

# **SACRED HEART COLLEGE (AUTONOMOUS)**

**Department of Physics**

**BACHELOR OF PHYSICS**

**Course plan**

**Academic Year 2018-19**

**Semester 4**

**SACRED HEART COLLEGE (AUTONOMOUS)**

**Department of English**

**COURSE PLAN: 2019-20**

|                       |  |           |    |
|-----------------------|--|-----------|----|
| PROGRAMME             | BSC Physics  | SEMESTER  | 4  |
| COURSE CODE AND TITLE | 15U4CCENG6: Evolution of the Philosophy of Science | CREDIT    | 4  |
| HOURS/WEEK            | 5  | HOURS/SEM | 90 |
| FACULTY NAME          | RAJESH JAMES                                       |           |    |

**COURSE OBJECTIVES**

| <b>COURSE OBJECTIVES</b>  |
|---|
| Appreciate the role of science in all walks of life and the treatment of its themes in various literary formats |
| Critically engage with literary texts written in different languages and later translated into English.         |
| Promote a new way of thinking which will encompass both science and literature                                  |
| Facilitate communication between both science and literature  |
| Apply the unfathomable power of literature and science in their writings and creative endeavors.                |

## COURSE PLAN

| SESSIO<br>N  | TOPIC                       | Learning<br>Resources | Value Additions     | Remarks |
|--|-----------------------------|-----------------------|---------------------|---------|
| <b>What is Science- George Orwell</b>                |                             |                       |                     |         |
| 1  | What is Science             | Text                  | Lecture/interaction |         |
| 2  | What is Science             | Text                  | Discussion          |         |
| 3  | What is Science             | Text                  | Reflections         |         |
| 4  | What is Science             | Text                  | Discussion          |         |
| 5  | What is Science             | Text                  | Quiz                |         |
| <b>The Origin of Science-Will Durant</b>             |                             |                       |                     |         |
| 6  | The Origin of Science       | Text                  | Lecture/interaction |         |
| 7  | The Origin of Science       | Text                  | Discussion          |         |
| 8  | The Origin of Science       | Text                  | Reflections         |         |
| 9  | The Origin of Science       | Text                  | Discussion          |         |
| 10   | The Origin of Science       | Text                  | Discussion          |         |
| 11   | The Origin of Science       | Text                  | Quiz                |         |
| <b>The Scientific Outlook-C V Raman</b>              |                             |                       |                     |         |
| 12   | The Scientific Outlook      | Text                  | Lecture/interaction |         |
| 13   | The Scientific Outlook      | Text                  | Discussion          |         |
| 14   | The Scientific Outlook      | Text                  | Reflections         |         |
| 15   | The Scientific Outlook      | Text                  | Reflections         |         |
| 16   | The Scientific Outlook      | Text                  | Discussion          |         |
| 17   | The Scientific Outlook      | Text                  | Discussion          |         |
| 18   | The Scientific Outlook      | Text                  | Quiz                |         |
| <b>Our Picture of the Universe – Stephen Hawking</b> |                             |                       |                     |         |
| 19   | Our Picture of the Universe | Text                  | Lecture/interaction |         |

|   |                             |      |                       |  |
|---|-----------------------------|------|-----------------------|--|
| 20  | Our Picture of the Universe | Text | Discussion            |  |
| 21  | Our Picture of the Universe | Text | Reflections           |  |
| 22  | Our Picture of the Universe | Text | Reflections           |  |
| 23  | Our Picture of the Universe | Text | Discussion            |  |
| 24  | Our Picture of the Universe |      | Discussion            |  |
| <b>Our Ancestors – Carl Sagan</b>               |                             |      |                       |  |
| 25  | Our Ancestors               | Text | Lecture/interaction   |  |
| 26  | Our Ancestors               | Text | Discussion            |  |
| 27  | Our Ancestors               | Text | Reflections           |  |
| 28  | Our Ancestors               | Text | Reflections           |  |
| 29  | Our Ancestors               | Text | Discussion            |  |
| 30  | Our Ancestors               |      | Quiz                  |  |
| <b>Literature and Science-Aldous Huxley</b>     |                             |      |                       |  |
| 30  | Literature and Science      | Text | Lecture/interaction   |  |
| 31  | Literature and Science      | Text | Discussion            |  |
| 32  | Literature and Science      | Text | Reflections           |  |
| 33  | Literature and Science      | Text | Reflections           |  |
| 34  | Literature and Science      | Text | Discussion            |  |
| 35  | Literature and Science      | Text | Discussion            |  |
| 36  | Literature and Science      | Text | Quiz                  |  |
| <b>Literature and Ecology- William Rueckert</b> |                             |      |                       |  |
| 37  | Literature and Ecology      | Text | Lecture / interaction |  |
| 38  | Literature and Ecology      | Text | Lecture               |  |
| 39  | Literature and Ecology      | Text | Interaction           |  |
| 40  | Literature and Ecology      | Text | Lecture               |  |

|  |                                |      |                       |  |
|--|--------------------------------|------|-----------------------|--|
| 41   | Literature and Ecology         | Text | Discussion            |  |
| 42   | Literature and Ecology         | Text | Interaction           |  |
| 43   | Literature and Ecology         | Text | Discussion            |  |
| 44   | Literature and Ecology         | Text | Discussion            |  |
| 45   | Literature and Ecology         | Text | Quiz                  |  |
| <b>Science and Society – Albert Einstein</b>           |                                |      |                       |  |
| 46   | Science and Society            | Text | Lecture / interaction |  |
| 47   | Science and Society            | Text | Lecture               |  |
| 48   | Science and Society            | Text | Interaction           |  |
| 49   | Science and Society            | Text | Lecture               |  |
| 50   | Science and Society            | Text | Discussion            |  |
| 51   | Science and Society            | Text | Interaction           |  |
| 52   | Science and Society            | Text | Discussion            |  |
| 53   | Science and Society            | Text | Lecture / interaction |  |
| 54   | Science and Society            | Text | Quiz                  |  |
| <b>A Little Bit of What You Fancy – Desmond Morris</b> |                                |      |                       |  |
| 55   | A Little Bit of What You Fancy | Text | Lecture               |  |
| 56   | A Little Bit of What You Fancy | Text | Analysis              |  |
| 57   | A Little Bit of What You Fancy | Text | Reflections           |  |
| 58   | A Little Bit of What You Fancy | Text | Discussions           |  |
| <b>Unit 2: Moxon's Master – Ambrose Bierce</b>         |                                |      |                       |  |
| 59   | Moxon's Master                 | Text | Lecture               |  |
| 60   | Moxon's Master                 | Text | Analysis              |  |
| 61   | Moxon's Master                 | Text | Reflections           |  |
| 62   | Moxon's Master                 | Text | Discussions           |  |

|  |                                   |      |             |  |
|--|-----------------------------------|------|-------------|--|
| 63   | Moxon's Master                    | Text | Interaction |  |
| <b>The Stolen Bacillus – H.G.Wells</b>               |                                   |      |             |  |
| 64   | The Stolen Bacillus               | Text | Lecture     |  |
| 65   | The Stolen Bacillus               | Text | Analysis    |  |
| 66   | The Stolen Bacillus               | Text | Reflections |  |
| 67   | The Stolen Bacillus               | Text | Discussions |  |
| 68   | The Stolen Bacillus               | Text | Quiz        |  |
| <b>EPICAC – Kurt Vonnegut</b>                        |                                   |      |             |  |
| 69   | EPICAC                            | Text | Lecture     |  |
| 70   | EPICAC                            | Text | Analysis    |  |
| 71   | EPICAC                            | Text | Reflections |  |
| 72   | EPICAC                            | Text | Discussions |  |
| <b>The Comet – JayantNarlikar</b>                    |                                   |      |             |  |
| 73   | The Comet                         | Text | Lecture     |  |
| 74   | The Comet                         | Text | PPT/Video   |  |
| 75   | The Comet                         | Text | Analysis    |  |
| 76   | The Comet                         | Text | Discussion  |  |
| <b>The Last War – Neil Grant</b>                     |                                   |      |             |  |
| 77   | The Last War – Neil Grant         | Text | Lecture     |  |
| 78   | The Last War – Neil Grant         | Text | PPT/Video   |  |
| 79   | The Last War – Neil Grant         | Text | Analysis    |  |
| 80   | The Last War – Neil Grant         | Text | Discussion  |  |
| <b>Cyberscripture Part 1 : Unplugged- G L Horton</b> |                                   |      |             |  |
| 81   | Cyberscripture Part 1 : Unplugged | Text | Lecture     |  |
| 82   | Cyberscripture Part 1 : Unplugged | Text | PPT/Video   |  |

|                 |                                   |      |                    |    |
|-----------------|-----------------------------------|------|--------------------|----|
| 83              | Cyberscripture Part 1 : Unplugged | Text | Analysis           |    |
| 84              | Cyberscripture Part 1 : Unplugged | Text | Discussion         |    |
| 85              | Cyberscripture Part 1 : Unplugged | Text | Lecture            |    |
| 86              | Cyberscripture Part 1 : Unplugged | Text | PPT/Video          |    |
| 87              | Cyberscripture Part 1 : Unplugged | Text | Analysis           |    |
| 88              | Cyberscripture Part 1 : Unplugged | Text | Discussion         |    |
| <b>Revision</b> |                                   |      |                    |    |
| 89              | Syllabus                          | Text | Quiz/ Interaction  | -6 |
| 90              | Syllabus                          | Text | Quiz / Interaction | -6 |

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

|   | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc.) | Couse Outcome |
|---|--------------------|--|---------------|
| 1 |                    | Prepare a review of any book/Article that inspired you most  | -6            |

#### **References**

Philosophy of Science

## COURSE PLAN

|                       |   |           |    |
|-----------------------|---|-----------|----|
| PROGRAMME             | BACHELOR OF SCIENCE - PHYSICS                 | SEMESTER  | 4  |
| COURSE CODE AND TITLE | 15U4CCHIN4A-CULTURE AND CIVILIZATION OF INDIA | CREDIT    | 4  |
| HOURS/WEEK            | 5   | HOURS/SEM | 90 |
| FACULTY NAME          | Dr. MINIPRIYA R, SYAMLAL M.S                  |           |    |

| COURSE OBJECTIVES   |
|---|
| Identify the socio-cultural aspects of literary works in different periods.                   |
| Student will be able to recognise the social significance of a literary work in any language. |
| Identify the relation between society and literature and analyse the cultural changes.        |
| Develop creative thinking capacity through Essays.  |
| Connect the cultural trends to literary forms.  |

| SESSION         | TOPIC  | LEARNING RESOURCES | VALUE ADDITIONS | REMARKS |
|-----------------|--|--------------------|-----------------|---------|
| <b>MODULE I</b> |  |                    |                 |         |
| 1               | Sanskriti Ki Kahani<br>Introduction About The Author       | Lecture/PPT        |                 |         |
| 2               | Sanskriti Ki Kahani  | Lecture            |                 | „       |
| 3               | Sanskriti Aur Apsanskriti<br>Introduction about the Author | Lecture/PPT        |                 |         |
| 4               | Sanskriti Aur Apsanskriti                                  | Lecture/Discussion |                 | „       |
| 5               | Sanskriti Ki Kahani  | Lecture            |                 | „       |
| 6               | Sanskriti Ki Kahani  | Lecture/PPT        |                 | „       |
| 7               | Sanskriti Aur Apsanskriti                                  | Lecture/Discussion |                 | „       |
| 8               | Sanskriti Aur Apsanskriti                                  | Interaction        |                 | „       |
| 9               | Sanskriti Ki Kahani  | Lecture            |                 | „       |
| 10              | Sanskriti Ki Kahani  | Lecture/Discussion |                 | „       |
| 11              | Sanskriti Aur Apsanskriti                                  | Lecture            |                 | „       |
| 12              | Sanskriti Aur Apsanskriti                                  | Interaction        | Seminar         | „       |
| 13              | Sanskriti Ki Kahani  | Lecture            |                 | „       |
| 14              | Sanskriti Ki Kahani  | Lecture            |                 | „       |
| 15              | Revision   | Lecture/Discussion |                 |         |
| 16              | Sanskriti Aur Apsanskriti                                  | Interaction        | Seminar         | „       |
| 17              | Sanskriti Aur Apsanskriti                                  | Lecture/PPT        |                 | „       |



|    |   |                    |         |     |
|----|---|--------------------|---------|-----|
| 18 | Revision  | Interaction        | Seminar |     |
| 19 | Bharateeya Sanskruti<br>Introduction about the Author                                       | Lecture/PPT        |         |     |
| 20 | Bharateeya Sanskruti  | Lecture            |         | , , |
| 21 | Ham Sanskruti Mei Nahi Vikruti Mei<br>Vikasit Ho Rehe Hain<br>Introduction About The Author | Lecture/PPT        |         |     |
| 22 | Bharateeya Sanskruti  | Lecture            |         | , , |
| 23 | Bharateeya Sanskruti  | Lecture/Discussion |         | , , |
| 24 | Ham Sanskruti Mei Nahi Vikruti Mei<br>Vikasit Ho Rehe Hain                                  | Lecture/PPT        |         | ,   |
| 25 | Bharateeya Sanskruti  | Lecture            |         | , , |
| 26 | Bharateeya Sanskruti  | Lecture/Discussion | Seminar | , , |
| 27 | Revision  | Lecture            |         |     |
| 28 | Revision  | Lecture/Discussion |         |     |
| 29 | Revision  | Interaction        |         |     |
| 30 | <b>CIA I ( 1 Hr Exam )</b>  |                    |         |     |
|    | <b>MODULE II</b>  |                    |         |     |
| 31 | Bharateeya Sanskruti  | Lecture            |         | , , |
| 32 | Ham Sanskruti Mei Nahi Vikruti Mei<br>Vikasit Ho Rehe Hain                                  | Lecture/Discussion |         | ,   |
| 33 | Ham Sanskruti Mei Nahi Vikruti Mei<br>Vikasit Ho Rehe Hain                                  | Lecture            |         | ,   |
| 34 | Bharateeya Sanskruti  | Lecture/Discussion |         | , , |
| 35 | Bharateeya Sanskruti  | Lecture/Discussion |         | , , |
| 36 | Revision  | Interaction        |         |     |
| 37 | Ham Sanskruti Mei Nahi Vikruti Mei<br>Vikasit Ho Rehe Hain                                  | Lecture            |         | ,   |
| 38 | Revision  | Lecture/Discussion |         |     |
| 39 | Loktantra Ek Dharma Hai<br>Introduction About The Author                                    | Lecture/PPT        |         |     |
| 40 | Loktantra Ek Dharma Hai   | Lecture            |         | ,   |
| 41 | Loktantra Ek Dharma Hai   | Lecture/Discussion |         | ,   |
| 42 | Atankwad Aur Hum<br>Introduction About The Author   | Lecture/Discussion |         |     |
| 43 | Atankwad Aur Hum  | Lecture/Discussion |         | ,   |
| 44 | Loktantra Ek Dharma Hai   | Lecture            |         | ,   |
| 45 | Loktantra Ek Dharma Hai   | Lecture/Discussion | Seminar | ,   |
| 46 | Atankwad Aur Hum  | Discussion         |         | ,   |
| 47 | Atankwad Aur Hum  | Lecture/Discussion |         | ,   |
| 48 | Atankwad Aur Hum  | Lecture            |         | ,   |
| 49 | Loktantra Ek Dharma Hai   | Lecture            |         | ,   |
| 50 | Loktantra Ek Dharma Hai   | Lecture/Discussion |         | ,   |
| 51 | Revision  | Discussion         |         |     |
| 52 | Atankwad Aur Hum  | Lecture            |         | ,   |
| 53 | Atankwad Aur Hum  | Lecture/Discussion |         | ,   |
| 54 | Atankwad Aur Hum  | Lecture/PPT        |         | ,   |

|                   |  |                    |         |     |
|-------------------|--|--------------------|---------|-----|
| 55                | Mahanom Ka Manwantar<br>Introduction About The Author                            | Lecture/Discussion |         |     |
| 56                | Mahanom Ka Manwantar   | Discussion         |         | , , |
| 57                | Atankwad Aur Hum   | Lecture/PPT        |         | ,   |
| 58                | Atankwad Aur Hum   | Lecture            |         | ,   |
| 59                | Revision   | Lecture/Discussion | Seminar |     |
| 60                | Mahanom Ka Manwantar   | Lecture            |         | , , |
| 61                | Mahanom Ka Manwantar   | Lecture/Discussion |         | , , |
| 62                | <b>CIA II (2 Hrs Exam)</b>   |                    |         |     |
| <b>MODULE III</b> |  |                    |         |     |
| 63                | Keral Itihas Ke Jharokhe Se<br>Introduction About The Author                     | Lecture/PPT        |         |     |
| 64                | Keral Itihas Ke Jharokhe Se  | Lecture            |         | ,   |
| 65                | Keral Itihas Ke Jharokhe Se  | Lecture/Discussion |         | ,   |
| 66                | Mahanom Ka Manwantar   | Lecture            |         | , , |
| 67                | Mahanom Ka Manwantar   | Lecture/Discussion |         | , , |
| 68                | Keral Itihas Ke Jharokhe Se  | Lecture            |         | ,   |
| 69                | Mahanom Ka Manwantar   | Lecture            |         | , , |
| 70                | Samajik Kranti Ka Agradoot Sree<br>Narayan Guru<br>Introduction About The Author | Lecture/PPT        |         | , , |
| 71                | Samajik Kranti Ka Agradoot Sree<br>Narayan Guru                                  | Lecture            |         | , , |
| 72                | Sabhyata Ka Rahasya<br>Introduction About The Author                             | Lecture/PPT        |         |     |
| 73                | Sabhyata Ka Rahasya  | Lecture            |         | ,   |
| 74                | Sabhyata Ka Rahasya  | Lecture/Discussion | Seminar | ,   |
| 75                | Samajik Kranti Ka Agradoot Sree<br>Narayan Guru                                  | Lecture            |         | , , |
| 76                | Samajik Kranti Ka Agradoot Sree<br>Narayan Guru                                  | Lecture            |         | , , |
| 77                | Sabhyata Ka Rahasya  | Lecture/Discussion |         | ,   |
| 78                | Sabhyata Ka Rahasya  | Lecture/Discussion |         | ,   |
| 79                | Samajik Kranti Ka Agradoot Sree<br>Narayan Guru                                  | Lecture/PPT        |         | , , |
| 80                | Samajik Kranti Ka Agradoot Sree<br>Narayan Guru                                  | Lecture/Discussion | Seminar | , , |
| 81                | Dalit Andolan Aur Ayyankali<br>Introduction about the Author                     | Lecture            |         |     |
| 82                | Dalit Andolan Aur Ayyankali  | Lecture/Discussion |         | ,   |
| 83                | Dalit Andolan Aur Ayyankali  | Lecture            |         | ,   |
| 84                | Dalit Andolan Aur Ayyankali  | Lecture/Discussion |         | ,   |
| 85                | Dalit Andolan Aur Ayyankali  | Lecture            |         | ,   |
| 86                | Dalit Andolan Aur Ayyankali  | Lecture/Discussion | Seminar | ,   |
| 87                | Seminar  |                    |         |     |
| 88                | Seminar  |                    |         |     |
| 89                | Revision   |                    |         |     |

|    |                          |  |  |  |
|----|--------------------------|--|--|--|
| 90 | Evaluation of the course |  |  |  |
|    |                          |  |  |  |

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

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

### GROUP ASSIGNMENTS/ACTIVITIES – Details & Guidelines

| SL NO | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|-------|--------------------|---|
| 1     | January            | Analyse an essay based on the text book. (Group Discussion).  |
| 2     | January            | Write a general essay based on cultural studies. (Group Activity).  |

#### References

- Adhunik Sahitya Ki Pravritiyan, Dr. Namvar Singh, Lokbharati Prakashan, New Delhi .
- Sanskruti Ka Tana Bana, Dr. Abha Gupta Thakur, Vani Prakashan, New Delhi .

#### Web resource references:

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

## COURSE PLAN

|                       |   |           |    |
|-----------------------|---|-----------|----|
| PROGRAMME             | PHYSICS                                       | SEMESTER  | 4  |
| COURSE CODE AND TITLE | 15U4CCFRN4A – AN ADVANCED COURSE IN FRENCH II | CREDIT    | 4  |
| HOURS/WEEK            | 5   | HOURS/SEM | 90 |

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

| SESSION         | TOPIC                                       | LEARNING RESOURCES   | VALUE ADDITIONS | REMARKS |
|-----------------|---|----------------------|-----------------|---------|
| <b>MODULE I</b> |   |                      |                 |         |
| 1               | Revision of French Basics                   | Role play, games     |                 |         |
| 2               | French Basics                               | Chalk n talk         |                 |         |
| 3               | French Basics                               | Chalk and Talk       |                 |         |
| 4               | French Basics                               | Chalk and Talk       |                 |         |
| 5               | French Basics                               | Chalk and Talk       |                 |         |
| 6               | French Basics                               | Chalk and Talk       |                 |         |
| 7               | French Basics                               | Chalk and Talk       |                 |         |
| 8               | French Basics                               | Chalk and Talk       |                 |         |
| 9               | Describe a personality                      | Lecture              |                 |         |
| 10              | Edith Piaf                                  | lecture              |                 |         |
| 11              | Interview a personality                     | Communication skills |                 |         |
| 12              | Interview with Edith Piaf                   | Oral                 |                 |         |
| 13              | famous people in your country               | Oral                 |                 |         |
| 14              | Narrate the life of a person of your choice | Communication Skills |                 |         |
| 15              | Describe a locality                         | Communication Skills |                 |         |
| 16.             | Describe a locality in your country         | Role play            |                 |         |

|                   |  |                              |  |  |
|-------------------|--|------------------------------|--|--|
| 17.               | Grammar – relative pronoun                   | Lecture, games               |  |  |
| 18.               | Sentence construction using relative pronoun | Games                        |  |  |
| 19.               | Artistic movements                           | Debate/Discussion            |  |  |
| 20.               | Reading Comprehension                        | Understanding Skills         |  |  |
| 21.               | Reading Comprehension                        | Understanding Skills         |  |  |
| 22.               | Reading Comprehension                        | Understanding Skills         |  |  |
| 23.               | Vocabulary building                          | Games                        |  |  |
| 24.               | Artistic movements                           | seminar                      |  |  |
| 25.               | Artistic movements                           | Expression oral              |  |  |
| 26.               | Female artists French culture                | Discussion                   |  |  |
| 27.               | Female artists in India                      | Discussions                  |  |  |
| 28.               | Female artists in India                      | Discussions ICT              |  |  |
| 29.               | French culture –                             | Discussions, comparison      |  |  |
| 30.               | Class test of Unit 1                         |                              |  |  |
| <b>MODULE II</b>  |  |                              |  |  |
| 31.               | Describe weather                             | Game                         |  |  |
| 32.               | Weather forecast                             | Role play                    |  |  |
| 33.               | Weather forecast in your country             | Lecture                      |  |  |
| 34.               | Causes and consequences of an issue          | Games, Role plays            |  |  |
| 35.               | Describe ways of protecting environment      | discussion                   |  |  |
| 36.               | Vocabulary Building                          | Games                        |  |  |
| 37.               | Global warming, green house effect           | Lecture                      |  |  |
| 38.               | Sentence Construction                        | Games                        |  |  |
| 39.               | Grammar-futur tense                          | Roleplay, listening exercise |  |  |
| 40.               | Describe future food habits                  | Roleplay                     |  |  |
| 41.               | Describe future food habits                  | Lecture , role play          |  |  |
| 42.               | Cities in transition                         | Debate                       |  |  |
| 43.               | Recycling                                    | Games                        |  |  |
| 44.               | Intercultural aspect                         | Lecture/Discussion           |  |  |
| 45.               | Revision                                     |                              |  |  |
| 46.               | Revision                                     |                              |  |  |
| 47.               | Revision                                     |                              |  |  |
| 48.               | Revision                                     |                              |  |  |
| 49.               | Revision                                     |                              |  |  |
| 50.               | Revision                                     |                              |  |  |
| 51.               | Revision                                     |                              |  |  |
| CIA-1             |  |                              |  |  |
| 52.               | Discussion of CIA                            |                              |  |  |
| 53.               | Vocabulary Building                          | Games                        |  |  |
| <b>MODULE III</b> |  |                              |  |  |
| 54.               | Organizing a party                           | PPT/Lecture                  |  |  |
| 55.               | Writing an invitation                        | PPT/Lecture                  |  |  |
| 56.               | Positive and negative reply to an invitation | PPT/Lecture                  |  |  |
| 57.               | Vocabulary- body parts                       | PPT                          |  |  |

|                  |  |                                    |  |  |
|------------------|--|------------------------------------|--|--|
| 58               | Vocabulary-parts of the body, expressing pain      | Music, GAMES                       |  |  |
| 59               | Explain problem which you face                     | Lecture/Role play                  |  |  |
| 60               | Mail on seeking advice, describing a problem       | Role play                          |  |  |
| 61               | Telephonic conversation                            | Role play                          |  |  |
| 62               | Vocabulary Building                                | Games                              |  |  |
| 63               | Posting on a problem which you face                | Roleplay                           |  |  |
| 64               | Giving advice/grammar-imperative                   | Chalk and talk, roleplay           |  |  |
| 65               | webdoctor  | Communication skills               |  |  |
| 66               | Writing a mail and receiving response              | Communication Skills               |  |  |
| 67               | French Culture -Vacation sports                    | PPT/Discussion                     |  |  |
| 68               | Sports in India                                    | Debate                             |  |  |
| 69               | Advantages of doing sports                         | Debate/Discussion                  |  |  |
| 70               | Famous authors- Moliere                            | Discussion                         |  |  |
| 71               | Clown – life of a clown                            | Discussion                         |  |  |
| CIA II           |  |                                    |  |  |
| <b>MODULE IV</b> |  |                                    |  |  |
| 72               | French language in the world                       | Chalk and talk                     |  |  |
| 73               | French language in the world                       | Role play                          |  |  |
| 74               | Information on francophone countries               | Role play                          |  |  |
| 75               | Describe a place, its past, its present and future | Discussion                         |  |  |
| 76               | Vocabulary Building                                | Games, Music                       |  |  |
| 77               | French movie                                       | Audio visual                       |  |  |
| 78               | French Movie                                       | Audio Visual                       |  |  |
| 79               | Francophone literature                             | Chalk n talk/Reading Comprehension |  |  |
| 80               | Francophone literature                             | Discussion                         |  |  |
| 81               | Francophone literature                             | Discussion                         |  |  |
| 82               | Francophone literature                             | Discussion                         |  |  |
| 83               | Francophone literature                             | Discussion                         |  |  |
| 84               | Revision   |                                    |  |  |
| 85               | Revision   |                                    |  |  |
| 86               | Revision   |                                    |  |  |
| 87               | Revision   |                                    |  |  |
| 88               | Revision   |                                    |  |  |
| 89               | Revision   | discussion                         |  |  |
| 90               | Revision   | discussion                         |  |  |

### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

|   | Date of completion | Topic of Assignment & Nature of assignment<br>(Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|---|--------------------|--|
| 1 | BY February        | Writing a resume of a francophone novel and its author   |
| 2 |                    | roleplays  |

### References

Version Originale, site web

### COURSE PLAN

|                       |   |           |    |
|-----------------------|---|-----------|----|
| PROGRAMME             | BACHELOR OF SCIENCE,PHYSICS   | SEMESTER  | 4  |
| COURSE CODE AND TITLE | 15U4CCSAN4A: HISORICAL SURVEY OF SANSKRIT LITERATURE AND KERALA CULTURE | CREDIT    | 4  |
| HOURS/WEEK            | 5   | HOURS/SEM | 90 |
| FACULTY NAME          | Dr.VIJAYARAJAN K.U  |           |    |

### COURSE OBJECTIVES

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

| SESSION          | TOPIC   | LEARNING RESOURCES | VALUE ADDITIONS | REMARKS |
|------------------|---|--------------------|-----------------|---------|
| <b>MODULE I</b>  |   |                    |                 |         |
| 1                | Introducing the importance of epic                    | Lecture            |                 |         |
| 2                | Valmiki's Ramayana                                    | Discussion         |                 |         |
| 3                | Ramayana story  | Lecture            |                 |         |
| 4                | Development of Ramayana                               | Lecture            |                 |         |
| 5                | Seven kandas  | Lecture            |                 |         |
| 6                | Arguments of Prof.Jacobi                              | Chalk n talk       |                 |         |
| 7                | Addition of two kandas                                | Lecture            |                 |         |
| 8                | The date of ramayana                                  | Chalk n talk       |                 |         |
| 9                | Balakanda, Ayodhyakanda                               | Lecture            |                 |         |
| 10               | Aaranyakanda, kishkindakanda                          | Lecture            |                 |         |
| 11               | Sundarakanda, Yudhakanda                              | Discussion         |                 |         |
| 12               | Utharakanda   | Discussion         |                 |         |
| 13               | Influence of Ramayana in Indian literature            | PPT/Lecture        |                 |         |
| 14               | Mahabharatham-Introduction                            | PPT/ Lecture       |                 |         |
| 15               | Eighteen Parvas                                       | PPT/ Lecture       |                 |         |
| 16               | The date of mahabharatham                             | PPT/Lecture        |                 |         |
| 17               | First stage - jayam                                   | Chalk n talk       |                 |         |
| 18               | Second stage -Bharatham                               | Lecture            |                 |         |
| 19               | Third Stage -mahabharatham                            | Lecture            |                 |         |
| 20               | Authorship of Mahabharatham                           | Lecture            |                 |         |
| 21               | The numbers of sloka –More than 1 lakh                | Game               |                 |         |
| 22               | The content of Bharatham                              | Game               |                 |         |
| 23               | Moralities in Bharatham                               | PPT/Lecture        |                 |         |
| 24               | Bhagavad Geetha                                       | PPT/Lecture        |                 |         |
| 25               | The influence of Bharatham in later Indian literature | Lecture            |                 |         |
| 26               | Harivamsham   | Lecture            |                 |         |
| <b>CIA-1</b>     |   |                    |                 |         |
| 27               | Purusharthas  | Lecture            |                 |         |
| 28               | The Fifth veda  | Chalk n talk       |                 |         |
| 29               | Commentary on Bharatham                               | Chalk n talk       |                 |         |
| 30               | Revision  |                    |                 |         |
| <b>MODULE II</b> |   |                    |                 |         |
| 31               | Introduction -Panchamahakavyas                        | Lecture            |                 |         |
| 32               | Kumarasambava   | Lecture            |                 |         |
| 33               | Content of Kumarasambava                              |                    |                 |         |
| 34               | Raghuvamsha   | Lecture            |                 |         |
| 35               | Content of Raghuvamsha                                | Lecture            |                 |         |
| 36               | Kiratharjuneeyam                                      | Lecture            |                 |         |
| 37               | Content of Kiratharjuneeyam                           | Lecture            |                 |         |
| 38               | Shishupalavadham                                      | PPT/Lecture        |                 |         |
| 39               | Content of Shishupalavadham                           | PPT/Lecture        |                 |         |
| 40               | Naishadhacharitham                                    | PPT/Lecture        |                 |         |



|            |                                   |              |                  |  |
|------------|-----------------------------------|--------------|------------------|--|
| 41         | Content of Naishadhacharitham     | Lecture      |                  |  |
| 42         | The importance of mahakakavya     | Lecture      |                  |  |
| 43         | The authors of mahakavya          | Chalk n talk |                  |  |
| 44         | Revision                          |              |                  |  |
| MODULE III |                                   |              |                  |  |
| 45         | Swapnavasavadatham                | Discussion   |                  |  |
| 46         | Content                           | PPT/Lecture  |                  |  |
| 47         | Prathijnayaugandharayanam         | PPT/ Lecture |                  |  |
| 48         | Content                           | PPT/Lecture  |                  |  |
| 49         | Malavikaagnimithram               | PPT/Lecture  |                  |  |
| 50         | Vikramorvasheeyam                 | PPT/ Lecture |                  |  |
| 51         | Abhijnanashakunthalam             | PPT/Lecture  | Video            |  |
| 52         | Content                           | PPT/Lecture  |                  |  |
| 53         | Venisamharam                      | PPT/Lecture  |                  |  |
| 54         | Mrichakatikam                     | Lecture      |                  |  |
| 55         | Uthararamacharitham               | Lecture      |                  |  |
| 56         | Ashcharyachudamani                | PPT/Lecture  |                  |  |
| 57         | Subhadradhananjayam               | PPT/Lecture  |                  |  |
| 58         | The Influence of Dramas           | PPT/Lecture  |                  |  |
| 59         | Revision                          |              |                  |  |
| MODULE IV  |                                   |              |                  |  |
| 60         | Shankaracharya                    | Lecture      |                  |  |
| 61         | Keralavarma Valiya koyi Thampuran | Lecture      |                  |  |
| 62         | Poorna Saraswathy                 | Chalk n talk |                  |  |
| 63         | Sree Narayana guru                | Lecture      |                  |  |
| 64         | Chattambi Swamikal                | Lecture      | Group discussion |  |
| 65         | A.R.Rajarajavarma                 | Lecture      |                  |  |
| 66         | P.C.Devasya                       | PPT/Lecture  |                  |  |
| 67         | K.N.Ezhuthachan                   | PPT/Lecture  |                  |  |
| 68         | Dr.P.K.Narayana Pillai            | PPT/Lecture  |                  |  |
| 69         | Melpathoor Narayana Bhattathiri   | PPT/Lecture  |                  |  |
| 70         | Sukumara Kavi                     | Lecture      |                  |  |
| 71         | I.C Chacko                        | Lecture      |                  |  |
| 72         | Revision                          |              |                  |  |

### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

|   | Date of completion | Topic of Assignment & Nature of assignment<br>(Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|---|--------------------|--|
| 1 | 15/01/2019         | Kerala Philosophers  |
| 2 | 21/01/2019         | The philosophy of Bhagavad Gita  |

### GROUP ASSIGNMENTS/ACTIVITES – Details & Guidelines

|   | Date of completion | Topic of Assignment & Nature of assignment<br>(Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|---|--------------------|--|
| 1 | 04/02/2019         | The Influence of Epics in Indian society   |
| 2 | 24/02/2019         | Mahakavyas and Indian literature   |

### References

- 1.A Short History of Sanskrit Literature, T.K. Ramachandra Iyer
- 2.Sanskrita Sahitya Caritram, ed. K. Kunjunni Raja and M.S. Menon, Kerala Sahitya Academi, Trissur
- 3.Sanskrita Bhasayum Sahityavum, T.P. Balakrishnan
- 4.History of Sanskrit Literature, A B Keith
- 5.Facets of Indian Culture, P C Muralimadhavan

**COURSE PLAN-**

|                     |   |           |    |
|---------------------|---|-----------|----|
| PROGRAMME           | <b>B.Sc PHYSICS</b>                         | SEMESTER  | 4  |
| COURSE CODE & TITLE | 15U4CCMAL4B ഗദ്യം രചന രചനാപരിചയം            | CREDITS   | 4  |
| HOURS/WEEK          | 5   | HOURS/SEM | 90 |
| FACULTY NAME        | <b>VISHNU RAJ P. Dr. JUSTINA K AUGUTINE</b> |           |    |

|   |
|---|
| COURSE OBJECTIVES   |
| ഭാഷ, എഴുത്ത്, രചനാപരിശീലനം എന്നീ ശേഷികളെ മനസിലാക്കുക  |
| ഉപന്യാസരചനാതത്വങ്ങൾ, പാദവാക്യഘടന എന്നീ ശേഷികളെ മനസിലാക്കുക  |
| സാഹിത്യനിരൂപണം, രാഷ്ട്രീയദർശനം, മാധ്യമ പഠനം എന്നിങ്ങനെ വിവിധങ്ങളായ ഗദ്യവ്യവഹാരങ്ങളുടെ മികച്ച മാതൃകകൾ പരിചയപ്പെടുത്തുക |
| വായനാഭീരുചി വർദ്ധിപ്പിക്കുക   |
| Eവ്യാവഹാരിക തലത്തിൽ മാതൃഭാഷാപ്രയോഗിക്കുവാനുള്ള കഴിവ് നേടുക  |

| Session         | Topic              | Teaching method | Learning Resources | Remarks |
|-----------------|--------------------|-----------------|--------------------|---------|
| <b>Module I</b> |                    |                 |                    |         |
| 1               | ഭാഷാചരിത്രം -ആമുഖം | Lecturing       | സാഹിത്യചരിത്രങ്ങൾ  |         |
| 2               | ഭാഷാചരിത്രം -ആമുഖം | Lecturing       | സാഹിത്യചരിത്രങ്ങൾ  |         |
| 3               | ക്രിയാത്മക രചന     | Discussion      | Text               |         |
| 4               | ക്രിയാത്മക രചന     | Reading         | Text               |         |
| 5               | സർഗാത്മകരചന        | Demonstrating   | Text               |         |
| 6               | സർഗാത്മകരചന        | Lecturing       |                    |         |
| 7               | സർഗാത്മകരചന        | Discussion      | Text               |         |
| 8               | ഭാഷാപ്രയോഗങ്ങൾ     | Demonstrating   | Text               |         |
| 9               | ഭാഷാപ്രയോഗങ്ങൾ     | Reading         | Text               |         |
| 10              | ഭാഷാപ്രയോഗങ്ങൾ     | Discussion      | Text               |         |
| 11              | വാക്യരചന           | Demonstrating   | സാഹിത്യചരിത്രങ്ങൾ  |         |

|    |                               |                      |                   |  |
|----|-------------------------------|----------------------|-------------------|--|
| 12 | വാക്യരചന                      | Discussion           | Text              |  |
| 13 | വാക്യരചന                      | Discussion           | Text              |  |
| 14 | മാനകഭാഷ                       | Reading              | സാഹിത്യചരിത്രങ്ങൾ |  |
| 15 | മാനകഭാഷ                       | Demonstrating        | Text              |  |
| 16 | ഭാഷാഭേദങ്ങൾ                   | Discussion           | Text              |  |
| 17 | ഭാഷാഭേദങ്ങൾ                   | Discussion           | Text              |  |
| 18 | വാക്യം യുക്തിയും              | Demonstrating        | Text              |  |
| 19 | വിമർശനാത്മക ചിന്ത             | lecturing            | Text              |  |
| 20 | വിമർശനാത്മക ചിന്ത             | Discussion           |                   |  |
| 21 | വിമർശനാത്മക ചിന്ത             | Discussion           | Text              |  |
| 22 | സന്ധികാര്യം                   | lecturing            | Text              |  |
| 23 | സന്ധികാര്യം                   | Discussion           | Text              |  |
| 24 | സന്ധികാര്യം                   | Discussion           |                   |  |
| 25 | അർത്ഥപരിണാമം                  | lecturing            | Text              |  |
| 26 | അർത്ഥപരിണാമം                  | Discussion           | Text              |  |
| 27 | വിവർത്തനം                     | lecturing            | Text              |  |
| 28 | വിവർത്തനം                     | Discussion           |                   |  |
| 29 | ചിഹ്നം                        | Lecturing            | Text              |  |
| 30 | ചിഹ്നം                        | Lecturing            |                   |  |
| 31 | നവപാഠങ്ങൾ                     | Discussion           | Text              |  |
| 32 | ഭാഷയുടെ ഘടന                   | Lecturing            | Text              |  |
| 33 | സ്ഥല പേരുകളുടെ രൂപമാറ്റം      | Reading              | Text              |  |
| 34 | പത്രഭാഷ                       | Discussion           |                   |  |
| 35 | യന്ത്ര ഏഴുത്ത്                | Discussion           | Text              |  |
| 36 | ഉപന്യാസരചന                    | Lecturing            | Text              |  |
|    |                               | <b>Module II</b>     |                   |  |
| 37 | മഹാകവിയുടെ ശിൽപ്പശാലയിൽ       | Reading              | Text              |  |
| 38 | മഹാകവിയുടെ ശിൽപ്പശാലയിൽ       | Discussion           |                   |  |
| 39 | മഹാകവിയുടെ ശിൽപ്പശാലയിൽ       | Discussion           | Text              |  |
| 40 | മതനവീകരണം മതനിരപേക്ഷത         | Lecturing Discussion | Text              |  |
| 41 | മതനവീകരണം മതനിരപേക്ഷത         | Reading              | Text              |  |
| 42 | പെൺവഴി രചനയുടെ മെയ്യും ഉയിരും | Discussion           |                   |  |
| 43 | ജനനാന്തരസൗഹൃദങ്ങൾ             | Discussion           | Text              |  |
| 44 | പെൺവഴി രചനയുടെ മെയ്യും ഉയിരും | Lecturing            | Text              |  |
| 45 | ജനനാന്തരസൗഹൃദങ്ങൾ             | Lecturing            | Text              |  |

|    |  |                         |      |  |
|----|--|-------------------------|------|--|
| 46 | ജനനാന്തരസൗഹൃദങ്ങൾ                                  | Reading                 | Text |  |
| 47 | ജനനാന്തരസൗഹൃദങ്ങൾ                                  | Discussion              | Text |  |
|    |  | <b>Module III</b>       |      |  |
| 48 | സാവിത്രിയുടെ മൈന                                   | Discussion              | Text |  |
| 49 | സാവിത്രിയുടെ മൈന                                   | Reading<br>Discussion   | Text |  |
| 50 | സാവിത്രിയുടെ മൈന                                   | Discussion              | Text |  |
| 51 | നാനോടെക്നോളജി                                      | Lecturing               | Text |  |
| 52 | നാനോടെക്നോളജി                                      | Discussion              | Text |  |
| 53 | നാനോടെക്നോളജി                                      | Lecturing               | Text |  |
| 54 | വി .ടി യുടെ വീട്<br>ലോകം                           | Reading<br>Discussion   | Text |  |
| 55 | വി .ടി യുടെ വീട്<br>ലോകം                           | Discussion              | Text |  |
| 56 | വി .ടി യുടെ വീട്<br>ലോകം                           | Discussion              | Text |  |
| 57 | നവോത്ഥാനത്തിന്റെ<br>പാഠങ്ങൾ                        | Lecturing               | Text |  |
| 58 | നവോത്ഥാനത്തിന്റെ<br>പാഠങ്ങൾ                        | Discussion              |      |  |
| 59 | നവോത്ഥാനത്തിന്റെ<br>പാഠങ്ങൾ                        | Lecturing<br>Discussion | Text |  |
| 60 | കേരളഫോക്ലോർ  | Reading                 | Text |  |
| 61 | കേരളഫോക്ലോർ  | Lecturing               | Text |  |
| 62 | കേരളഫോക്ലോർ  | Discussion              | Text |  |
| 63 | കേരളഫോക്ലോർ  | Discussion              | Text |  |
| 64 | കേരളഫോക്ലോർ  | Reading                 | Text |  |
| 65 | കേരളഫോക്ലോർ  | Reading                 | Text |  |
| 66 | കേരളഫോക്ലോർ  | Lecturing               | Text |  |
| 67 | കേരളഫോക്ലോർ  | Reading                 | Text |  |
| 68 | കേരളഫോക്ലോർ  | Lecturing               | Text |  |
| 69 | കേരളഫോക്ലോർ  | Reading                 | Text |  |
| 70 | കലയും സമൂഹവും                                      | Discussion              | Text |  |
| 71 | കലയും സമൂഹവും                                      | Discussion              | Text |  |
| 72 | കലയും സമൂഹവും                                      | Discussion              | Text |  |
| 73 | സംവാദം   | Discussion              | Text |  |
| 74 | സംവാദം   | Discussion              | Text |  |
| 75 | സംവാദം   | Discussion              | Text |  |
|    |  | <b>Module IV</b>        |      |  |
| 76 | വർത്തമാന പത്രം<br>വായനക്കുമുൻപുള്ള<br>വർത്തമാനങ്ങൾ | Discussion              | Text |  |
| 77 | വർത്തമാന പത്രം<br>വായനക്കുമുൻപുള്ള<br>വർത്തമാനങ്ങൾ | Discussion              | Text |  |

|    |  |              |      |  |
|----|--|--------------|------|--|
| 78 | വർത്തമാന പത്രം<br>വായനക്കുമുൻപുള്ള<br>വർത്തമാനങ്ങൾ | Discussion   | Text |  |
| 79 | കാലാവസ്ഥാ മാറ്റവും<br>തീരദേശ<br>ജൈവവൈവിധ്യവും      | Discussion   | Text |  |
| 80 | കാലാവസ്ഥാ മാറ്റവും<br>തീരദേശ<br>ജൈവവൈവിധ്യവും      | Discussion   | Text |  |
| 81 | കാലാവസ്ഥാ മാറ്റവും<br>തീരദേശ<br>ജൈവവൈവിധ്യവും      | Discussion   | Text |  |
| 82 | കാലാവസ്ഥാ മാറ്റവും<br>തീരദേശ<br>ജൈവവൈവിധ്യവും      | Discussion   | Text |  |
| 83 | Revision   | Discussion   | Text |  |
| 84 | സെമിനാർ  | Presentation | Text |  |
| 85 | സെമിനാർ  | Discussion   | Text |  |
| 86 | സെമിനാർ  | Presentation | Text |  |
| 87 | സെമിനാർ  | Discussion   | Text |  |
| 88 | സെമിനാർ  | Presentation | Text |  |
| 89 | സെമിനാർ  | Discussion   | Text |  |
| 90 | Evaluation of course                               | Discussion   | Text |  |

### ASSIGNMENTS

| Sl no | Date of submission/completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|-------|-------------------------------|---|
| 1     | By February                   | ഉപന്യാസരത്നങ്ങൾ വിവരിക്കുക  |
| 2     |                               | മലയാളഭാഷയും കേരളീയ സമൂഹവും  |

### SEMINAR

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

**Reference :**

1. സമ്പൂർണ്ണ മലയാള സാഹിത്യചരിത്രം - എഡിറ്റർ : പന്മന രാമചന്ദ്രൻ നായർ
2. മലയാളത്തിന്റെ ഭാവി - കെ. സേതുരാമൻ
3. എഴുത്തിന്റെ വഴികൾ - എം. ജി. യൂണിവേഴ്സിറ്റി പ്രസിദ്ധീകരണം
4. ഗദ്യവിതാനം - എം. ജി. യൂണിവേഴ്സിറ്റി പ്രസിദ്ധീകരണം

**COURSE PLAN**

|                       |   |           |    |
|-----------------------|---|-----------|----|
| PROGRAMME             | BACHELOR OF SCIENCE (PHYSICS)                 | SEMESTER  | 4  |
| COURSE CODE AND TITLE | 15U4CRPHY04: SEMICONDUCTOR PHYSICS            | CREDIT    | 3  |
| HOURS/WEEK            | 3   | HOURS/SEM | 54 |
| FACULTY NAME          | MATHEW GEORGE, SIBY MATHEW, ALEX SHINU SCARIA |           |    |

**COURSE OBJECTIVES**

|   |
|---|
| Understand the basic physics of semiconductors, p-n junctions, rectifiers, voltage multipliers and simple waveshaping circuits. |
| Understand the basic physics of transistor operation and analyse various transistor amplifier circuits                          |
| Understand the physics of simple oscillator circuits  |
| Understand basics and applications of operational amplifiers as well as modulation techniques like AM and FM                    |

| Session | Topic  | Method               | Remarks |
|---------|--|----------------------|---------|
|         | <b>Module I Semiconducting diodes and applications (14 hours)</b>            |                      |         |
| 1       | PN Junction, Depletion layer , Barrier potential                             | Lecture / Discussion |         |
| 2       | Biasing-forward and reverse, Reverse breakdown                               | Lecture / Discussion |         |
| 3       | Junction capacitance and diffusion capacitance-                              | Lecture / Discussion |         |
| 4       | PN Junction diode – VI characteristics–                                      | Lecture / Discussion |         |
| 5       | Diode parameters, Diode current Equation                                     | Lecture / Discussion |         |
| 6       | Diode , testing , Ideal diode.   | Lecture / Discussion |         |
| 7       | Zener diode and its reverse characteristics, Thermistors.                    | Lecture / Discussion |         |
| 8       | Rectification - Half wave, Full wave, Efficiency & Ripple factor             | Lecture / Discussion |         |
| 9       | Centre tapped, Bridge rectifier circuits, Efficiency & Ripple factor         | Lecture / Discussion |         |
| 10      | Filter circuits – Inductor Filter, Capacitor Filter , LC Filter , pi Filter- | Lecture / Discussion |         |
| 11      | Regulated Power supplies - Zener diode regulator                             | Lecture / Discussion |         |
| 12      | Voltage multipliers –Doublers Tripler  | Lecture / Discussion |         |
| 13      | Wave shaping circuits - Clipper - Positive & negative                        | Lecture / Discussion |         |
| 14      | Biased –Clampers-Positive, negative and biased.                              | Lecture / Discussion |         |
|         |  |                      |         |
|         | <b>Module II Transistors Configurations and Feed back (12 hours)</b>         |                      |         |
| 15      | Bipolar junction transistors   | Lecture / Discussion |         |
| 16      | Transistor biasing, CB configuration and characteristics                     | Lecture / Discussion |         |
| 17      | Transistor biasing, CC configuration and characteristics                     | Lecture / Discussion |         |
| 18      | Transistor biasing , CE configuration and characteristics                    | Lecture / Discussion |         |
| 19      | Active, saturation and cut-off regions.                                      | Lecture / Discussion |         |
| 20      | Current gain $\alpha$ , $\beta$ , $\gamma$ and their relationships.          | Lecture / Discussion |         |



|    |   |                      |  |
|----|---|----------------------|--|
| 21 | Leakage currents-Thermal runaway.   | Lecture / Discussion |  |
| 22 | DC operating point and AC and DC Load line, Q-Point.                      | Lecture / Discussion |  |
| 23 | Basic principles of feedback, positive & negative feedback                | Lecture / Discussion |  |
| 24 | Advantages of negative feedback   | Lecture / Discussion |  |
| 25 | Negative feedback circuits –voltage series & shunt                        | Lecture / Discussion |  |
| 26 | Negative feedback circuits – current series & shunt.                      | Lecture / Discussion |  |
|    |   |                      |  |
|    | <b>Amplifiers and Oscillators (12 hours)</b>                              |                      |  |
| 27 | Need for biasing - Stabilization -  | Lecture / Discussion |  |
| 28 | Voltage divider bias.   | Lecture / Discussion |  |
| 29 | Single stage transistor Amplifiers-                                       | Lecture / Discussion |  |
| 30 | CE amplifier -  | Lecture / Discussion |  |
| 31 | amplification factors.  | Lecture / Discussion |  |
| 32 | Decibel system  | Lecture / Discussion |  |
| 33 | Variations in Amplifier gain with frequency.                              | Lecture / Discussion |  |
| 34 | Oscillatory Circuits  | Lecture / Discussion |  |
| 35 | LC oscillators –Hartley Oscillator  | Lecture / Discussion |  |
| 36 | Colpit's Oscillator   | Lecture / Discussion |  |
| 37 | RC oscillators-Phase shift Oscillator.                                    | Lecture / Discussion |  |
| 38 | Astable and monostable multivibrator (basic idea only)                    | Lecture / Discussion |  |
|    |   |                      |  |
|    | <b>Module III FET , Operational Amplifier &amp; Modulation (16 hours)</b> |                      |  |
| 39 | FET - Characteristics   | Lecture / Discussion |  |
| 40 | FET - Parameters.   | Lecture / Discussion |  |
| 41 | Comparison between FET and BJT.   | Lecture / Discussion |  |

|    |   |                      |  |
|----|---|----------------------|--|
| 42 | MOSFET (basic idea only)  | Lecture / Discussion |  |
| 43 | OP-amp-Symbol and terminals.                                    | Lecture / Discussion |  |
| 44 | Characteristics of ideal Op-amp, CMRR                           | Lecture / Discussion |  |
| 45 | Applications-inverting, Non-inverting                           | Lecture / Discussion |  |
| 46 | Unity follower  | Lecture / Discussion |  |
| 47 | Summing amplifiers  | Lecture / Discussion |  |
| 48 | Types of modulation – AM  | Lecture / Discussion |  |
| 49 | Types of modulation – FM  | Lecture / Discussion |  |
| 50 | Pulse modulation and Phase modulation (qualitative study only). | Lecture / Discussion |  |
| 51 | Amplitude modulation-modulation index -                         | Lecture / Discussion |  |
| 52 | Analysis of AM wave – Sidebands – bandwidth-                    | Lecture / Discussion |  |
| 53 | AM Demodulation.  | Lecture / Discussion |  |
| 54 | Revision  | Lecture / Discussion |  |

## References

1. Basic Electronics-B.L.Theraja
2. A Text Book of Applied Electronics-R.S.Sedha

### COURSE PLAN

|                       |  |           |    |
|-----------------------|--|-----------|----|
| PROGRAMME             | BACHELOR OF PHYSICS  | SEMESTER  | 4  |
| COURSE CODE AND TITLE | 15U4PCHE4.1 - ADVANCED PHYSICAL CHEMISTRY – II                 | CREDIT    | 3  |
| HOURS/WEEK            | 3  | HOURS/SEM | 54 |
| FACULTY NAME          | <i>Dr. ASWATHY R., Dr. SOUMYA T V and Dr. MARIA LINSHA P.L</i> |           |    |

#### **COURSE OBJECTIVES**

Know the basics of spectroscopy.

Understand the fundamental principles of chemical kinetics and photochemistry

Explain the applications of electromotive force, electrochemistry and redox reactions

| SESSION         | TOPIC  | LEARNING RESOURCES | VALUE ADDITIONS | REMARKS |
|-----------------|--|--------------------|-----------------|---------|
| <b>MODULE I</b> |  |                    |                 |         |
| 1.              | Interaction of electromagnetic radiation with matter, electromagnetic spectrum             | Chalk and Board    |                 |         |
| 2.              | Quantization of energy, electronic, vibrational and rotational energy levels               | Chalk and Board    |                 |         |
| 3.              | Boltzmann distribution of energy (formula only), population of levels                      | Chalk and Board    |                 |         |
| 4.              | UV- Visible Spectroscopy: Beer Lambert's law   | Chalk and Board    |                 |         |
| 5.              | molar extinction coefficient and its importance  | Chalk and Board    |                 |         |
| 6.              | UV spectrum, max, chromophore, auxochrome  | Chalk and Board    |                 |         |
| 7.              | Red shift, blue shift, types of transition   | Chalk and Board    |                 |         |
| 8.              | Infra-red spectroscopy: vibrational degrees of freedom                                     | Chalk and Board    |                 |         |
| 9.              | Types of vibrations – symmetric and asymmetric stretching and bending                      | Chalk and Board    |                 |         |
| 10.             | Concept of group frequencies-frequencies of common functional groups in organic compounds. | Chalk and Board    |                 |         |
| 11.             | Rotational Spectroscopy: diatomic molecules  | Chalk and Board    |                 |         |

|                   |   |                 |  |  |
|-------------------|---|-----------------|--|--|
| 12.               | Determination of bond length  | Chalk and Board |  |  |
| <b>MODULE II</b>  |   |                 |  |  |
| 13.               | Rate of reaction, rate law  | Chalk and Board |  |  |
| 14.               | Order of reaction, molecularity of reaction                         | Chalk and Board |  |  |
| 15.               | Integrated rate expression for first order reaction                 | Chalk and Board |  |  |
| 16.               | Half life, determination of order of reactions                      | Chalk and Board |  |  |
| 17.               | Influence of temperature on reaction rate – Arrhenius equation      | Chalk and Board |  |  |
| 18.               | Concept of activation energy  | Chalk and Board |  |  |
| 19.               | Importance of activated complex                                     | Chalk and Board |  |  |
| 20.               | Catalysis, examples   | Chalk and Board |  |  |
| <b>MODULE III</b> |   |                 |  |  |
| 21.               | Laws of Photochemistry  | Chalk and Board |  |  |
| 22.               | Photochemical process – primary and secondary, quantum yield        | Chalk and Board |  |  |
| 23.               | Basic Concepts of Photosensitized reactions                         | Chalk and Board |  |  |
| 24.               | Flash photolysis and chemiluminescence                              | Chalk and Board |  |  |
| 25.               | Frank-Condon principle – fluorescence and phosphorescence           | Chalk and Board |  |  |
| <b>MODULE IV</b>  |   |                 |  |  |
| 26.               | Conductance of electrolytic solution, electrolytic conductivity (K) | Chalk and Board |  |  |
| 27.               | Molar conductivity of solutions of electrolytes                     | Chalk and Board |  |  |
| 28.               | Variation of conductivity and molar conductivity with concentration | Chalk and Board |  |  |
| 29.               | Kohlrausch's law – application                                      | Chalk and Board |  |  |
| 30.               | Faraday's laws of electrolysis                                      | Chalk and Board |  |  |
| 31.               | Electrochemical equivalent and chemical equivalent                  | Chalk and Board |  |  |

|                  |   |                 |         |  |
|------------------|---|-----------------|---------|--|
| 32.              | Transport number-determination by Hittorf's method  | Chalk and Board |         |  |
| 33.              | Applications of conductance measurements  | Chalk and Board |         |  |
| 34.              | Kw, Ksp, Conductometric titrations  | Chalk and Board | Seminar |  |
| 35.              | Strong and weak electrolytes.   | Chalk and Board |         |  |
| 36.              | Ostwald's dilution law  | Chalk and Board |         |  |
| 37.              | Hydrolysis of salts   | Chalk and Board |         |  |
| <b>MODULE V</b>  |   |                 |         |  |
| 38.              | Galvanic cells, characteristics of reversible cells   | Chalk and Board |         |  |
| 39.              | Reversible electrodes – different types   | Chalk and Board |         |  |
| 40.              | Electrode potential – effect of electrolyte concentration on electrode potential and emf (Nernst equation)            | Chalk and Board |         |  |
| 41.              | Electrochemical series, representation of cell  | Chalk and Board |         |  |
| 42.              | EMF of cell   | Chalk and Board |         |  |
| 43.              | EMF and equilibrium constant of cell reaction   | Chalk and Board |         |  |
| 44.              | Concentration cells   | Chalk and Board |         |  |
| 45.              | General discussion of electrode – concentration cell and electrolyte concentration cells                              | Chalk and Board |         |  |
| 46.              | Liquid junction potential, fuel cells – the hydrogen – oxygen fuel cell.  | Chalk and Board |         |  |
| 47.              | Application of emf measurement – determination of pH using hydrogen electrode, quinhydrone electrode, glass electrode | Chalk and Board | Seminar |  |
| 48.              | Potentiometric titrations   | Chalk and Board |         |  |
| <b>MODULE VI</b> |   |                 |         |  |
| 49.              | Oxidation Reduction reactions: explanation with examples  | Chalk and Board |         |  |
| 50.              | oxidation states  | Chalk and Board | Seminar |  |
| 51.              | Rules to assign oxidation states in polyatomic molecules  | Chalk and Board |         |  |

|     |                                   |                 |  |  |
|-----|-----------------------------------|-----------------|--|--|
| 52. | Determination of oxidation states | Chalk and Board |  |  |
| 53. | Oxidation reduction titrations    | Chalk and Board |  |  |
| 54. | Experimental method, example      | Chalk and Board |  |  |

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

|  | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc.) |
|--|--------------------|--|
|  | 11/1/2019          | Difference between conductometric and potentiometric titrations  |

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

|  | Date of completion | Topic of Assignment & Nature of assignment (Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|--|--------------------|---|
|  | 10/12/2018         | Numerical problems related to electrochemistry and photochemistry   |

#### References

1. C. N. Banwell, E.M. McCash, Fundamentals of Molecular Spectroscopy, 4th edn. Tata McGraw – Hill Pub. C. Ltd. New Delhi.
2. Bruce H. Mahan, University Chemistry 3rd edn.
3. P. Atkins. J. Paula, Atkins Physical Chemistry. 8th edn.Oxford University Press, 2006.
4. B. R. Puri, L.R. Sharma, M. S. Pathania, Elements of Physical Chemistry, 40th edn. Vishal Pub. Co. Jalandhar (2003).

**COURSE PLAN:**

|                       |  |           |    |
|-----------------------|--|-----------|----|
| PROGRAMME             | BACHELOR OF PHYSICS  | SEMESTER  | 4  |
| COURSE CODE AND TITLE | 15U4CPMAT04: FOURIER SERIES, PARTIAL DIFFERENTIAL EQUATIONS, NUMERICAL ANALYSIS AND ABSTRACT ALGEBRA | CREDIT    | 4  |
| HOURS/WEEK            | 5  | HOURS/SEM | 90 |
| FACULTY NAME          | SANIL JOSE   |           |    |

| COURSE OBJECTIVES   |
|---|
| Find the Fourier series expansion of a given periodic function in a specified interval. |
| Solve different types of differential equations   |
| Discuss the solution using numerical method   |
| Understand the concepts of groups, cyclic groups, permutation groups                    |

| SESSION         | TOPIC  | LEARNING RESOURCES | VALUE ADDITIONS | REMARKS |
|-----------------|--|--------------------|-----------------|---------|
| <b>MODULE I</b> |  |                    |                 |         |
| 1               | Introduction to functions                                  | PPT                | video           |         |
| 2               | History  | PPT                | video           |         |
| 3               | Definition and examples of Fourier series of period $2\pi$ | Lecture            |                 |         |
| 4               | Examples of Fourier series of period $2\pi$                | Lecture            |                 |         |
| 5               | Examples of Fourier series of period $2\pi$                | Lecture            |                 |         |
| 6               | examples of Fourier series of period $2\pi$                | Lecture            |                 |         |
| 7               | examples of Fourier series of period $2\pi$                | Lecture            |                 |         |
| 8               | Definition and examples of Fourier series of period $2l$   | Lecture            |                 |         |
| 9               | Examples of Fourier series of period $2l$                  | Lecture            |                 |         |
| 10              | Examples of Fourier series of period $2l$                  | Lecture            |                 |         |
| 11              | Examples of Fourier series of period $2l$                  | Lecture            |                 |         |
| 12              | Half range Fourier Series                                  | Lecture            |                 |         |
| 13              | Examples   | Lecture            |                 |         |
| 14              | Examples   | Lecture            |                 |         |

| <b>MODULE II</b>  |  |             |         |  |
|-------------------|--|-------------|---------|--|
| 15                | Laplace Transforms- Introduction             | PPT/Lecture |         |  |
| 16                | Historical Aspects                           | Lecture     |         |  |
| 17                | Definition and examples of Laplace Transform | Lecture     |         |  |
| 18                | Properties of Laplace transform              | Lecture     |         |  |
| 19                | Properties of Laplace transform              | Lecture     |         |  |
| 20                | Properties of Laplace transform              | Lecture     |         |  |
| 21                | Examples and Applications                    | Lecture     |         |  |
| 22                | Examples and Applications                    | Lecture     |         |  |
| 23                | Examples and Applications                    | Lecture     |         |  |
| 24                | Inverse Laplace transforms                   | Lecture     |         |  |
| 25                | Inverse Laplace transforms                   | Lecture     |         |  |
| 26                | CIA-1  |             |         |  |
| 27                | Inverse Laplace transforms- Examples         | Lecture     |         |  |
| 28                | Inverse Laplace transforms - Examples        | Lecture     |         |  |
| 29                | Convolution theorem                          | Lecture     |         |  |
| 30                | Convolution theorem                          | Lecture     |         |  |
| 31                | Examples                                     | Lecture     |         |  |
| 32                | Examples                                     | Lecture     |         |  |
| 33                | Examples                                     | Lecture     |         |  |
| 34                | Examples                                     | Lecture     |         |  |
| 35                | Application to differential equations        | Lecture     |         |  |
| 36                | Application to differential equations        | Lecture     |         |  |
| 37                | Application to differential equations        | Lecture     |         |  |
| 38                | Application to differential equations        | Lecture     |         |  |
| 39                | Problems                                     | Lecture     |         |  |
| 40                | Problems                                     | Lecture     | SEMINAR |  |
| 41                | Problems                                     | Lecture     | SEMINAR |  |
| 42                | Problems                                     | Lecture     | SEMINAR |  |
| 43                | Revision                                     | Lecture     | GD      |  |
| 44                | Problems                                     | Lecture     | GD      |  |
| 45                | Class test                                   | Lecture     |         |  |
| <b>Module III</b> |  |             |         |  |
| 46                | Introduction to Fourier Transform            | Lecture     |         |  |
| 47                | Definition of Fourier transform              | Lecture     |         |  |
| 48                | Example and properties of Fourier transform  | Lecture     |         |  |
| 49                | Example and properties of Fourier transform  | Lecture     |         |  |
| 50                | Example and properties of Fourier transform  | Lecture     |         |  |
| 51                | Example and properties of Fourier transform  | Lecture     |         |  |
| 52                | Example and properties of Fourier transform  | Lecture     |         |  |



|                  |  |                |    |  |
|------------------|--|----------------|----|--|
|                  | transform  |                |    |  |
| 53               | Fourier Sine and cosine Integrals - Introduction | Lecture        |    |  |
| 54               | Fourier Sine and cosine Integrals- Examples      | Lecture        |    |  |
| 55               | Fourier Sine and cosine Integrals - Examples     | Lecture        |    |  |
| 56               | Complex form of Fourier Transforms               | Lecture        |    |  |
| 57               | Complex form of Fourier Transforms               | Lecture        |    |  |
| 58               | Complex form of Fourier Transforms               | Lecture        |    |  |
| 59               | Inversion formula                                | Lecture        |    |  |
| 60               | Inversion formula                                | Lecture        |    |  |
| 61               | Revision/ GD                                     | Lecture        | GD |  |
| <b>MODULE IV</b> |  |                |    |  |
| 62               | Binary systems                                   | Lecture        |    |  |
| 63               | Binary systems examples                          | Lecture        |    |  |
| 64               | Groups, Elementary properties of groups          | Lecture        |    |  |
| 65               | Groups, Elementary properties of groups          | Lecture        |    |  |
| 66               | Groups, Elementary properties of groups          | Lecture        |    |  |
| 67               | Groups, Elementary properties of groups          | Lecture        |    |  |
| 68               | Finite groups                                    | Lecture        |    |  |
| 69               | Finite groups                                    | Lecture        |    |  |
| 70               | Finite groups                                    | Lecture        |    |  |
| <b>CIA II</b>    |  |                |    |  |
| 71               | Sub groups & cyclic groups                       | Lecture        |    |  |
| 72               | Sub groups & cyclic groups                       | Lecture        |    |  |
| 73               | Sub groups & cyclic groups                       | Lecture        |    |  |
| 74               | Lagrange's theorem                               | Lecture        |    |  |
| 75               | Lagrange's theorem                               | Lecture        |    |  |
| 76               | Permutation groups                               | Lecture        |    |  |
| 77               | Permutation groups                               | Lecture        |    |  |
| 78               | Revision   | Lecture        | GD |  |
| 79               | Seminar /GD                                      | Group activity | GD |  |
| 80               | Seminar /GD                                      | Group activity | GD |  |
| 81               | Seminar /GD                                      | Group activity | GD |  |
| 82               | Seminar /GD                                      | Group activity | GD |  |

|    |                         |                |    |  |
|----|-------------------------|----------------|----|--|
| 83 | Seminar /GD             | Group activity | GD |  |
| 84 | Seminar /GD             | Group activity | GD |  |
| 85 | Seminar /GD             | Group activity | GD |  |
| 86 | Seminar /GD             | Group activity | GD |  |
| 87 | Seminar /GD             | Group activity | GD |  |
| 88 | Seminar /GD             | Group activity | GD |  |
| 89 | Seminar /GD             | Group activity | GD |  |
| 90 | Summary of the syllabus | Lecture        |    |  |

### INDIVIDUAL ASSIGNMENTS/SEMINAR – Details & Guidelines

|   | Date of completion | Topic of Assignment & Nature of assignment<br>(Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|---|--------------------|--|
| 1 | By February        | Problems in Fourier Series   |
| 2 |                    | Problems in differential Equations   |

### Seminar – Details & Guidelines

|   | Date of completion | Topic of Seminar & Nature of Seminar<br>(Individual/Group – Written/Presentation – Graded or Non-graded etc) |
|---|--------------------|--|
| 1 | By February        | Numerical Method   |
| 2 |                    | <b>Groups</b>  |

### Text Book

1. Erwin Kreyszig : Advanced Engineering Mathematics, Eighth Edition, Wiley, India.
2. Ian Sneddon – Elements of Partial Differential Equation ( Tata McGraw Hill)
3. S.S .Sastry : Introductory methods of Numerical Analysis ,4<sup>th</sup> edition ( Prentice Hall)
4. John B Fraleigh- A first course in Abstract Algebra( 7<sup>th</sup> Edition)Pearson Education

### References

- 1) Advanced Engineering Mathematics by Michael D Greenberg, Pearson Education, 2002
- 2) Advanced Engineering Mathematics by Erwin Kreyszig, Eighth edition, Wiley, India.
- 3) Higher Engineering Mathematics, by B.S. Grewal, Khanna Publishers.
- 4) A First Course in Abstract Algebra, by John B Fraleigh, Seventh edition, Pearson Education.