SACRED HEART COLLEGE (AUTONOMOUS)

Department of Physics

BACHELOR OF PHYSICS

Course plan

Academic Year 2018-19

Semester 2

Programme Outcome

	ProgrammeOutcome
PO 1	**Critical Thinking:** Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO 2	**Effective Communication:** Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the word by connecting people, ideas, books, media and technology.
PO 3	**Effective Citizenship:** Demonstrate empathetic social concern and equity centered national development, and the ability to act an informed awareness of issues and participate in civic life through volunteering.
PO 4	**Environment and Sustainability:** Understand the issues of environmental contexts and sustainable development.
PO5	**Ethics**: Recognise different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO 6	**Global Perspective:** Understand the economic, social and ecological connections that link the world's nations and people.

BACHELOR OF PHYSICS

	PROGRAM SPECIFIC OUTCOMES
PSO 1	Understand concepts relating to properties of matter, thermodynamics, classical mechanics, relativity and energy and environmental physics, incorporating the contributions of relevant physicists in these fields.
PSO 2	Apply and analyse the concepts of electricity, magnetism, electrodynamics, optics, spectroscopy and optoelectronics; with special emphasis on the contributions by eminent scientists in these fields.
PSO 3	Apply and analyse the concepts of semiconductor physics, digital electronics and computational physics; with special emphasis on the contributions by eminent scientists in these fields.
PSO 4	Apply and analyse the concepts of statistical mechanics, quantum mechanics, nuclear physics, particle physics, astrophysics, error analysis, superconductivity and condensed matter physics; with special emphasis on the contributions by eminent scientists in these fields.

Course Structure

Course Code	Title Of The Course	No. Hrs./Week	Credits	Total Hrs./Sem

U2CCENG3	Critical Thinking, Academic Writing & Presentation	5	4	90
U2CRBCA4	MUSINGS ON VITAL ISSUES	4	3	72
U2CCHIN2A	- TRANSLATION, COMMUNUCATION SKILLS AND APPLIED GRAMMAR	4	4	72
U2CCMAL2A	□□□□	4	3	72
U1CCFRN1A	FRENCH LANGUAGE AND COMMUNICATION SKILLS II	4	3	72
U2CCSAN2A	Communication skills in Sanskrit language	4	3	72
U2CRPHY02	Mechanics and Properties of Mater	2	2	36
U2CPCHE2	BASIC ORGANIC CHEMISTRY	2	2	36
U2CPMAT 02	INTEGRAL CALCULUS AND MATRICES	2	2	36

COURSE PLAN (COURSE 1)

PROGRAMME	B.Sc. Physics	SEMESTER	2
COURSE CODE AND TITLE	15U2CCENG3: CRITICAL THINKING, ACADEMIC WRITING AND PRESENTATION	CREDIT	4
HOURS/WEEK	5	HOURS/SEM	90
FACULTY NAME			

Course Outcomes

CO1: Comprehends fundamental concepts of critical reasoning and develops the capacity to read and respond critically, drawing conclusions, generalizing, differentiating fact from opinion and creating their own arguments.

CO2: Develops appropriate and impressive writing styles for various contexts.
CO3: Write and correct structural imperfections and edit what they have written.

CO4: Develops capacity for making academic presentations effectively and impressively.

Course Plan

Sessions		Topic	Method	Course Outcome	Remarks/ Reference

1		Introduction to Critical Thinking	Lecture	CO 1	
2		Reasoning and Arguments	Discussion	CO1	
3		Deductive and Inductive Arguments	Lecture	CO1	
4		Fallacies	Lecture	CO1	
5		Inferential Comprehension	Reading Exercises	CO1	
6		Critical Thinking and Academic Writing	Lecture	CO1	
7		Critical Thinking and Academic Writing	Exercises	CO1	
8		Writing Models	Introductory Lecture	CO2	
9		Writing Letters	General Principles	CO2	
10		Writing a Letter to the Editor	Exercise - 1	CO2	
11		Letter to the Editor	Discussion on the Samples done	CO2	
12		Resume	General Guidelines	CO2	
13		Resume Writing	Writing Exercise	CO2	
14		Resume Writing	Discussion on the samples	CO2	
15		Covering Letter	General Introduction and Writing Exercise	CO2	
16		Covering Letter	Discussion on the samples	CO2	
17		Emails	General Instructions and Writing Exercise	CO2	
18		Emails	Discussion on the Samples	CO2	
19		Interview Skills	Discussion on the general principles	CO2	
20		Group Discussion	Practical sessions and Evaluation	CO2	
21		Accuracy in Academic writing	Lecture	CO3	
22		Articles and Determiners	Lecture and discussion	CO3	
23		Nouns and Pronouns	Lecture	CO3	
24		Subject-verb agreement	Lecture and discussion	CO3	
25		Phrasal verbs	Lecture	CO3	
26		Modals	Lecture	CO3	
27		Tenses	Lecture and demonstration	CO3	

28		Conditional clauses	General Instructions and Writing Exercise	CO3	
29		Relative Pronouns	Lecture and demonstration	CO3	
30		Passive Voices	Lecture and illustration	CO3	
31		Conjunctions	Lecture	CO3	
32		Embedded questions	Demonstration	CO3	
33		Punctuations and Abbreviations	General Instructions and Writing Exercise	CO3	
34		Soft skills for academic presentations	Presentation and lecture	CO4	
35		Effective communication skills	Lecture	CO4	
36		How to structure presentation	Lecture and Demonstration	CO4	
37		Flip Charts, OHP, Power point presentation	Demonstration	CO4	
38		Clarity and brevity in presentation	Lecture	CO4	
39		Interaction and persuasion	Lecture	CO4	
40		Interview skills	Face to face interaction, demonstration	CO4	
41		Group Discussion	Demonstration and Lecture	CO4	
42		Group Discussion	Demonstration and Lecture	CO4	
43		Revision	Discussion and revising the topics	CO4	

Assignment

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Couse Outcome
1		Draft a Resume for applying for the career you wish to choose	CO 2

Reference

Marilyn Anderson, Pramod K Nayar and Madhucchandra Sen. Critical Thinking, Academic Writing and Presentation Skills. Pearson Education and Mahatma Gandhi University

COURSE PLAN(COURSE 2)

PROGRAMME	BSc Physics	SEMESTER	2
COURSE CODE AND TITLE	15U2CCENG4 : MUSINGS ON VITAL ISSUES	CREDIT	3
HOURS/WEEK	4	HOURS/SEM	72
FACULTY NAME			

Course Outcome

CO1: Explore the world of literature further and appreciate the universality of human experience and aspirations.

CO2: Comprehend different genres of writings – essays, poetry and short story.

CO3: Evaluate literature and develop their ability to read texts critically.

CO4: Develop a sense of appreciation and proficiency in language.

Course Plan

Sessions	Date	Topic	Method	Course Outcome	Remarks/ Reference
1		Introducing the text book	Group Discussion	CO1	
2		The dark side of growth	Lecture	CO1	
3		The dark side of growth	Lecture	CO1	
4		The dark side of growth	Lecture	CO1	
5		The dark side of growth	Lecture	CO1	
6		Discussing the questions	Group Presentations	CO4	
7		Money madness(D.H Lawrence)	Discussion	CO1	
8		Money madness(D.H Lawrence	Lecture, Presentation by the students	CO1	
9		For the disposed(S. Joseph)	Lecture, discussion	CO1	
10		For the disposed(S. Joseph)	Lecture, discussion	CO1	
11		First Internals			
12		The social costs of Economic Globalization	Presentation by the students	CO2	
13		The social costs of Economic Globalization	Presentation by the students	CO2	

14		The social costs of Economic Globalization	Presentation by the students	CO2	
15		Distribution of answer sheets	Discussion, correction of common mistakes	CO3	
16		The universal declaration of human rights	Discussion on the evolution of the declaration of rights- discussion on natural rights and legal rights, concept of rights in various religions.	CO3	
17		The universal declaration of human rights	Discussion, answering the questions	CO3	
18		Human Rights and Legal Responsibilities- Nani A. Palkhivala	Lecture- discussion on the concept of freedom, legal awareness, human rights violations in the society, rights of woman…	CO3	
19		Human Rights and Legal Responsibilities- Nani A. Palkhivala	Analysis of answers and presentation by the students	CO3	
20		Twelve Million Black Voices- Richard Wright	Discussion on African- American writing, Slave narratives, emancipation of blacks, Dalit writings..	CO3	
21		Twelve Million Black Voices- Richard Wright	Discussion on African- American writing, Slave narratives, emancipation of blacks, Dalit writings..Analysis of answers and presentations by the students	CO2	
22		Lost Forests- Johannes V. Jensen	Lecture on Slave narratives, African- American writing, concept of freedom, bonded labour, child labour, poverty..	CO3	
23		Lost Forests- Johannes V. Jensen	Presentation of answers by the students	CO4	
24		Why I Want a Wife- Judy Brady	Discussion on marriage, division of job, Sufferings of women, equal status of women, sexual exploitation…	CO4	
25		Mother's Day- J.B. Priestly	Role play	CO4	

26		Mother's Day- J.B. Priestly	Role play	CO4	
27		REVISION			
28		REVISIN			
29		Second Internal examination			
30		Distribution of Answer Sheets	Correction of common mistakes	CO4	

Assignment

	Date of submission/completion	*Topic of Assignment& Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)*	*Weightage*
1		Review of a book, article	5marks

Reference

Dr P J George Ed. Musings on Vital Issues. Orient Blackswan and Mahatma Gandhi University.

COURSE PLAN (course 3)

PROGRAMME	ADDITIONAL LANGUAGE – HINDI	SEMESTER	2
COURSE CODE AND TITLE	U2CCHIN2A- TRANSLATION, COMMUNUCATION SKILLS AND APPLIED GRAMMAR	CREDIT	4
HOURS/WEEK	4	HOURS/SEM	72
FACULTY NAME	Dr.Minipriya R (Asst.Professor) Syamlal M S (Asst.Professor)		

COURSE OUTCOMES:

	COURSE OUTCOMES	PO/ PSO	CL
CO 1	Understand Hindi language and communication.		U

CO 2	Understand the importance of correspondence in the fields of administration, media and business.			U, A An
CO 3	Understand translation as a linguistic, communicative and cultural activity.			U , A
CO 4	Understand the relevant Socio – Cultural issues and develop writing skills through conversation.			U, A
CO 5	Understand grammar and analyse the problems and challenges of communication in Hindi.			U, A

CL* Cognitive Level

Sessions	Date	Topic	Learning Resources	Course Outcomes
MODULE I				
1		Introductory Session-	Oral/descriptive	CO 1
2		Exercise oriented Grammar	Description/exercise	CO 5
3		Parts of speech	Description/exercise	CO 5
4		Noun	Description/exercise	CO 5
5		Pronoun	Description/exercise	CO 5
6		Adjectives	Description/exercise	CO 5
7		Verb	Description/exercise	CO 5
8			Reading/writing	CO 3
9			Reading /writing	CO 3
10			Reference/Library	CO 2
11			Discussion	CO 5
12		Samvad,Shabd Sangrah	Communication	CO 1
13		Sakshatkar	Communication	CO 1
14			Communication	CO 1
15			Exercise	CO 2

16			Exercise	CO 4
17			Exercise	CO 4
18			Reference/Library	CO 2
19			Presentation	CO 4,CO 2
20			Discussion	CO 3
21		CIA – I	1 Hr; Descriptive answers only	
MODULE II				
22		Conjunctions	Description/exercise	CO 5
23		Case endings	Description/exercise	CO 5
24		Auxiliary verbs	Description/exercise	CO 5
25		Tenses	Description/exercise	CO 5
26			Description/exercise	CO 5
27			Reading/writing	CO 4
28			Reading/writing	CO 4
29			Reference/Library	CO 5
30			Discussion	CO 5
31		Samvad,Shabd Sangrah	Communication	CO 1
32		Sakshatkar	Communication	CO 3
33			Communication	CO 1
34			Communication	CO 1
35			Communication	CO 3
36			Exercise	CO 4
37			Exercise	CO 4
38			Exercise	CO 4
39			Exercise	CO 4
40			Exercise	CO 1

41		Translation -Introduction	Oral/descriptive	CO 3
42		Theory	Oral/descriptive	CO 3
MODULE III				
43		Practice English to Hindi	Exercise	CO 3, CO 4
44			Exercise	CO 3, CO 4
45			Exercise	CO 3
46			Exercise	CO 4
47			Exercise	CO 3,CO 4
48		Practice Hindi to English	Exercise	CO 3
49			Exercise	CO 3
50			Exercise	CO 4
51			Exercise	CO 3,CO 4
52			Exercise	CO 3,CO 4
53		SEMINAR	Paper presentation	CO 1
54		SEMINAR	Paper presentation	CO 2
55		SEMINAR	Paper presentation	CO 3
56		SEMINAR	Paper presentation	CO 4
57		SEMINAR	Paper presentation	CO 5
58		SEMINAR	Paper presentation	CO 3
59		REVISION		
60		REVISION		
61		REVISION		
62		CIA II	2 HOURS	
63			Group Discussion	CO 1
64			Group Discussion	CO 3
65			Group Discussion	CO 2

66			Debates	CO 1
67		Discussion on the CIA		
68		REVISION		
69		REVISION		
70		REVISION		
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)	Marks	Corse Outcomes
1	Assignment (December)	Sakshatkar based on the text book and reference – Writing-Individual	5	CO 1
2	Seminar(January-February)	Paper Presentation based on the text book and reference – Oral-Individual	5	CO 5

Additional Reading List
1. **Bhasha Vigyan Evam Hindi Bhasha,Dr.Pandit Banne,Jawahar Pustakalaya,Uttarpradesh.**
2. **Bhasha Vigyan Evam Hindi Bhasha,Dr.Lakshmikanth Pandey,Jawahar Pustakalaya,Uttarpradesh.**

COURSE PLAN (COURSE 4)

Title of the course	□□□□
Semester in which the course is to be taught	SECOND
No. of credits	4
No. of contact hours	72
Name of the professor	□□.□□□□□□□□.□□□ ,□□□□□□□□□□□□□

COURSE OUTCOMES

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Sessions		Topic	Method	Remarks/Reference
1		Introductory Session	Lecturing	1,2,3
2		□□□□□□□□□□□□□□□□□□	Lecturing	2,3

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4		□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□ □□□□□□□.	Independent Reading/Lecturing	1,2,4
5		□□□□□□□□□□□□□	Lecturing	2,3
6		□□□□□□□□□□□	Lecturing	1,2,3
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9		□□□□□□□□□□□□□	Reading/Lecturing	1,2,4
10		□□□□□□□□□□□	Reading/Lecturing	
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13		□□□□□□□□□□□□□	Reading/Lecturing	1,2,4
14		□□□□□□□□□□□□	Reading/Lecturing	2,3
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18		□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□	Reading/Lecturing	2,3
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21		□□□□□□□□□□□□□	Reading/Lecturing	1,2,4
22		□□□□□□□□□□□□	Reading/Lecturing	1,2,4
23		□□□□□□□□□□□□□□□□□ □□□□□□□	Class Discussion	1,2,3
24		CIA -I	1hr; descriptive answers only	2,3
25		SEMINAR PRESENTATION POEMS	Presentation/discussion	2,3
26		SEMINAR PRESENTATION POEMS	Presentation/discussion	1,2,3
27		Discussion on the CIA I	Class Discussion	
28		□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□□□	Discussion	1,2,3
29		□□□□□□□□,□□□□□□□□□, □□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□□□	Debate/discussion	2,3
30		□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□□□□□	Class Discussion	2,3
31		□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□	Lecturing	1,2,3
32		□□□□□□□□□□□□□- □□□□□□□□□□□ -□□□□□	Lecturing/Class Discussion	1,2,4

33		□□□□□□□□□□□□□	Reading/Lecturing	1,2,4
34		□□□□□,□□□□□□,□□	Reading/Lecturing	1,2,3
35		□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	Lecturing	2,3
36		□□□,□□□	Class Discussion	1,2,3
37		□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□.	Lecturing/Class Discussion	1,2,4
38		□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	Lecturing	2,3
39		□□	Class Discussion	2,3
40		□□□.	LecturingDiscussion/	1,2,3
41		□□	Drama Perfomance	2,3
42		□□□-□□□□□□□□□□□□□□□□□□□	Lecturing	1,2,3

43		□□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□.	LecturingDiscussion	1,2,3
44		□□□□□□□□□□□□□□□□□□□□ □□□□	Lecturing	1,2,3
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46		□□□ .□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□	Discussion/	1,2,3
47		□□□□□□□□□□□□□	Lecturing	1,2,4
48		□□.□□.□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□	Reading	1,2,4
49		□□□□□□□□□□□□□	Lecturing	1,2,3
50		□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□ □□□□□ □□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□□ □□□□□	Lecturing	1,2,4
51		□□□□□□□□□□□□□	Lecturing	2,3
52		□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□ □□□□□□□□□□	Lecturing Discussion/	1,2,3
53		□□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□	Lecturing	2,3
54		□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□□□□□□	Lecturing	2,3
55		□□□□□□□□□□□□□□□□□□□□ □□□□□□	Lecturing	2,3

56		□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□	Discussion	2,3
57		□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□ □□□□□□□□	Lecturing Discussion	2,3
58		□□□□□□□□□□□□□□□□ □□□□□□□□□□□	Discussion	2,3
59		□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□ □□□□□□	Lecturing	2,3
60		□□□□□□□- □□□□□□□□□□□	Reading/Lecturing	2,3
61		□□□□□□□- □□□□□□□□□□□	Reading/Lecturing	2,3
62		□□□□□□□- □□□□□□□□□□□	Reading/Lecturing	2,3
63		.□□□□□□□□□□□		2,3
64		□□□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□□	Debate/discussion	1,2,4
65		□□□□□□□□,□□□□□□,□□□□ □□□□□□□□□□□□□ - □□□□□□□□,□□□□□□	Discussion/Debate	1,2,4
66		CIA II{common}	2hr	
67		CIA II{common}	2hr	
68		CIA II{common}	2hr	
69		CIA II{common}	2hr	
70		CIA II{common}	2hr	
71		CIA II{common}	2hr	
72		SEMINAR PRESENTATION ON POEMS	Presentation/discussion	1,2,4
73		SEMINAR PRESENTATION ON	Presentation/discussi	1,2,4

		POEMS	on	
74		Discussion on the CIA II	Class Discussion	1,2,4
75		REVISION		1,2,4

ASSIGNMENTS

	Date of submission/ completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Weigh ttage	Cos
1		□□□ □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	5	1,2, 3,4
2		□□	5	1,2, 3,4

Basic Reference

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	COURSE PLAN	

ACADEMIC YEAR 2018-2019				
PROGRAMME	I BA/ BSc	SEMESTER		II
COURSE CODE AND TITLE	19U2CCSAN2A Communication skills in Sanskrit language	CREDIT		4
HOURS/SEM	72			
FACULTY NAME	Dr.Vijayarajan.K.U			

COURSE OUTCOMES (COs)	
1	Developing the basic knowledge in Sanskrit
2	Students can understand the poetic style with special reference to classical literature
3	Students get an awareness about Indian classical poetic tradition
4	Students familiarize the figures of speech and their usage
5	Students develop the communication skills in sanskrit
6	Understand moral values through Drama
7	Students develop writing skills in Sanskrit
8	Students get awareness about Verbal forms

MODULE I

Sl. No	Session	Topic	Method of Teaching	Value Additions	CO	PO/ PSO	Cognitive Leve(CL)	Knowledge Category (KC)
1	1	Introductory session- ViBhakthi	Lecturing		1,2,8		U	C
	2	Seven forms of ViBhakthi	Lecturing		1,2,5,8		U	C
	3	Forms of rama ,Hari shabdas	chalk n talk		1,2,4,8		R	C
	4	Forms of rema, Guru, Latha Shabdas	Discussion		4,2,3		An,C	C
	5	Verbs- Present Tense	Lecturing		2,4		An,C	C
	6	Verbs- Past Tense	Discussion		4,3,2		An,C	C
	e7	Verbs - Future Tense	Discussion		8,2,1		C,U	C
	8	Conversation in Sanskrit	practising		3,4,1		An,C	C

MODULE II

| | 9 | Structure of Sentence | Lecturing | | 4,2 | | U | C |
| | 10 | Prathama Purusha | Lecturing | | 4,2 | | U | C |

	11	Madhyamapurusha	Lecturing		2,3		An,C	C
	13	Uthamapurusha	chalk n talk		3,5		U	C
	14	Verb's rule	Discussion		3,4		An,C	C
	15	use of ekavachana,dvivachana,bahuvachana	role play		4,5,8		AP,An	C
	16	Sentence - Active voice	Oral,Description		2,4,6		U	C
	17	Sentence - Passive voice	Lecturing		3,2		U	C
MODULE III								
	18	Introductory session	Lecturing		7,8		U	C
	19	Explaining Ghandakavya	Discussion		7,8		U,AP,An	C
	20	Yaksha's story	chalk n talk		7,8		U,AP,An	C
	21	Requesting to Megha	Discussion		4,5,8		U,AP,An	C
	22	Reading slokas	Discussion		3,4,5		U,AP,An	C
	23	Yaksha's eplanation	Lecturing		4,5,8		U,ap,An	C

MODULE IV

	24	Introductory session	Lecturing		3,4, 8		U	C
	25	Bhasa's Dramas	Lecturing		4,5, 8		U	C
	26	prathamanga	Lecturing		1,2, 3		U	C
	27	dvitheeyanga	Oral,Description		1,2, 3		U, An	C
	28	Tritheeyanga	Lecturing		1,2, 3		U	C
	29	summarizing	Lecturing		4,5, 6		U	C

MODULE V

		REVISION						

ASSIGNMENTS AND SEMINARS

SI	Modul	Topic	Nature of		Alignment with POs,

No	e		Assignment	PSOs and COs	
1	1	Vibhakthi and it's usage	project		
2	1	Lakara and It's importance			
3	2	Sentence Construction			
4	3	Kalidasa' s khandakavyas			
5	4	Shoodraka			

TEXTBOOKS AND REFERENCES
Meghadootha of Kalidasa
Mricchakatika-Kathasangraha of Prof.Vasudevan Elayat
Siddharupam and Sabdamanjari

COURSE PLAN (COURSE 7)

PROGRAMME	BACHELOR OF PHYSICS	SEMESTER	2
COURSE CODE AND TITLE	15U2CRPHY02 Mechanics and Properties of Matter	CREDIT	2+(1Practical)
Theory HOURS/WEEK	2	HOURS/SEM	36
FACULTY NAME	Dr. Sumod S.G and Dr. Siby Mathew		

		COURSE OUTCOMES	PO/ PSO	CL
CO 1		Understand superposition of waves.	PO1, PSO1	U

CO 2	Analyse the theory of oscillation.	PO1, PSO1	U
CO 3	Define the basic concepts of angular velocity- angular acceleration- angular momentum.	PO1, PSO1	U/An
CO 4	State parallel and perpendicular axes theorems.	PO1, PSO1	U/An

CL* Cognitive Level

SESSION	TOPIC	LEARNING RESOURCES	COURSE OUTCOME
MODULE I			
1	Introduction , Velocity- acceleration- force – acceleration due to gravity-weightlessness,	Lect	CO1
2	compound pendulum (symmetric and unsymmetric) radius of gyration- kater's pendulum - centripetal acceleration and force- centrifugal force	Lect + Group Activity	CO1
3	Angular velocity- angular acceleration- angular momentum- conservation-	Lect	CO1
4	torque moment of inertia-	Lect	CO1
5	Parallel and perpendicular axes theorem -	Lect	CO2
6	Problem Solving Session	Lect+PPT	CO2
7	calculation of moment of inertia-	Lect	CO2
8	rod, ring, MI	Lect	CO 3
9	Problems with rod, ring, MI	Lect	CO 3
10	calculation of moment of inertia- rod, ring, MI	Lect	CO 4
11	disc, cylinder, Sphere MI	Lect	CO 4
MODULE III			
12	Molecular theory of surface tension- surface energy- excess pressure in a liquid	Lect + Group Activity	CO 4
13	Drop transverse waves on the surface of a liquid-effect of gravity-	Lect	CO 4
14	effect of surface tension- factors affecting surface tension-	Lect	CO 4
15	Applications of ST	Lect	CO 4
16	Streamline and turbulent flow-Viscosity	Lect+ppt	CO 4
17	Critical Velocity	Lect+activity	CO 4
18	Derivation of Piseuille's Formula	Lect	CO 4

19	Stoke's Formulae, Lubricants	Lect+discussion	CO 3
20	Stress- strain- Hooke's law- ratio- -	Lect	CO 4
21	elastic module- Poisson's	Lect	CO 2
22	bending of Beams bending moment	Lect+ppt	CO 4
23	bending of Beams bending moment	Lect	CO 1
24	Young's modulus (cantilever-mirror and telescope)-microscope)	Lect+discussion	CO 4
25	Young's modulus (cantilever-mirror and telescope)-microscope)	Lect	CO 2
26	Young's modulus (uniform and non uniform bending-	Lect+discussion	CO 4
27	torsional oscillations rigidity modulus- static torsion(mirror and telescope)-	Lect	CO 4
28	I section girder.	Lect	CO 2
29	Molecular theory of surface tension- surface energy- -	Lect+ppt	CO 4
30	excess pressure in a liquid Drop transverse waves on the surface of a liquid	Lect	CO 3
31		Lect+discussion	CO 4
32	factors affecting surface tension- applications.	Lect	CO 2
33	Streamline and turbulent flow- critical velocity-	Lect	CO 1
34	derivation of Poiseuille's Formula	Lect+ppt	CO 4
35	derivation of Poiseuille's Formula	Lect	CO 2
36	Stoke's formula-Lubricants	Lect+discussion	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	20/12/2018	Problems associated with MI	CO 1
2	20/1/2019	Applications of Surface Tension	CO2

GROUP ASSIGNMENTS– Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcome
1	Class activityin Feb 2019	Scope of Properties of matter in practical applications (Group Discussion)	CO 3

References

1. Fundamentals of Physics - Halliday and Resnik (John Wiley)

2. Principles of Mechanics - John. L. Synge and Byron A Griffith (Mc- Graw Hill)

3. Advanced Physics - Materials and Mechanics - Tom Duncan (John Murray London)

4. Mechanics - D.S.Mathur (S.Chand)

5. Classical Mechanics - Goldstein

6. Classical Mechanics - K. SankaraRao (Prentice. Hall of India- N.Delhi)

7. Text Book of Sound - Brijlal and Subramaniam (S.Chand)

8. Refresher Course in Physics - Vol1- C.L.Arora

9. Vibration, Waves and Acoustics - D.Chattopadhyay (Books and Allied Pvt Ltd)

10. Properties of Matter - Brijlal and Subramaniam (S.Chand)

11. Properties of Matter - -D.S.Mathur (S.Chand)

12. Mechanics- H.S.Hans and S.P.Puri. (Tata McGraw-Hill)

13. Properties of Matter- Brijlal and N. Subrahmanyam (S. Chand and Co.)

14. Mechanics- J.C. Upadhyaya (Ram Prasad and Sons)

COURSE PLAN (COURSE 8)

PROGRAMME	COMPLEMENTARY CHEMISTRY FOR BACHELOR OF SCIENCE IN PHYSICS	SEMESTER	2
COURSE CODE AND TITLE	15U2CPCHE2: BASIC ORGANIC CHEMISTRY	CREDIT	2
HOURS/WEEK	2	HOURS/SEM	36
FACULTY NAME	Dr. Ramakrishnan S and Dr. Ragi A S		

	COURSE OUTCOMES	PO/ PSO	CL
CO 1	*Understand the basics of organic chemistry.*	PO 1, PSO 1	U
CO 2	*Understand various purification techniques like solvent extraction, distillation and crystallization.*	PO 1, PSO 1	U
CO 3	*Develop an idea on stereochemistry of organic compounds*	PO 1, PSO 1	U
CO 4	*Explain the basics of organic reaction mechanism.*	PO 1, PSO 1	U
CO 5	*Discuss the classification and synthesis of polymers.*	PO 6, PSO 2	U
CO 6	*Discuss the hazards of synthetic polymers/ plastics.*	PO 6, PSO 2	U
CO 7	*Understand the concept of biodegradable alternatives for plastics.*	PO 6, PSO 2	U

CL* Cognitive Level

SESSION	TOPIC	LEARNING RESOURCES	VALUE ADDITIONS	COURSE OUTCOME
MODULE I : Purification of Organic Compounds : Dr. Ragi A S(3h)				
1	Purification techniques: Recrystallisation, sublimation.	Chalk & Board	Q & A Session	CO 2
2	General principles of distillation, fractional distillation, distillation under reduced pressure	Chalk & Board		CO 2
3	Solvent extraction	Chalk & Board		CO 2
MODULE II: Stereochemistry of Organic Compounds: Dr. Ramakrishnan S(11h)				
4	Geometrical isomerism- *cis* and *trans* configuration, 2-butene, maleic and fumaric acid,	Chalk & Board		CO 3
5	Determination of configuration of cis-trans isomers, E and Z configuration.	Chalk & Board		CO 3
6	Optical isomerism- D and L configuration. Optical activity,	Chalk & Board	quiz	CO 3
7	Chirality, Stereogenic Centre	Chalk & Board		CO 3
8	Enantiomers and diastereomers	Chalk & Board		CO 3
9	Optical isomerism in lactic acid and tartaric acid	Chalk & Board	quiz	CO 3
10	Racemisation	Chalk & Board		CO 3
11	Conformation- Newman projection, Saw-horse projection	Chalk & Board		CO 3
12	Conformations of Ethane	Chalk & Board		CO 3
13	n - butane	Chalk & Board		CO 3
14	Cyclohexane.	Chalk & Board		CO 3
MODULE III: Mechanisms of Organic Reactions: Dr.Ragi A.S (15h)				
15	Hybridization and shape of molecules - sp^3, sp^2 and sp, (ethane, ethene, ethyne)	Chalk & Board	quiz	CO 4
16	Types of reagents - electrophiles, nucleophiles.	Chalk & Board		CO 4
17	Types of electron displacement in organic molecules	Chalk & Board		CO 4
18	Explanation of the strength of carboxylic and halogen substituted acids,	Chalk & Board		CO 4
19	Basic strength of primary, secondary and tertiary amines.	Chalk & Board	Q & A Session	CO 4
20	Types of bond fission- homolytic and heterolytic fission.	Chalk & Board		CO 4
21	Reactive intermediates-carbocations-Their formation and stability.	Chalk & Board		CO 4
22	Substitution reactions: Nucleophilic substitution of alkyl halides- S_N1 and S_N2 mechanisms. Factors affecting rate of Substitution reaction of alkyl halide. Nature of alkyl halide, Effect of solvent. Stereochemistry of S_N1 and S_N2	Chalk & Board		CO 4

	reactions.			
23	Electrophilic substitution in benzene-reaction mechanism. Halogenation, Nitration and Sulphonation	Chalk & Board		CO 4
24	Addition reactions: electrophilic addition. Addition of Bromine and Hydrogen halides to ethane, propene and ethyne-the Markwonikoff's rule, Peroxide effect.	Chalk & Board		CO 4
25	Reactive intermediates- free radicals. Their formation and stability.	Chalk & Board		CO 4
26	Substitution reactions: Nucleophilic substitution of alkyl halides- SN1 and SN2 mechanisms. Factors affecting rate of Substitution reaction of alkyl halide. Nature of alkyl halide, Effect of solvent. Stereochemistry of SN1 and SN2 reactions.	Chalk & Board		CO 4
27	Electrophilic substitution in benzene-reaction mechanism. Halogenation, Nitration and Sulphonation	Chalk & Board		CO 4
28	Addition reactions: electrophilic addition. Addition of Bromine and Hydrogen halides to ethane, propene and ethyne-the Markwonikoff's rule, Peroxide effect.	Chalk & Board		CO 4
29	Elimination reactions: E1 and E2 mechanisms. Saytzeff and Hofmann elimination	Chalk & Board		CO 4
MODULE IV: Natural and Synthetic Polymers: Dr.Ramakrishnan S (7h)				
30	Classification of polymers: Natural, synthetic; linear, cross-linked and network; plastics, elastomers, fibres; homopolymers and copolymers.	Chalk & Board	Quiz	CO 5
31	Polymerization reactions, Addition Polymerization,	Chalk & Board		CO 5
32	Condensation polymerization,	Chalk & Board		CO 5
33	Polyethene, polypropylene, PVC, phenol-formaldehyde resins, polyamides (nylons) and polyester.	Chalk & Board		CO 5
34	Natural rubber: structure, vulcanization.	Chalk & Board		CO 5
35	Synthetic rubbers- SBR, nitrile rubber, neoprene.	Chalk & Board		CO 5
36	Biodegradable polymers, environmental hazards caused by polymers, Health problem due to burning plastics.	Chalk & Board		CO 6 and CO 7

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group –	Course Outcome

		Written/Presentation – Graded or Non-graded etc)	
1	04/12/2018	Conformations	CO 2
2	28/01/2019	SN1 and SN2 reactions	CO 4

GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Course Outcome
1	02/02/2019	Biodegradable Polymers	CO 7

References

1. I. L. Finar, Organic Chemistry, Vol. I, 6th edn. Pearson.
2 S. M. Mukherji, S. P Singh, R. P Kapoor, Organic Chemistry, Vol.1, New Age International (P) Ltd, 2006
3 P.S Kalsi, Stereochemistry Conformation and Mechanism, New Age International Publishers, 2004
4 Peter Sykes, A Guide Book to Mechanism in Organic Chemistry, 6th edn. Orient Longman, 1988
5 S. M. Mukherji, S.P Singh, Reaction Mechanism in Organic Chemistry, Macmillan, 3rd Edn., 2003
6 V. R. Gowariker, Polymer Science, Wiley Eastern.
7 K.S Tewari,N K Vishnoi, Text book of Organic Chemistry, Vikas Publishing House Pvt. Ltd.2007.

COURSE PLAN (COURSE 9)

PROGRAMME	BACHELOR OF MATHEMATICS	SEMESTER	2
COURSE CODE AND TITLE	16 U2CPMAT 02 : INTEGRAL CALCULUS AND MATRICES	CREDIT	.3
HOURS/WEEK	4	HOURS/SEM	60
FACULTY NAME	SANIL JOSE		

	COURSE OUTCOMES	PO/ PSO	CL
CO 1	Understand definite integrals and The fundamental theorem of Calculus	PSO2	U
CO 2	Determine the area and volume of surfaces in space .	PSO2	A
CO 3	Understand the concepts of Double Integrals	PSO2	U

CO 4	Apply the concepts of multiple integrals to find the area and volume of regions in space	PSO2 , PSO 4	Ap
CO 5	Understand the concepts of matrices	PO1, PSO2	U
CO 6	Apply the concepts of matrices to solve system of linear equations and characteristic roots	PO1, PSO2	AP

CL* Cognitive Level

Sessions	Topic	Method	VALUE ADDITIONS	COURSE OUTCOME
1	Introductory Session			
2	A quick review of indefinite integral as anti derivative.	Lecture, Group Discussion, Problem Solving		CO 1
3	A quick review of indefinite integral as anti derivative.	Lecture, Group Discussion, Problem Solving		CO 1
4	The Definite integral.	Lecture, Group Discussion, Problem Solving		CO 1
5	The Definite integral.	Lecture, Group Discussion, Problem Solving		CO 1
6	The Definite integral.	Lecture, Group Discussion, Problem Solving		CO 1
7	The Definite integral.	Lecture, Group Discussion, Problem Solving		CO 1
8	The fundamental theorem of	Lecture, Group Discussion, Problem		CO 1

	Calculus	Solving		
9	The fundamental theorem of Calculus	Lecture, Group Discussion, Problem Solving		CO 1
10	The fundamental theorem of Calculus	Lecture, Group Discussion, Problem Solving		CO 1
11	The fundamental theorem of Calculus	Lecture, Group Discussion, Problem Solving		CO 1
12	The fundamental theorem of Calculus	Lecture, Group Discussion, Problem Solving		CO 1
13	Substitution and area between curves	Lecture, Group Discussion, Problem Solving		CO 2
14	Substitution and area between curves	Lecture, Group Discussion, Problem Solving		CO 2
15	Substitution and area between curves	Lecture, Group Discussion, Problem Solving		CO 2
16	Substitution and area between curves	Lecture, Group Discussion, Problem Solving		CO 2

17	Volumes by slicing and rotation about an axis (disc method only)	Lecture, Group Discussion, Problem Solving		CO 2
18	Volumes by slicing and rotation about an axis (disc method only)	Lecture, Group Discussion, Problem Solving		CO 2
19	Volumes by slicing and rotation about an axis (disc method only)	Lecture, Group Discussion, Problem Solving		CO 2
20	Volumes by slicing and rotation about an axis (disc method only)	Lecture, Group Discussion, Problem Solving		CO 2
21	Volumes by slicing and rotation about an axis (disc method only)	Lecture, Group Discussion, Problem Solving		CO 2
22	Areas of surfaces of revolution and the theorem of Pappus (excluding theorem of Pappus)	Lecture, Group Discussion, Problem Solving		CO 2
23	Areas of surfaces of revolution and the theorem of Pappus (excluding theorem of Pappus)	Lecture, Group Discussion, Problem Solving		CO 2
24	Areas of surfaces of revolution and the theorem of Pappus (excluding theorem of Pappus)	Lecture, Group Discussion, Problem Solving		CO 2
25	Areas of surfaces of revolution and the theorem of Pappus (excluding theorem of	Lecture, Group Discussion, Problem Solving		CO 2

	Pappus)			
26	Double Integrals	Lecture, Group Discussion, Problem Solving		CO 3
27	Double Integrals	Lecture, Group Discussion, Problem Solving		CO 3
28	Area of bounded region in plane only	Lecture, Group Discussion, Problem Solving		CO 3
29	Area of bounded region in plane only	Lecture, Group Discussion, Problem Solving		CO 3
30	Area of bounded region in plane only	Lecture, Group Discussion, Problem Solving		CO 3
31	Area of bounded region in plane only	Lecture, Group Discussion, Problem Solving		CO 3
32	Double Integrals in Polar form,	Lecture, Group Discussion, Problem Solving		CO 3
33	Double Integrals in Polar form,	Lecture, Group Discussion, Problem Solving		CO 3
34	Double Integrals in Polar form,	Introduction		CO 3

35	Triple integrals in rectangular co-ordinates	Lecture, Group Discussion, Problem Solving		CO 4
36	Triple integrals in rectangular co-ordinates	Lecture, Group Discussion, Problem Solving		CO 4
37	Volume of a region in space	Lecture, Group Discussion, Problem Solving		CO 4
38	Volume of a region in space	Lecture, Group Discussion, Problem Solving		CO 4
39	Volume of a region in space	Lecture, Group Discussion, Problem Solving		CO 4
40	Rank of a Matrix	Lecture, Group Discussion, Problem Solving		CO 5
41	Non-Singular and Singular matrices	Lecture, Group Discussion, Problem Solving		CO 5
42	Elementary Transformations	Lecture, Group Discussion, Problem Solving		CO 5
43	Elementary Transformations	Lecture, Group Discussion, Problem Solving		CO 5

44	Inverse of an elementary Transformations	Lecture, Group Discussion, Problem Solving		CO 5
45	Equivalent matrices,	Lecture, Group Discussion, Problem Solving		CO 5
46	Row Canonical form	Lecture, Group Discussion, Problem Solving		CO 5
47	Row Canonical form	Lecture, Group Discussion, Problem Solving		CO 5
48	Normal form	Lecture, Group Discussion, Problem Solving		CO 5
49	Normal form	Lecture, Group Discussion, Problem Solving		CO 5
50	System of non homogeneous	Lecture, Group Discussion, Problem Solving		CO 6
51	Solution using matrices	Lecture, Group Discussion, Problem Solving		CO 6
52	Solution using matrices	Lecture, Group Discussion, Problem Solving		CO 6
53	Cramer's rule	Lecture, Group Discussion, Problem Solving		CO 6
54	Cramer's rule	Lecture, Group Discussion, Problem Solving		CO 6
55	System of homogeneous equations	Lecture, Group Discussion, Problem		CO 6

		Solving		
56	Characteristic equation of a matrix; Characteristic roots and characteristic vectors	Lecture, Group Discussion, Problem Solving		CO 6
57	Cayley-Hamilton theorem and simple applications	Lecture, Group Discussion, Problem Solving		CO 6
58	Cayley-Hamilton theorem and simple applications	Lecture, Group Discussion, Problem Solving		CO 6
59	Revision			CO 6
60	Revision			

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	INTEGRATION PROBLEMS	CO 1, CO 2
2	28/1/2019	PROBLEMS IN MATRICES	CO 5, CO 6

GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

	Date of completion	Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc)	Couse Outcome
1	2/2/2019	PROBLEMS IN MULTILPLE INTEGRATION	CO 3, CO 4
2			

Text Books

1. George B. Thomas, Jr: Thomas' Calculus Eleventh Edition, Pearson, 2008.
2. Frank Ayres Jr : Matrices, Schaum's Outline Series, TMH Edition.

Reference Books :

1. Shanti Narayan , P .K . Mittal :Integral Calculus (S. Chand & Company)

2. Shanthi Narayanan & P.K. Mittal, A Text Book of Matrices, S. Chand.

3. David W. Lewis - Matrix Theory (Allied)