

SACRED HEART COLLEGE (AUTONOMOUS)

Department of Physics

BSC PHYSICS

Course plan

Academic Year 2016 - 17

Semester 3

SACRED HEART COLLEGE (AUTONOMOUS)**Department of Physics****COURSE PLAN**

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| PROGRAMME | UG COMMON COURSE 3-Physics | SEMESTER | 3 |
| COURSE CODE AND TITLE | 15U3CCENG5: REFLECTIONS ON INDIAN POLITY, SECULARISM AND SUSTAINABLE ENVIRONMENT | CREDIT | 4 |
| HOURS/WEEK | 5 | HOURS/SEM | 90 |
| FACULTY NAMES | Shijo Varghese, Joseph Kusumalayam | | |

COURSE OBJECTIVES

Communicate effectively in English.

Understand the vital aspects of Indian polity viz. democracy, federalism and secularism.

Respond critically to the questions of sustainable development

Assimilate and creatively respond to Gandhian thoughts

Compare and contrast scholarly texts (both content and style

Critique the challenges and opportunities that citizens are bound to encounter.

| SESSION | TOPIC | LEARNING RESOURCES | VALUE ADDITIONS | REMARKS |
|---------------------------------|---|--------------------|-----------------|---------|
| MODULE I - INDIAN POLITY | | | | |
| 1 | The Preamble of the Constitution | Lecture | | |
| 2 | The Preamble of the Constitution | PPT/Lecture | | |
| 3 | The Preamble of the Constitution | PPT/Lecture | | |
| 4 | On the Constitution of India | lecture | | |
| 5 | Rajendra Prasad : "Let Posterity Judge" | PPT/Lecture | video | |

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| 6 | Rajendra Prasad : "Let Posterity Judge" | PPT/Lecture | PPT | |
| 7 | Rajendra Prasad : "Let Posterity Judge" | Lecture | | |
| 8 | Rajendra Prasad : "Let Posterity Judge" | Lecture | | |
| 9 | Rajendra Prasad : "Let Posterity Judge" | PPT/Lecture | video | |
| 10 | Rajendra Prasad : "Let Posterity Judge" | PPT/Lecture | | |
| 11 | Sebastian : "Exciting Views" | Discussion | | |
| 12 | Sebastian : "Exciting Views" | Discussion | | |
| 13 | Amulal Hingorani : "Brother Abdul Rahman" | Seminar Presentation s | PPT | |
| 14 | Amulal Hingorani : "Brother Abdul Rahman" | Seminar Presentation s | PPT | |
| 15 | Amulal Hingorani : "Brother Abdul Rahman" | Seminar Presentation s | PPT | |
| MODULE II | | | | |
| 16 | Vallathol : "My Master" | Discussion | | |
| 17 | Vallathol : "My Master" | Discussion | | |
| 18 | Louis Fischer : "Gandhi and Western World" | Seminar Presentation s | PPT | |
| 19 | Louis Fischer : "Gandhi and Western World" | Seminar Presentation s | PPT | |
| 20 | Louis Fischer : "Gandhi and Western World" | Seminar Presentation s | PPT | |
| 21 | Louis Fischer : "Gandhi and Western World" | Seminar Presentation s | PPT | |
| 22 | Raja Rao : "The Cow of the Barricades" | Lecture | | |

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| 23 | Raja Rao : "The Cow of the Barricades" | Lecture | | |
| 24 | Raja Rao : "The Cow of the Barricades" | Discussion | | |
| 25 | M.K.Gandhi : "Round Table Conference Speech" | Lecture | Text | |
| 26 | M.K.Gandhi : "Round Table Conference Speech" | PPT/Lecture | | |
| 27 | M.K.Gandhi : "Round Table Conference Speech" | Lecture | | |
| 28 | M.K.Gandhi : "Round Table Conference Speech" | Lecture | | |
| 29 | C E M Joad : "The Gandhian Way" | Lecture | | |
| 30 | C E M Joad : "The Gandhian Way" | PPT/Lecture | PPT | |
| 31 | C E M Joad : "The Gandhian Way" | Lecture | | |
| MODULE III | | | | |
| 32 | Mohinder Sing Sarna : "Smaller Gandhis" | Lecture | Text | |
| 33 | Mohinder Sing Sarna : "Smaller Gandhis" | Lecture | | |
| 34 | Mohinder Sing Sarna : "Smaller Gandhis" | PPT/Lecture | PPT | |
| 35 | Mohinder Sing Sarna : "Smaller Gandhis" | Lecture | video | |
| 36 | Kumar Vikal : "Can you Make Out" | Seminar | PPT | |
| 37 | Kumar Vikal : "Can you Make Out" | Seminar | PPT | |
| 38 | Shashi Tharoor : "The Idea of India: India's Mosaic of Multiplicities" | Seminar | PPT | |
| 39 | Shashi Tharoor : "The Idea of India: India's Mosaic of Multiplicities" | Seminar | PPT | |
| 40 | Shashi Tharoor : "The Idea of India: India's Mosaic of Multiplicities" | Seminar | PPT | |
| 41 | Roots | PPT/Lecture | | |
| 42 | Roots | Lecture | video | |
| 43 | Roots | Lecture | | |
| 44 | Roots | Lecture | | |

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| 45 | Roots | Lecture | Quiz | |
| 46 | Padma Sachdev : "Smoke" | Discussion | PPT | |
| 47 | Padma Sachdev : "Smoke" | Discussion | Essay | |
| 48 | Padma Sachdev : "Smoke" | Discussion | | |
| MODULE IV | | | | |
| 49 | Seminar | Presentation | | |
| MODULE III- PRAXIS OF GANDHIAN THOUGHT | | | | |
| 50 | Fritjof Capra : "Deep Ecology" | Lecture | Video | |
| 51 | Fritjof Capra : "Deep Ecology" | Discussion | | |
| 52 | Fritjof Capra : "Deep Ecology" | Discussion | | |
| 53 | A K Ramanujan : "Ecology" | Seminar | PPT | |
| 54 | A K Ramanujan : "Ecology" | Seminar | PPT | |
| 55 | A K Ramanujan : "Ecology" | Seminar | PPT | |
| 56 | Sujatha Bhatt : "The First Meeting" | Lecture, discussion | | |
| 57 | Sujatha Bhatt : "The First Meeting" | Discussion | | |
| 58 | Ramachandra Guha : "A Gandhian in Garhwal" | Lecture | Notes | |
| 59 | Ramachandra Guha : "A Gandhian in Garhwal" | Discussion | | |
| 60 | Ramachandra Guha : "A Gandhian in Garhwal" | Lecture | | |
| 61 | Ramachandra Guha : "A Gandhian in Garhwal" | Lecture | | |
| 62 | Jack London : "The Law of Life" | Seminar | PPT | |
| 63 | Jack London : "The Law of Life" | Seminar | PPT | |
| 64 | Jack London : "The Law of Life" | Seminar | PPT | |
| 65 | Jack London : "The Law of Life" | Seminar | PPT | |
| 66 | Elizabeth Bishop : "The Fish" | Discussion | Text | |
| 67 | Elizabeth Bishop : "The Fish" | Discussion | Text | |

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| 68 | Chief Seattle : “The End of Living and the Beginning of Survival” | Presentation | PPT | |
| 69 | Chief Seattle : “The End of Living and the Beginning of Survival” | Presentation | PPT | |
| 70 | Chief Seattle : “The End of Living and the Beginning of Survival” | PPT/Lecture | PPT | |
| 71 | Deep Ecology | Lecture | video | |
| 72 | Deep Ecology | Lecture | | |
| 73 | Robinson Jeffers : “The Last Conservative” | PPT/Lecture | Notes | |
| 74 | Robinson Jeffers : “The Last Conservative” | PPT | | |
| 75 | Review | | | |
| 76 | Review | | | |
| 77 | Review | | | |
| 78 | Review | | | |
| 79 | Review | | | |
| 80 | Seminar Presentation | PPT | | |
| 81 | Seminar Presentation | PPT | | |
| 82 | CIA 2 | | | |

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

| | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|---|--------------------|---|
| 1 | 2/8/2016 | Presentations |
| 2 | 28/8/2016 | Role Plays |

GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

| | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|----------|--------------------|---|
| 1 | 12/9/2016 | Group Discussions |
| 2 | 20/9/2016 | Performances |

References

Dr B Keralavarma Ed. Understanding India: An Anthology on Indian Polity, Secularism and Sustainable Environment. Macmillan and Mahatma Gandhi University.

COURSE PLAN 2

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|-----------------------|----------------------------------|-----------|----|
| PROGRAMME | BACHELOR OF SCIENCE – PHYSICS | SEMESTER | 3 |
| COURSE CODE AND TITLE | 15U3CCHIN3A – POETRY AND FICTION | CREDIT | 4 |
| HOURS/WEEK | 5 | HOURS/SEM | 90 |
| FACULTY NAME | Dr. MINIPRIYA R, SYAMLAL M. S | | |

COURSE OBJECTIVES

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|---|
| Describe the various aspects of Hindi poetry in context of socio-cultural and political condition of that period. |
| Student will be able to recognise the social significance of a literary work in any language. |
| Develop creative thinking capacity through literature. |
| Acquire ability to read, appreciate and analyze Novel independently |
| Develop knowledge of literary forms in Hindi Short story and effective reading skills. |

| SESSION | TOPIC | LEARNING RESOURCES | VALUE ADDITIONS | REMARKS |
|------------------|--|---------------------|-----------------|---------|
| MODULE I | | | | |
| 1 | General Introduction about the history of Hindi Poetry and Stories | Lecture/PPT | | |
| 2 | Kabirdas | Lecture/PPT | | |
| 3 | Kabirdas | Lecture/PPT | | |
| 4 | General Introduction about the history of Hindi Novel and introducing the prescribed textbook. | Lecture/PPT | | |
| 5 | Introduction of the author Rajendra Awasthi | Lecture/ PPT | | |
| 6 | Kabirdas | Lecture/Discussion | Seminar | |
| 7 | Akeli Awaz (Novel) | Lecture | | |
| 8 | Sarojmruthi, Introduction of the author | Lecture/ PPT | | |
| 9 | Sarojmruthi | Lecture/Discussion | | |
| 10 | Akeli Awaz (Novel) | Lecture | | |
| 11 | Akeli Awaz (Novel) | Lecture | | |
| 12 | Sarojmruthi | Lecture/Discussion | | |
| 13 | Sarojmruthi | Lecture/Discussion | Seminar | |
| 14 | Akeli Awaz (Novel) | Lecture | | |
| 15 | Akeli Awaz (Novel) | Lecture/Discussion | | |
| 16 | Aansuom Ki Holi, Introduction of the author | Lecture/ PPT | | |
| 17 | Aansuom Ki Holi | Lecture/ PPT | | |
| 18 | Akeli Awaz (Novel) | Lecture | | |
| 19 | Akeli Awaz (Novel) | Lecture | | |
| 20 | Aansuom Ki Holi | Interaction | Seminar | |
| 21 | Akeli Awaz (Novel) | Lecture | | |
| 22 | Aansuom Ki Holi | Lecture/PPT | | |
| 23 | Aansuom Ki Holi | Lecture/PPT | | |
| 24 | Akeli Awaz (Novel) | Lecture | | |
| 25 | Akeli Awaz (Novel) | Lecture | | |
| 26 | Nach, Introduction of the author | Lecture/PPT | | |
| 27 | Nach | Lecture/PPT | | |
| 28 | Akeli Awaz (Novel) | Lecture/Discussion | | |
| 29 | Nach | Lecture/Discussion | | |
| 30 | Nach | Interaction | Seminar | |
| 31 | Revision | Lecture | | |
| 32 | CIA I (I Hr Exam) | | | |
| MODULE II | | | | |
| 33 | Tulsidas | Lecture/PPT | | |
| 34 | Tulsidas | Lecture | | |
| 35 | Akeli Awaz (Novel) | Lecture | | |
| 36 | Akeli Awaz (Novel) | Lecture | | |
| 37 | Tulsidas | Lecture/ Discussion | Seminar | |

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| 38 | Khamosh Dhadkaneim, Introduction of the author | Lecture/PPT | | |
| 39 | Akeli Awaz (Novel) | Lecture | | |
| 40 | Akeli Awaz (Novel) | Interaction | | |
| 41 | Khamosh Dhadkaneim | Interaction | Seminar | |
| 42 | Akeli Awaz (Novel) | Lecture/Discussion | | |
| 43 | Khamosh Dhadkaneim | Lecture/PPT | | |
| 44 | Khamosh Dhadkaneim | Lecture | | |
| 45 | Akeli Awaz (Novel) | Lecture | | |
| 46 | Akeli Awaz (Novel) | Interaction | | |
| 47 | Rani Maa Ka Chabootara, Introduction of the author | Lecture | | |
| 48 | Rani Maa Ka Chabootara | Lecture | | |
| 49 | Akeli Awaz (Novel) | Lecture | | |
| 50 | Akeli Awaz (Novel) | Lecture | | |
| 51 | Rani Maa Ka Chabootara | Discussion | Seminar | |
| 52 | Akeli Awaz (Novel) | Lecture | | |
| 53 | Akeli Awaz (Novel) | Lecture | | |
| 54 | Rani Maa Ka Chabootara | Lecture/ Discussion | | |
| 55 | Sthriyam, Introduction of the author | Lecture/PPT | | |
| 56 | Akeli Awaz (Novel) | Lecture | | |
| 57 | Sthriyam | Lecture | | |
| 58 | Sthriyam | Lecture/ Discussion | | |
| 59 | Sthriyam | Discussion | Seminar | |
| 60 | Revision | Interaction | | |
| 61 | Revision | Interaction | | |
| 62 | CIA II (2 Hrs Exam) | | | |
| | MODULE II | | | |
| 63 | Meerabai | Lecture/PPT | | |
| 64 | Meerabai | Lecture | | |
| 65 | Akeli Awaz (Novel) | Lecture | | |
| 66 | Akeli Awaz (Novel) | Lecture | | |
| 67 | Meerabai | Lecture/Discussion | Seminar | |
| 68 | Akeli Awaz (Novel) | Lecture/Discussion | | |
| 69 | Meerabai | Interaction | Seminar | |
| 70 | Akeli Awaz (Novel) | Lecture | | |
| 71 | Akeli Awaz (Novel) | Lecture/Discussion | | |
| 72 | Prem Patra, Introduction of the Author | Lecture/PPT | | |
| 73 | Prem Patra | Lecture/Discussion | Seminar | |
| 74 | Akeli Awaz (Novel) | Lecture | | |
| 75 | Prem Patra | Lecture | | |
| 76 | Prem Patra | Lecture/ Discussion | Seminar | |
| 77 | Aparadh, Introduction of the Author | Lecture/PPT | | |
| 78 | Revision | Interaction | | |
| 79 | Revision | Interaction | | |

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| 80 | Aparadh | Lecture | | |
| 81 | Aparadh | Lecture | Seminar | |
| 82 | Aparadh | Lecture/Discussion | | |
| 83 | Akali Awaz (Novel) | Lecture/Discussion | Seminar | |
| 84 | Aparadh | Lecture | | |
| 85 | Aparadh | Lecture | | |
| 86 | Seminar | Discussion | Seminar | |
| 87 | Seminar | Discussion | | |
| 88 | Revision | Interaction | | |
| 89 | Revision | Interaction | | |
| 90 | Evaluation of the course | | | |
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INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines (B.Sc. PHYSICS)

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

GROUP ASSIGNMENTS/ACTIVITIES – Details & Guidelines

| SL NO | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|-------|--------------------|---|
| 1 | September | Exercise activity based on Novel (Group Discussion). |
| 2 | September | Review a Poem from the textbook 1 and reference, Writing (Group Activity). |

References

- Nayi Said Ki Kavita , Ganesh Pandey , Vani Prakashan, New Delhi .
- Hindi Upanyas Naya Path , Hemant Kukreti , Vani Prakashan, New Delhi .

Web resource references:

- epustakalay.com
- www.hindikunj.com

COURSE PLAN

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| PROGRAMME | PHYSICS | SEMESTER | 3 |
| COURSE CODE AND TITLE | 15U3CCFRN3A – AN ADVANCED COURSE IN FRENCH I | CREDIT | 4 |
| HOURS/WEEK | 5 | HOURS/SEM | 90 |

COURSE OBJECTIVES

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

| SESSION | TOPIC | LEARNING RESOURCES | VALUE ADDITIONS | REMARKS |
|-----------------|-----------------------------------|----------------------|-----------------|---------|
| MODULE I | | | | |
| 1 | Revision of French Basics | Role play, games | | |
| 2 | French Basics | Chalk n talk | | |
| 3 | French Basics | Chalk and Talk | | |
| 4 | French Basics | Chalk and Talk | | |
| 5 | French Basics | Chalk and Talk | | |
| 6 | French Basics | Chalk and Talk | | |
| 7 | French Basics | Chalk and Talk | | |
| 8 | French Basics | Chalk and Talk | | |
| 9 | Unit 1 – Le passé compose | Chalk and talk | | |
| 10 | Past tense | lecture | | |
| 11 | Past tense –narrate an event | Communication skills | | |
| 12 | Past tense –narrate an event | Oral | | |
| 13 | Past tense –narrate an event | Oral | | |
| 14 | Narrate the life of a person | Communication Skills | | |
| 15 | Narrate a positive/Negative event | Communication Skills | | |
| 16. | To learn the entire life | Role play | | |

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| 17. | One's opinion on learning the entire life | Role Play | | |
| 18. | Interview on learning the entire life | Role Play | | |
| 19. | Sharing experiences on learning during old age | Debate/Discussion | | |
| 20 | Reading Comprehension | Understanding Skills | | |
| 21. | Reading Comprehension | Understanding Skills | | |
| 22. | Reading Comprehension | Understanding Skills | | |
| 23. | Vocabulary building | Games | | |
| 24 | Communicative skills- emotions | Chalk and talk, oral | | |
| 25 | Emotions of a teacher | Expression oral | | |
| 26. | Emotion of a student in a language class | Discussion | | |
| 27 | Expressions related to emotions | Vocabulary building games | | |
| 28 | Language network | Discussions ICT | | |
| 29 | French culture – EU Rights | Discussions, comparison | | |
| 30 | Class test of Unit 1 | | | |
| MODULE II | | | | |
| 31 | Describe one's house | Game | | |
| 32 | Describe one's Furniture | Lecture | | |
| 33 | Grammar-prepositions | Lecture | | |
| 34 | Making Sentences | Games, Role plays | | |
| 35 | Describe your friend's house | discussion | | |
| 36 | Vocabulary Building | Games | | |
| 37 | Pronoun Y, Locate things | Chalk and talk | | |
| 38 | Sentence Construction | Games | | |
| 39 | Type of lodging | Roleplay, listening exercise | | |
| 40 | Preferences on type of lodging | Roleplay | | |
| 41 | Comparison, describe one's favourite place | Chalk and Talk, role play | | |
| 42 | Compare 2 cities/countries | Debate | | |
| 43 | Vocabulary Building | Games | | |
| 44 | Country or country side - debate | Lecture/Discussion | | |
| 45 | Revision | | | |
| 46 | Revision | | | |
| 47 | Revision | | | |
| 48 | Revision | | | |
| 49 | Revision | | | |
| 50 | Revision | | | |
| 51 | Revision | | | |
| CIA-1 | | | | |
| 52 | Discussion of CIA | | | |
| 53 | Vocabulary Building | Games | | |
| MODULE III | | | | |
| 54 | Describe a natural product | PPT/Lecture | | |
| 55 | Describe an Indian Product | PPT/Lecture | | |
| 56 | Positives and negatives of a product | PPT/Lecture | | |
| 57 | Advertise a product | PPT | | |

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| 58 | Vocabulary-parts of the body, expressing pain | Music, GAMES | | |
| 59 | Explain problem which you face | Lecture/Role play | | |
| 60 | Mail on seeking advice, describing a problem | Role play | | |
| 61 | Telephonic conversation | Role play | | |
| 62 | Vocabulary Building | Games | | |
| 63 | Posting on a problem which you face | Roleplay | | |
| 64 | Giving advice/grammar-imperative | Chalk and talk, roleplay | | |
| 65 | webdoctor | Communication skills | | |
| 66 | Writing a mail and receiving response | Communication Skills | | |
| 67 | French Culture -Vacation sports | PPT/Discussion | | |
| 68 | Sports in India | Debate | | |
| 69 | Advantages of doing sports | Debate/Discussion | | |
| 70 | Adventure sports in India | Discussion | | |
| 71 | Sport which you like | Discussion | | |
| CIA II | | | | |
| MODULE IV | | | | |
| 72 | Past tense- imparfait | Chalk and talk | | |
| 73 | Sentence construction using imparfait | Role play | | |
| 74 | Narrate an event using imparfait | Role play | | |
| 75 | Describing something | Discussion | | |
| 76 | Vocabulary Building | Games, Music | | |
| 77 | French movie | Audio visual | | |
| 78 | French Movie | Audio Visual | | |
| 79 | Describe a past event-may 68 | Chalk n talk/Reading Comprehension | | |
| 80 | Describe an event in your country | Discussion | | |
| 81 | Describe an historical event/incident | Discussion | | |
| 82 | Describe an historical event/incident | Discussion | | |
| 83 | Talk about an event in the past | Discussion | | |
| 84 | Describing a place, childhood event | Roleplay | | |
| 85 | Narrate a positive childhood event | Roleplay | | |
| 86 | Conversation on a past happening | Role play | | |
| 87 | Narrate a negative happening | Role play | | |
| 88 | A historical event which you like | Speaking practice | | |
| 89 | French Culture- peaceful demonstrations | discussion | | |
| 90 | Peaceful demo in India(your country) | discussion | | |

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

| | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
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| 1 | By October | Preparing a guide for French tourists on basic communication skills in French and Malayalam |
| 2 | | roleplays |

References

Version Originale, site web

COURSE PLAN

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| PROGRAMME | BACHELOR OF SCIENCE, PHYSICS | SEMESTER | 3 |
| COURSE CODE AND TITLE | 15U3CCSAN3A: TRANSLATION AND COMMUNICATION | CREDIT | 4 |
| HOURS/WEEK | 5 | HOURS/SEM | 90 |
| FACULTY NAME | Dr.Mathew Jose | | |

COURSE OBJECTIVES

Learning the art of translation

Understanding translation as a Linguistic activity

Understanding translation as a cultural ,economic and professional activity

familiarising the technology of Translation

Understand moral values through Drama

Inculcating students with reading and communication skills in Sanskrit

Understand the tools to beautify the literature through Drama and Translation

Students identify the richness of Indian Literature

| SESSI ON | TOPIC | LEARNING RESOURCES | VALUE ADDITIONS | REMARKS |
|------------------|-------------------------------|-----------------------|--------------------|---------|
| MODULE I | | | | |
| 1 | Introducing Translation | Lecture | | |
| 2 | History of translation | Discussion | | |
| 3 | History of Bible translation | Lecture | | |
| 4 | History of Arabic translation | Lecture | | |
| 5 | History of Indian translation | Lecture | | |
| 6 | Qualities of translator | Chalk n talk | | |
| 7 | Tools of Translation | Lecture | | |
| 8 | Glossaries, Dictionaries | Chalk n talk | | |
| 9 | News paper style | Lecture | | |
| 10 | Theories of translation | Lecture | | |
| 11 | Applied linguistics | Discussion | | |
| 12 | Morphology | Discussion | | |
| 13 | Syntax | PPT/Lecture | | |
| 14 | Revision | | | |
| MODULE II | | | | |
| 15 | Source language | PPT/Lecture | | |
| 16 | Target language | Chalk n talk | | |
| 17 | Transliteration | Lecture | | |
| 18 | Word to word translation | Lecture | | |
| 19 | Faithful translation | Lecture | | |
| 20 | Recreation | Game | | |
| 21 | Unit of translation | Game | | |

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| 22 | Sentence as the unit | PPT/Lecture | | |
| 23 | Paragraph as the unit | PPT/Lecture | | |
| 24 | Science related translation | Lecture | | |
| 25 | Cultural importance in translation | Lecture | | |
| CIA-1 | | | | |
| 26 | Poem translation | Lecture | | |
| 27 | Prose translation | Chalk n talk | | |
| 28 | Idioms and proverbs | Chalk n talk | | |
| 29 | Translation in Modern age | Discussion | | |
| 30 | Limitations of translation | Discussion | | |
| 31 | Translation of person's name | Lecture | | |
| 32 | Revision | | | |
| MODULE III | | | | |
| 33 | Introduction Abhijanashakunthalam | Lecture | | |
| 34 | Prathamanga | Lecture | | |
| 35 | Dushyantha's hunting | Lecture | | |
| 36 | Dushyanthas meeting with Shakunthala | Lecture | | |
| 37 | Shakunthala's history | PPT/Lecture | | |
| 38 | Dvitheeyanga- Samagamam | PPT/Lecture | | |
| 39 | Dushyantha's talk with Mandavya | PPT/Lecture | | |
| 40 | Sages meeting with Dushyantha | Lecture | | |
| 41 | Mandhavya going to palace | Lecture | | |
| 42 | Thritheeyangam | Chalk n talk | | |
| 43 | Dushyantha 's talk with shakunthala | Discussion | | |
| 44 | Durvasa's visiting and curse | Roleplay | | |
| 45 | Chathurthanga | Discussion | | |

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| 46 | Shakunthala's departure from Ashrama | PPT/Lecture | | |
| 47 | Kannva's advice to Shakunthala | PPT/ Lecture | | |
| 48 | Revision | | | |
| MODULE IV | | | | |
| 50 | Introduction Mrichakatika drama | PPT/Lecture | | |
| 51 | Charudatha | PPT/Lecture | Video | |
| 52 | Vasanthasena | PPT/Lecture | | |
| 53 | Vasanthasena's visiting | PPT/Lecture | | |
| 54 | Rajasyala Samsthanaka | Lecture | | |
| 55 | Vasanthasena 's meeting with Charudatha | Lecture | | |
| 56 | Matithreya's conversation with Radanika | PPT/Lecture | | |
| 57 | Rohasena | PPT/Lecture | | |
| 58 | Dvitheeyanka | PPT/Lecture | | |
| 59 | Gambling incident | PPT/Lecture | | |
| 60 | Catching Gambler | PPT/Lecture | | |
| 61 | Escaping | PPT/Lecture | | |
| CIA - II | | | | |
| 62 | Vasanthasena's talk with her servant | Chalk n talk | | |
| 63 | thritheeyanka | Lecture | | |
| 64 | Rebhila's music discussion | Lecture | Group discussion | |
| 65 | Sharvilaka –the thief | Lecture | | |
| 66 | Taking gold from Maithreya | PPT/Lecture | | |
| 67 | Charudatha talk with Maithreya | PPT/Lecture | | |
| 68 | Dootha's talking | PPT/Lecture | | |

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| 69 | Revision | | | |
| 70 | Revision | | | |
| 71 | Revision | | | |
| 72 | Revision | | | |

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

| | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|---|--------------------|---|
| 1 | 13/08/2016 | Kalidasa's Dramas |
| 2 | 21/08/2016 | Shakunthal in Mahabharatha |

GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

| | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|---|--------------------|---|
| 1 | 09/09/2016 | The modern possibilities for Translation |
| 2 | 24/09/2016 | Shakunthalam and Medias |

References

Vivarttanattinte Bhasasatrabhoomika, Prabodhacandran V.R., Kerala Bhasha Institute, Trivandrum, 1986, pp. 38-39

Vivarttanam, A group of authors, Kerala Bhasha Institute, 1990, Chapter, 3&Preface of N.V. Krishna Warriar, pp. 3-7.

Sakunthalaprakashika, Prof. M.V. Gopalakrishnan

Mricchakatikakathasamgrham, Prof. P.C. Vasudevan Elayat

COURSE PLAN

| | | | |
|---------------------|------------------------------|-----------|----|
| PROGRAMME | B.Sc PHYSICS | SEMESTER | 3 |
| COURSE CODE & TITLE | 15U3CCMAL3A അറ്റോമിക് ഘോഷിതം | CREDITS | 4 |
| HOURS/WEEK | 5 | HOURS/SEM | 90 |

| |
|--|
| COURSE OBJECTIVES |
| കഥകളി, നാടകം, സിനിമ തുടങ്ങിയ ദൃശ്യകലകളെക്കുറിച്ച് മനസ്സിലാക്കുക. |
| ഭാഷാപഠനം സാഹിത്യാനുഭവത്തിലൂടെ ആവിഷ്കരിക്കുക കേരളത്തിലെ കലാരൂപങ്ങളെക്കുറിച്ച് മനസ്സിലാക്കുക . |
| സാഹിത്യ പരിചയം ഉണ്ടാക്കുക |
| വ്യാവഹാരിക തലത്തിൽ മാതൃഭാഷാപ്രയോഗിക്കുവാനുള്ള കഴിവ് നേടുക |
| ഭാഷാപഠനത്തിലൂടെ ആശയവിനിമയശേഷി വർദ്ധിപ്പിക്കുക |

| Session | Topic | Learning Resources | Teaching Method | Remarks |
|-----------------|--|--------------------|------------------|---------|
| Module I | | | | |
| 1 | ദൃശ്യകലാ സാഹിത്യം സാമാന്യാവലോകനം, | സാഹിത്യചരിത്രങ്ങൾ | Lecturing | |
| 2 | ദൃശ്യകലാ സാഹിത്യം സാമാന്യാവലോകനം-നാടകം | സാഹിത്യചരിത്രങ്ങൾ | Lecturing | |
| 3 | ദൃശ്യകലാ സാഹിത്യം സാമാന്യാവലോകനം-നാടകം | സാഹിത്യചരിത്രങ്ങൾ | Discussion | |
| 4 | മലയാളശാകുന്തളം(നാടകം) | Text | Lecturing | |
| 5 | മലയാളശാകുന്തളം(നാടകം) ആമുഖം | Text | Reading | |
| 6 | മലയാളശാകുന്തളം(നാടകം) | Text | Group Discussion | |
| 7 | അങ്കം ഒന്ന്- ആമുഖം | Text | Lecturing | |
| 8 | അങ്കം ഒന്ന്- ആമുഖം | Text | Reading | |
| 9 | അങ്കം ഒന്ന് | Text | Group Discussion | |
| 10 | അങ്കം രണ്ട് ആമുഖം | Text | Lecturing | |
| 11 | അങ്കം രണ്ട് ആമുഖം | Text | Reading | |
| 12 | അങ്കം രണ്ട് | Text | Group Discussion | |

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|----|----------------------------------|-------------------|------------------|--|
| 13 | അങ്കം - | Text | Lecturing | |
| 14 | അങ്കം രണ്ടു് | Text | Reading | |
| 15 | അങ്കം മൂന്നു് | Text | Group Discussion | |
| 16 | അങ്കം മൂന്നു് | Text | Group Discussion | |
| 17 | അങ്കം മൂന്നു് | Text | Group Discussion | |
| 18 | അങ്കം നാലു് | Text | Lecturing | |
| 19 | അങ്കം നാലു് | Text | Reading | |
| 20 | അങ്കം നാലു് | Text | Group Discussion | |
| 21 | അങ്കം നാലു് | Text | Lecturing | |
| 22 | അങ്കം നാലു് | Text | Reading | |
| 23 | അങ്കം നാലു് | Text | Group Discussion | |
| | | Module II | | |
| 24 | നളചരിതം രണ്ടാംദിവസം (ആട്ടക്കഥ) | Text | Lecturing | |
| 25 | നളചരിതം രണ്ടാംദിവസം (ആട്ടക്കഥ) | Text | Group Discussion | |
| 26 | രംഗം അഞ്ചു് | Text | Lecturing | |
| 27 | രംഗം അഞ്ചു് | Text | Reading | |
| 28 | രംഗം ആറു് | Text | Group Discussion | |
| 29 | രംഗം ആറു് | Text | Group Discussion | |
| 30 | Internal Assessment 1 | Text | | |
| 31 | Question paper discussion | Text | Group Discussion | |
| 32 | രംഗം ആറു് | Text | Lecturing | |
| 33 | രംഗം ഏഴു് | Text | Reading | |
| 34 | രംഗം ഏഴു് | Text | Group Discussion | |
| 35 | രംഗം എട്ടു് | Text | Lecturing | |
| 36 | രംഗം എട്ടു് | Text | Reading | |
| 37 | രംഗം ഒൻപതു് | Text | Group Discussion | |
| 38 | രംഗം ഒൻപതു് | | Lecturing | |
| 39 | രംഗം പത്തു് | Text | Reading | |
| 40 | രംഗം പത്തു് | Text | Group Discussion | |
| 41 | നളചരിതം - ഒരു അവലോകനം | Text | Lecturing | |
| 42 | നളചരിതം - ഒരു അവലോകനം | Text | Reading | |
| | | Module III | | |
| 43 | മലയാളനാടകചരിത്രം - അവലോകനം | സാഹിത്യചരിത്രങ്ങൾ | Lecturing | |
| 44 | മലയാളനാടകചരിത്രം - അവലോകനം | സാഹിത്യചരിത്രങ്ങൾ | Group Discussion | |
| 45 | മലയാള നാടകത്തിലെ - നൂതന പ്രവണതകൾ | സാഹിത്യചരിത്രങ്ങൾ | Lecturing | |
| 46 | ഒരു മാധ്യവേനൽ പ്രണയരാവ്-ആമുഖം | Text | Group Discussion | |
| 47 | ഒരു മാധ്യവേനൽ പ്രണയരാവ്-ആമുഖം | Text | Lecturing | |
| 48 | നാടകവിശകലനം | Text | Lecturing | |
| 49 | നാടകവിശകലനം | Text | Group Discussion | |
| 50 | നാടകവിശകലനം | Text | Group Discussion | |
| 51 | നാടകാവതരണം | Text | Performance | |

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| 52 | നാടകാവതരണം | Text | Performance | |
| 53 | നാടകവിശകലനം | Text | Group Discussion | |
| 54 | നാടകവിശകലനം | Text | Group Discussion | |
| 55 | നാടകാവതരണം | Text | Performance | |
| 56 | നാടകാവതരണം | Text | Performance | |
| 57 | നാടകാവതരണം | Text | Performance | |
| 58 | നാടകവിശകലനം | Text | Group Discussion | |
| 59 | നാടകാവതരണം | Text | Performance | |
| 60 | നാടകാവതരണം | Text | Performance | |
| 61 | നാടകാവതരണം | Text | Performance | |
| 62 | നാടകവിശകലനം | Text | Group Discussion | |
| 63 | സംവാദം | Text | Group Discussion | |
| | | Module IV | | |
| 64 | സിനിമയുടെ ചരിത്രം | Text | Group Discussion | |
| 65 | വാക്കും ദൃശ്യവും | Text | Presentation | |
| 66 | അധ്യായം 1 | Text | Presentation | |
| 67 | അധ്യായം 2 | Text | Presentation | |
| 68 | ചെമ്മീൻ | Text | Presentation | |
| 69 | സിനിമ പ്രദർശനം | Film | Screening | |
| 70 | സിനിമ പ്രദർശനം | Film | Screening | |
| 71 | സിനിമ വിശകലനം | Text | Group Discussion | |
| 72 | സിനിമ വിശകലനം | Text | Group Discussion | |
| 73 | വിധേയൻ | Text | Group Discussion | |
| 74 | സിനിമ പ്രദർശനം | Film | Screening | |
| 75 | സിനിമ പ്രദർശനം | Film | Screening | |
| 76 | സിനിമ വിശകലനം | Text | Group Discussion | |
| 77 | പമേൻ പാഞ്ചലി | Text | Group Discussion | |
| 78 | പമേൻ പാഞ്ചലി | Text | Group Discussion | |
| 79 | സിനിമ പ്രദർശനം | Film | Screening | |
| 80 | സിനിമ പ്രദർശനം | Film | Screening | |
| 81 | സിനിമ പ്രദർശനം | Text | Presentation | |
| 82 | സിനിമ വിശകലനം | Text | Group Discussion | |
| 83 | സിനിമ വിശകലനം | Text | Group Discussion | |
| 84 | സിനിമസംവാദം | Text | Group Discussion | |
| 87 | സിനിമസംവാദം | Text | Group Discussion | |
| 85 | സെമിനാർ | Text | Presentation | |
| 86 | സെമിനാർ | Text | Presentation | |
| 87 | സെമിനാർ | Text | Presentation | |
| 88 | സെമിനാർ | Text | Presentation | |
| 89 | Revision | Text | Presentation | |
| 90 | Evaluation of the course | Interaction | Group Discussion | |

ASSIGNMENTS

| Sl no | Date of submission/completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
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| 1 | By October | അനുരൂപണസിനിമയുടെ സവിശേഷതകൾ |
| 2 | | കേരളത്തിലെ ദൃശ്യകലാപാരമ്പര്യം |

SEMINAR

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

Referance :

- 1.നാടകദർശനം -ജി .ശങ്കരപ്പിള്ള
- 2.സിനിമയുടെ ലോകം - അടൂർ ഗോപാലകൃഷ്ണൻ

COURSE PLAN

| | | | |
|-----------------------|---|-----------|----|
| PROGRAMME | BACHELOR OF SCIENCE (PHYSICS) | SEMESTER | 3 |
| COURSE CODE AND TITLE | 15U3CRPHY03: OPTICS, LASERS AND FIBER OPTICS | CREDIT | 3 |
| HOURS/WEEK | 3 | HOURS/SEM | 54 |
| FACULTY NAME | MATHEW GEORGE, SIBY MATHEW, ALEX SHINU SCARIA | | |

Course Objectives

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|---|
| Analyze the important and fascinating areas of interference with many experiments associated with it. |
| Apply concepts of Fraunhofer and Fresnel diffraction and analyse wavelengths of a light source using grating. |
| Understand basics of polarisation and techniques for production and detection of polarised light. |
| Understand basic physics of lasers and optical fibers. |

| Session | Topic | Method | Remarks |
|---------|---|----------------------|---------|
| | Module I - Interference (13 hours) | | |
| 1 | Review of basic ideas of interference- Coherent waves | Lecture / Discussion | |
| 2 | Optical path and phase change | Lecture / Discussion | |
| 3 | superposition of waves-theory of interference-intensity distribution. | Lecture / Discussion | |
| 4 | Young's double slit experiment- | Lecture / Discussion | |
| 5 | Coherence-Conditions for interference. | Lecture / Discussion | |
| 6 | Thin films-plane parallel film- | Lecture / Discussion | |
| 7 | Interference due to reflected light-conditions for brightness and darkness- | Lecture / Discussion | |
| 8 | interference due to transmitted light-Haidinger fringes | Lecture / Discussion | |
| 9 | interference in wedge shaped film-colours in thin films- | Lecture / Discussion | |

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| 10 | Newton's rings-theory | Lecture / Discussion | |
| 11 | Newton's rings-applications. | Lecture / Discussion | |
| 12 | Michelson interferometer-construction- | Lecture / Discussion | |
| 13 | working and (just mention the) applications. | Lecture / Discussion | |
| | | | |
| | Module II - Diffraction (10 hours) | | |
| 14 | Fresnel Diffraction-Huygens-Fresnel theory – | Lecture / Discussion | |
| 15 | zone plate –Difference between zone plate and convex lens. | Lecture / Discussion | |
| 16 | Comparison between interference and diffraction – | Lecture / Discussion | |
| 17 | diffraction pattern due to a straight edge- | Lecture / Discussion | |
| 18 | single slit. | Lecture / Discussion | |
| 19 | Fraunhofer diffraction at a single slit- | Lecture / Discussion | |
| 20 | Fraunhofer diffraction- double slit- | Lecture / Discussion | |
| 21 | Fraunhofer diffraction- N slits- | Lecture / Discussion | |
| 22 | Theory of plane transmission grating. | Lecture / Discussion | |
| 23 | Dispersive power and resolving power of grating. | Lecture / Discussion | |
| | Polarization (12hours) | | |
| 24 | Concept of polarization –plane of polarization- | Lecture / Discussion | |
| 25 | Types of polarized light-production of plane polarized light by reflection | Lecture / Discussion | |
| 26 | production of plane polarized light by refraction. Malu's law | Lecture / Discussion | |
| 27 | Polarization by double refraction - calcite crystal. | Lecture / Discussion | |
| 28 | Anisotropic crystals - optic axis | Lecture / Discussion | |
| 29 | Double refraction - Huygens explanation of double refraction | Lecture / Discussion | |
| 30 | Retarders - Quarter wave plate | Lecture / Discussion | |

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| 31 | Retarders - Half wave plate | Lecture / Discussion | |
| 32 | Production and detection of plane polarized light | Lecture / Discussion | |
| 33 | Production and detection of elliptically polarized light and | Lecture / Discussion | |
| 34 | Production and detection of circularly polarized light | Lecture / Discussion | |
| 35 | Optical Activity-specific rotation. | Lecture / Discussion | |
| | | | |
| | Module III - Laser (10 hours) | | |
| 36 | Absorption- spontaneous emission and stimulated emission- | Lecture / Discussion | |
| 37 | Einstein relations- | Lecture / Discussion | |
| 38 | Population inversion- Active medium | Lecture / Discussion | |
| 39 | Pumping- different pumping methods- | Lecture / Discussion | |
| 40 | Resonators –plane mirror and confocal resonators | Lecture / Discussion | |
| 41 | Metastable state- Three level and Four level Laser systems. | Lecture / Discussion | |
| 42 | Ruby Laser- | Lecture / Discussion | |
| 43 | He-Ne laser- | Lecture / Discussion | |
| 44 | Semiconductor Laser- | Lecture / Discussion | |
| 45 | Laser beam Characteristics- coherence. | Lecture / Discussion | |
| 46 | Applications of Laser- Holography (qualitative study only). | Lecture / Discussion | |
| | Fiber Optics (9 hours) | | |
| 47 | Propagation of light in a fiber - | Lecture / Discussion | |
| 48 | acceptance angle- | Lecture / Discussion | |
| 49 | numerical aperture- V-number- | Lecture / Discussion | |
| 50 | single mode and multimode | Lecture / Discussion | |
| 51 | step index fiber –graded index fiber- | Lecture / Discussion | |
| 52 | Fibers, attenuation- | Lecture / Discussion | |

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|----|--|----------------------|--|
| 53 | application of fiber-optical fiber communication – | Lecture / Discussion | |
| 54 | Fibers, advantages. | Lecture / Discussion | |

References

1. Optics by N.Subramanayam- Brijlal- M.N.Avadhanulu
2. Semiconductor physics and optoelectronics-V.Rajendran- J.Hemaletha and M.S.M.Gibson

COURSE PLAN

| | | | |
|-----------------------|--|-----------|----|
| PROGRAMME | BSc PHYSICS | SEMESTER | 3 |
| COURSE CODE AND TITLE | 15U3CPCHE3.1- ADVANCED PHYSICAL CHEMISTRY – I | CREDIT | 3 |
| HOURS/WEEK | 3 | HOURS/SEM | 54 |
| FACULTY NAME | <i>DR. K B JOSE, Dr. IGNATIUS ABRAHAM, DR. ABI T G</i> | | |

COURSE OBJECTIVES

Know the basics of nanomaterials and nanotechnology.

Understand symmetry and point groups of simple molecules.

Describe the properties of solid state and liquid state

Define phases and explain the phase diagram of one- and two-component systems.

Explain the theories of adsorption

| SESSION | TOPIC | LEARNING RESOURCES | VALUE ADDITIONS | REMARKS |
|-----------------|---|--------------------------------------|-----------------|---------|
| MODULE I | | | | |
| 1. | Introduction to nanoscience-Moore's law | Conventional Lecture - Chalk & Board | | |
| 2. | Properties of nanomaterials | Conventional Lecture - Chalk & Board | | |
| 3. | Synthesis of nanomaterials-reduction method-precipitation method-sol gel method | Conventional Lecture - Chalk & | | |

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| | | Board | | |
| 4. | Green synthesis of nanosilver and nanogold- | Conventional Lecture - Chalk & Board | | |
| 5. | Properties and applications of nanomaterials | ICT | | |
| 6. | Nanocomposites | Conventional Lecture - Chalk & Board | | |
| 7. | Nanomedicine | Conventional Lecture - Chalk & Board | | |
| 8. | Properties of nanomaterials | Conventional Lecture - Chalk & Board | | |
| MODULE II | | | | |
| 9. | Symmetry elements and symmetry operation | Conventional Lecture - Chalk & Board | | |
| 10. | Centre of symmetry, plane of symmetry | Conventional Lecture - Chalk & Board | | |
| 11. | Proper and improper axes of symmetry | Conventional Lecture - Chalk & Board | | |
| 12. | Identity, molecular point groups | Conventional Lecture - Chalk & Board | | |
| 13. | Schoeniflies symbol and determination of point groups of simple molecule- H ₂ O | Conventional Lecture - Chalk & Board | discussion | |
| 14. | Point groups of simple molecule NH ₃ , BF ₃ | Conventional Lecture - Chalk & Board | discussion | |

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|-------------------|--|--------------------------------------|------------|--|
| 15. | Point groups of simple molecule CO, HCl | Conventional Lecture - Chalk & Board | discussion | |
| 16. | Point groups of simple molecule C ₂ H ₂ , | Conventional Lecture - Chalk & Board | discussion | |
| 17. | Point groups of simple molecule Benzene, NO ₃ ⁻ , PCl ₅ | Conventional Lecture - Chalk & Board | discussion | |
| MODULE III | | | | |
| 18. | Classification: amorphous, crystalline – differences | Conventional Lecture - Chalk & Board | | |
| 19. | Lattice ,lattice energy (general idea) | Conventional Lecture - Chalk & Board | | |
| 20. | Unit cell, examples of simple cubic | Conventional Lecture - Chalk & Board | | |
| 21. | bcc and fcc lattices | Conventional Lecture - Chalk & Board | | |
| 22. | Calculation of number of molecules in a unit cell. | Conventional Lecture - Chalk & Board | seminar | |
| 23. | Weiss and Miller indices, crystal systems | Conventional Lecture - Chalk & Board | | |
| 24. | Bravais lattices, X-ray diffraction – Bragg's equation | Conventional Lecture - Chalk & Board | | |
| 25. | structure determination of NaCl by X-ray diffraction | Conventional Lecture - Chalk & Board | | |

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| 26. | Theories of Solid: metallic bond | Conventional Lecture - Chalk & Board | | |
| 27. | Band theory, conductors | Conventional Lecture - Chalk & Board | | |
| 28. | Semiconductors and insulators | Conventional Lecture - Chalk & Board | | |
| 29. | Mention of super conductors | Conventional Lecture - Chalk & Board | seminar | |
| 30. | Defects in solids-stoichiometric | Conventional Lecture - Chalk & Board | | |
| 31. | Non-stoichiometric defects and consequences | Conventional Lecture - Chalk & Board | | |
| 32. | Magnetic Properties: classification | Conventional Lecture - Chalk & Board | | |
| 33. | Diamagnetic, paramagnetic | Conventional Lecture - Chalk & Board | | |
| 34. | Antiferromagnetic, ferro and ferrimagnetic | Conventional Lecture - Chalk & Board | | |
| 35. | Permanent and temporary magnets | Conventional Lecture - Chalk & Board | | |
| MODULE IV | | | | |
| 36. | Intermolecular forces liquids compared with gases and solids | Conventional Lecture - Chalk & Board | | |

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| 37. | Viscosity, surface tension | Conventional Lecture - Chalk & Board | | |
| 38. | Liquid crystals – the intermediate phase between solid and normal liquid phases | Conventional Lecture - Chalk & Board | discussion | |
| 39. | Thermographic behavior, classification | Conventional Lecture - Chalk & Board | | |
| 40. | Structure of nematic and cholesteric phases. | Conventional Lecture - Chalk & Board | | |
| MODULE V | | | | |
| 41. | Adsorption – types of adsorption of gases by solids | Conventional Lecture - Chalk & Board | | |
| 42. | Factors influencing adsorption | Conventional Lecture - Chalk & Board | | |
| 43. | Freundlich adsorption isotherm – Langmuir adsorption isotherm | Conventional Lecture - Chalk & Board | | |
| 44. | Colloids: preparation, properties – optical and electrical | Conventional Lecture - Chalk & Board | seminar | |
| 45. | Electric double layer, coagulation, electrophoresis, electro osmosis, Surfactants, micelle, applications of colloids | Conventional Lecture - Chalk & Board | | |
| MODULE VI | | | | |
| 46. | The phase rule, definition | Conventional Lecture - Chalk & Board | | |
| 47. | Equilibrium between phases, one component system – water system | Conventional Lecture - Chalk & | | |

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|-----|--|--------------------------------------|------------|--|
| | | Board | | |
| 48. | Sulphur system | Conventional Lecture - Chalk & Board | | |
| 49. | Distribution law, partition coefficient | Conventional Lecture - Chalk & Board | | |
| 50. | Applications- Study of association or dissociation | Conventional Lecture - Chalk & Board | discussion | |
| 51. | Principle of extraction. Distribution indicators. | Conventional Lecture - Chalk & Board | | |
| 52. | Revision | Conventional Lecture - Chalk & Board | discussion | |

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

| | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc.) |
|--|--------------------|--|
| | 11/7/2016 | Properties and applications of nanomaterials |

GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

| | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|--|--------------------|---|
| | 10/8/2016 | Symmetry of different molecules |

References

1. B. R. Puri, L. R. Sharma, M. S. Pathania, Elements of Physical Chemistry, 40th edn. Vishal Pub. Co. Jalandhar (2003)
2. Ashcroft / Mermin, Solid State Physics, Thomson Publishers
3. J. Tareen and T. Kutty, A basic course in Crystallography, University Press.

COURSE PLAN

| | | | |
|-----------------------|--|-----------|----|
| PROGRAMME | COMPLEMENTARY MATHEMATICS FOR BSC PHYSICS | SEMESTER | 3 |
| COURSE CODE AND TITLE | 15U3CPMAT03- Differential Equations, Matrices and Trigonometry | CREDIT | 4 |
| HOURS/WEEK | 5 | HOURS/SEM | 90 |
| FACULTY NAME | DIDIMOS K. V. | | |

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|---|
| Course Objectives |
| Understand the methods of solving important types of first order ordinary differential equations. |
| Understand the origin of first order p.d.e's and their solution. |
| Understand different types of matrices and rank of a matrix |
| Apply the concept of matrices in solving system of linear equations |
| Find the Eigen values and Eigen vectors of a given matrix |
| Understand the applications of Cayley Hamilton theorem |
| Understand trigonometric functions, their expansions and summation of infinite series using the C+iS method |

| SESSION | TOPIC | LEARNING RESOURCES | VALUE ADDITIONS | REMARKS |
|-----------------|----------------------------------|-------------------------|-----------------|---------|
| MODULE I | | | | |
| 1 | Separable Equations | Lecture/Problem solving | | |
| 2 | Problem | Lecture/Problem solving | | |
| 3 | Reducible to separable equations | Lecture/Problem solving | | |
| 4 | Problem | Lecture/Problem solving | | |
| 5 | Homogeneous Equations | Lecture/Problem solving | | |
| 6 | Problem | Lecture/Problem solving | | |

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|------------------|---|-------------------------|--|---|
| 7 | Problem | Lecture/Problem solving | | |
| 8 | Homogeneous Equations | Lecture/Problem solving | | , |
| 9 | Homogeneous Equations | Lecture/Problem solving | | , |
| 10 | Problem | Lecture/Problem solving | | , |
| 11 | Problem | Lecture/Problem solving | | , |
| 12 | Linear Differential equations | Lecture/Problem solving | | , |
| 13 | Bernoulli's equation | Lecture/Problem solving | | , |
| 14 | Problem | Lecture/Problem solving | | |
| 15 | Exact Differential equations | Lecture/Problem solving | | |
| 16 | integrating factors | Lecture/Problem solving | | |
| 17 | integrating factors | Lecture/Problem solving | | |
| 18 | Problem | Problem solving | | |
| MODULE II | | | | |
| 19 | Formation of partial differential equations | Lecture/Problem solving | | |
| 20 | Formation of partial differential equations | Lecture/Problem solving | | |
| 21 | problems | Lecture/Problem solving | | |
| 22 | Formation of partial differential equations | Lecture/Problem solving | | |
| 23 | problems | Lecture/Problem solving | | |
| 24 | Formation of partial differential equations | Lecture/Problem solving | | |
| 25 | problems | Lecture/Problem solving | | |
| 26 | Solution by Direct integration | Lecture/Problem solving | | |
| 27 | problems | Lecture/Problem solving | | |
| 28 | problems | Lecture/Problem solving | | |
| 29 | Lagrange's method | Lecture/Problem solving | | |
| 30 | problems | Lecture/Problem solving | | |
| 31 | problems | Lecture/Problem solving | | |
| 32 | problems | Lecture/Problem solving | | |
| 33 | Lagrange's method | Lecture/Problem solving | | |
| 34 | problems | Lecture/Problem solving | | |
| 35 | problems | Lecture/Problem solving | | |
| 36 | problems | Lecture/Problem solving | | |
| 37 | Lagrange's method | Lecture/Problem solving | | |
| 38 | problems | Lecture/Problem solving | | |
| 39 | problems | Lecture/Problem solving | | |

| MODULE III | | | | |
|-------------------|--|-------------------------|--|--|
| 40 | Transpose of Matrices | Lecture | | |
| 41 | Problems | Lecture/Problem solving | | |
| 42 | Problems | Lecture/Problem solving | | |
| 43 | Problems | Lecture/Problem solving | | |
| 44 | Symmetric and skew symmetric matrices | Lecture/Problem solving | | |
| 45 | problems | Lecture/Problem solving | | |
| CIA-I | | | | |
| 46 | Singular and non-singular matrices. | Lecture/Problem solving | | |
| 47 | problems | Lecture/Problem solving | | |
| 48 | problems | Lecture/Problem solving | | |
| 49 | Elementary transformations | Lecture/Problem solving | | |
| 50 | Inverse of a matrix | Lecture/Problem solving | | |
| 51 | problems | Lecture/Problem solving | | |
| 52 | Rank of a matrix | Lecture/Problem solving | | |
| 53 | problems | Lecture/Problem solving | | |
| 54 | Solution of system of linear equations | Lecture/Problem solving | | |
| 55 | problems | Lecture/Problem solving | | |
| 56 | problems | Lecture/Problem solving | | |
| 57 | Characteristic equation | Lecture/Problem solving | | |
| 58 | problems | Lecture/Problem solving | | |
| 59 | problems | Lecture/Problem solving | | |
| 60 | problems | Lecture/Problem solving | | |
| 61 | Eigen values | Lecture/Problem solving | | |
| 62 | problems | Lecture/Problem solving | | |
| 63 | problems | Lecture/Problem solving | | |
| 64 | Cayley Hamilton theorem | Lecture/Problem solving | | |
| 65 | problems | Lecture/Problem solving | | |
| 66 | problems | Lecture/Problem solving | | |
| 67 | Cayley Hamilton theorem | Lecture/Problem solving | | |
| 68 | problems | Lecture/Problem solving | | |
| Module-IV | | | | |
| 69 | Expansions of $\sin nx$ | Lecture/Problem solving | | |
| 70 | Expansions of \sin | Lecture/Problem solving | | |
| 71 | problems | Lecture/Problem solving | | |
| 72 | $\cos nx$ | Lecture/Problem solving | | |
| 73 | problems | Lecture/Problem solving | | |
| 74 | problems | Lecture/Problem solving | | |
| 75 | problems | Lecture/Problem solving | | |

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|-----------------|---|-------------------------|--|--|
| 76 | Tan nx | Lecture/Problem solving | | |
| 77 | problems | Lecture/Problem solving | | |
| 78 | problems | Lecture/Problem solving | | |
| 79 | $\sin^n \theta, \cos^n \theta$ | Lecture/Problem solving | | |
| 80 | problems | Lecture/Problem solving | | |
| 81 | problems | Lecture/Problem solving | | |
| 82 | problems | Lecture/Problem solving | | |
| CIA - II | | | | |
| 83 | $\sin^n \theta \cos^n \theta$ | Lecture/Problem solving | | |
| 84 | problems | Lecture/Problem solving | | |
| 85 | problems | Lecture/Problem solving | | |
| 86 | Circular and hyperbolic functions | Problem solving | | |
| 87 | Inverse circular and hyperbolic function. | Lecture/Problem solving | | |
| 88 | Separation into real and imaginary parts. | Lecture/Problem solving | | |
| 89 | Summation of infinite series based on C + iS method | Lecture/Problem solving | | |
| 90 | problems | Lecture/Problem solving | | |

INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

| | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|---|--------------------|---|
| 1 | 12/8/2016 | Linear Differential equations |
| 2 | 1/10/2016 | Cayley Hamilton theorem |

GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

| | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|---|--------------------|---|
| 1 | 31/7/2016 | Expansions of $\sin nx$ |
| 2 | 13/9/2016 | Circular and hyperbolic functions |

Textbook:

- 1) Ordinary and Partial Differential Equations with Laplace transforms, Fourier series and applications, by V Sundarapandian., McGraw Hill Publications
- 2) A text book of Engineering Mathematics, by N.P Bali, Manish Goyal , Lakshmi publications, Eight edition
- 3) Plane Trigonometry by S. L Loney

References

- 1) Matrices, Schaum's Outline Series, Tata McGraw Hill Publications
- 2) Differential Equations, by Shepley L Ross, Wiley.
- 3) Differential Equations, with applications and Historical notes, by G.F. Simmons and S.G.Krantz, Tata McGraw Hill Publications
- 4) Elements of Partial Differential Equations, by Ian Sneddon, Tata McGraw Hill Publications