

SACRED HEART COLLEGE (AUTONOMOUS)

Department of Chemistry

BACHELOR OF SCIENCE IN CHEMISTRY

Course plan

Academic Year 2018-19

Semester One

PROGRAMME OUTCOMES

PO 1	Critical Thinking
PO 2	Effective Communication
PO 3	Effective Citizenship
PO 4	Environment and Sustainability
PO 5	Ethics
PO 6	Global Perspective

PROGRAMME SPECIFIC OUTCOMES

PSO 1	Explain the basic concepts and solve the problems related to inorganic, organic theoretical and physical chemistry.
PSO 2	Apply the principles of chemistry in industry, agriculture, medicine and environment.
PSO 3	Experiment, analyse and draw conclusions from qualitative, quantitative and synthetic laboratory exercises in chemistry.
PSO 4	Design projects in different fields of chemistry and develop research aptitude.

COURSE STRUCTURE

Course Code	Title Of The Course	No. Hrs./ Week	Credits	Total Hrs./Sem
15U1CCENG1	Communication Skills in English	5	4	90
15U1CCENG2	Reading Literature in English	4	3	72
15U1CCHIN1A	Prose and Drama	4	4	72
15U1CCFRN1A	French Language and Communication Skills I	4	4	72
15U1CCSAN1A	Drama, Poetry and Alankara	4	4	72
15U1CCMAL1A	Kadha, Novel	4	4	72
15U1CRCHE1	Theoretical and Inorganic Chemistry I	2	2	36
15U1CPPHY1	Properties of Matter, Mechanics and Particle Physics	2	2	36
15U1CPMAT1	Differential Calculus and Trigonometry	4	3	60

COURSE PLAN - COMMUNICATION SKILLS IN ENGLISH

PROGRAMME	BACHELOR OF SCIENCE IN CHEMISTRY	SEMESTER	I
COURSE CODE AND TITLE	15U1CCENG1: COMMUNICATION SKILLS IN ENGLISH	CREDIT	3+1
HOURS/WEEK	5	HOURS/SEM	90
FACULTY NAME	MR. SUNIL K V		

	COURSE OUTCOMES	PO / PSO	CL
CO1	Understand the mechanics of English language and comprehend the plain meaning of simple narrations, announcements and instructions.	PO 1, PO 5 PSO 1	R
CO2	Make inferences about the implications of statements from stress and tone recognise the various registers of speech.	PO 1 PSO 1	U
CO3	Listen to formal presentations and prepare lecture notes using the appropriate format.	PO 1 PSO 1	U
CO4	Use English language for a variety of speaking contexts including conversations, presentations, speeches, discussions and negotiations.	PO 1, PO 6 PSO 1	U
CO5	Critically evaluate presentations, narrations, speeches and analyse and evaluate their content and respond to them appropriately.	PO 1, PO 6 PSO 1	U
CO6	Creatively respond to one's surroundings in the form of dramatic works, poetry, narrations, and songs, and perform them before an audience.	PO 1, PO 6 PSO 1	U
CO7	Understand the mechanics of English language and comprehend the plain meaning of simple narrations, announcements and instructions.	PO 1, PO 6 PSO 1	U

Sessions	Topic	Learning Resources	Value Additions	COs
1	Introduction to Communication Skills	Lecture	Q & A Session	CO1
2	Introduction to Communication Skills	Lecture	Q & A Session	CO1
3	Introduction to Communication Skills	Lecture	Q & A Session	CO1
4	Phonetics: Introduction	PPT presentation		CO5, CO6
5	Phonetics: Introduction	PPT presentation		CO5, CO6
6	Phonetics: Introduction	PPT presentation		CO5, CO6
7	Unit 1 – Write as you speak	Audio presentation & Exercises		CO3, CO4
8	Unit 1 – Write as you speak	Audio presentation & Exercises		CO3, CO4

9	Unit 1 – Write as you speak	Audio presentation & Exercises		CO3, CO4
10	Unit 2 – Dip in Deep Sea	Audio presentation & Exercises		CO1, CO3
11	Unit 2 – Dip in Deep Sea	Audio presentation & Exercises		CO1, CO3
12	Unit 2 – Dip in Deep Sea	Audio presentation & Exercises		CO1, CO3
13	Unit 3 – Many Mad Men	Audio presentation & Exercises		CO3, CO4
14	Unit 3 – Many Mad Men	Audio presentation & Exercises		CO3, CO4
15	Unit 3 – Many Mad Men	Audio presentation & Exercises		CO3, CO4
16	Unit 4 – A Cot Caught in a Cart	Audio presentation & Exercises		CO1,CO3
17	Unit 4 – A Cot Caught in a Cart	Audio presentation & Exercises		CO1,CO3
18	Unit 4 – A Cot Caught in a Cart	Audio presentation & Exercises		CO1,CO3
19	Unit 5 – Look for Good Food	Audio presentation & Exercises		CO3, CO2
20	Unit 5 – Look for Good Food	Audio presentation & Exercises		CO3, CO2
21	Unit 5 – Look for Good Food	Audio presentation & Exercises		CO3, CO2
22	Unit 6 – Bad Luck, Early Worm and Unit	Audio presentation & Exercises		CO5, CO7
23	Unit 6 – Bad Luck, Early Worm and Unit	Audio presentation & Exercises		CO5, CO7
24	Unit 6 – Bad Luck, Early Worm and Unit	Audio presentation & Exercises		CO5, CO7
25	Unit 7 - Again and Again	Audio presentation & Exercises		CO2, CO4
26	Unit 7 - Again and Again	Audio presentation & Exercises		CO2, CO4
27	Unit 7 - Again and Again	Audio presentation & Exercises		CO2, CO4
28	Unit 7 - Again and Again	Audio presentation & Exercises		CO2, CO4
29	Unit 8 – A China Clay Toy	Audio presentation & Exercises		CO1, CO3
30	Unit 8 – A China Clay Toy	Audio presentation & Exercises		CO1, CO3
31	Unit 8 – A China Clay Toy	Audio presentation & Exercises		CO1, CO3

32	Unit 8 – A China Clay Toy	Audio presentation & Exercises		CO1, CO3
33	Unit 9 – Holy Cow	Audio presentation & Exercises		CO6, CO7
34	Unit 9 – Holy Cow	Audio presentation & Exercises		CO6, CO7
35	Unit 9 – Holy Cow	Audio presentation & Exercises		CO6, CO7
36	Unit 10 – Here, There, Everywhere	Audio presentation & Exercises	Q & A Session	CO6, CO7
37	Unit 10 – Here, There, Everywhere	Audio presentation & Exercises	Q & A Session	CO6, CO7
38	Unit 10 – Here, There, Everywhere	Audio presentation & Exercises	Q & A Session	CO6, CO7
39	IAT – 1			
40	IAT – 1			
41	Discussion on the test paper	Discussion	Q & A Session	CO4, CO6
42	Discussion on the test paper	Discussion	Q & A Session	CO4, CO6
43	Discussion on the test paper	Discussion	Q & A Session	CO4, CO6
44	Unit 11 – Buzzing Bees & Hissing Snakes	Audio presentation & Exercises		CO6, CO7
45	Unit 11 – Buzzing Bees & Hissing Snakes	Audio presentation & Exercises		CO6, CO7
46	Unit 12 – Pleasure Ships on the sea	Audio presentation & Exercises		CO6, CO7
47	Unit 12 – Pleasure Ships on the sea	Audio presentation & Exercises		CO6, CO7
48	Unit 12 – Pleasure Ships on the sea	Audio presentation & Exercises		CO6, CO7
49	Unit 13 – A Fine Vine Unit 14 – Thanks Brother!	Audio presentation & Exercises		CO1, CO3
50	Unit 13 – A Fine Vine Unit 14 – Thanks Brother!	Audio presentation & Exercises		CO1, CO3
51	Unit 13 – A Fine Vine Unit 14 – Thanks Brother!	Audio presentation & Exercises		CO1, CO3

52	Unit 15 – Jane’s Chain Unit 16 – A Smiling King	Audio presentation & Exercises		CO2, CO3
53	Unit 15 – Jane’s Chain Unit 16 – A Smiling King	Audio presentation & Exercises		CO2, CO3
54	Unit 15 – Jane’s Chain Unit 16 – A Smiling King	Audio presentation & Exercises		CO2, CO3
55	Unit 17 – Betty’s Bitter Butter Unit 18 – Have Your Way	Audio presentation & Exercises	Q & A Session	CO1, CO3
56	Unit 17 – Betty’s Bitter Butter Unit 18 – Have Your Way	Audio presentation & Exercises	Q & A Session	CO1, CO3
57	Unit 17 – Betty’s Bitter Butter Unit 18 – Have Your Way	Audio presentation & Exercises	Q & A Session	CO1, CO3
58	Unit 17 – Betty’s Bitter Butter Unit 18 – Have Your Way	Audio presentation & Exercises	Q & A Session	CO1, CO3
59	Unit 17 – Betty’s Bitter Butter Unit 18 – Have Your Way	Audio presentation & Exercises	Q & A Session	CO1, CO3
60	Unit 19 – Right Road, Light Road Revision	Audio presentation & Exercises Drill Exercises		CO1, CO3
61	Unit 19 – Right Road, Light Road Revision	Audio presentation & Exercises Drill Exercises		CO1, CO3
62	Unit 19 – Right Road, Light Road Revision	Audio presentation & Exercises Drill Exercises		CO1, CO3
63	Revision Exercises	Drill Exercises		CO5, CO7
64	Revision Exercises	Drill Exercises		CO5, CO7
65	Revision Exercises	Drill Exercises		CO5, CO7
66	Unit 20 - Pronunciation: Syllables	Lecture Session		CO2, CO6
67	Unit 20 - Pronunciation: Syllables	Lecture Session		CO2, CO6
68	Unit 20 - Pronunciation: Syllables	Lecture Session		CO2, CO6
69	Unit 21 - Word stress 1	Audio presentation & Exercises		CO2, CO6

70	Unit 21 - Word stress 1	Audio presentation & Exercises		CO2, CO6
71	Unit 21 - Word stress 1	Audio presentation & Exercises		CO2, CO6
72	Unit 22 - Word stress 2	Audio presentation & Exercises		CO6, CO7
73	Unit 22 - Word stress 2	Audio presentation & Exercises		CO6, CO7
74	Unit 22 - Word stress 2	Audio presentation & Exercises		CO6, CO7
75	Unit 22 - Stress and Parts of Speech	Audio presentation & Exercises		CO4, CO5
76	Unit 22 - Stress and Parts of Speech	Audio presentation & Exercises		CO4, CO5
77	Unit 22 - Stress and Parts of Speech	Audio presentation & Exercises		CO4, CO5
78	Unit 23 - Sentence Stress	Audio presentation & Exercises		CO5, CO7
79	Unit 23 - Sentence Stress	Audio presentation & Exercises		CO5, CO7
80	Unit 23 - Sentence Stress	Audio presentation & Exercises		CO5, CO7
81	IAT – 2			
82	Performance Analysis _ IAT 2	Discussion	Q & A Session	CO5, CO7
83	Unit 24 – Weak forms & Strong Forms Unit 25 – Contracted forms	Audio presentation & Exercises		CO2, CO3
84	Unit 24 – Weak forms & Strong Forms Unit 25 – Contracted forms	Audio presentation & Exercises		CO2, CO3
85	Unit 24 – Weak forms & Strong Forms Unit 25 – Contracted forms	Audio presentation & Exercises		CO2, CO3
86	Unit 26 – Intonation	Audio presentation & Exercises		CO1, CO7
87	Unit 26 – Intonation	Audio presentation & Exercises		CO1, CO7
88	Unit 27 – Different accents	Lecture and Drill		CO2, CO3
89	Unit 27 – Different accents	Lecture and Drill		CO2, CO3
90	Influence of Mother tongue	Lecture and Drill	Quiz	CO2, CO4

ASSIGNMENTS

	Date of Completion	Topic of Assignment & Nature of assignment (Individual/ Group – Written/ Presentation – Graded or Non-graded etc)	Course Outcome
1	05- 07 - 2018	Write a note on your bus trip the college & present it before the class.	CO6
2	13- 08 - 2018	Write a descriptive note on the sights and sounds of the college canteen + presentation before the class	CO5, CO6
3	25- 08 - 2018	Write an interesting conversation you listened to recently and present it before the class with your partner.	CO4, CO5
4	03 - 09 - 2018	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	CO2
5	05- 09 - 2018	Write a description of the Lakeview ground	CO6
6	11 - 09 - 2018	Describe the college auditorium	CO6
7	15- 09 - 2018	Describe the sights and sounds in the portico of the college on any given day	CO6, CO5
8	05- 10 - 2018	Describe the aquarium in the portico	CO7
9	15- 10 - 2018	Narrate your experiences of any day on the campus	CO5

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 PLAN - READING LITERATURE IN ENGLISH

PROGRAMME	BACHELOR OF SCIENCE IN CHEMISTRY	SEMESTER	1
COURSE CODE AND TITLE	15U1CCENG2: READING LITERATURE IN ENGLISH	CREDIT	3
HOURS/WEEK	4	HOURS/SEM	72
FACULTY NAME	FR. SABU THOMAS		

	COURSE OUTCOMES	PO / PSO	CL
CO1	Explain the nuances of English Language through literature	PO 1, PO 5 PSO 1	R
CO2	Compare the Varied parameters of English language	PO 1 PSO 1	U
CO3	Discover comprehensive ability	PO 1 PSO 1	U
CO4	Connect the efficiency of the students with realities of life	PO 1, PO 6 PSO 1	U
CO5	Evaluate the beauty of literary expression	PO 1, PO 6 PSO 1	U

CL* Cognitive Level

Sessions	Topic	Learning Resources	Value Additions	Course Outcome
1	Introducing the text book	Group Discussion	Q & A Session	CO3

2	Bores E V Lucas	Lecture		CO2, CO3
3	Bores E V Lucas	Lecture		CO2, CO3
4	Bores E V Lucas	Lecture		CO2, CO3
5	Bores E V Lucas	Lecture		CO2, CO3
6	A Glory has Departed- Jawaharlal Nehru	Presentation by students, Listening to the speech made by Nehru.		CO1, CO3
7	A Glory has Departed- Jawaharlal Nehru	Presentation by students, Listening to the speech made by Nehru.		CO1, CO3
8	A Glory has Departed- Jawaharlal Nehru	Individual presentations		CO1, CO4
9	A Glory has Departed- Jawaharlal Nehru	Individual presentations		CO1, CO4
10	Tryst with Destiny- Amartya Sen	Lecture, Discussion		CO1, CO4
11	Tryst with Destiny- Amartya Sen	Lecture, Discussion		CO1, CO4
12	Tryst with Destiny- Amartya Sen	Lecture, Discussion		CO1, CO4
13	Tryst with Destiny- Amartya Sen	Correction of notes		CO1
14	How to Escape from Intellectual Rubbish- Bertrand Russel	Lecture		CO3
15	How to Escape from Intellectual Rubbish- Bertrand Russel	Lecture	Q & A Session	CO3
16	How to Escape from Intellectual Rubbish- Bertrand Russel	Lecture	Q & A Session	CO3
17	Sonnet William Shakespeare	Discussion on sonnets, its structure, themes		CO5, CO3
18	Sonnet William Shakespeare	Discussion on sonnets, its structure, themes		CO5, CO3
19	Ode to a Nightingale-John Keats	Discussion on romantic poetry		CO5
20	Ode to a Nightingale-John Keats	Discussion on romantic poetry		CO5
21	Ode to a Nightingale- John Keats	Discussion, Lecture		CO5
22	Ode to a Nightingale- John Keats	Discussion, Lecture		CO5
23	Mending Wall- Robert Frost	Lecture, Discussion on relationships, barriers		CO3
24	Mending Wall- Robert Frost	Lecture, Discussion on relationships, barriers		CO3

25	Mending Wall- Robert Frost	Seminar presentations	Q & A Session	CO1, CO4
26	Mending Wall- Robert Frost	Seminar presentations	Q & A Session	CO1, CO4
27	IAT- I	Written Examination		
28	IAT-I	Written Examination		
29	The Bicycle- David Malouf	Lecture, discussion		CO3, CO1
30	The Bicycle- David Malouf	Lecture, discussion		CO3, CO1
31	Distribution of answer sheets	Discussion		CO3
32	Distribution of answer sheets	Discussion		CO3
33	Poor Girl- Maya Angelou	Presentation by the students- discussion on gender discrimination		CO1, CO4
34	Poor Girl- Maya Angelou	Presentation by the students- discussion on gender discrimination		CO1, CO4
35	The Mask- Kamala Suraiya	Presentation by the students		CO4
36	The Mask- Kamala Suraiya	Presentation by the students		CO4
37	Goodbye party for Miss Pushpa T S- Nissim Ezekiel	Presentation by the students		CO4, CO1
38	Goodbye party for Miss Pushpa T S- Nissim Ezekiel	Presentation by the students		CO4, CO1
39	Once Upon a Time-Gabriel Okara	Discussion on relationships, African culture	Q & A Session	CO1, CO4
40	Once Upon a Time-Gabriel Okara	Discussion on relationships, African culture	Q & A Session	CO1, CO4
41	The Lottery Ticket- Anton Pavlovich Chekhov	Role play		CO1, CO4
42	The Lottery Ticket- Anton Pavlovich Chekhov	Role play		CO1, CO4
43	The Lottery Ticket- Anton Pavlovich Chekhov	Presentation based on select topics		CO3, CO1
44	The Lottery Ticket- Anton Pavlovich Chekhov	Presentation based on select topics		CO3, CO1
45	Retrieved Reformation- O. Henry	Lecture, story reading, Discussion on O Henry endings		CO3, CO4
46	Retrieved Reformation- O. Henry	Lecture, story reading, Discussion on O Henry endings		CO3, CO4
47	Retrieved Reformation- O. Henry	Discussion		CO3

48	Retrieved Reformation- O. Henry	Discussion		CO3
49	A Shadow- R K Narayan	Reading- discussion – presentation by the students		CO1, CO3
50	A Shadow- R K Narayan	Reading- discussion – presentation by the students		CO1, CO3
51	A Shadow- R K Narayan	Discussion of questions and answers	Q & A Session	CO4
52	A Shadow- R K Narayan	Discussion of questions and answers	Q & A Session	CO4
53	Correction of notebooks	Discussion		CO4
54	Correction of notebooks	Discussion		CO4
55	A Devoted Son- Anita Deasi	Lecture		CO3
56	A Devoted Son- Anita Deasi	Lecture		CO3
57	A Devoted Son- Anita Deasi	Discussion based on questions		CO1,CO4
58	A Devoted Son- Anita Deasi	Discussion based on questions		CO1,CO4
59	Two Gentlemen of Verona- A J Cronin	Presentation by students		CO4
60	Two Gentlemen of Verona- A J Cronin	Presentation by students		CO4
61	Refund- Fritz Karinthy	Role play- discussion on educational system		CO5
62	Refund- Fritz Karinthy	Role play- discussion on educational system		CO5
63	Refund- Fritz Karinthy	Role play- discussion on educational system	Quiz	CO5
64	Refund- Fritz Karinthy	Role play- discussion on educational system		CO5
65	Lord Byron's Love Letter- Tennessee Williams	Presentation by the students		CO3
66	Lord Byron's Love Letter- Tennessee Williams	Presentation by the students		CO3
67	Lord Byron's Love Letter- Tennessee Williams	Presentation by the students		CO3, CO1
68	The Monkey's Paw- W.W Jacob	Presentation by the students		CO1, CO3
69	The Monkey's Paw- W.W Jacob	Presentation by the students		CO1
70	IAT- II	Written Examination		
71	Revision			
72	Revision			

ASSIGNMENT

	<i>Date of submission/ completion</i>	<i>Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)</i>	CO
1	03-09-2018	Review of a book, article	CO1, CO3, CO5

REFERENCES

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

COURSE PLAN- PROSE AND DRAMA

PROGRAMME	BACHELOR OF SCIENCE IN CHEMISTRY	SEMESTER	1
COURSE CODE AND TITLE	15U1CCHIN1A- PROSE AND DRAMA	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	72
FACULTY NAME	DR. MINIPRIYA R, MR. SYAMLAL M S		

	COURSE OUTCOMES	PO/ PSO	CL
CO 1	Understand the Ancient Indian culture through Hindi Prose.	PO 1, PO 5 PSO 1	U,An
CO 2	Understand various trends in Hindi Prose.	PO 1 PSO 1	U, An
CO 3	Understand the Socio – Cultural changes in literature.	PO 1 PSO 1	U
CO 4	Understand the various trends in Hindi Drama.	PO 1, PO 6 PSO 1	U, An
CO 5	Understand Drama and develop communication skills, performance skills.	PO 1, PO 6 PSO 1	U, A

CL* Cognitive Level

Sessions	Topic	Learning Resources	Value Additions	Course Outcomes
1	Introductory Session	Lecturing	Q & A Session	CO 1
2	Sahitya Ki Mahatta Introduction About The Author	Oral/Descriptive		CO 1
3	Sahitya Ki Mahatta	Oral/Descriptive		CO 2
4	Sahitya Ki Mahatta	Reading/Lecturing		CO 2
5	Madhavi, Introduction About The Author	Reading/Lecturing		CO 1
6	Madhavi, Act-1 Scene -1	Oral/Descriptive		CO 4
7	Continue	Conversation	Quiz	CO 4
8	Continue	Discussion		CO 5
9	Himalay Introduction About The Author	Oral/Descriptive		CO 1
10	Continue	Oral/Descriptive		CO 2
11	Continue	Reading/Lecturing		CO 2
12	Madhavi, Act-1 Scene -2	Reading/Lecturing		CO 4
13	Continue	Oral/Descriptive	Q & A Session	CO 4
14	Madhavi, Act-1 Scene -3	Conversation		CO 5
15	Continue	Discussion		CO 5
16	Continue	Conversation		CO 4
17	Continue	Discussion		CO 5
18	Neta Nahin, Nagarik Chahiye Introduction About The Author	Oral/Descriptive	Q & A Session	CO 1
19	Continue	Oral/Descriptive		CO 2
20	Continue	Reading/Lecturing		CO 2
21	Madhavi, Act-2 Scene -1	Oral/Descriptive		CO 4
22	Continue	Conversation		CO 5
23	IAT – I	1 Hour descriptive Answers only		
24	Samashti Aur Vyakti Introduction About The Author	Oral/Descriptive	Q & A Session	CO 1
25	Continue	Oral/Descriptive		CO 2
26	Continue	Reading/Lecturing		CO 2
27	Continue	Discussion		CO 3
28	Madhavi, Act-2 Scene -2	Oral/Descriptive		CO 4

29	Continue	Oral/Descriptive		CO 4
30	Continue	Reading/Lecturing		CO 5
31	Continue	Conversation		CO 4
32	Continue	Discussion		CO 5
33	Madhavi, Act-2 Scene - 3	Oral/Descriptive		CO 4
34	Continue	Reading/Lecturing		CO 1
35	Continue	Conversation	Quiz	CO 4
36	Madhavi, Act-2 Scene - 4	Oral/Descriptive		CO 1
37	Continue	Reading/Lecturing		CO 4
38	Continue	Conversation		CO 4
39	Madhavi, Act-3 Scene - 1	Oral/Descriptive		CO 4
40	Continue	Reading/Lecturing		CO 5
41	Continue	Reading/Lecturing		CO 4
42	Continue	Discussion		CO 5
43	Stri Jo Mahaj Twacha Hai Introduction About The Author	Oral/Descriptive	Q & A Session	CO 1 , CO 2
44	Continue	Oral/Descriptive		CO 2
45	Continue	Reading/Lecturing		CO 3
46	Continue	Reading/Lecturing		CO 3
47	Continue	Discussion		CO 2
48	Madhavi ,Act-3 Scene -2	Oral/Descriptive		CO 1
49	Continue	Reading/Lecturing		CO 4
50	Continue	Reading/Lecturing		CO 4
51	Continue	Discussion		CO 5
52	Madhavi ,Act-3 Scene -3	Oral/Descriptive		CO 1
53	Continue	Reading/Lecturing		CO 4
54	Continue	Reading/Lecturing		CO 5
55	Continue	Discussion		CO 5
56	Total Summary of the Drama	Oral/Descriptive	Q & A Session	CO 4
57	REVISION	Discussion		
58	REVISION	Discussion		
59	REVISION	Discussion		
60	REVISION	Discussion		
61	IAT – II	2 HOURS		

62	REVISION	Discussion		
63	REVISION	Discussion		
64	REVISION	Discussion		
65	REVISION	Discussion		
66	Discussion on CIA II	Discussion		
67	SEMINAR	Presentation of Paper		CO 1
68	SEMINAR	Presentation of Paper		CO 3
69	SEMINAR	Presentation of Paper		CO 4
70	SEMINAR	Presentation of Paper		CO 5
71	SEMINAR	Presentation of Paper		CO 2
72	Evaluation of the Course	Discussion		

ASSIGNMENTS

	Date of submission/ completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcomes
1	Assignment(September)	Review of a lesson based on the text book and reference-Writing(Individual)	CO 4
2	Seminar (October)	Presentation on a given topic based on the text book and reference –Oral (Individual)	CO 2

Additional Reading List

1. Hindi Natak, Bachan Singh,Rajkamal Prakashan,New Delhi.
2. Adhunik Sahitya ki pravrutthiyaan, Namvar Sigh, Lokbhrarati Prakashan, New Delhi.

COURSE PLAN- FRENCH LANGUAGE AND COMMUNICATION SKILLS I

PROGRAMME	BACHELOR OF SCIENCE IN CHEMISTRY	SEMESTER	I
COURSE CODE AND TITLE	15U1CCFRN1A: FRENCH LANGUAGE AND COMMUNICATION SKILLS I	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	72
FACULTY NAME	DR. SHOBA LIZA JOHN		

	COURSE OUTCOMES	PO / PSO	CL
CO1	Understand the basic concepts of French language including grammar, vocabulary and sentence structure.	PO 1, PO 5 PSO 1	R
CO2	Understand the basic communication skills necessary for living in France and French speaking countries.	PO 1 PSO 1	U
CO3	Describe oneself and ones surroundings using a repertory of words and expressions in a simple and structured grammatical manner.	PO 1 PSO 1	U
CO4	Develop business communication skills	PO 1, PO 6 PSO 1	U
CO5	Express an issue of concern including topics like environmental, social or health issues, enumerate its causes and consequences and suggest solutions	PO 1, PO 6 PSO 1	U
CO6	Understand the mannerisms, culture and tradition of France and Francophone countries and compare it to one's own country and develop co-cultural feeling	PO 1, PO 6 PSO 1	U
CO7	Understand and appreciate the history of France and Francophone countries and compare it to one's own country	PO 1, PO 6 PSO 1	U
CO8	Understand the special features of France including gastronomy, social institutions, policies, the present French scenario and compare it to one's own country	PO 1, PO 6 PSO 1	U

Sessions	Topic	Learning Resources	Value Additions	COs
1	Introducing French Basics	Role play, games	Q & A Session	CO 1, CO 2, CO 3
2	Introducing French Basics	Role play, games	Q & A Session	CO 1, CO 2, CO 3
3	Introducing French Basics	Role play, games	Q & A Session	CO 1, CO 2, CO 3
4	French basics	Chalk n talk		CO 1, CO 2, CO 3
5	French basics	Chalk n talk		CO 1, CO 2, CO 3
6	French basics	Chalk n talk		CO 1, CO 2, CO 3
7	French basics	Games, music		CO 1, CO 2, CO 3
8	French basics	Games, music		CO 1, CO 2, CO 3
9	French basics	Games, music		CO 1, CO 2, CO 3
10	Numbers, verbs, greetings	Role play		CO 1, CO 2, CO 3
11	Numbers, verbs, greetings	Role play		CO 1, CO 2, CO 3
12	Numbers, verbs, greetings	Role play		CO 1, CO 2, CO 3
13	Useful sentences in French	Chalk n talk		CO 1, CO 2, CO 3
14	Useful sentences in French	Chalk n talk		CO 1, CO 2, CO 3
15	Useful sentences in French	Chalk n talk		CO 1, CO 2, CO 3
16	French culture	Discussion, ICT		CO 6, CO 7, CO 8
17	French culture	Discussion, ICT		CO 6, CO 7, CO 8
18	French culture	Discussion, ICT		CO 6, CO 7, CO 8
19	Revision			
20	Introducing a third person	Game		CO 2, CO 3
21	Introducing a third person	Game		CO 2, CO 3
22	Introducing a third person	Game		CO 2, CO 3
23	ER verbs	Chalk n talk, Game		CO 2, CO 3

24	ER verbs	Chalk n talk, Game		CO 2, CO 3
25	ER verbs	Chalk n talk, Game		CO 2, CO 3
26	Grammar articles	Role play, listening		CO 2, CO 3
27	Grammar articles	Role play, listening		CO 2, CO 3
28	Grammar articles	Role play, listening		CO 2, CO 3
29	Profession	Chalk n talk		CO 2, CO 3
30	Profession	Chalk n talk		CO 2, CO 3
31	Profession	Chalk n talk		CO 2, CO 3
32	French culture- french names and profession	Role play		CO 5, CO 6, CO 7, CO 8
33	French culture- french names and profession	Role play		CO 5, CO 6, CO 7, CO 8
34	French culture- french names and profession	Role play		CO 5, CO 6, CO 7, CO 8
35	Explaining the objective of learning French	Discussion, ICT	Q & A Session	CO 5, CO 6, CO 7, CO 8
36	Explaining the objective of learning French	Discussion, ICT	Q & A Session	CO 5, CO 6, CO 7, CO 8
37	Explaining the objective of learning French	Discussion, ICT	Q & A Session	CO 5, CO 6, CO 7, CO 8
38	Describe a locality	Oral, description		CO 2, CO 3
39	Describe a locality	Oral, description		CO 2, CO 3
40	Describe a locality	Oral, description		CO 2, CO 3
41	Places vocabulary	Games, music	Q & A Session	CO 2, CO 3
42	Places vocabulary	Games, music	Q & A Session	CO 2, CO 3
43	Places vocabulary	Games, music	Q & A Session	CO 2, CO 3
44	Adjectives	Role play		CO 2, CO 3
45	Adjectives	Role play		CO 2, CO 3
46	Adjectives	Role play		CO 2, CO 3
47	Revision			
48	Negation	Chalk n talk / roleplay		CO 2, CO 3
49	Negation	Chalk n talk / roleplay		CO 2, CO 3
50	Negation	Chalk n talk / roleplay		CO 2, CO 3
51	Describing your ideal locality	Role play/presentation		CO 2, CO 3
52	Describing your ideal locality	Role play/presentation		CO 2, CO 3
53	Describing your ideal locality	Role play/presentation		CO 2, CO 3
54	French culture-express preference for city or village	Discussion	Q & A Session	CO 5, CO 6, CO 7, CO 8
55	French culture-express preference for city or village	Discussion	Q & A Session	CO 5, CO 6, CO 7, CO 8

56	French culture-express preference for city or village	Discussion	Q & A Session	CO 5, CO 6, CO 7, CO 8
57	Corresponding with a friend expressing one's likings	Chalk n talk/Role plays		CO 2, CO 3
58	Corresponding with a friend expressing one's likings	Chalk n talk/Role plays		CO 2, CO 3
59	Corresponding with a friend expressing one's likings	Chalk n talk/Role plays		CO 2, CO 3
60	Adject if possess	Chalk n talk		CO 2, CO 3
61	Adject if possess	Chalk n talk		CO 2, CO 3
62	Adject if possess	Chalk n talk		CO 2, CO 3
63	Activities and Sports vocabulary	Speaking/role play		CO 2, CO 3
64	Activities and Sports vocabulary	Speaking/role play		CO 2, CO 3
65	Activities and Sports vocabulary	Speaking/role play		CO 2, CO 3
66	Famous french personality	Discussion/comprehension		CO 5, CO 6, CO 7, CO 8
67	Famous french personality	Discussion/comprehension		CO 5, CO 6, CO 7, CO 8
68	Famous french personality	Discussion/comprehension		CO 5, CO 6, CO 7, CO 8
69	French music and comparison to one's own musical preference	Discussion		CO 5, CO 6, CO 7, CO 8
70	French music and comparison to one's own musical preference	Discussion		CO 5, CO 6, CO 7, CO 8
71	French music and comparison to one's own musical preference	Discussion		CO 5, CO 6, CO 7, CO 8
72	Revision			

ASSIGNMENTS

	Date of submission/ completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcomes

1	Assignment(September)	French culture-express preference for city or village	CO 5, CO 6, CO 7, CO 8
2	Seminar (October)	French music and comparison to one's own musical preference	CO 5, CO 6, CO 7, CO 8

COURSE PLAN- DRAMA, POETRY AND ALANKARA

PROGRAMME	BACHELOR OF SCIENCE IN CHEMISTRY	SEMESTER	I
COURSE CODE AND TITLE	15U1CCSAN1A: DRAMA, POETRY AND ALANKARA	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	72
FACULTY NAME	DR. VIJAYARAJAN K U		

	COURSE OUTCOMES	PO / PSO	CL
CO1	Through Kalidasa's kumasambava an awareness of Sanskrit literature as a poetic tradition	PO 1, PO 5 PSO 1	R
CO2	Students can understand the poetic style with special reference to classical literature	PO 1 PSO 1	U
CO3	Students get an awareness about Indian classical poetic tradition	PO 1 PSO 1	U
CO4	Students familiarize the figures of speech and their usage	PO 1, PO 6 PSO 1	U
CO5	Students get an awareness about aesthetic values	PO 1, PO 6 PSO 1	U
CO6	Understand moral values through Drama	PO 1, PO 6 PSO 1	U
CO7	Understand the tools to beautify the literature through Alankara	PO 1, PO 6 PSO 1	U
CO8	Students identify the richness of Indian Literature	PO 1, PO 6 PSO 1	U

Sessions	Topic	Learning Resources	Value Additions	COs
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1	Introductory session	Lecturing	Q & A Session	CO1
2	Introductory session	Lecturing	Q & A Session	CO1
3	About Kalidasa	Lecturing		CO5, CO6
4	About Kalidasa	Lecturing		CO5, CO6
5	Kumarasambava	Chalk n talk		CO3, CO4
6	Kumarasambava	Chalk n talk		CO3, CO4
7	Brahmacharipravesha	Role play		CO1, CO3
8	Brahmacharipravesha	Role play		CO1, CO3
9	Welcoming Brahmachari	Lecturing		CO3, CO4
10	Welcoming Brahmachari	Lecturing		CO3, CO4
11	Brahmachari's conversation	Role play		CO1,CO3
12	Brahmachari's conversation	Role play		CO1,CO3
13	Shivaninda	Discussion		CO3, CO2
14	Shivaninda	Discussion		CO3, CO2
15	Criticising Parvathy	Lecturing		CO5, CO7
16	Criticising Parvathy	Lecturing		CO5, CO7
17	Introduction of Bhasa	Lecturing		CO2, CO4
18	Introduction of Bhasa	Lecturing		CO2, CO4
19	About Karnabhara	Lecturing		CO1, CO3
20	About Karnabhara	Lecturing		CO1, CO3
21	Nandisloka	Lecturing		CO6, CO7
22	Nandisloka	Lecturing		CO6, CO7
23	Entering karna to War	Chalk n talk	Q & A Session	CO6, CO7
24	Entering karna to War	Chalk n talk	Q & A Session	CO6, CO7
25	Karna's talk with Shalyaraja	Discussion		
26	Karna's talk with Shalyaraja	Discussion		
27	Karna's talk with Shalyaraja	Discussion		
28	Parashurama's course	Role play	Q & A Session	CO4, CO6
29	Parashurama's course	Role play	Q & A Session	CO4, CO6
30	Parashurama's course	Role play	Q & A Session	CO4, CO6
31	Indra's conversation with Karna	Oral, Description		CO6, CO8
32	Indra's conversation with Karna	Oral, Description		CO6, CO8
33	Indra's conversation with Karna	Oral, Description		CO6, CO8
34	Giving Kavacha and Kundalas	Lecturing		CO1, CO3
35	Giving Kavacha and Kundalas	Lecturing		CO1, CO3

36	Giving Kavacha and Kundalas	Lecturing		CO1, CO3
37	Introduction of Kuvalayananda	Lecturing		CO2, CO3
38	Introduction of Kuvalayananda	Lecturing		CO2, CO3
39	Introduction of Kuvalayananda	Lecturing		CO2, CO3
40	Upamalankara	Discussion	Q & A Session	CO1, CO3
41	Upamalankara	Discussion	Q & A Session	CO1, CO3
42	Upamalankara	Discussion	Q & A Session	CO1, CO3
43	Vyathireka alankara	Chalk n talk		CO1, CO3
44	Vyathireka alankara	Chalk n talk		CO1, CO3
45	Vyathireka alankara	Chalk n talk		CO1, CO3
46	Deepaka	Discussion		CO5, CO7
47	Deepaka	Discussion		CO5, CO7
48	Deepaka	Discussion		CO5, CO7
49	Ullekha	Lecturing		CO2, CO6
50	Ullekha	Lecturing		CO2, CO6
51	Ullekha	Lecturing		CO2, CO6
52	Drishtantha	Lecturing		CO2, CO6
53	Drishtantha	Lecturing		CO2, CO6
54	Drishtantha	Lecturing		CO2, CO6
55	Introduction of Kuvalayananda	Discussion		CO6, CO7
56	Introduction of Kuvalayananda	Discussion		CO6, CO7
57	Introduction of Kuvalayananda	Discussion		CO6, CO7
58	Character sketch of Karna	Lecturing		CO4, CO5
59	Character sketch of Karna	Lecturing		CO4, CO5
60	Character sketch of Karna	Lecturing		CO4, CO5
61	Character sketch of Shalyaraja	Lecturing		CO5, CO8
62	Character sketch of Shalyaraja	Lecturing		CO5, CO8
63	Character sketch of Shalyaraja	Lecturing		CO5, CO8
64	Character sketch of Brahmachari	Oral,Description		CO5, CO8
65	Character sketch of Brahmachari	Oral,Description		CO5, CO8
66	Character sketch of Brahmachari	Oral,Description		CO5, CO8
67	Character sketch of Parvathy	Lecturing	Q & A Session	CO5, CO7

68	Character sketch of Parvathy	Lecturing	Q & A Session	CO5, CO7
69	Character sketch of Parvathy	Lecturing	Q & A Session	CO5, CO7
69	Critical study of kumarasambava	Lecturing		CO2, CO3
70	Critical study of Karnabhara	Lecturing		CO1, CO7
71	Revision			CO2, CO3
72	Revision		Quiz	CO2, CO4

ASSIGNMENTS

	Date of submission/ completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcomes
1	Assignment(September)	Indra's conversation with Karna	CO 6, CO 8
2	Seminar (October)	Critical study of Karnabhara	CO 1, CO 7

COURSE PLAN - KADHA NOVEL

PROGRAMME	BACHELOR OF SCIENCE IN CHEMISTRY	SEMESTER	1
COURSE CODE AND TITLE	15U1CCMAL1A: KADHA NOVEL	CREDIT	4
THEORY HOURS/WEEK	4	HOURS/SEM	72
FACULTY NAME	FR. C S XAVIER AND MR. VISHNURAJ P		

	COURSE OUTCOMES	PO / PSO	CL
CO1	Describe the basic concepts of literature and its characteristics.	PO 1, PO 5 PSO 1	R
CO2	Identify the major themes and motifs in the novel 'Kadha Novel'.	PO 1 PSO 1	U
CO3	Analyze the character development and the role of the protagonist in the novel.	PO 1 PSO 1	U
CO4	Evaluate the social and cultural context of the novel and its relevance to contemporary society.	PO 1, PO 6 PSO 1	U

Session s	Topic	Learning Resources	Value additions	Course Outcomes
1	Introductory Session	Lecturing	Q & A Session	CO1, CO 2, CO 3
2	History and development of the novel as a literary form.	Lecturing		CO 3, CO 4

3	□□□□□ □□□□ □□□□□□□□□□	Group Discussion		CO 1, CO 3, CO 4
4	□□□□□□□□□□□□ □□□□ □□□□□□□□□□□□□□□□□□□	Lecturing		CO 1, CO 3, CO 4
5	1 □□□□ 3□□□ □□□□□□□□□□ □□□□□□□□□□□□□□□□	Group Discussion		CO 1, CO 2, CO 3
6	4 □□□□ 8 □□□ □□□□□□□□□□ □□□□□□□□□□□□□□□□	Group Discussion		CO 1, CO 3, CO 4
7	□□□□□□□□□□□□□□□□□□ □□□□□□□□□□ □□□□□□□□□□ □□□□□□□□□ □□□□□□□□□□ □□□□□□□□□□□□□□ □□□□□□□□□□	Seminar		CO 1, CO 2, CO 3
8	9 □□□□ 12 □□□ □□□□□□□□□□ □□□□□□□□□□□□□□□□	Lecturing		CO 1, CO 3, CO 4
9	13 □□□□ 15 □□□ □□□□□□□□□□ □□□□□□□□□□□□□□□□	Lecturing		CO 1, CO 2, CO 3
10	□□□□□□□□□□□□□□□□□□□□, □□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□.	Discussion	Q & A Session	CO 1, CO 3, CO 4
11	□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□, □□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□.	Lecturing		CO 1, CO 3, CO 4
12	□.□□.□□□□□□ □□□□□□ □□□□□□□□□□□□□□□□□□□□□□ ,□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□	Discussion		Module I Finished
13	CIA –I	1 hr; descriptive answers only		CO 1, CO 3, CO 4
14	□□□□□□□□□□□ □□□□ □□ □□□□□□□□□□□□□□□□□□□□	Independent Reading/Lecturing	Q & A Session	CO 1, CO 2, CO 3
15	□□□□□□□□□□□	Independent Reading/Lecturing		CO 1, CO 3, CO 4
16	□□□□□□□□□□	Group Discussion		CO 3, CO 4
17	□□□□□□□□□□□□□□□□□□□□ □□□□□ □□□□□□□□□□	Lecturing		CO 1, CO 2, CO 3
18	□□□□□□□□□□	Class Discussion		CO 1, CO 3, CO 4
19	□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□	Debate		CO 3, CO 4

20	□□□□□□□□□□ □□□□□□□□□□□□□□□□ □□□□□□□□□□	Lecturing		CO 1, CO 2, CO 3
21	□□□□□□□□□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□	Lecturing		CO 3, CO 4
22	□□□□□□□□□□ □□□□ □□□□□□□□□□	Discussion		Module II Finished
23	CIA –II	Exam		CO 3, CO 4
24	Discussion of question paper	Questioning	Q & A Session	CO 3, CO 4
25	□□□□□□□□□□□□□□ □□□□□□□□□□□□	Group Discussion		CO 1, CO 3, CO 4
26	□□□□□□□□□□ □□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□	Discussion		CO 3, CO 4
27	□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□	Independent Reading/Lecturing		CO 1, CO 2, CO 3
28	□□□□□□□□□□□□	Discussion		CO 3, CO 4
29	□□.□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□	Lecturing		CO 2, CO 3
30	□□□□□□□□□□ □□□□□□□□□□	Discussion	Quiz	CO 3, CO 4
31	□□□□□□□□□□□□□□□□□□□□ - □□□□□□	Lecturing		CO 1, CO 2, CO 3
32	□□□□□ -□□□□□□□□□□	Independent Reading/Lecturing		CO 1, CO 3, CO 4
33	□□□□□□ □□□□□□□□□□	Lecturing		CO 1, CO 3, CO 4
34	□□□□□□□□□□ □□□□□□□□□□	Discussion		CO 2, CO 3
35	□□□□□□□□ □□□□□□-□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□□□ □□□□□□□□	Seminar		CO 2, CO 3
36	□□□□□□□□ □□□□□□-□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□□□ □□□□□□□□	Seminar		CO 1, CO 2, CO 3
37	□□□□□□□□□□□□□□ □□□□□ □□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□□□□□ .	Lecturing		CO 2, CO 3
38	□□□□□□□□□□□□□□□□ □□□□□ □□□□□□□□ □□□□□□□□□□ .	Independent Reading/Lecturing		CO 1, CO 2, CO 3

39	□□□□□□□□	Group Discussion	Quiz	CO 1, CO 2, CO 3
40	□□□□□□□□□□ □□□□□□□ □□□□ □□□□□ □□□□□□□□□□□□□□□□	Lecturing		CO 3, CO 4
41	□□□□ □□□□□□□ □□□□□□□□□□ □□□□□□□□□□□□□	Lecturing		CO 3, CO 4
42	□□□□□□□□□□□ □□□□ □□□□ □□ □□□□□□□□□□□□□□□	Lecturing/ Discussion		CO 3, CO 4
43	□□□□□□□□□□□ □□□□□□□□□□□□□□□□ □□□□□□□□□	Lecturing/ Discussion		CO 1, CO 2, CO 3
44	□□ .□□□□ .□□□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□□□□□□□	Lecturing/ Discussion		CO 3, CO 4
45	□□□□□□□□□□ □□□□□□□□□□ □□□□ □□□□□□□□□□ □□□□□□□□□□	Lecturing/ Discussion/ Reading		CO 3, CO 4
46	□□□□□□□□	Group Discussion		CO 1, CO 3, CO 4
47	□□□□□□□ □□□□ □□ □□□□□□□□□□□□□□□□□□□□	Lecturing	Quiz	CO 2, CO 3
48	□□□□□□□□	Group Discussion		CO 1, CO 3, CO 4
49	□□□□□□□□□□□ □□□□□□□□ □□□□□□□□□□ □□□□□□□□.	Lecturing/ Discussion		CO 1, CO 2, CO 3
50	Seminar presentations- Novel	Powerpoint presentation		CO 3, CO 4
51	Seminar presentations- Novel	Powerpoint presentation		CO 3, CO 4
52	Seminar presentations- Novel	Powerpoint presentation		CO 3, CO 4
53	Seminar presentations- Novel	Powerpoint presentation		CO 3, CO 4
54	Seminar presentations of shortstory	Powerpoint presentation		CO 1, CO 2, CO 3
55	Seminar presentations of shortstory	Powerpoint presentation		CO 3, CO 4
56	Seminar presentations of shortstory	Powerpoint presentation		CO 3, CO 4
57	Seminar presentations of shortstory	Powerpoint presentation		CO 3, CO 4
58	REVISION			CO 3, CO 4

59	REVISION			CO 1, CO 2, CO 3
60	Previous Question paper discussion	Discussion		
61	CIA II	2 HOURS		CO 3, CO 4
62	□□□□□□ □□□□□□□□ □□□□□□□□□□	Group discussion		CO 2, CO 3
63	□□□□□□ □□□□□□□□□□ □□□□□□□□□□□□□□ □□□□□□□□□□□□□□ □□□□□□□□	Reading		CO 3, CO 4
64	□□□□□□□□ □□□□ □□□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□.	Lecturing/ group discussion		CO 1, CO 2, CO 3
65	Discussion on the CIA			CO 3, CO 4
66	REVISION			CO 1, CO 2, CO 3
67	REVISION			CO 3, CO 4
68	REVISION			CO 3, CO 4
69	REVISION			CO 1, CO 2, CO 3
70	REVISION			CO 3, CO 4
71	REVISION			
72	Evaluation of the Course			

ASSIGNMENTS

	Date of submission/completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcomes
1	20 – 08 - 2018	□□□□ □□□□□□□□ □□□□□□□□□□□□	CO 3, CO 4
2	05 – 10 - 2018	□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□ □□□□□□□□ □□□□□□□□□□□□□□ □□□□□□□□ □□□□□□□□	CO 3, CO 4

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Additional Reading List

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COURSE PLAN- THEORETICAL AND INORGANIC CHEMISTRY I

PROGRAMME	BACHELOR OF SCIENCE IN CHEMISTRY	SEMESTER	1
COURSE CODE AND TITLE	15U1RCHE01: THEORETICAL AND INORGANIC CHEMISTRY I	CREDIT	2
HOURS/WEEK	2	HOURS/SEM	36
FACULTY NAME	MR. SENJU DEVASSYKUTTY (SD) AND DR. JORPHIN JOSEPH (JRJ)		

	COURSE OUTCOMES	PO / PSO	CL
CO1	<i>Remember the evolution of chemistry as a discipline of science</i>	PO 1, PO 5 PSO 1	R
CO2	<i>Understand the basics concepts of chemistry and fundamental principles of analytical chemistry.</i>	PO 1 PSO 1	U
CO3	<i>Analyse the features and limitations of various models of atomic structure.</i>	PO 1 PSO 1	U
CO4	<i>Apply the principles of quantum mechanics to describe atomic structure.</i>	PO 1, PO 6 PSO 1	U

CL* Cognitive Level

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	COURSE OUTCOME
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Module 1 - Chemistry as a discipline of science (3h) (JRJ)				
1	What is Science? - Scientific statements - Scientific methods – Observation - Posing a question	Conventional Teaching	video	CO 1
2	Formulation of hypothesis – Experiment – Theory – Law - Revision of scientific theories and laws. Evolution of chemistry - Alchemy - Branches of chemistry	Conventional Teaching		CO 1
3	Components of a research project -Introduction, review of literature, scope, materials and methods, results and discussion, conclusions and bibliography.	Conventional Teaching		CO 1
Module 2 - Basic Concepts in Chemistry (3h) (JRJ)				
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		CO 2
5	Methods of expressing concentration: Weight percentage, molality, molarity, normality, formality, mole fraction, ppm and millimoles.	Conventional Teaching		CO 2
6	Numerical Problems related to basic concepts.	Conventional Teaching	quiz	CO 2
Module 3 - Analytical Chemistry I (9h) (SD)				
7	Quantitative Analysis. Primary standard-secondary standard, quantitative dilution	Conventional Teaching		CO 2
8	Problems.	Conventional Teaching	quiz	CO 2
9	Problems.	Conventional Teaching	quiz	CO 2
10	Calibration of volumetric apparatus. Acid base titrations- titration curves –pH indicators.	Conventional Teaching		CO 2

11	Calibration of volumetric apparatus. Acid base titrations- titration curves –pH indicators.	Conventional Teaching		CO 2
12	Redox titrations – Titration curve – Titrations involving KmnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$ - Redox indicators.	Conventional Teaching ASSIGNMENT I		CO 2
13	Complexometric titrations – EDTA titrations – titration curves – metal ion indicators and characteristics.	Conventional Teaching		CO 2
14	Errors in Chemical Analysis. Accuracy, precision, Types of error-absolute and relative error, methods of eliminating or minimizing errors.	Conventional Teaching ICT		CO 2
15	Methods of expressing precision: mean, median, deviation, average deviation and coefficient of variation. Significant figures and its application.	Conventional Teaching	Q & A session	CO 2
Module 4 - Atomic Structure (9h) (SD)				
16	Introduction to atomic structure based on historical development – Rutherford’s atom model and its limitations	Conventional Teaching		CO 3
17	Failure of classical physics – Black body radiation	Conventional Teaching		CO 3
18	Compton Effect - Planck’s quantum hypothesis -	Conventional Teaching		CO 3
19	Photoelectric effect	Conventional Teaching		CO 3
20	Generalization of quantum theory -Atomic spectra of hydrogen and hydrogen like atoms – Ritz-combination principle	Conventional Teaching	Q & A session	CO 3
21	Bohr theory of atom – Calculation of Bohr radius, velocity and energy of an electron -	Conventional Teaching		CO 3

22	Explanation of atomic spectra – Rydberg equation – Limitations of Bohr theory - Sommerfield modification	Conventional Teaching		CO 3
23	Louis de Broglie's matter waves – Wave-particle duality	Conventional Teaching ICT		CO 3
24	Electron diffraction - Heisenberg's uncertainty principle	Conventional Teaching		CO 3
Module 5 - Quantum Mechanical Model of Atom (12h) (JRJ)				
25	Operator algebra – Linear and Hermitian operators	Conventional Teaching		CO 4
26	Laplacian and Hamiltonian operators	Conventional Teaching ASSIGNMENT II		CO 4
27	Eigen functions and Eigen values of an operator	Conventional Teaching		CO 4
28	Postulates of quantum mechanics - Well behaved functions	Conventional Teaching		CO 4
29	Time independent Schrödinger wave equation - Application to particle in a one dimensional box	Conventional Teaching		CO 4
30	Normalization of wave function - Particle in a three-dimensional box-Degeneracy.	Conventional Teaching ICT		CO 4
31	Application of Schrödinger wave equation to hydrogen atom	Conventional Teaching		CO 4
32	Conversion of Cartesian coordinates to polar coordinates - The wave equation in spherical polar coordinates (derivation not required)	Conventional Teaching		CO 4

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		CO 4
34	Schrödinger equation for multi-electron atoms: Need for approximation methods.	Conventional Teaching		CO 4
35	Electron spin – Spin quantum number - Pauli's Exclusion principle	Conventional Teaching	Q & A session	CO 4
36	Hund's rule of maximum multiplicity - Aufbau principle – Electronic configuration of atoms	Conventional Teaching	Q & A session	CO 4

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcome
1	04/08/2018	Bohr Atom Theory	CO 3
2	28/10/2018	Schrodinger Wave Equation	CO 4

GROUP ASSIGNMENTS/ACTIVITIES – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcome
1	02/11/2018	Postulates of Quantum Mechanics	CO 4

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.

References

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*, 5thedn., Blackwell Science, London (Chapter 1)
6. D. F. Shriver and P. W. Atkins, *Inorganic Chemistry*, 3rdedn., 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*, 8thEdition, 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

PROGRAMME	BACHELOR OF SCIENCE IN CHEMISTRY	SEMESTER	1
COURSE CODE AND TITLE	15U1CPPHY2: PROPERTIES OF MATTER, MECHANICS AND PARTICLE PHYSICS	CREDIT	2
THEORY HOURS/WEEK	2	HOURS/SEM	36
FACULTY NAME	DR. MATHEW GEORGE & DR. PIUS AUGUSTINE		

	COURSE OUTCOMES	PO/ PSO	CL
CO 1	Understanding the concepts of Elastic moduli- Poisson's ratio- twisting couple- determination of rigidity modulus	PO1, PSO1	U/An
CO 2	Understanding the basic concepts of Rotational dynamics of rigid bodies	PO1, PSO1	U/An
CO 3	Understanding the role of oscillations in Physics life	PO1, PSO1	U/An
CO 4	Understanding Particle Physics – Basic Introduction	PO1, PSO1	U/An

CL* Cognitive Level

Session	Topic to be covered/activity	Learning Resources	Value Additions	Course Outcome
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1	Introduction – to Elasticity	Lecture	Q & A Session	CO 1
2	Elastic moduli	Lecture		CO 1
3	Poisson's ratio and class activity	Class Activity in Groups		CO 1
4	Twisting couple	Lecture + PPT		CO 1
5	Determination of rigidity modulus	Lecture		CO 1
6	Determination of rigidity modulus Contd	Lecture		CO 1
7	Problems	Lecture		CO 1
8	Static torsion	Lecture		CO 1
9	Torsion pendulum	Lecture		CO 1
10	Bending of beams and Cantilever	Lecture		CO 1
11	Problems	Class Activity in Groups	Q & A Session	CO 1
12	Uniform Bending	Lecture		CO 1
13	Non-Uniform bending	Lecture + Video		CO 1
14	Introduction	Lecture		CO2
15	Angular velocity, angular momentum	Lecture		CO2
16	Torque, conservation of angular momentum	Lecture		CO2
17	Angular acceleration, moment of inertia	Lecture		CO2
18	Parallel and perpendicular axes theorem	Lecture		CO2
19	Moment of inertia of rod, ring	Lecture		CO2
20	Moment of inertia of disc, cylinder	Lecture		CO2
21	Moment of inertia of sphere	Lecture		CO2
22	Moment of inertia of flywheel	Lecture		CO2
23	Review, problems	Lecture	Quiz	CO2
24	Periodic and oscillatory motion	Lecture		CO3
25	Simple harmonic motion, differential equation	Lecture		CO3
26	Expression for velocity, displacement and acceleration, graphical representation	Lecture	Q & A Session	CO3
27	Energy of particle executing SHM	Lecture		CO3
28	Damped oscillations	Lecture		CO3
29	Forced oscillations	Lecture		CO3
30	Resonance	Lecture		CO3
31	Review, problems	Lecture	Quiz	CO3
32	Fundamental interaction in nature	Lecture		CO4
33	Gauge particles	Lecture		CO4
34	Classification of particles antiparticles	Lecture		CO4

35	Elementary particle quantum numbers	Lecture		CO4
36	Conservation laws and Quark Model	Lecture		CO4

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

PROGRAMME	BACHELOR OF SCIENCE IN CHEMISTRY	SEMESTER	1
COURSE CODE AND TITLE	15U2CPMAT01: DIFFERENTIAL CALCULUS AND TRIGONOMETRY	CREDIT	3
HOURS/WEEK	4	HOURS/SEM	60
FACULTY NAME	MR. SANIL JOSE		

	COURSE OUTCOMES	PO/ PSO	CL
CO 1	Understand limits, derivatives of a functions and its applications.	PO1, PSO2	U
CO 2	Determine whether a given function is increasing or decreasing.	PO1, PSO2	A
CO 3	Apply the concepts of maxima and minima of a function to real world problems	PO1, PSO2	U
CO 4	Understand the concepts of derivative of functions of more than one variable	PO1/ PSO2	Ap
CO 5	Understand the concepts of Trigonometric functions, their properties and summation of trigonometric series	PO1, PSO2	U

CL* Cognitive Level

Sessions	Topic	LEARNING RESOURCES	VALUE ADDITIONS	COURSE OUTCOME
1	Introductory Session	Lecture	Q & A Session	CO 1

2	Rates of change and limits	Lecture		CO 1
3	Calculating limits using the limit laws	Lecture, Solving	Problem	CO 1
4	Calculating limits using the limit laws	Lecture, Solving	Problem	CO 1
5	The precise definition of a limit	Lecture,		CO 1
6	The precise definition of a limit	Lecture Solving	Problem	CO 1
7	One sided limits and limits at infinity	Lecture, Solving	Problem	CO 1
8	Derivative of a function	Lecture, Solving	Problem	CO 1
9	Derivative of a function	Lecture, Solving	Problem	CO 1
10	Differentiation rules	Lecture, Solving	Problem	CO 1
11	Differentiation rules	Lecture, Solving	Problem	CO 1
12	The derivative as a rate of change	Lecture		CO 1
13	The derivative as a rate of change	Lecture, Solving	Problem	CO 1
14	Derivatives of trigonometric functions	Lecture, Solving	Problem	CO 1
15	The chain rule and parametric equations	Lecture, Solving	Problem	CO 1
16	The chain rule and parametric equations	Lecture, Solving	Problem	CO 1
17	Implicit Differentiation.	Lecture, Solving	Problem	CO 1
18	Implicit Differentiation.	Lecture, Solving	Problem	CO 1
19	Test			
20	Extreme values of functions	Lecture, Solving	Problem	CO 2
21	Extreme values of functions	Lecture, Solving	Problem	CO2
22	The Mean Value Theorem	Lecture, Solving	Problem	CO 3

23	The Mean Value Theorem	Lecture, Solving	Problem		CO 3
24	Monotonic functions	Lecture, Solving	Problem		CO 2
25	Monotonic functions	Lecture, Solving	Problem		CO2
26	First derivative test.	Lecture, Solving	Problem		CO 2
27	First derivative test.	Lecture, Solving	Problem		CO2
28	First derivative test.	Lecture, Solving	Problem		CO 2
29	Test				CO2
30	Functions of several variables	Lecture, Solving	Problem		CO 4
31	Partial derivatives	Lecture, Solving	Problem		CO 4
32	Partial derivatives	Lecture, Solving	Problem		CO 4
33	Partial derivatives	Lecture, Solving	Problem		CO 4
34	Partial derivatives	Introduction			CO 4
35	The Chain Rule	Lecture, Solving	Problem		CO 4
36	The Chain Rule	Lecture, Solving	Problem		CO 4
37	The Chain Rule	Lecture, Solving	Problem		CO 4
38	The Chain Rule	Lecture, Solving	Problem		CO 4
39	Test				CO 4
40	Expansions of $\sin n\theta$	Lecture, Solving	Problem		CO 5
41	Expansions of $\cos n\theta$,	Lecture, Solving	Problem		CO 5
42	Expansions of $\tan n\theta$	Lecture, Solving	Problem		CO 5
43	Expansions of $\sin^n \theta$	Lecture, Solving	Problem		CO 5
44	Expansions of $\cos^n \theta$,	Lecture, Solving	Problem		CO 5
45	Expansions of $\sin^n \theta$ $\cos^m \theta$	Lecture, Solving	Problem		CO 5

46	Circular and hyperbolic functions	Lecture, Solving	Problem		CO 5
47	Circular and hyperbolic functions	Lecture, Solving	Problem		CO 5
48	Inverse circular and hyperbolic function	Lecture, Solving	Problem		CO 5
49	Inverse circular and hyperbolic function	Lecture, Solving	Problem		CO 5
50	Inverse circular and hyperbolic function	Lecture, Solving	Problem		CO 5
51	Separation into real and imaginary parts	Lecture, Solving	Problem		CO 5
52	Separation into real and imaginary parts	Lecture, Solving	Problem		CO 5
53	Separation into real and imaginary parts	Lecture, Solving	Problem		CO 5
54	Summation of infinite series based on $C + i$ method	Lecture, Solving	Problem		CO 5
55	Summation of infinite series based on $C + i$ method	Lecture, Solving	Problem		CO 5
56	Summation of infinite series based on $C + i$ method	Lecture, Solving	Problem		CO 5
57	Summation of infinite series based on $C + i$ method	Lecture, Solving	Problem		CO 5
58	Summation of infinite series based on $C + i$ method	Lecture, Solving	Problem		CO 5
59	Application	Lecture, Solving	Problem		CO 5
59	Revision	Lecture, Solving	Problem		CO 5
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)	Couse Outcome
1	4/1/2019	PROBLEMS IN DIFFERENTIATION	CO 1, CO 2

2	28/1/2019	PROBLEMS IN TRIGONOMETRY	CO 4
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GROUP ASSIGNMENTS/ACTIVITIES – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc.)	Course Outcome
1	2/2/2019	PROBLEMS IN PARTIAL DIFFERENTIAL EQUATIONS	CO 3

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.