	<b>BSc Chemistry</b>	<b>SEMESTER</b>	<b>1</b>
<b>COURSE CODE AND TITLE</b>	<b>U1CCENG2: Reading Literature in English</b>	<b>CREDIT</b>	<b>3</b>
<b>HOURS/WEEK</b>	<b>4</b>	<b>HOURS/SEM</b>	<b>72</b>

**COURSE OBJECTIVES**

Explain the nuances of English Language through literature.
Compare the Varied parameters of English language.
Discover comprehensive ability.
Connect the efficiency of the students with realities of life.
Evaluate the beauty of literary expression.

<b>SESSION</b>	<b>TOPIC</b>	<b>Learning Resources</b>	<b>VALUE ADDITIONS</b>	<b>REMARKS</b>
<b>MODULE I</b>				
<b>ESSAYS</b>				
1	Introducing the text book	Text	PPT	
2	Bores: E V Lucas	Text		
3	Bores: E V Lucas	Text		
4	Bores: E V Lucas	Text		
5	A Glory has Departed- Jawaharlal Nehru	Text	Group Discussion	
6	A Glory has Departed- Jawaharlal Nehru	Text		

7	A Glory has Departed- Jawaharlal Nehru	Text		
8	A Glory has Departed- Jawaharlal Nehru	Text		
9	Tryst with Destiny- Amartya Sen	Text		
10	Tryst with Destiny- Amartya Sen	Text		
11	Tryst with Destiny- Amartya Sen	Text		
12	Tryst with Destiny- Amartya Sen	Text		
13	How to Escape from Intellectual Rubbish-Bertrand Russel	Text	Group Discussion	
14	How to Escape from Intellectual Rubbish-Bertrand Russel	Text		
15	How to Escape from Intellectual Rubbish-Bertrand Russel	Text		
16	How to Escape from Intellectual Rubbish-Bertrand Russel	Text		
17	Discussion			
18	Discussion		Quiz	
MODULE II- Poetry				
19	Sonnet XXX-William Shakespeare	Text	Lecture/PPT	
20	Sonnet XXX-William Shakespeare	Text		
21	Sonnet XXX-William Shakespeare	Text	Poetry Recitation	
22	Ode to a Nightingale-John Keats	Text	Poetry Recitation	
23	Ode to a Nightingale-John Keats	Text		
24	Mending Wall- Robert Frost		Interaction	
First Internal Examination				
25	Mending Wall- Robert Frost	Text	Poetry Recitation	

26	Mending Wall- Robert Frost	Text	Role Play	
27	The Bicycle- David Malouf	Text	Role play	
28	The Bicycle- David Malouf	Text		
29	The Bicycle- David Malouf	Text		
30	The Refuge	Text		
<b>Unit 3: The Boy Comes Home</b>				
30	Poor Girl- Maya Angelou	Text	Lecture/PPT	
31	Poor Girl- Maya Angelou	Text		
32	The Mask- Kamala Suraiya	Text		
33	The Mask- Kamala Suraiya	Text		
34	Goodbye party for Miss Pushpa T S- Nissim Ezekiel	Text	Poetry Recitation	
35	Goodbye party for Miss Pushpa T S- Nissim Ezekiel	Text		
36	Once Upon a Time-Gabriel Okara	text	Quiz	
<b>MODULE III: Short Story</b>				
37	The Lottery Ticket- Anton Pavlovich Chekhov	Text		
38	The Lottery Ticket- Anton Pavlovich Chekhov	Text		
39	The Lottery Ticket- Anton Pavlovich Chekhov	Text		
40	The Lottery Ticket- Anton Pavlovich Chekhov	Text	Quiz	
41	The Lottery Ticket- Anton Pavlovich Chekhov	Text	Video/ e-content	
42	Retrieved Reformation- O. Henry	Text		
43	Retrieved Reformation- O. Henry	Text		

44	Retrieved Reformation- O. Henry	Text		
45	Retrieved Reformation- O. Henry	Text	PPT	
46	Retrieved Reformation- O. Henry	Text		
47	A Shadow- R K Narayan	Text		
48	A Shadow- R K Narayan	Text		
49	A Shadow- R K Narayan	Text		
50	A Shadow- R K Narayan	Text	PPT	
51	A Devoted Son- Anita Deasi	Text		
52	A Devoted Son- Anita Deasi	Text		
53	A Devoted Son- Anita Deasi	Text		
54	A Devoted Son- Anita Deasi	Text	Discussion/Quiz	
55	Two Gentlemen of Verona- A J Cronin	Text		
56	Two Gentlemen of Verona- A J Cronin	Text		
57	Two Gentlemen of Verona- A J Cronin	Text		
58	Two Gentlemen of Verona- A J Cronin	Text	Quiz	
59	Two Gentlemen of Verona- A J Cronin	Text	Role Play	
60	Two Gentlemen of Verona- A J Cronin	Text		
<b>Unit 4: DRAMA</b>				
61	Refund- Fritz Karinthy	Text		
62	Refund- Fritz Karinthy	Text		

63	Refund- Fritz Karinthy	Text		
64	Refund- Fritz Karinthy	Text	Enacting the Drama	
65	Lord Byron's Love Letter-Tennessee Williams	Text		
66	Lord Byron's Love Letter-Tennessee Williams	Text	Quiz	
<b>Second Internal Examination</b>				
67	Lord Byron's Love Letter-Tennessee Williams	Text		
68	Lord Byron's Love Letter-Tennessee Williams	Text	Enacting the Drama	
69	The Monkey's Paw- W.W Jacob	Text Recital/ lecture		
70	The Monkey's Paw- W.W Jacob	Text		
71	The Monkey's Paw- W.W Jacob	Text		
72	The Monkey's Paw- W.W Jacob	Text	Enacting the Drama	

#### ASSIGNMENT

	<b>Date of submission/ completion</b>	<b>Topic of Assignment &amp; Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)</b>
1	By October	Review of a book, article

#### REFERENCE

- Dr. Leesa Sadasivan Ed. Reading Literature in English. Foundation Books and Mahatma Gandhi University.

### COURSE PLAN

PROGRAMME	BACHELOR OF CHEMISTRY	SEMESTER	1
COURSE CODE AND TITLE	U1CCHIN1A – PROSE AND DRAMA	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	72

### COURSE OBJECTIVES

Understand and explain the different prose forms written in Hindi language.

Understand various trends in Hindi Drama and its presentation.

Understand the ancient Indian culture

Understand the socio - cultural change in literature

Understand the development of literature and aesthetics

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
<b>MODULE I</b>				
1	General information about literature	Lecture/Discussion		
2	Development of Drama	Lecture/Discussion		
3	Madhavi – Introduction of Author Bhishma Sahni	Lecture/PPT		
4	Madhavi Act – 1, Scene -1	Lecture	Video	
5	Essay - Jeevan Mein Sahitya Ka Sthan  Introduction of Author Premchand	Lecture/Discussion		



6	Premchand and his literary works	Lecture/PPT		
7	Madhavi Act – 1, Scene -1	Lecture	Narration of stories related to 'Mahabharat'	
8	Revision	Interaction	Video	
9	Madhavi Act – 1, Scene -1	Lecture		
10	Madhavi Act – 1, Scene -2	Lecture/Discussion		
11	Essay - Jeevan Mein Sahitya Ka Sthan	Lecture		
12	Revision	Interaction	Presentation by students	
13	Madhavi Act – 1, Scene -2	Lecture		
14	Madhavi Act – 1, Scene -2	Lecture		
15	Madhavi Act – 1, Scene -3	Lecture	Presentation by students	
16	Essay - Jeevan Mein Sahitya Ka Sthan	Interaction	Acting	
17	Analyzing the characters of 'Madhavi'	Interaction	Conversation	
18	Essay - Jeevan Mein Sahitya Ka Sthan	Lecture	Seminar	
19	Madhavi Act – 1, Scene -3	Lecture/Discussion	Video	
20	Essay - Jeevan Mein Sahitya Ka Sthan	Lecture		
21	Essay - Jeevan Mein Sahitya Ka Sthan	Interaction		

22	Essay - Jeevan Mein Sahitya Ka Sthan	Lecture/Discussion		
23	Essay - Sahitya Ki Mahatta Introduction of Author Mahaveer Prasad Dwivedi	Lecture/PPT		
24	<b>CIA – I (1Hour Exam)</b>			
<b>MODULE II</b>				
25	Essay - Sahitya Ki Mahatta	Lecture	Seminar	
26	Essay - Sahitya Ki Mahatta	Lecture		
27	Essay - Sahitya Ki Mahatta	Lecture		
28	Essay - Sahitya Ki Mahatta	Lecture/Discussion		
29	Revision	Interaction	Seminar	
30	Madhavi Act – 2, Scene -1	Lecture		
31	Madhavi Act – 2, Scene -1	Lecture	Presentation by students	
32	Madhavi Act – 2, Scene -1	Lecture/Discussion		
33	Madhavi Act – 2, Scene -2	Lecture		
34	Madhavi Act – 2, Scene -2	Lecture		
35	Madhavi Act – 2, Scene -2	Lecture	Presentation by students	
36	Revision	Interaction	Video	
37	Madhavi Act – 2, Scene -3	Lecture		
38	Madhavi Act – 2, Scene -3	Lecture/Discussion		
39	Essay - Lalit Kalayen Introduction of the Author Dr. Syamsundar Das	Lecture/PPT		
40	Essay - Lalit Kalayen	Lecture	Seminar	

41	Essay - Lalit Kalayen	Lecture		
42	Essay - Lalit Kalayen	Lecture/Discussion		
43	Essay - Lalit Kalayen	Lecture/Discussion		
44	Madhavi Act – 2, Scene -3	Lecture	Video	
45	Madhavi Act – 2, Scene -3	Lecture	Video	
46	Interactive session	Discussion	Debate	
47	<b>CIA – II (2 Hours Exam)</b>			
<b>MODULE III</b>				
48	Essay - Rashtra Ka Swaroop Introduction of the Author Vasudev Saran Agraval	Lecture/PPT		
49	Essay - Rashtra Ka Swaroop	Lecture		
50	Essay - Rashtra Ka Swaroop	Lecture		
51	Essay - Rashtra Ka Swaroop	Discussion	Presentation by students	
52	Madhavi Act – 2, Scene -4	Lecture		
53	Madhavi Act – 2, Scene -4	Lecture		
54	Madhavi Act – 3, Scene -1	Lecture		
55	Madhavi Act – 3, Scene -1	Lecture/Discussion		
56	Revision	Discussion	Video	
57	Essay - Tum Ghar Kab Aoge Kavi Introduction of the Author Ramdhari Sinh Dinakar	Lecture/PPT		
58	Essay - Tum Ghar Kab Aoge Kavi	Lecture		

59	Essay - Tum Ghar Kab Aoge Kavi	Lecture	Seminar	
60	Essay - Tum Ghar Kab Aoge Kavi	Lecture		
61	Essay - Tum Ghar Kab Aoge Kavi	Lecture/Discussion		
62	Essay - Tum Ghar Kab Aoge Kavi	Discussion	Presentation by students	
63	Madhavi Act – 3, Scene -2	Lecture		
64	Madhavi Act – 3, Scene -2	Lecture		
65	Madhavi Act – 3, Scene -2	Lecture/Discussion	Video	
66	Madhavi Act – 3, Scene -3	Lecture	Video	
67	Madhavi Act – 3, Scene -3	Lecture/Discussion	Presentation by students	
68	Madhavi Act – 3, Scene -3			
69	Madhavi Conclusion	Interaction	Criticising the drama	
70	Seminar			
71	Seminar			
72	Evaluation of the course			

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

Sl.No	Date of Completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	Assignment (October)	Review of a lesson based on the text book 2 and reference-Writing (Individual)
2	Seminar (October)	Presentation on a given topic based on t the text book 1 and reference – oral (Individual)

### GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

Sl.No	Date of Completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	September	Literary Analysis of drama and its video (Group Discussion)
2	September	Presentation of any scene from drama Madhavi.(Group Activity)

#### References

- Hindi Natak Ka Ithihas : Somanath Gupth Hindi Bhavan, Allahabad
- Yug- Chaya , Editor: Shivdan Singh Chouhan, Rajkamal Prakashan,New Delhi.

#### Web resource references:

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

### COURSE PLAN

PROGRAMME	BSc CHEMISTRY	SEMESTER	1
COURSE CODE AND TITLE	U1CCFRN1A - FRENCH LANGUAGE AND COMMUNICATION SKILLS I	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	72

### COURSE OBJECTIVES

Understand the basic concepts of French language including grammar, vocabulary and sentence structure

Understand the basic communication skills necessary for living in France and French speaking countries.

Describe oneself and ones surroundings using a repertory of words and expressions in a simple and structured grammatical manner.

Develop business communication skills

Express an issue of concern including topics like environmental, social or health issues, enumerate its causes and consequences and suggest solutions

Understand the mannerisms, culture and tradition of France and Francophone countries and compare it to one's own country and develop co-cultural feeling

Understand and appreciate the history of France and Francophone countries and compare it to one's own country

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	Method of Teaching	Value Additions	Remarks
<b>MODULE I</b>				
1	Introducing French Basics	role play, Discussion	french basic communication	
2	French basics -alphabets	chalk n talk, audio	Lecture	
3	french basics	audio ppt, discussion	Lecture	
4	french basics	chalk n talk	Lecture	
5	numbers 1-20	role play,audio ppt	Lecture	
6	verbs introduction	chalk n talk	Lecture	
7	conjugation introduction	chalk n talk,ppt audio	audio	
8	Greetings	role play,audio ppt	Know a new culture	
9	Basic useful sentences in French	role play, audio ppt	Q and A	
10	spell in French	role play,audio ppt	presentation	
11	Indefinite articles	chalk n talk,audio ppt	Lecture	
12	prononciation of vowels	role play,audio ppt	Lecture	
13	French culture	Discussion, audio,ICT	Lecture,q nd A	
14	Revision			
<b>MODULE II</b>				
15	introducing a third person	game,audio ppt	Q nd A	
16	Asking personal information in french	role play,audio ppt	Lecture	
17	Giving personal information in french	role play,audio ppt	Interaction	
18	verbs etre ,avoir	chalk n talk	Lecture	
19	ER verbs	chalk n talk, audio ppt	Lecture	
20	adjectives of nationalities	role play, conversation	Lecture	
21	grammar articles	role play, listening	Ppt	
22	CIA 1			
23	Profession	cross words,chalk n talk	Lecture	
24	interests and tastes	role play,audio	Lecture	
25	Masculine,feminine of adjectives	exercices ,chalk n talk,audio	Lecture	

26	French culture- french names and profession	roleplay,audio	knowing culture	
27	explaining the objective of learning French	Discussion, ICT,audio	Lecture,q and A	
28	Revision			
		<b>MODULE III</b>		
29	describe a locality	oral, description	Q and A	
30	Express in quatity	role play,chalk n talk	Lecture	
31	"vivre" verb conjugation	audio,chalk n talk	Lecture	
32	places vocabulary	games,music,audio	Video	
33	Il y a,	audio,	daily needed vocabs	
	il n'y a pas	chalk n talk		
34	definite articles	chalk n talk,audio ppt	Lecture	
35	Adjectives	role play,audio ppt	Lecture	
36	Prepositions	role play ,audio ppt	Lecture	
37	Negation	chalk n talk/roleplay	Lecture	
38	Qualificative adjectives	chalk n talk ,audio ppt	Q and A	
39	Describing ur ideal locality	role play/presentation	Lecture	
40	intonations	audio ppt	Lecture	
41	French culture-express preference for city or village	Discussion	knowing culture	
42	revision			
43	CIA 2			
44	Correspondig with a friend expressing one's likings	chalk n talk/Role plays	Q and A	
45	speak about a persons character	role play ,GD	know each other	
46	adjectif possessif part 1	chalk n talk,audio ppt	Lecture	
47	adjectif possessif part 2	chalk n talk, audio ppt	Lecture	
48	speak about the surroundings	discussion	Lecture	
49	introduce and describe someone	role play	Lecture	
50	activities - vocabulary	lecture,audio	Lecture	
51	sports vocabulary	speaking/role play	general knowledge	
52	Vocabulary - relations	chalk n talk,audio ppt	Lecture	
53	famous french personality	discussion/comprehension	Lecture	



54	lexique des liens de parente	chalk n talk,audio ppt	Lecture	
	Express ones likings	Audio ppt,discussion	Q and A	
55	lexiques des loisirs	Audio ppt,discussion	Video	
56	forme negation	Audio ppt,discussion	Q and A	
57	pronunciation of verbs	Audio ppt,discussion	Q and A	
58	form filling	Audio ppt,discussion	Q and A	
59	french artists	Audio ppt,discussion	GK	
60	french music	Audio ppt,discussion	Video	
61	one's own musical preferences	Audio ppt,discussion	Q and A	
62	french music and comparison to one's own musical preference	discussion	knowing the culture	
63	module 1 -revision			
64	module 1 -revision			
65	module 2- revision			
66	module 2-revision			
67	module 3-revision			
68	module 3-revision			
69	module 4-revision			
70	module 4-revision			
71	PYQs discussion			
72	PYQs 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 October	Basic vocabulary on communication skills in Malayalam and French
2		roleplays

#### References

Version Originale, site web

### COURSE PLAN

PROGRAMME	BACHELOR OF SCIENCE IN CHEMISTRY	SEMESTER	1
COURSE CODE AND TITLE	U1CCSAN1A: DRAMA, POETRY AND ALANKARA	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	72

COURSE OBJECTIVES
Students can understand the poetic style with special reference to classical literature
Students get an awareness about Indian classical poetic tradition
Students familiarize the figures of speech and their usage
Students get an awareness about aesthetic values
Express an issue of concern including topics like environmental, social or health issues, enumerate its causes and consequences and suggest solutions
Understand moral values through Drama
Understand the tools to beautify the literature through Alankara
Students identify the richness of Indian Literature

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	REMARKS
<b>MODULE I</b>				
1	Introducing Sanskrit Basics	Lecture		
2	About Mahakavya	Lecture		
3	About Kumarasambava	Lecture		
4	Fifth sarga of Kumarasambava	Lecture	e-resource	
5	Brahmacharipravesha	Lecture		
6	Parvathi's penance	PPT/Lecture		
7	Inviting Brahmachari	Lecture		

8	Purushartha	Lecture		
9	Himalaya	Lecture		
10	Conversation to Parvathy	Lecture		
11	Critisisation	PPT/Lecture		
12	Questioning	PPT/Lecture		
13	Upamas	PPT/Lecture		
14	Revision			
<b>MODULE II</b>				
15	Sanskrit Drama - Introduction	PPT/Lecture		
16	Mahakavi Bhasa's Dramas	Lecture		
17	Bhasa's Karnabharam	Lecture		
18	Mahabharatha	Lecture		
19	Mangalasloka	Lecture		
20	Entry of Karna	PPT/Lecture		
21	Request to Karna	PPT/Lecture		
22	Duryodhana's order	PPT/Lecture		
23	Karna's sadness	PPT/Lecture		
24	Revenge	Lecture		
25	Karna's birth	Lecture		
26	CIA-1			
27	Kunthi's request	Lecture		
28	Karna's study	Lecture		
29	ParaShurama's teaching	PPT/Lecture		
30	Parashrama's curse	PPT/Lecture		
31	Greatness of Kshathriyas	PPT/Lecture		
32	Bravery of Karna	Lecture		

33	Indra's request to karna	Lecture		
34	Brahmana's blessing	PPT/Lecture		
35	Karna offering Horses	PPT/Lecture		
36	Karna offering elephants	PPT/Lecture		
37	Karna offering gold	Lecture		
38	Karna offering his kavacha	Lecture		
39	Indra accepting kavacha and kundala	PPT/Lecture		
40	Indra's blessing	PPT/Lecture		
41	The greatness of giving	PPT/Lecture		
42	<b>Revision</b>			
43	Revision			
44	Revision			
45	Revision			
	MODULE III			
46	Alankara introduction			
47	Kuvalayananda	PPT/Lecture		
48	Upama alankara	PPT/Lecture		
49	Upamana ,Upameya ,sadharana dharma	PPT/Lecture		
50	Ullekha Alankara	PPT/Lecture		
51	Dipika Alankara	PPT/Lecture		
52	Dipika example	PPT/Lecture	Video	
53	Vyathireka Alankara	PPT/Lecture		
54	Aprastutaprasamsa	PPT/Lecture		
55	Revision			
56	Svabhavokthi Alankara	Lecture	Debate	
57	Rupaka Alankara	PPT/Lecture		

58	Drishtantha Alankara	PPT/Lecture		
59	Dristantha -example	PPT/Lecture		
60	Arthantharanyasa	PPT/Lecture		
61	Prathama Ullekha	PPT/Lecture		
62	Dvitheeya Ullekha	PPT/Lecture		
CIA - II				
MODULE IV				
63	Characteristic of Karna	Lecture		
64	Characteristics of Shalya	Lecture	Group discussion	
65	Characteristics of Indra	Lecture		
66	Characteristics of Parvathi	PPT/Lecture		
67	Characteristics of Brahmachari	PPT/Lecture		
68	Himalaya	PPT/Lecture		
69	Revision			
70	Revision			
71	Revision			
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	12/08/2014	The role of Karna in Mahabharatha
2	16/09/2014	Upama kalidasasya

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

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	23/9/2014	The moral values in Kumarasambava
2	30/9/2014	Purushartha –the means of life

## References

1. Bhasanatakacakram O.R.I& Manuscript Library Trivandrum
2. Bhasanatakamanjari, Dr. V.S. Idakidath, Saparya Books, Kollam
3. Kumarasambhavam by Kuttikrishna Marar
4. Bhasanatakasarvasvam Sudhamsu Chathurvedi
5. Kalidasa Hridayam, V. Unnikrishnan Nair
6. The Problems of Bhasa Plays, Dr. N.P. Unni
7. Abhijnana Sakunthalam, M.R.Kale
8. Kalidasarvasvam, Sudhamsucathurvedi
9. Kuvalayanandam , Appayyadikshitha

**COURSE PLAN**

PROGRAMME	<b>B.Sc Chemistry</b>	SEMESTER	1
COURSE CODE & TITLE	U1CCMAL1A കഥ നോവൽ	CREDITS	4
HOURS/WEEK	4	HOURS/SEM	72

COURSE OBJECTIVES
കഥ, നോവൽ എന്നിവയെക്കുറിച്ച് മെച്ചപ്പെട്ട ധാരണ ഉണ്ടാക്കുക
ഭാഷാപഠനം സാഹിത്യാനുഭവത്തിലൂടെ ആവിഷ്കരിക്കുക
വായനാഭിരുചി വർദ്ധിപ്പിക്കുക
സാഹിത്യ പരിചയം ഉണ്ടാക്കുക
വ്യാവഹാരിക തലത്തിൽ മാതൃഭാഷാപ്രയോഗിക്കുവാനുള്ള കഴിവ് നേടുക
ഭാഷാപഠനത്തിലൂടെ ആശയവിനിമയശേഷി വർദ്ധിപ്പിക്കുക

**COURSE PLAN**

Session	Topic	Learning Resources	Teaching Method	Remarks
<b>Module I</b>				
1	മലയാളസാഹിത്യം സാമാന്യാവലോകനം	സാഹിത്യചരിത്രങ്ങൾ	Lecturing	
2	ചെറുകഥയുടെ ചരിത്രം-1	സാഹിത്യചരിത്രങ്ങൾ	Lecturing	
3	ചെറുകഥയുടെ ചരിത്രം-2	സാഹിത്യചരിത്രങ്ങൾ	Discussion	

4	തകഴിയുടെ രചനാലോകം	നോവൽ & ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
5	വെളുത്തകുഞ്ഞ്	Text	Reading	
6	വെളുത്തകുഞ്ഞ്	Text	Group Discussion	
7	സന്തോഷ് ഏഷ്യാക്കാണത്തിൻറെ കഥകൾ	ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
8	അഭിനയമുഹൂർത്തങ്ങൾ കഥ	Text	Reading	
9	അഭിനയമുഹൂർത്തങ്ങൾ കഥ	Text	Group Discussion	
10	ഒ വി വിജയനെ പരിചയപ്പെടുത്തുന്നു	നോവൽ & ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
11	കടൽത്തീരത്ത്	Text	Reading	
12	കടൽത്തീരത്ത്	Text	Group Discussion	
13	എൻ എസ് മാധവൻറെ കൃതികളുടെ രാഷ്ട്രീയം	നോവൽ & ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
14	നാലാംലോകം കഥ	Text	Reading	
15	നാലാംലോകം കഥ	Text	Group Discussion	
16	നാലാംലോകം കഥ	Text	Group Discussion	
17	ചെറുകഥ - അവലോകനം	Text	Group Discussion	
Module II				
18	എം ടി വാസുദേവൻ നായരുടെ കൃതികൾ	നോവൽ & ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
19	ഷെർലക്ക്	Text	Reading	
20	ഷെർലക്ക്	Text	Group Discussion	



21	ഉണ്ണി ആറിനെ പരിചയപ്പെടുത്തുന്നു	നോവൽ & ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
22	ഒറ്റപ്പെട്ടവൻ-	Text	Reading	
23	ഒറ്റപ്പെട്ടവൻ-	Text	Group Discussion	
24	ജോൺ എബ്രഹാം: സാഹിത്യവും സിനിമയും	നോവൽ & ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
25	നേർച്ചക്കോഴി	Text	Reading	
26	നേർച്ചക്കോഴി	Text	Group Discussion	
27	സാനാ ജോസഫ്, പുരാണ പുനർവായന	നോവൽ & ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
28	തായ്ക്കുലം	Text	Reading	
29	തായ്ക്കുലം	Text	Group Discussion	
30	ചെറുകഥ - അവലോകനം	Text	Group Discussion	
31	Internal Assessment 1	Text		
32	Question paper discussion	Text	Group Discussion	
Module III				
33	മാധവിക്കുട്ടിയുടെ കഥകളുടെ പ്രത്യേകതകൾ	നോവൽ & ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
34	പക്ഷിയുടെ മണം	Text	Reading	
35	പക്ഷിയുടെ മണം	Text	Group Discussion	
36	വൈക്കം മുഹമ്മദ് ബഷീറിന്റെ ലോകം	നോവൽ & ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
37	ശിക്കിടിമുക്കൻ	Text	Reading	
38	ശിക്കിടിമുക്കൻ	Text	Group Discussion	
39	സേതുവിന്റെ കൃതികൾ		Lecturing	
40	ദൂത്	Text	Reading	

41	ദൂത്	Text	Group Discussion	
42	കെ ആർ മീരയുടെ എഴുത്തുകൾ	നോവൽ & ചെറുകഥാ പഠനങ്ങൾ	Lecturing	
43	മോഹമത്തെ	Text	Reading	
44	മോഹമത്തെ	Text	Group Discussion	
45	ചെറുകഥ - അവലോകനം	Text	Group Discussion	
Module - IV				
46	മലയാളനോവൽ ചരിത്രം	സാഹിത്യചരിത്രങ്ങൾ	Lecturing	
47	മലയാളനോവൽ ചരിത്രം	സാഹിത്യചരിത്രങ്ങൾ	Group Discussion	
48	മലയാളനോവൽ നൂതന പ്രവണതകൾ	സാഹിത്യചരിത്രങ്ങൾ	Lecturing	
49	മലയാളനോവൽ നൂതന പ്രവണതകൾ	സാഹിത്യചരിത്രങ്ങൾ	Group Discussion	
50	വിനോയ് തോമസ്- ആമുഖം	നോവൽ പഠനങ്ങൾ	Lecturing	
51	കരിക്കോട്ടക്കരി- നോവൽ ആമുഖം	നോവൽ പഠനങ്ങൾ	Lecturing	
52	കരിക്കോട്ടക്കരി അധ്യായം 1	Text	Group Discussion	
53	കരിക്കോട്ടക്കരി അധ്യായം 2	Text	Group Discussion	
54	കരിക്കോട്ടക്കരി അധ്യായം 3	Text	Group Discussion	
55	കരിക്കോട്ടക്കരി അധ്യായം 4	Text	Group Discussion	
56	കരിക്കോട്ടക്കരി അധ്യായം 5	Text	Group Discussion	
57	കരിക്കോട്ടക്കരി അധ്യായം 6	Text	Group Discussion	

58	കുരികുറുടുകുരി അധ്യായം 7	Text	Group Discussion	
59	കുരികുറുടുകുരി അധ്യായം 8	Text	Group Discussion	
60	കുരികുറുടുകുരി അധ്യായം 9	Text	Group Discussion	
61	കുരികുറുടുകുരി അധ്യായം10	Text	Group Discussion	
62	കുരികുറുടുകുരി അധ്യായം 11	Text	Group Discussion	
	Internal Assessment 2			
63	കുരികുറുടുകുരി അധ്യായം 12	Text	Group Discussion	
64	കുരികുറുടുകുരി അധ്യായം 13	Text	Group Discussion	
65	കുരികുറുടുകുരി അവലുറുകനം	Text	Group Discussion	
66	സുവരദം- വരിനേയ് തുറമസ്	Text	Group Discussion	
67	സെമിനര	Text	Presentation	
68	സെമിനര	Text	Presentation	
69	സെമിനര	Text	Presentation	
70	സെമിനര	Text	Presentation	
71	സെമിനര	Text	Presentation	
72	Revision	Text	Group Discussion	

**ASSIGNMENTS**

Sl no	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	By October	മലയാളത്തിലെ തെരഞ്ഞെടുത്ത കഥാകൃത്തുക്കളുടെ വിവരണങ്ങൾ
2		സിലബസിൽ പഠിക്കാൻ ഇല്ലാത്ത ഒരു നോവലിന്റെ ആസ്വാദനം

**SEMINAR**

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

**Referance :**

1. സമ്പൂർണ്ണ മലയാള സാഹിത്യചരിത്രം - എഡിറ്റർ :പന്മന രാമചന്ദ്രൻ നായർ
- 2.ചെറുകഥ ഇന്നലെ ഇന്ന് ഓരോ അച്ചുതൻ
- 3.മലയാള നോവൽ സാഹിത്യചരിത്രം - കെ എം തരകൻ

**COURSE PLAN- THEORETICAL AND INORGANIC CHEMISTRY I**

<b>PROGRAMME</b>	<b>BACHELOR OF SCIENCE IN CHEMISTRY</b>	<b>SEMESTER</b>	<b>1</b>
<b>COURSE CODE AND TITLE</b>	<b>U1CRCHE01: THEORETICAL AND INORGANIC CHEMISTRY I</b>	<b>CREDIT</b>	<b>2</b>
<b>HOURS/WEEK</b>	<b>2</b>	<b>HOURS/SEM</b>	<b>36</b>

**COURSE OBJECTIVES**

*Remember the evolution of chemistry as a discipline of science*

*Understand the basics concepts of chemistry and fundamental principles of analytical chemistry.*

*Analyse the features and limitations of various models of atomic structure.*

*Apply the principles of quantum mechanics to describe atomic structure.*

<b>SESSION</b>	<b>TOPIC</b>	<b>LEARNING RESOURCES</b>	<b>VALUE ADDITIONS</b>	<b>REMARKS</b>
<b>Module 1 - Chemistry as a discipline of science (3h) (JRJ)</b>				
1	What is Science? - Scientific statements - Scientific methods – Observation - Posing a question	Conventional Teaching	video	
2	Formulation of hypothesis – Experiment – Theory – Law - Revision of scientific theories and laws. Evolution of chemistry - Alchemy - Branches of chemistry	Conventional Teaching		
3	Components of a research project -Introduction, review of literature, scope, materials and methods, results and discussion, conclusions and bibliography.	Conventional Teaching		
<b>Module 2 - Basic Concepts in Chemistry (3h) (JRJ)</b>				
4	Atomic mass and Molecular mass. Isotopes, isobars and isotones – Mole concept – Molar volume – Oxidation and reduction – Oxidation number and valency - Variable valency - Equivalent mass.	Conventional Teaching		

5	Methods of expressing concentration: Weight percentage, molality, molarity, normality, formality, mole fraction, ppm and millimoles.	Conventional Teaching		
6	Numerical Problems related to basic concepts.	Conventional Teaching	quiz	
<b>Module 3 - Analytical Chemistry I (9h) (GT)</b>				
7	<b>Quantitative Analysis.</b> Primary standard-secondary standard, quantitative dilution	Conventional Teaching		
8	Problems.	Conventional Teaching	quiz	
9	Problems.	Conventional Teaching	quiz	
10	Calibration of volumetric apparatus. Acid base titrations- titration curves –pH indicators.	Conventional Teaching		
11	Calibration of volumetric apparatus. Acid base titrations- titration curves –pH indicators.	Conventional Teaching		
12	Redox titrations – Titration curve – Titrations involving $\text{KmnO}_4$ and $\text{K}_2\text{Cr}_2\text{O}_7$ - Redox indicators.	Conventional Teaching ASSIGNMENT I		
13	Complexometric titrations – EDTA titrations – titration curves – metal ion indicators and characteristics.	Conventional Teaching		
14	<b>Errors in Chemical Analysis.</b> Accuracy, precision, Types of error-absolute and relative error, methods of eliminating or minimizing errors.	Conventional Teaching ICT		
15	Methods of expressing precision: mean, median, deviation, average deviation and coefficient of variation. Significant figures and its application.	Conventional Teaching	Q & A session	
<b>Module 4 - Atomic Structure (9h) (GT)</b>				

16	Introduction to atomic structure based on historical development – Rutherford’s atom model and its limitations	Conventional Teaching		
17	Failure of classical physics – Black body radiation	Conventional Teaching		
18	Compton Effect - Planck’s quantum hypothesis -	Conventional Teaching		
19	Photoelectric effect	Conventional Teaching		
20	Generalization of quantum theory -Atomic spectra of hydrogen and hydrogen like atoms – Ritz-combination principle	Conventional Teaching	Q & A session	
21	Bohr theory of atom – Calculation of Bohr radius, velocity and energy of an electron -	Conventional Teaching		
22	Explanation of atomic spectra – Rydberg equation – Limitations of Bohr theory - Sommerfield modification	Conventional Teaching		
23	Louis de Broglie's matter waves – Wave-particle duality	Conventional Teaching ICT		
24	Electron diffraction - Heisenberg's uncertainty principle	Conventional Teaching		
<b>Module 5 - Quantum Mechanical Model of Atom (12h) (JRJ)</b>				
25	Operator algebra – Linear and Hermitian operators	Conventional Teaching		
26	Laplacian and Hamiltonian operators	Conventional Teaching ASSIGNMENT II		

27	Eigen functions and Eigen values of an operator	Conventional Teaching		
28	Postulates of quantum mechanics - Well behaved functions	Conventional Teaching		
29	Time independent Schrödinger wave equation - Application to particle in a one dimensional box	Conventional Teaching		
30	Normalization of wave function - Particle in a three-dimensional box-Degeneracy.	Conventional Teaching ICT		
31	Application of Schrödinger wave equation to hydrogen atom	Conventional Teaching		
32	Conversion of Cartesian coordinates to polar coordinates - The wave equation in spherical polar coordinates (derivation not required)	Conventional Teaching		
33	Radial and Angular functions (derivation not required) – Orbitals and concept of Quantum numbers (n, l, m).Radial functions - Radial distribution functions and their plots – Shapes of orbitals (s, p and d).	Conventional Teaching		
34	Schrödinger equation for multi-electron atoms: Need for approximation methods.	Conventional Teaching		
35	Electron spin – Spin quantum number - Pauli's Exclusion principle	Conventional Teaching	Q & A session	
36	Hund's rule of maximum multiplicity - Aufbau principle – Electronic configuration of atoms	Conventional Teaching	Q & A session	



### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	04/08/2014	Bohr Atom Theory
2	28/10/2014	Schrodinger Wave Equation

### GROUP ASSIGNMENTS/ACTIVITIES – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	02/11/2014	Postulates of Quantum Mechanics

### REFERENCES

1. Jeffrey A. Lee, *The Scientific Endeavor: A Primer on Scientific Principles and Practice*, Pearson Education, 1999.
2. C.N.R. Rao, *Understanding Chemistry*, Universities Press India Ltd., Hyderabad, 1999.
3. Robert H. Hill and David Finster, *Laboratory Safety for Chemistry Students*, 1st Edition, Wiley, Hoboken, NJ, 2010.
4. M.C. Day and J. Selbin, *Theoretical Inorganic Chemistry*, East West Press, New Delhi, 2002.
5. B.R. Puri, L.R. Sharma and K.C. Kalia, *Principles of Inorganic Chemistry*, 31st Edition, Milestone Publishers and Distributors, New Delhi, 2013.
6. Satya Prakash, *Advanced Inorganic Chemistry, Volume 1*, 5th Edition, S. Chand and Sons, New Delhi, 2012.
7. J. Mendham, R.C. Denney, J. D. Barnes and M. Thomas, *Vogel's Text Book of Quantitative Chemical Analysis*, 6th Edition, Pearson Education, Noida, 2013.
8. A.K. Chandra, *Introductory Quantum Chemistry*, 4th Edition, Tata McGraw Hill Publishing Company, Noida, 1994.
9. R.K. Prasad, *Quantum Chemistry*, 4th Edition, New Age International(P) Ltd., New Delhi, 2012.
10. B.K. Sen, *Quantum Chemistry – Including Spectroscopy*, 3rd Edition, Kalyani publishers, NewDelhi, 2010.

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1. T.F Gieryn, *Cultural Boundaries of Science*, University of Chicago Press, Chicago, 1999.
2. H. Collins and T. Pinch, *The Golem: What Everyone Should Know about Science*, Cambridge University Press, Cambridge, 1993.
3. C.R. Kothari, *Research Methodology: Methods and Techniques*, 2nd Revised Edition, New Age International Publishers, New Delhi, 2004.
4. *Guidance in a Nutshell - Compilation of Safety Data Sheets*, European Chemicals Agency, Finland, Version 1.0, December 2013.
5. J. D. Lee, *Concise Inorganic Chemistry*, 5<sup>th</sup>edn., Blackwell Science, London (Chapter 1)
6. D. F. Shriver and P. W. Atkins, *Inorganic Chemistry*, 3<sup>rd</sup>edn., Oxford University Press(Chapter 1)
7. B. Douglas, D. Mc Daniel, J. Alexander, *Concepts and models in Inorganic Chemistry* (Chapter 1)
8. D.A. Skoog, D.M. West, F.J. Holler and S.R. Crouch, *Fundamentals of Analytical Chemistry*, 8<sup>th</sup>Edition, Brooks/Cole, Thomson Learning, Inc., USA, 2004
9. D.A. McQuarrie, *Quantum Chemistry*, 2nd Edition, University Science Books, California, 2008.
10. M.C. Day and J. Selbin, *Theoretical Inorganic Chemistry*, East West Press, New Delhi, 2002.
11. P.W. Atkins and R.S. Friedman, *Molecular Quantum Mechanics*, 3rd Edition, Oxford University Press, New York, 1997.
12. I.N. Levine, *Quantum Chemistry*, 6th Edition, Pearson Education Inc., New Delhi, 2009.
13. Jack Simons, *An Introduction to Theoretical Chemistry*, 2nd Edition, Cambridge University Press, Cambridge, 2005.

**COURSE PLAN- PROPERTIES OF MATTER, MECHANICS AND PARTICLE PHYSICS**

<b>PROGRAMME</b>	<b>BACHELOR OF SCIENCE IN CHEMISTRY</b>	<b>SEMESTER</b>	<b>1</b>
<b>COURSE CODE AND TITLE</b>	<b>U1CPPHY2: PROPERTIES OF MATTER, MECHANICS AND PARTICLE PHYSICS</b>	<b>CREDIT</b>	<b>2</b>
<b>THEORY HOURS/WEEK</b>	<b>2</b>	<b>HOURS/SEM</b>	<b>36</b>

<b>COURSE OBJECTIVES</b>
Understanding the concepts of Elastic moduli- Poisson's ratio- twisting couple- determination of rigidity modulus
Understanding the basic concepts of Rotational dynamics of rigid bodies
Understanding the role of oscillations in Physics life
Understanding Particle Physics – Basic Introduction

<b>Session</b>	<b>Topic to be covered/activity</b>	<b>Learning Resources</b>	<b>Value Additions</b>	<b>Remarks</b>
1	Introduction – to Elasticity	Lecture	Q & A Session	
2	Elastic moduli	Lecture		
3	Poisson's ratio and class activity	Class Activity in Groups		
4	Twisting couple	Lecture + PPT		
5	Determination of rigidity modulus	Lecture		
6	Determination of rigidity modulus Contd	Lecture		
7	Problems	Lecture		
8	Static torsion	Lecture		
9	Torsion pendulum	Lecture		
10	Bending of beams and Cantilever	Lecture		
11	Problems	Class Activity in Groups	Q & A Session	
12	Uniform Bending	Lecture		
13	Non-Uniform bending	Lecture + Video		
14	Introduction	Lecture		
15	Angular velocity, angular momentum	Lecture		
16	Torque, conservation of angular momentum	Lecture		

17	Angular acceleration, moment of inertia	Lecture		
18	Parallel and perpendicular axes theorem	Lecture		
19	Moment of inertia of rod, ring	Lecture		
20	Moment of inertia of disc, cylinder	Lecture		
21	Moment of inertia of sphere	Lecture		
22	Moment of inertia of flywheel	Lecture		
23	Review, problems	Lecture	Quiz	
24	Periodic and oscillatory motion	Lecture		
25	Simple harmonic motion, differential equation	Lecture		
26	Expression for velocity, displacement and acceleration, graphical representation	Lecture	Q & A Session	
27	Energy of particle executing SHM	Lecture		
28	Damped oscillations	Lecture		
29	Forced oscillations	Lecture		
30	Resonance	Lecture		
31	Review, problems	Lecture	Quiz	
32	Fundamental interaction in nature	Lecture		
33	Gauge particles	Lecture		
34	Classification of particles antiparticles	Lecture		
35	Elementary particle quantum numbers	Lecture		
36	Conservation laws and Quark Model	Lecture		

#### References

1. Mechanics- H.S.Hans and S.P.Puri. (Tata McGraw-Hill)
2. Properties of Matter- Brijlal and N. Subrahmanyam (S. Chand and Co.)
3. Concepts of Modern Physics- A. Beiser (Tata McGraw-Hill, 5th Edn.)

### COURSE PLAN - DIFFERENTIAL CALCULUS AND TRIGONOMETRY

<b>PROGRAMME</b>	<b>BACHELOR OF SCIENCE IN CHEMISTRY</b>	<b>SEMESTER</b>	<b>1</b>
<b>COURSE CODE AND TITLE</b>	<b>U1CPMAT01: DIFFERENTIAL CALCULUS AND TRIGONOMETRY</b>	<b>CREDIT</b>	<b>3</b>
<b>HOURS/WEEK</b>	<b>4</b>	<b>HOURS/SEM</b>	<b>60</b>

<b>COURSE OBJECTIVES</b>
Understand limits, derivatives of a functions and its applications.
Determine whether a given function is increasing or decreasing.
Apply the concepts of maxima and minima of a function to real world problems
Understand the concepts of derivative of functions of more than one variable
Understand the concepts of Trigonometric functions, their properties and summation of trigonometric series

<b>Sessions</b>	<b>Topic</b>	<b>LEARNING RESOURCES</b>	<b>VALUE ADDITIONS</b>	<b>REMARKS</b>
1	Introductory Session	Lecture	Q & A Session	
2	Rates of change and limits	Lecture		
3	Calculating limits using the limit laws	Lecture, Problem Solving		
4	Calculating limits using the limit laws	Lecture, Problem Solving		
5	The precise definition of a limit	Lecture,		
6	The precise definition of a limit	Lecture Problem Solving		
7	One sided limits and limits at infinity	Lecture, Problem Solving		
8	Derivative of a function	Lecture, Problem Solving		
9	Derivative of a function	Lecture, Problem Solving		
10	Differentiation rules	Lecture, Problem Solving		

11	Differentiation rules	Lecture, Solving	Problem		
12	The derivative as a rate of change	Lecture			
13	The derivative as a rate of change	Lecture, Solving	Problem		
14	Derivatives of trigonometric functions	Lecture, Solving	Problem		
15	The chain rule and parametric equations	Lecture, Solving	Problem		
16	The chain rule and parametric equations	Lecture, Solving	Problem		
17	Implicit Differentiation.	Lecture, Solving	Problem		
18	Implicit Differentiation.	Lecture, Solving	Problem		
19	Test				
20	Extreme values of functions	Lecture, Solving	Problem		
21	Extreme values of functions	Lecture, Solving	Problem		
22	The Mean Value Theorem	Lecture, Solving	Problem		
23	The Mean Value Theorem	Lecture, Solving	Problem		
24	Monotonic functions	Lecture, Solving	Problem		
25	Monotonic functions	Lecture, Solving	Problem		
26	First derivative test.	Lecture, Solving	Problem		
27	First derivative test.	Lecture, Solving	Problem		
28	First derivative test.	Lecture, Solving	Problem		
29	Test				
30	Functions of several variables	Lecture, Solving	Problem		
31	Partial derivatives	Lecture, Solving	Problem		

32	Partial derivatives	Lecture, Solving	Problem		
33	Partial derivatives	Lecture, Solving	Problem		
34	Partial derivatives	Introduction			
35	The Chain Rule	Lecture, Solving	Problem		
36	The Chain Rule	Lecture, Solving	Problem		
37	The Chain Rule	Lecture, Solving	Problem		
38	The Chain Rule	Lecture, Solving	Problem		
39	Test				
40	Expansions of $\sin n\theta$	Lecture, Solving	Problem		
41	Expansions of $\cos n\theta$ ,	Lecture, Solving	Problem		
42	Expansions of $\tan n\theta$	Lecture, Solving	Problem		
43	Expansions of $\sin^n \theta$	Lecture, Solving	Problem		
44	Expansions of $\cos^n \theta$ ,	Lecture, Solving	Problem		
45	Expansions of $\sin^n \theta$ $\cos^m \theta$	Lecture, Solving	Problem		
46	Circular and hyperbolic functions	Lecture, Solving	Problem		
47	Circular and hyperbolic functions	Lecture, Solving	Problem		
48	Inverse circular and hyperbolic function	Lecture, Solving	Problem		
49	Inverse circular and hyperbolic function	Lecture, Solving	Problem		
50	Inverse circular and hyperbolic function	Lecture, Solving	Problem		
51	Separation into real and imaginary parts	Lecture, Solving	Problem		
52	Separation into real and imaginary parts	Lecture, Solving	Problem		
53	Separation into real and imaginary parts	Lecture, Solving	Problem		

54	Summation of infinite series based on C + iSmethod	Lecture, Solving	Problem		
55	Summation of infinite series based on C + is method	Lecture, Solving	Problem		
56	Summation of infinite series based on C + is method	Lecture, Solving	Problem		
57	Summation of infinite series based on C + is method	Lecture, Solving	Problem		
58	Summation of infinite series based on C + is method	Lecture, Solving	Problem		
59	Application	Lecture, Solving	Problem		
59	Revision	Lecture, Solving	Problem		
60	Revision	Lecture, Solving	Problem		

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

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)
1	4/9/2014	PROBLEMS IN DIFFERENTIATION
2	28/9/2014	PROBLEMS IN TRIGONOMETRY

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

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc.)
1	2/9/2014	PROBLEMS IN PARTIAL DIFFERENTIAL EQUATIONS

#### Text Books: -

1. George B. Thomas, Jr: Thomas' Calculus Eleventh Edition, Pearson, 2008.
2. S.L. Loney – Plane Trigonometry Part – II, AITBS Publishers India, 2009.

#### Reference Books :

1. Shanti Narayan : Differential Calculus ( S Chand)
2. George B. Thomas Jr. and Ross L. Finney : Calculus, LPE, Ninth edition, Pearson Education.
3. S.S. Sastry, Engineering Mathematics, Volume 1, 4 th Edition PHI.
4. Muray R Spiegel, Advanced Calculus, Schaum's Outline series.