



Kayamkulam, Alappuzha

**ACCREDITED BY NAAC WITH 'B' GRADE  
KAYAMKULAM-690502**

**KERALA STATE- SOUTH INDIA**

(A Minority Community Educational Institution)

Affiliated to the University of Kerala

Web site: [www.msmcollege.in](http://www.msmcollege.in),

E-mail: [msmcollege@rediffmail.com](mailto:msmcollege@rediffmail.com)

Fax: 0479-2445594, Tel. No: 0479-2442111

## **Program Outcomes, Programme Specific Outcomes and Course Outcomes for all programmes**



## **MILAD E SHERIEF MEMORIAL COLLEGE**

(Affiliated To University of Kerala)

KAYAMKULAM-690502 KERALA STATE- SOUTH INDIA

(A Minority Community Educational Institution)

Web site: [www.msmcollege.in](http://www.msmcollege.in), E-mail: [msmcollege@rediffmail.com](mailto:msmcollege@rediffmail.com)

Fax: 0479-2445594, Tel. No: 0479-2442111

# **PROGRAMME OUTCOMES PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES**

**PROGRAM OUTCOMES, PROGRAMME SPECIFIC OUTCOMES AND  
COURSE OUTCOMES OF UNDERGRADUATE PROGRAMMES –BA/BSC/BCOM**

**Graduate Programme Outcomes (BA/BSc/BCom)**

|            |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PO1</b> | <b>Critical Thinking:</b> Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.                                                                                                            |
| <b>PO2</b> | <b>Academic Intelligence:</b> Ability to acquire knowledge and skills, including “learning how to learn”, that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at attaining domain proficiency in their respective subject which can foster in each problem-solving skill in their day today life.                                                |
| <b>PO3</b> | <b>Communication:</b> Speak, read, write and listen clearly in person and through electronic media in English/language of the discipline, and make meaning of the world by connecting people, ideas, books, media and technology.                                                                                                                                                                                             |
| <b>PO4</b> | <b>Research Aptitudes:</b> A sense of inquiry and capability for asking relevant/appropriate questions, problematising, synthesising and articulating; Ability to define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation. |
| <b>PO5</b> | <b>Environment and Sustainability:</b> Understand the impact of technology and business practices in societal and environmental contexts, and sustainable development.                                                                                                                                                                                                                                                        |
| <b>PO6</b> | <b>Social Interaction:</b> Elicit views of others, mediate disagreements and help reach conclusions in group settings.                                                                                                                                                                                                                                                                                                        |
| <b>PO7</b> | <b>Problem Solving:</b> Identify, formulate, conduct investigations, and find solutions to problems based on in-depth knowledge of relevant domains.                                                                                                                                                                                                                                                                          |
| <b>PO8</b> | <b>Computational Thinking:</b> Understand data-based reasoning through translation of data into abstract concepts using computing technology-based tools.                                                                                                                                                                                                                                                                     |

## GENERAL ENGLISH

| COURSE<br>CODE | COURSE NAME                                                | COURSE OUTCOMES |                                                                                                            |
|----------------|------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                                                            |                 |                                                                                                            |
| EN 1111.1      | Language Course 1:<br>Listening, Speaking,<br>and Reading  | CO1             | To make the students proficient communicators in English                                                   |
|                |                                                            | CO2             | To develop in the learners the ability to understand English in a wide range of contexts                   |
|                |                                                            | CO3             | Understanding the nuances of listening, speaking and reading English                                       |
|                |                                                            | CO4             | To face situations with confidence and to seek employment in the modern globalized world                   |
|                |                                                            | CO5             | Knowledge of English phonetics will help the students to listen and to speak English better                |
| EN 1121        | Foundation Course 1:<br>Writings on<br>Contemporary Issues | CO1             | To sensitize students to the major issues in the society and the world.                                    |
|                |                                                            | CO2             | To encourage them to read literary pieces critically                                                       |
| SEMESTER II    |                                                            |                 |                                                                                                            |
| EN 1211.1      | Language Course 3:<br>Environmental Studies                | CO1             | Analyze the interrelationship between living organism and environment.                                     |
|                |                                                            | CO2             | Understand the importance of environment by assessing its impact on the human world.                       |
|                |                                                            | CO3             | Enrich the knowledge on themes of biodiversity, natural resources, pollution control and waste management. |
|                |                                                            | CO4             | Understand the constitutional protection given for environment.                                            |

|              |                                                           |     |                                                                                    |
|--------------|-----------------------------------------------------------|-----|------------------------------------------------------------------------------------|
| EN 1212.1    | Language Course 4:<br>Modern English<br>Grammar and Usage | CO1 | To help students have a good understanding of modern English grammar.              |
|              |                                                           | CO2 | To enable them produce grammatically and idiomatically correct language.           |
|              |                                                           | CO3 | To help them improve their verbal communication skills.                            |
|              |                                                           | CO4 | To help them minimise mother tongue influence.                                     |
| SEMESTER III |                                                           |     |                                                                                    |
| EN 1311.1    | Language Course 6:<br>Writing and<br>Presentation Skills  | CO1 | To familiarize students with different modes of general and academic writing.      |
|              |                                                           | CO2 | To help them master writing techniques to meet academic and professional needs.    |
|              |                                                           | CO3 | To introduce them to the basics of academic presentation                           |
|              |                                                           | CO4 | To sharpen their accuracy in writing.                                              |
| SEMESTER IV  |                                                           |     |                                                                                    |
| EN 1411.1    | Language Course 8:<br>Readings in Literature              | CO1 | To sensitize students to the aesthetic, cultural and social aspects of literature. |
|              |                                                           | CO2 | To help them analyze and appreciate literary texts.                                |

### ADDITIONAL LANGUAGES

| COURSE<br>CODE | COURSE NAME         | COURSE OUTCOME |                                                     |
|----------------|---------------------|----------------|-----------------------------------------------------|
| SEMESTER I     |                     |                |                                                     |
| HN1111.1       | Hindi Katha Sahitya | CO1            | Familiarize the students with the world of fiction. |

|                 |                               |            |                                                                                                  |
|-----------------|-------------------------------|------------|--------------------------------------------------------------------------------------------------|
|                 |                               | <b>CO2</b> | Remembers main works of the representative writers.                                              |
|                 |                               | <b>CO3</b> | Elucidates key sentences with reference to context.                                              |
|                 |                               | <b>CO4</b> | Understand how the resource language is used as a medium in creative writing .                   |
|                 |                               | <b>CO5</b> | Analyse and evaluate the works of the fiction writers.                                           |
|                 |                               | <b>CO6</b> | Understand the craft of the fiction writers .                                                    |
| <b>AR1111.1</b> | <b>Functional Arabic I</b>    | <b>CO1</b> | Developing communication skills and inculcating values of communication among the students.      |
|                 |                               | <b>CO2</b> | Acquiring mastery of Arabic with efficient communicative skills and expressive capabilities      |
|                 |                               | <b>CO3</b> | Familiarizing with situation language and situation vocabulary in the different domains of life. |
|                 |                               | <b>CO4</b> | Understanding and acquiring knowledge of employing language in real life occasions.              |
| <b>AR1111.2</b> | <b>Arabic Communication I</b> | <b>CO1</b> | Developing communication skills and inculcating values of communication among the students.      |
|                 |                               | <b>CO2</b> | Acquiring mastery of Arabic with efficient communicative skills and expressive capabilities      |
|                 |                               | <b>CO3</b> | Familiarizing with situation language and situation vocabulary in the different domains of life. |
|                 |                               | <b>CO4</b> | Understanding and acquiring knowledge of employing language in real life occasions.              |
| <b>AR1111.3</b> | <b>Communicative Arabic I</b> | <b>CO1</b> | Developing communication skills and inculcating values of communication among the students.      |
|                 |                               | <b>CO2</b> | Acquiring mastery of Arabic with efficient communicative skills and expressive capabilities      |
|                 |                               | <b>CO3</b> | Familiarizing with situation language and situation vocabulary in the different domains of life. |
|                 |                               | <b>CO4</b> | Understanding and acquiring knowledge of employing language in real life occasions.              |

|             |                                          |     |                                                                                                  |
|-------------|------------------------------------------|-----|--------------------------------------------------------------------------------------------------|
| ML 1111.1   | Malayala Kavitha                         | CO1 | Introduce students to the literary spaces of Malayalam poetry.                                   |
|             |                                          | CO2 | To develop a fundamental understanding of poetry.                                                |
| ML1111.2    | Sahithya Padanam -1                      | CO1 | Introduce students to the literary spaces of Malayalam Literature.                               |
|             |                                          | CO2 | To develop a fundamental understanding of literature.                                            |
|             |                                          | CO3 | Introduce student to various phases of developments in literature.                               |
| ML1111.3    | Gadyasahithyam                           | CO1 | Familiarize students with the literary aspects of Malayala Gadyasahithyam.                       |
|             |                                          | CO2 | To generate curiosity and an understanding of the Gadyasahithyam.                                |
| SEMESTER II |                                          |     |                                                                                                  |
| HN 1211.1   | Hindi Nibandh Aur<br>anya Gadya Vidhayen | CO1 | Understand the craft of prescribed writers.                                                      |
|             |                                          | CO2 | Understand the different forms of prose.                                                         |
|             |                                          | CO3 | Analyse the prescribed prose form in accordance with the craft .                                 |
|             |                                          | CO4 | Recollect the main works of prescribed writers.                                                  |
|             |                                          | CO5 | Elucidate key sentences with reference to context                                                |
| AR1211.1    | Functional Arabic II                     | CO1 | Developing communication skills and inculcating values of communication among the students.      |
|             |                                          | CO2 | Acquiring mastery of Arabic with efficient communicative skills and expressive capabilities      |
|             |                                          | CO3 | Familiarizing with situation language and situation vocabulary in the different domains of life. |
|             |                                          | CO4 | Understanding and acquiring knowledge of employing language in real life occasions.              |
| AR1211.2    | Arabic<br>for Communication II           | CO1 | Developing communication skills and inculcating values of communication among the students.      |
|             |                                          | CO2 | Acquiring mastery of Arabic with efficient communicative skills and expressive capabilities      |

|                     |                                           |            |                                                                                                  |
|---------------------|-------------------------------------------|------------|--------------------------------------------------------------------------------------------------|
|                     |                                           | <b>CO3</b> | Familiarizing with situation language and situation vocabulary in the different domains of life. |
|                     |                                           | <b>CO4</b> | Understanding and acquiring knowledge of employing language in real life occasions.              |
| <b>AR1211.3</b>     | <b>Communicative Arabic II</b>            | <b>CO1</b> | Developing communication skills and inculcating values of communication among the students.      |
|                     |                                           | <b>CO2</b> | Acquiring mastery of Arabic with efficient communicative skills and expressive capabilities      |
|                     |                                           | <b>CO3</b> | Familiarizing with situation language and situation vocabulary in the different domains of life. |
|                     |                                           | <b>CO4</b> | Understanding and acquiring knowledge of employing language in real life occasions.              |
| <b>ML 1211.1</b>    | <b>Gadyasahithyam</b>                     | <b>CO1</b> | Introduce students to the literary aspects of Malayala Gadyasahithyam.                           |
|                     |                                           | <b>CO2</b> | Generate curiosity and an understanding of the Gadyasahithyam                                    |
| <b>ML 1211.2</b>    | <b>Sahitya Padanam -2</b>                 | <b>CO1</b> | Develop deeper knowledge in the literary spaces of Malayalam Literature.                         |
|                     |                                           | <b>CO2</b> | To develop a deeper understanding of literature.                                                 |
|                     |                                           | <b>CO3</b> | Familiarize students with the various phases of developments in literature.                      |
| <b>ML1211.3</b>     | <b>Com Eng - Drisyakalasaahithyam</b>     | <b>CO1</b> | To develop an understanding of Drisyakalasaahithyam and its relevance.                           |
| <b>SEMESTER III</b> |                                           |            |                                                                                                  |
| <b>HN 1311.1</b>    | <b>Hindi Natak ,Vyakaran Tatha Anuvad</b> | <b>CO1</b> | Familiarize the students with the development of plays in Hindi.                                 |
|                     |                                           | <b>CO2</b> | Translate simple passages from English to Hindi .                                                |
|                     |                                           | <b>CO3</b> | Analyse and evaluate the play.                                                                   |
|                     |                                           | <b>CO4</b> | Use Hindi language correctly by understanding grammar.                                           |
|                     |                                           | <b>CO5</b> | Identifies common grammatical mistakes made while writing in Hindi.                              |



|             |                                  |     |                                                                                                                                                                                     |
|-------------|----------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AR1311.1    | Arabic Prose                     | CO1 | Reading & Understanding literary and general works in Arabic CO 2:Understanding basic language structures by the reading of prose literature in Arabic                              |
|             |                                  | CO2 | Developing literary appreciation skills by the evaluation of model literature selections.                                                                                           |
| ML 1311.1   | Bhashavabodhavum Sargatmakatayum | CO1 | Introduce students to the aspects of Bhashavabodhavum Sargatmakatayum.                                                                                                              |
|             |                                  | CO2 | Familiarize students with the nature,relevance and characteristics of the study.                                                                                                    |
| SEMESTER IV |                                  |     |                                                                                                                                                                                     |
| 1411.1      | Hindi Kavitha evam Ekanki        | CO1 | Understand the aesthetics of ancient and modern poetry of Hindi.                                                                                                                    |
|             |                                  | CO2 | Appreciates the creativity of poets.                                                                                                                                                |
|             |                                  | CO3 | Understand the development of poetry.                                                                                                                                               |
|             |                                  | CO4 | Motivate to live a meaningful life.                                                                                                                                                 |
|             |                                  | CO5 | These poems ,novels and stories encourage our students to work hard and to choose a right way to get success and to avoid unfair means .                                            |
| AR1411.1    | Readings in Arabic Literature    | CO1 | Sensitizing the student to the aesthetic, cultural and social aspects of literary appreciation and analysis and the socio-literary elements of Classical & Modern Arabic Literature |
|             |                                  | CO2 | Understanding the distinct features of Classical & Modern Arabic Literature                                                                                                         |
|             |                                  | CO3 | Estimating the scope of various genres in Arabic Literature.                                                                                                                        |
| ML 1411.1   | Drishyakala Sahityam             | CO1 | Introduce students to the literary aspects of Drishyakala Sahityam (Drishya Kaumudi).                                                                                               |
|             |                                  | CO2 | Generate curiosity and an understanding of the Drishyakala Sahityam                                                                                                                 |

## CORE COURSES

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAM IN ENGLISH LANGUAGE AND LITERATURE**

**PROGRAM SPECIFIC OUTCOMES**

**PSO1:** Realize the divergent and plural voices that come into the making of the corpus of literary studies.

**PSO2 :** Understand literature as one of the many arts that seeks literary expression and its close connection with other art forms like painting, music, dance, movie and so on down the ages.

**PSO3 :** Imbibe the importance of a multidisciplinary approach to understanding the nuances of literary expressions.

**PSO4:** Understand the specific socio-cultural backdrop of the formation of literary representations.

**COURSE OUTCOME (CO)**

| COURSE CODE | COURSE NAME                        | COURSE OUTCOME |                                                                         |
|-------------|------------------------------------|----------------|-------------------------------------------------------------------------|
| SEMESTER I  |                                    |                |                                                                         |
| EN 1141     | Introduction to Literary Studies I | CO1            | Introduce varied literary representations.                              |
|             |                                    | CO2            | Familiarize students with the nature and characteristics of literature. |
|             |                                    | CO3            | Discuss the nature and characteristics of the literature                |
|             |                                    | CO4            | Introduce two key genres of literature, poetry and drama.               |
|             |                                    | CO5            | Possess a foundational understanding of poetry and drama.               |
| EN 1131     | Popular Literature and Culture     | CO1            | Encourage the student to think critically about popular literature.     |
|             |                                    | CO2            | Understand the categories of the popular and the canonical.             |

|                    |                                            |            |                                                                                                                                                            |
|--------------------|--------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                            | <b>CO3</b> | Identify the conventions, formulas, themes and styles of popular genres such as detective fiction, science fiction and fantasy, and children's literature. |
|                    |                                            | <b>CO4</b> | An assessment of the literary and cultural value of popular texts                                                                                          |
|                    |                                            | <b>CO5</b> | Sensitize students to the ways in which popular fiction reflects and engages with questions of gender, identity, ethics and education.                     |
| <b>SEMESTER II</b> |                                            |            |                                                                                                                                                            |
| <b>EN 1241</b>     | <b>Introduction to Literary Studies II</b> | <b>CO1</b> | Cherish a taste for the literary among students                                                                                                            |
|                    |                                            | <b>CO2</b> | Comprehend the nature and characteristics of different genres of literature.                                                                               |
|                    |                                            | <b>CO3</b> | Detailed awareness of the two key genres of literature-fiction and non-fiction                                                                             |
|                    |                                            | <b>CO4</b> | Imbibe the representational possibilities of the respective genres.                                                                                        |
|                    |                                            | <b>CO5</b> | Instill a creative and critical aptitude                                                                                                                   |
| <b>EN 1231</b>     | <b>Art and Literary Aesthetics</b>         | <b>CO1</b> | The student will be able to engage with literature from a broader, educated perspective.                                                                   |
|                    |                                            | <b>CO2</b> | The student will be able to think with greater originality and independence about the complex interrelationship between different art forms.               |
|                    |                                            | <b>CO3</b> | The student will be trained to engage sensitively and intelligently in new readings of literature.                                                         |

|                     |                                          |            |                                                                                                                                                                                            |
|---------------------|------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                          | <b>CO4</b> | The course develops an understanding of the correlation between literature, film, music and painting and encourages ways of reading and seeing which deliver insights into literary texts. |
|                     |                                          | <b>CO5</b> | Initiate students to implement the multidisciplinary scope of art and literary studies.                                                                                                    |
| <b>SEMESTER III</b> |                                          |            |                                                                                                                                                                                            |
| <b>EN 1341</b>      | <b>British Literature I</b>              | <b>CO1</b> | Comprehend the origins of English literature                                                                                                                                               |
|                     |                                          | <b>CO2</b> | Understand the specific features of the particular periods                                                                                                                                 |
|                     |                                          | <b>CO3</b> | Understand themes, structure and style adopted by early British writers                                                                                                                    |
|                     |                                          | <b>CO4</b> | Gain knowledge of the growth and development of British Literature in relation to the historical developments                                                                              |
|                     |                                          | <b>CO5</b> | Understand how writers use language and creativity to capture the human experience through different literary forms                                                                        |
| <b>EN 1321</b>      | <b>Evolution of the English Language</b> | <b>CO1</b> | Knowledge of the paradigm shifts in the development of English.                                                                                                                            |
|                     |                                          | <b>CO2</b> | Well aware of the historical paradigm shifts in the history the of English Language                                                                                                        |
|                     |                                          | <b>CO3</b> | Imbibe the plural socio cultural factors that went in to the shaping of the English Language.                                                                                              |
|                     |                                          | <b>CO4</b> | Place English language in a global context.                                                                                                                                                |
|                     |                                          | <b>CO5</b> | Recognize the politics of many ‘_Englishes’                                                                                                                                                |

|             |                                |     |                                                                                                                                                                    |
|-------------|--------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN 1331     | Narratives of Resistance       | CO1 | Be able to identify themes of resistance in different forms and genres of literature.                                                                              |
|             |                                | CO2 | Have a sense of the various kinds of injustice related to race, ethnicity, gender etc.                                                                             |
|             |                                | CO3 | Develop an idea of literature as a form of resistance to all forms of totalitarian authority.                                                                      |
|             |                                | CO4 | Understand the inter connection between various genres in manifesting resistance                                                                                   |
|             |                                | CO5 | How resistance is an undeniable presence in the everyday narratives of literary and other artistic expressions.                                                    |
| SEMESTER IV |                                |     |                                                                                                                                                                    |
| EN 1441     | British Literature II          | CO1 | Sensitize students to the changing trends in English literature in the 18th and 19th centuries and connect it with the sociocultural and political developments.   |
|             |                                | CO2 | Develop the critical thinking necessary to discern literary merit                                                                                                  |
|             |                                | CO3 | Be able to recognize paradigm shifts in literature                                                                                                                 |
|             |                                | CO4 | Be able to identify techniques, themes and concerns                                                                                                                |
|             |                                | CO5 | Connect literature to the historical developments that shaped the English history                                                                                  |
| EN 1442     | Literature of the 20th Century | CO1 | Understand social, political, aesthetic and cultural transformations of early twentieth century in relation to literary texts with their specific formal features. |

|            |                                                  |            |                                                                                                                           |
|------------|--------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------|
|            |                                                  | <b>CO2</b> | Know the stylistic features of Modernism and its various literary and aesthetic movements                                 |
|            |                                                  | <b>CO3</b> | Critically engage the ideas that characterise the period, especially the crisis of modernity                              |
|            |                                                  | <b>CO4</b> | Understand contemporary responses to the historical incidents that mark the period                                        |
|            |                                                  | <b>CO5</b> | Understand and use critical strategies that emerged in the early twentieth century.                                       |
| EN1431     | Philosophy for Literature                        | <b>CO1</b> | Have a diachronic understanding of the evolution of philosophy from the time of Greek masters to 20th century.            |
|            |                                                  | <b>CO2</b> | Have an awareness of the major schools of thought in western philosophy.                                                  |
|            |                                                  | <b>CO3</b> | Have a healthy epistemological foundation at undergraduate level that ensures scholarship at advanced levels of learning. |
|            |                                                  | <b>CO4</b> | Talk about some of the key figures in Philosophy.                                                                         |
|            |                                                  | <b>CO5</b> | Analyze and appreciate texts critically, from different philosophical perspectives                                        |
| SEMESTER V |                                                  |            |                                                                                                                           |
| EN 1541    | Literature of Late 20th Century and 21st Century | <b>CO1</b> | Identify the various socio-cultural changes that evolved in the late modernist period                                     |
|            |                                                  | <b>CO2</b> | Relate to the diverse currents of postmodern literature and its reflections in the contemporary ethos                     |

|                |                                                         |            |                                                                                                                                                           |
|----------------|---------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                         | <b>CO3</b> | Assimilate the inherent multiplicities and fluidity of societal perspectives                                                                              |
|                |                                                         | <b>CO4</b> | Develop an innate sympathy for the tragedies of Holocaust and an awareness regarding the environmental impasses threatening the modern world              |
|                |                                                         | <b>CO5</b> | Empathise with the marginalised and comprehend their predicament.                                                                                         |
| <b>EN 1542</b> | <b>Postcolonial Literatures</b>                         | <b>CO1</b> | Ability to critique colonial history                                                                                                                      |
|                |                                                         | <b>CO2</b> | Awareness of the socio-political contexts of colonialism and post colonialism                                                                             |
|                |                                                         | <b>CO3</b> | Understanding of the effects of colonialism in various nations                                                                                            |
|                |                                                         | <b>CO4</b> | Knowledge of the key terms in post-colonial thought                                                                                                       |
|                |                                                         | <b>CO5</b> | Study of the race and gender dynamics in postcolonial literature                                                                                          |
| <b>EN 1543</b> | <b>20th Century Malayalam Literature in Translation</b> | <b>CO1</b> | Generate knowledge about the varied milieu of the development and growth of Malayalam literature and be sensitive to its socio cultural and political imp |
|                |                                                         | <b>CO2</b> | Get a basic knowledge of the literary and the non-literary works produced in Malayalam                                                                    |
|                |                                                         | <b>CO3</b> | Discern the vibrancy of Malayalam literature                                                                                                              |
|                |                                                         | <b>CO4</b> | Sense the distinctness of the socio-cultural arena in which Malayalam literature Is produced                                                              |

|                |                                                          |            |                                                                                                                                      |
|----------------|----------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                          | <b>CO5</b> | Know the value of literature produced in regional languages and key role of translation in the growth of language and literature.    |
| <b>EN 1544</b> | <b>Linguistics and Structure of the English Language</b> | <b>CO1</b> | Understand the phonological and grammatical structure of English Language                                                            |
|                |                                                          | <b>CO2</b> | Be able to analyse actual speech in terms of the principle of linguistics                                                            |
|                |                                                          | <b>CO3</b> | Improve the accent and pronunciation of the language                                                                                 |
|                |                                                          | <b>CO4</b> | Introduce the students to internationally accepted forms of speech and writing in English.                                           |
|                |                                                          | <b>CO5</b> | Explore the ancient linguistic tradition of India                                                                                    |
| <b>EN 1545</b> | <b>Criticism and Theory</b>                              | <b>CO1</b> | Analyze and appreciate texts critically, from different perspectives.                                                                |
|                |                                                          | <b>CO2</b> | Appreciate Indian Aesthetics and find linkages between Western thought and Indian critical tradition.                                |
|                |                                                          | <b>CO3</b> | Show an appreciation of the relevance and value of multidisciplinary theoretical models in literary study.                           |
|                |                                                          | <b>CO4</b> | Demonstrate an understanding of important theoretical methodologies and develop an aptitude for critical analysis of literary works. |
|                |                                                          | <b>CO5</b> | Gain a critical and pluralistic understanding and perspective of life                                                                |



|             |                                       |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|---------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN 1551.1   | Communicative Applications in English | CO1 | Learners majoring in some subject other than English will have a working knowledge of the type of English that is required in real life situations, especially the globalized workplace.                                                                                                                                                                                                                              |
|             |                                       | CO2 | Well trained to write clear, well-framed, polite but concise formal letters and e-mails for a variety of purposes                                                                                                                                                                                                                                                                                                     |
|             |                                       | CO3 | Acquire some of the soft-skills that go hand in hand with English –namely, the ability to prepare for an interview and face it confidently, the ability to participate boldly a group discussion and contribute meaningfully to it, the ability to make a simple and interesting presentation of 5-10 minutes before a mixed audience on anything that they have learnt in the previous semesters of the UG programme |
| SEMESTER VI |                                       |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |
| EN 1641     | Gender Studies                        | CO1 | Recognize the patriarchal bias in the formation of history and knowledge.                                                                                                                                                                                                                                                                                                                                             |
|             |                                       | CO2 | Analyse the ways in which gender, race, ethnicity class, caste and sexuality construct the social, cultural and biological experience of both men and women in all societies.                                                                                                                                                                                                                                         |
|             |                                       | CO3 | Recognize and use the major theoretical frames of analysis in gender studies                                                                                                                                                                                                                                                                                                                                          |
|             |                                       | CO4 | Interrogate the social constructions of gender and the limiting of the same in to the male-female binary in its intersections with culture, power, sexualities and nationalities                                                                                                                                                                                                                                      |

|                |                                  |            |                                                                                                                                                      |
|----------------|----------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                  | <b>CO5</b> | Examine gender issues in relation to the sustainable goals of development.                                                                           |
| <b>EN 1642</b> | <b>Indian Writing in English</b> | <b>CO1</b> | Make students aware of different aspects of colonization like cultural colonization.                                                                 |
|                |                                  | <b>CO2</b> | Trace the historical and literary genesis and development of Indian Writing in English                                                               |
|                |                                  | <b>CO3</b> | Acquaint them with the major movements in Indian Writing in English across varied period and genres                                                  |
|                |                                  | <b>CO4</b> | Address the plurality of literary and socio-cultural representations within Indian life as well as letters.                                          |
|                |                                  | <b>CO5</b> | Enhance the literary and linguistic competence of students by making them aware of how language works through literature written in the subcontinent |
| <b>EN 1643</b> | <b>Film Studies</b>              | <b>CO1</b> | Recognize the language of films and use it creatively.                                                                                               |
|                |                                  | <b>CO2</b> | Analyze films from both technical and non-technical perspectives                                                                                     |
|                |                                  | <b>CO3</b> | Engage questions of social justice and gender justice by critiquing representations of culture.                                                      |
|                |                                  | <b>CO4</b> | Use film as a medium of communication                                                                                                                |
|                |                                  | <b>CO5</b> | Derive an interest in various careers related to film                                                                                                |

|                  |                         |            |                                                                                                                                                                                                            |
|------------------|-------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EN 1644</b>   | <b>World Classics</b>   | <b>CO1</b> | Understand the study of Classics as a means of discovery and enquiry into the formations of great literary works and how the rich imagery of these classical works continues beyond the twentieth century. |
|                  |                         | <b>CO2</b> | Recognize the diversity of cultures and the commonalities of human experience reflected in the literature of the world.                                                                                    |
|                  |                         | <b>CO3</b> | Imbibe a fair knowledge in the various Classical works from different parts of the world, at different time periods, across cultures.                                                                      |
|                  |                         | <b>CO4</b> | Examine oneself and one's culture through multiple frames of reference, including the perception of others from around the world.                                                                          |
|                  |                         | <b>CO5</b> | Develop and aesthetic sense to appreciate and understand the various literary works with a strong foundation in the World Classics.                                                                        |
| <b>EN 1661.3</b> | <b>Creative Writing</b> | <b>CO1</b> | Create a body of original creative works which exhibit basic elements of literary writing.                                                                                                                 |
|                  |                         | <b>CO2</b> | Generate the ability to apply the creative as well as critical approaches to the reading and writing of literary genres.                                                                                   |
|                  |                         | <b>CO3</b> | Critique and support the creative writing of peers in a guided workshop environment.                                                                                                                       |
|                  |                         | <b>CO4</b> | Engage in literary output by identifying, analyzing and expressing socially sensitive and personally abstract themes and ideas.                                                                            |

|  |  |            |                                                                                 |
|--|--|------------|---------------------------------------------------------------------------------|
|  |  | <b>CO5</b> | Gain expertise in providing critical readings of works of literary expressions. |
|--|--|------------|---------------------------------------------------------------------------------|

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAM IN COMMUNICATIVE ENGLISH & LITERATURE**

**PROGRAM SPECIFIC OUTCOMES**

**PSO1** Realize the divergent and plural voices that come into the making of the corpus of literary studies.

**PSO2** Understand literature as one of the many arts that seeks literary expression and its close connection with other art forms like painting, music, dance, movie and so on down the ages.

**PSO3** Imbibe the importance of a multidisciplinary approach to understanding the nuances of literary expressions.

**PSO4** Understand the specific socio-cultural backdrop of the formation of literary representations.

**COURSE OUTCOME (CO)**

| PAPER<br>CODE | COURSE NAME                                     | COURSE OUTCOME |                                                                                                     |
|---------------|-------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------|
| SEMESTER I    |                                                 |                |                                                                                                     |
| CG 1141       | Core I :<br>Introduction To<br>Literary Studies | CO1            | Introduce varied literary representations.                                                          |
|               |                                                 | CO2            | Comprehend the nature and characteristics of literature.                                            |
|               |                                                 | CO3            | Possess a foundational understanding of literary forms and representations.                         |
| CG 1171       | Vocational Course I:<br>Soft Skills             | CO1            | Advance unique soft skills which is beneficial for a successful life and better career performances |
|               |                                                 | CO2            | Increase personal, social and professional skills                                                   |
|               |                                                 | CO3            | Confront their surroundings enthusiastically with confidence                                        |
| CG 1131       | Complementary<br>Course I: English<br>For       | CO1            | Understand ESP and differentiate English for General Purpose and English for Specific Purpose       |

|             |                                                                    |     |                                                                                                                                                                                                   |
|-------------|--------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | Specific Purposes                                                  | CO2 | Be able to speak and write English for various specific purposes                                                                                                                                  |
|             |                                                                    | CO3 | Familiarize with the vocabulary and language of Business English, Technical English, Travel English, Medical English, Legal English, English for Logistics, BPO English                           |
| SEMESTER II |                                                                    |     |                                                                                                                                                                                                   |
| CG 1241     | Core II: British Literature I                                      | CO1 | Comprehend the origins and development of British literature and understand the specific features of the particular periods<br>Gain knowledge of growth and development of                        |
|             |                                                                    | CO2 | Understand the major concerns, structure and style adopted by early British writers                                                                                                               |
|             |                                                                    | CO3 | British Literature in relation to the historical developments                                                                                                                                     |
| CG 1242     | Core III:Narratives Of Resistance                                  | CO1 | Be able to identify themes of resistance in different forms and genres of literature and to identify injustices related to race, ethnicity, sexuality, gender etc. prevalent in society.          |
|             |                                                                    | CO2 | Develop an idea of literature as a form of resistance to all forms of totalitarian authority.                                                                                                     |
|             |                                                                    | CO3 | Understand the inter connection between various genres in manifesting resistance and how it becomes an undeniable presence in the everyday narratives of literary and other artistic expressions. |
| CG 1271     | Vocational Course II: Narratives Of Social Justice And Restitution | CO1 | Make students cognizant regarding pressing social issues and to apply language skills, knowledge, and social skills to identify and defend human rights violations.                               |
|             |                                                                    | CO2 | Acquire skills of social work intervention in human needs and societal issues.                                                                                                                    |
|             |                                                                    | CO3 | Consider the importance of law and imbibe a clear set of values which informs the social work practice                                                                                            |
| CG 1231     | Complementary Course II: Language For Media                        | CO1 | Develop specific language skills for various media                                                                                                                                                |
|             |                                                                    | CO2 | Comprehend the trends and evolution of language use in media                                                                                                                                      |

|                     |                                                                 |            |                                                                                                           |
|---------------------|-----------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------|
|                     |                                                                 | <b>CO3</b> | Understand the role and use of language in the evolutionary history of medias                             |
| <b>SEMESTER III</b> |                                                                 |            |                                                                                                           |
| <b>CG 1341</b>      | <b>Reading Fiction</b>                                          | <b>CO1</b> | 1. To make students aware of the diverse fictional forms in prose.                                        |
|                     |                                                                 | <b>CO2</b> | To enable them to analyse and appreciate various fictional writings.                                      |
|                     |                                                                 | <b>CO3</b> | To give them an insight into other cultures                                                               |
|                     |                                                                 | <b>CO4</b> | To help them think and write imaginatively                                                                |
| <b>CG 1342</b>      | <b>20th Century Malayalam Literature In English Translation</b> | <b>CO1</b> | To introduce the students to the richness of twentieth century Malayalam writing                          |
|                     |                                                                 | <b>CO2</b> | To provide the students a basic understanding of twentieth century Malayalam Writing                      |
|                     |                                                                 | <b>CO3</b> | To introduce to them some of the major twentieth century Malayalam writers                                |
|                     |                                                                 | <b>CO4</b> | To help them analyse and appreciate twentieth century Malayalam literature                                |
| <b>CG 1331</b>      | <b>History Of English Literature - III</b>                      | <b>CO1</b> | To give an understanding of the history of literature                                                     |
| <b>SEMESTER IV</b>  |                                                                 |            |                                                                                                           |
| <b>EN 1441</b>      | <b>Reading Prose</b>                                            | <b>CO1</b> | To help students understand and appreciate different types of prose writing.                              |
|                     |                                                                 | <b>CO2</b> | To introduce to them the basics concepts of style and literary devices in prose.                          |
|                     |                                                                 | <b>CO3</b> | To acquaint them with cultural diversity and divergence in perspectives.                                  |
|                     |                                                                 | <b>CO4</b> | To enable them to write creatively and critically.                                                        |
| <b>EN 1421</b>      | <b>Informatics</b>                                              | <b>CO1</b> | To update and expand basic informatics skill and attitudes relevant to the emerging knowledge society     |
|                     |                                                                 | <b>CO2</b> | To equip students to utilize the digital knowledge resources effectively for their chosen fields of study |
| <b>CG 1431</b>      | <b>History Of English Language</b>                              | <b>CO1</b> | To familiarize students with the origin and development of the English Language                           |
|                     |                                                                 | <b>CO2</b> | To make them aware of the changes in different areas of the language                                      |

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAM IN MALAYALAM****PROGRAM SPECIFIC OUTCOMES**

**PSO 1.** Gaining a basic understanding of various fields of Malayalam language, culture and literature, different stages of growth of literature.

**PSO 2.** Form new ideas and perspectives through attitudes, thinking, investigative reading, and review of critique literary works.

**PSO 3.** Growth of interest in research in the fields of literary theory, literary criticism, and literary historiography.

**PSO 4.** Gaining knowledge about the academic status of Malayalam language.

**PSO 5.** Strengthening understanding and application of language and vocabulary.

**PSO 6.** Gaining confidence to form original thinking and worldview.

**PSO 7.** Acquiring ability to participate in cultural forums and debates.

**PSO 8.** Achieving capacity to participate in competitive examinations including National Level Civil Services Examinations.

**COURSE OUTCOME (CO)**

| PAPER<br>CODE | COURSE NAME      | COURSE OUTCOME |                                                           |
|---------------|------------------|----------------|-----------------------------------------------------------|
| SEMESTER I    |                  |                |                                                           |
| ML1141        | Novel Sahithyam  | CO1            | Introduce students to the world of Novel literature.      |
|               |                  | CO2            | Introduce the key Novelists and their contributions.      |
|               |                  | CO3            | Possess a foundational understanding of poetry and Novel. |
| ML 1131.1     | Kerala Padanam-1 | CO1            | Introduce students to Kerala literary aspects.            |

|                     |                                                                                        |     |                                                                                                                          |
|---------------------|----------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------|
|                     |                                                                                        | CO2 | Familiarize students with the nature, relevance and characteristics of the study.                                        |
|                     |                                                                                        | CO3 | Develop an understanding of the various eras of Kerala history and culture.                                              |
| SK1131.2            | Sanskrit -1                                                                            | CO1 | Introduce students to the world of Sanskritham.                                                                          |
|                     |                                                                                        | CO2 | Introduce varied literary representations.                                                                               |
| <b>SEMESTER II</b>  |                                                                                        |     |                                                                                                                          |
| ML 1241             | Nadakam Sahithyam                                                                      | CO1 | Introduce students to the world of Drama literature.                                                                     |
|                     |                                                                                        | CO2 | Introduce the key figures in the Drama literature and their contributions.                                               |
| ML 1231.1           | Kerala Padanam - 2                                                                     | CO1 | Develop deeper knowledge in the Kerala literary aspects.                                                                 |
|                     |                                                                                        | CO2 | In-depth knowledge to the nature, relevance and characteristics of the study.                                            |
|                     |                                                                                        | CO3 | Significance of the literary works in shaping the Kerala history and culture.                                            |
| SK 1231.2           | Sanskrit-2                                                                             | CO1 | Develop deeper knowledge to the world of Sanskritham.                                                                    |
| <b>SEMESTER III</b> |                                                                                        |     |                                                                                                                          |
| ML 1321             | Foundation Course-II(Informatics)-Vivara Sanketi kavidyayum Malayalam Bhasha Padanavum | CO1 | Introduce students to the connections between and the relevance of Information Technology in Malayalam Bhasha Padanavum. |
|                     |                                                                                        | CO2 | Familiarize students with the latest trends in Malayalam language.                                                       |
| ML 1331             | Paristhithi Padanam                                                                    | CO1 | To develop an understanding of environmental studies.                                                                    |



|             |                                                    |     |                                                                                                   |
|-------------|----------------------------------------------------|-----|---------------------------------------------------------------------------------------------------|
|             |                                                    |     |                                                                                                   |
| SK 1331.2   | Sanskrit-3                                         | CO1 | Develop core and in-depth knowledge of Sanskritham.                                               |
| ML 1341     | Sahityameemamsa:<br>Pourasthyavum<br>Paschathyavum | CO1 | Introduce students to literary spaces of Sahityameemamsa.                                         |
|             |                                                    | CO2 | To generate curiosity for making a comparative study of the Pourasthya and Paschathya literature. |
| SEMESTER IV |                                                    |     |                                                                                                   |
| ML 1441     | Aadhunika<br>Malayala Kavitha                      | CO1 | To develop an understanding of Modern Malayalam Poetry.                                           |
| ML 1442     | Niroopana Sahithya                                 | CO1 | Familiarize students with Malayalam Critical Studies.                                             |
| ML-1431     | Dalit Sahityam,<br>Streevada Sahityam              | CO1 | To develop an understanding of the Dalit Sahityam and Streevada Sahityam in Malayalam literature. |
| SK 1431.2   | Sanskrit-4                                         | CO1 | To strengthen the in-depth knowledge of Sanskritham.                                              |

| SEMESTER V  |                                               |     |                                                                                                                                         |
|-------------|-----------------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------|
| ML1541      | Bhashasastram                                 | CO1 | To familiarize students with Bhashasastram.                                                                                             |
| ML1542      | Cherukadha padanam                            | CO2 | To develop an understanding of Cherukadhapadanam                                                                                        |
| ML1543      | Vivarthanam: Sidhanthavum Prayogavum          | CO1 | To familiarize students with Vivarthana Sahityam.                                                                                       |
|             |                                               | CO2 | To develop an understanding of its applications.                                                                                        |
| ML1544      | Jeevacharithram, Aathmakadha, Yathra Sahityam | CO1 | To develop an understanding Of Jeevacharithram, Aathmakadha, Yathra Sahityam.                                                           |
| ML1545      | Malayala Bhasha Sahitya Charithram-1          | CO1 | To develop an understanding of Malayala Bhasha Sahitya Charithram.                                                                      |
|             |                                               | CO2 | To familiarize students with the various stages of developments in the literature.                                                      |
| ML 1551.3   | Open Course -1 Chalachitra Padanam            | CO1 | To develop an understanding of Chalachitra Padanam.                                                                                     |
|             |                                               | CO2 | To understand Various aspects of film and media.                                                                                        |
| SEMESTER VI |                                               |     |                                                                                                                                         |
| ML 1641     | Malayalam Bhasha Sahitya Charitram-2          | CO1 | To develop a deeper understanding of Malayala Bhasha Sahitya Charithram.                                                                |
|             |                                               | CO2 | To generate curiosity among student for learning more about the literature and familiarize them with the key contributors to the field. |
| ML 1642     | MalayalaVyakaranam                            | CO1 | Understand the phonological and grammatical structure of Malayalam Language                                                             |
|             |                                               | CO2 | To analyze actual speech in terms of the principle of linguistics                                                                       |

|           |                                   |     |                                                                                      |
|-----------|-----------------------------------|-----|--------------------------------------------------------------------------------------|
|           |                                   | CO3 | Introduce the students to various forms of speech and writing in Malayalam.          |
|           |                                   | CO4 | Explore the linguistic variations of Malayalam language                              |
| ML 1643   | Aadhunika Poorva Malayala Kavitha | CO1 | To familiarize students with Aadhunika Poorva Malayala Kavitha.                      |
| ML 1644   | Nattarivu Padanam                 | CO1 | To develop an understanding of Nattarivu Padanam.                                    |
| ML 1651.1 | Elective- Tharatamya Sahityam     | CO1 | To familiarize students with the Tharatamya Sahityam.                                |
|           |                                   | CO2 | To develop an understanding of the various stages of developments in the literature. |
| ML 1645   | Desertation or Project            | CO1 | To familiarize students with processes of dissertation or Project work.              |
|           |                                   | CO2 | Equip students to conduct dissertation or Project work.                              |

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAM IN ARABIC  
LANGUAGE AND LITERATURE**

**PROGRAM SPECIFIC OUTCOMES**

**PSO1.** Introducing the learners to the lingua franca of the Arab countries and also to equip them to acquire basic skills in professional and functional Arabic.

**PSO 2.** Equipping the learners to seek employment in several new fields, in India and Gulf-Arab countries, which demands knowledge in functional Arabic

**PSO 3.** Developing communication skills and inculcating values of communication among students.

**PSO 4.** Equipping the students to handle Arabic language in Real life situations with working knowledge in different walks of life

**PSO 5.** Understanding the colloquial usages of Modern Arabic prevalent in Major Arab countries

**PSO 6.** Perfecting the mastery of Arabic language with sufficient knowledge in applied grammar

**PSO 7.** Acquiring proficiency in professional translation & business Arabic Reading & Understanding literary and general works in Arabic

**COURSE OUTCOME (CO)**

| COURSE CODE | COURSE NAME              | COURSE OUTCOME |                                                                                                                                                                                                                                 |
|-------------|--------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I  |                          |                |                                                                                                                                                                                                                                 |
| AR1141      | Grammar & Morphology I   | CO1            | Moulding the students to identify and analyze the basic sentence patterns and grammar of Arabic language.                                                                                                                       |
|             |                          | CO2            | Assimilating the four basic language skills in students - Listening, Speaking, reading and Writing.                                                                                                                             |
|             |                          | CO3            | Enabling to distinguish and apprehend the meaning of grammatical structures in spoken and written form.                                                                                                                         |
|             |                          | CO4            | Using Arabic effectively for study purpose across the curriculum.                                                                                                                                                               |
|             |                          | CO5            | Making students use grammatical terminology precisely for effective analyses of sentence structures within Arabic texts.                                                                                                        |
|             |                          | CO6            | Getting acquaintance with the rules of word formation.                                                                                                                                                                          |
| AR1131      | Ancient History of Arabs | CO1            | Exploring the historical background and progress of Islam from the period of ignorance to the demise of the Prophet Muhammad (pbuh) and how the Islamic culture and civilization affected the history and destiny of the Arabs. |

|                    |                                    |            |                                                                                                                                                                                                                            |
|--------------------|------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                    | <b>CO2</b> | Getting an introduction to Islamic History and its culture                                                                                                                                                                 |
|                    |                                    | <b>CO3</b> | Understanding the cultural and historical background of Islam in the medieval history of mankind                                                                                                                           |
|                    |                                    | <b>CO4</b> | Evaluating the course and development of Islam during the life time of the Prophet.                                                                                                                                        |
| <b>AR1132</b>      | <b>Basic Translation</b>           | <b>CO1</b> | Helping the students to update and expand basic secretarial and translation skills and attitudes relevant to the application of Arabic in the commercial and correspondence field.                                         |
|                    |                                    | <b>CO2</b> | Expanding translation and correspondence skills related to various business areas                                                                                                                                          |
|                    |                                    | <b>CO3</b> | Familiarizing with technical language and commercial vocabulary in the different domains                                                                                                                                   |
|                    |                                    | <b>CO4</b> | Acquiring essential mastery in technical Arabic.                                                                                                                                                                           |
| <b>SEMESTER II</b> |                                    |            |                                                                                                                                                                                                                            |
| <b>AR1241</b>      | <b>Grammar &amp; Morphology II</b> | <b>CO1</b> | Moulding the students to identify and analyze the basic sentence patterns and grammar of Arabic                                                                                                                            |
|                    |                                    | <b>CO2</b> | language to apply it in real communication contexts effectively and accurately.                                                                                                                                            |
|                    |                                    | <b>CO3</b> | Assimilating the four basic language skills in students - Listening. Speaking, reading and Writing.                                                                                                                        |
|                    |                                    | <b>CO4</b> | Enabling to distinguish and apprehend the meaning of grammatical structures in spoken and written form.                                                                                                                    |
|                    |                                    | <b>CO5</b> | Making students use grammatical terminology precisely for effective analyses of sentence structures within Arabic texts.                                                                                                   |
|                    |                                    | <b>CO6</b> | Getting acquaintance with the rules of word formation                                                                                                                                                                      |
| <b>AR1231</b>      | <b>Medieval History of Arabs</b>   | <b>CO1</b> | Exploring the historical background and progress of Islam from the period of the pious Caliphs to the reign of Abbasids and how the Arab- Muslim culture and civilization affected the history and destiny of the Mankind. |
|                    |                                    | <b>CO2</b> | Getting an introduction to Islamic History and its culture                                                                                                                                                                 |

|              |                      |     |                                                                                                                                                              |
|--------------|----------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                      | CO3 | Understanding the cultural and historical background of Islam in the medieval history of mankind                                                             |
|              |                      | CO4 | Evaluating the course and development of Islam during the life time of the Prophet.                                                                          |
|              |                      | CO5 | Assessing the course of Islam and Muslim rule during the periods of the pious Califs, the Umayyads and the Abbasids.                                         |
|              |                      | CO6 | Studying how the medieval Arabs contributed to the development of human knowledge and science in the Middle Ages                                             |
| AR1232       | Advanced Translation | CO1 | Helping the students to update and expand advanced translation skills and attitudes relevant to the application of Arabic in the commercial fields.          |
|              |                      | CO2 | Expanding translation skills related to various business areas<br>Familiarizing with technical language and commercial vocabulary in the different domains   |
|              |                      | CO3 | Acquiring essential mastery in technical Arabic                                                                                                              |
| SEMESTER III |                      |     |                                                                                                                                                              |
| AR1321       | Arabic Rhetoric      | CO1 | Sensitizing the students to the theories of rhetoric in Arabic literary heritage                                                                             |
|              |                      | CO2 | Preparing the students for a rhetoric approach of literary appreciation and evaluation                                                                       |
|              |                      | CO3 | Understanding the concepts of Arabic rhetoric and poetics                                                                                                    |
|              |                      | CO4 | Understanding how to use the rhetoric techniques in literature Familiarizing with the difference between literary texts and other pieces of scientific texts |
| AR1341       | Elementary Arabic I  | CO1 | Imparting the language skills by helping the students to use Arabic as medium of expression                                                                  |
|              |                      | CO2 | Perfecting the mastery of language with efficient communicative skills                                                                                       |
|              |                      | CO3 | Acquiring advanced vocabulary and language structure                                                                                                         |
|              |                      | CO4 | Using Arabic as a communication medium.                                                                                                                      |

|             |                          |     |                                                                                                                                                                                                                                                                                      |
|-------------|--------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AR1331      | Modern History of Arabs  | CO1 | Exploring the historical background and progress of Islam during the Middle Ages and explore the history and evolution of the modern Muslim world.                                                                                                                                   |
|             |                          | CO2 | Getting an introduction to Islamic History and its culture                                                                                                                                                                                                                           |
|             |                          | CO3 | Understanding the cultural and historical background of Islam in the medieval history of mankind                                                                                                                                                                                     |
|             |                          | CO4 | Evaluating the course and development of Islam Muslim rule in Spain and Medieval world and its effect on the political history of the world                                                                                                                                          |
|             |                          | CO5 | Understanding the history and challenges of Modern Arab-Muslim world with special reference to India and Kerala                                                                                                                                                                      |
|             |                          | CO6 | Studying how the medieval Arabs contributed to the development of human knowledge and science in the Middle Ages                                                                                                                                                                     |
| AR1332      | Indian Arabic Literature | CO1 | Introducing the students to the world of Indo-Arabic literature and to identify the commonness in the works of Arab literary personalities and Indian writers in Arabic Tracing the development of Indo-Arabic literature Getting an analytical knowledge of Arabic writing in India |
|             |                          | CO2 | Finding out the differences and commonness between Middle East literature and Indian Arabic                                                                                                                                                                                          |
|             |                          | CO3 | literature Studying how Arabic literature was acted as a medium of resistance against European colonialism in Medieval Malabar                                                                                                                                                       |
| SEMESTER IV |                          |     |                                                                                                                                                                                                                                                                                      |
| AR1441      | Elementary Arabic II     | CO1 | Imparting the language skills by helping the students to use Arabic as medium of expression                                                                                                                                                                                          |
|             |                          | CO2 | Perfecting the mastery of language with efficient communicative skills                                                                                                                                                                                                               |
|             |                          | CO3 | Acquiring advanced vocabulary and language structure                                                                                                                                                                                                                                 |

|            |                                          |     |                                                                                                                                                                                  |
|------------|------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AR1442     | History of Classical Literature          | CO1 | Sensitizing the student to the aesthetic, cultural and social aspects of literary appreciation and analysis                                                                      |
|            |                                          | CO2 | Understanding the unbroken literary tradition in Arabic                                                                                                                          |
|            |                                          | CO3 | Getting an analytical and in depth knowledge of the literary creations, authors, trends, etc.                                                                                    |
|            |                                          | CO4 | Focusing on the relation between literature and Bedouin life in Arabia                                                                                                           |
|            |                                          | CO5 | Studying the approach of religion to arts and literature                                                                                                                         |
| AR1431     | Classical Arabic Prose                   | CO1 | Sensitizing the student to the aesthetic, cultural and social aspects of literary appreciation and analysis and the socio-literary elements of Classical Arabic prose literature |
|            |                                          | CO2 | Understanding the distinct features of Jahiliyya and Islamic prose literature                                                                                                    |
|            |                                          | CO3 | Estimating the scope of various genres of classical Arabic prose Studying the relation between literature and Bedouin life in Arabia                                             |
|            |                                          | CO4 | Appreciating the influence of Islam in the Arabic prose literature                                                                                                               |
| AR1432     | Classical Arabic Poetry                  | CO1 | Sensitizing the student to the aesthetic, cultural and social aspects of literary appreciation and analysis and the socio-literary elements of Classical Arabic Poetry           |
|            |                                          | CO2 | Understanding the distinct features of Jahiliyya and Islamic Poetry Estimating the scope of various genres of classical Arabic Poetry                                            |
|            |                                          | CO3 | Studying the relation between literature and Bedouin life in Arabia                                                                                                              |
|            |                                          | CO4 | Appreciating the influence of Islam in the Arabic Poetry                                                                                                                         |
| SEMESTER V |                                          |     |                                                                                                                                                                                  |
| AR1551     | A Package in Gulf Arabic (Open Course I) | CO1 | Introducing the learners to the lingua franca of the Arab countries and also to equip them to acquire basic skills in professional and functional Arabic.                        |



|               |                                        |            |                                                                                                                                                                                  |
|---------------|----------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                                        | <b>CO2</b> | Equipping the learners to seek employment in several new fields, in India and Gulf-Arab countries which demands knowledge in functional Arabic                                   |
|               |                                        | <b>CO3</b> | Understanding the elementary components of Arabic                                                                                                                                |
|               |                                        | <b>CO4</b> | Acquiring basic working knowledge in Communicative Arabic                                                                                                                        |
|               |                                        | <b>CO5</b> | Using Arabic as a functional language by developing written, oral and translation skills.CO                                                                                      |
|               |                                        | <b>CO6</b> | Understanding the colloquial usages of Modern Arabic prevalent in Major Arab countries                                                                                           |
|               |                                        | <b>CO7</b> | Acquiring a practical knowledge in functional Arabic required for the fields of Travel, Tourism, Hospitality Management. Advertisement, Health, Export and Journalism.           |
| <b>AR1541</b> | <b>Reading classical Arabic Prose</b>  | <b>CO1</b> | Sensitizing the student to the aesthetic, cultural and social aspects of literary appreciation and analysis and the socio-literary elements of Classical Arabic prose literature |
|               |                                        | <b>CO2</b> | Understanding the distinct features of Jahiliyya and Islamic prose literature                                                                                                    |
|               |                                        | <b>CO3</b> | Estimating the scope of various genres of classical Arabic prose Studying the relation between literature and Bedouin life in Arabia                                             |
|               |                                        | <b>CO4</b> | Appreciating the influence of Islam in the Arabic prose literature                                                                                                               |
| <b>AR1542</b> | <b>Reading Classical Arabic Poetry</b> | <b>CO1</b> | Sensitizing the student to the aesthetic, cultural and social aspects of literary appreciation and analysis and the socio-literary elements of Classical Arabic Poetry           |
|               |                                        | <b>CO2</b> | Understanding the distinct features of Jahiliyya and Islamic Poetry Estimating the scope of various genres of classical Arabic Poetry                                            |
|               |                                        | <b>CO3</b> | Studying the relation between literature and Bedouin life in Arabia                                                                                                              |
|               |                                        | <b>CO4</b> | Appreciating the influence of Islam in the Arabic Poetry                                                                                                                         |
| <b>AR1543</b> | <b>Rhetoric &amp; poetics</b>          | <b>CO1</b> | Sensitizing the students to the theories of rhetoric in Arabic literary heritage                                                                                                 |

|                    |                                                                           |            |                                                                                                                                                                                      |
|--------------------|---------------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                                           | <b>CO2</b> | Preparing the students for a rhetoric approach of literary appreciation and evaluation                                                                                               |
|                    |                                                                           | <b>CO3</b> | Understanding the concepts of Arabic rhetoric and poetics                                                                                                                            |
|                    |                                                                           | <b>CO4</b> | Understanding how to use the rhetoric techniques in literature Familiarizing with the difference between literary texts and other pieces of scientific texts                         |
| <b>AR1544</b>      | <b>Literature in Arabic 750-1800 AD</b>                                   | <b>CO1</b> | Introducing the students to the aesthetic, cultural and social spheres of Medieval Arabic literary heritage and the influence of politics, religion and culture in Arabic literature |
|                    |                                                                           | <b>CO2</b> | Understanding the distinct features of Abbasid and Turkish literature in Arabic                                                                                                      |
|                    |                                                                           | <b>CO3</b> | Estimating the scope of various genres of medieval Arabic prose and poetry. Studying the relation between literature and other socio-cultural elements                               |
|                    |                                                                           | <b>CO4</b> | Appreciating the influence of Islam and politics in the Medieval Arabic literature                                                                                                   |
| <b>AR1545</b>      | <b>Reading Medieval Arabic prose and poetry</b>                           | <b>CO1</b> | Sensitizing the student to the aesthetic, cultural and social aspects of literary appreciation and analysis and the socio literary elements of Medieval Arabic literature            |
|                    |                                                                           | <b>CO2</b> | Understanding the distinct features of Abbasi, Mamluki, Ottoman and Spanish Arabic literature                                                                                        |
|                    |                                                                           | <b>CO3</b> | Estimating the scope of various genres of Medieval Arabic prose and poetry Studying the relation between literature and geographical and socio-cultural elements in the great        |
|                    |                                                                           | <b>CO4</b> | Appreciating the influence of medieval Muslim politics in the Arabic literature                                                                                                      |
| <b>SEMESTER VI</b> |                                                                           |            |                                                                                                                                                                                      |
| <b>AR1641</b>      | <b>Literature in Arabic 19<sup>th</sup> and 20<sup>th</sup> centuries</b> | <b>CO1</b> | Following up the development of new literature in Arabic from the beginning of European invasion into the Arab world in 19th and 20th centuries                                      |

|        |                                      |     |                                                                                                                                                                                                               |
|--------|--------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |                                      |     | Understanding the distinct features of Modern literature in Arabic                                                                                                                                            |
|        |                                      | CO2 | Introducing new literary schools and trends in Arabic literature Estimating the scope of various genres of Contemporary Arabic prose and poetry.                                                              |
|        |                                      | CO3 | Assessing the influence of western literature and culture in the Arabic literature                                                                                                                            |
|        |                                      | CO4 | Tracing the development of modern Arabic literature in various Arab regions                                                                                                                                   |
| AR1642 | Reading Modern Arabic Prose & Poetry | CO1 | Introducing the student to the world of various literary genres of modern Arabic literary output and sensitizing them to the aesthetic, western and traditional aspects of literary appreciation and analysis |
|        |                                      | CO2 | Assessing the difference between literary prose and artistic prose in modern Arabic                                                                                                                           |
|        |                                      | CO3 | Introducing the student to the world of various literary genres of modern Arabic literary output and sensitizing them to the aesthetic, western and traditional aspects of literary appreciation and Analysis |
|        |                                      | CO4 | Introducing the student to the world of various literary genres of modern Arabic literary output and sensitizing them to the aesthetic, western and traditional aspects of literary appreciation and Analysis |
|        |                                      | CO5 | CO5:Appreciating the influence of western literature in Arabic literary personalities                                                                                                                         |
|        |                                      | CO6 | Understanding the characteristics of modern literature in Arabic                                                                                                                                              |
| AR1643 | Narrative Literature                 | CO1 | Guiding the students to the world of Arabic narrative heritage by providing a reading list of narrative literature                                                                                            |
|        |                                      | CO2 | Assessing the basic differences between traditional narration and modern short story                                                                                                                          |

|               |                                 |            |                                                                                                                                                                                         |
|---------------|---------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                                 | <b>CO3</b> | Estimating the scope of narrative in modern Arabic literature                                                                                                                           |
|               |                                 | <b>CO4</b> | Understanding the distinct features of Arabic narrative literature                                                                                                                      |
| <b>AR1644</b> | <b>Drama &amp; Fiction</b>      | <b>CO1</b> | Guiding the students to the world of Arabic fiction by providing a reading list of Arabic fiction and Drama.                                                                            |
|               |                                 | <b>CO2</b> | Appreciating and analysing the fictional elements in literature                                                                                                                         |
|               |                                 | <b>CO3</b> | Assessing the basic differences between traditional narration and modern fiction                                                                                                        |
|               |                                 | <b>CO4</b> | Estimating the scope of fiction and drama in modern Arabic literature                                                                                                                   |
|               |                                 | <b>CO5</b> | Understanding the distinct features of Arabic Drama and fiction                                                                                                                         |
| <b>AR1651</b> | <b>Informatics in Arabic II</b> | <b>CO1</b> | Updating and expanding basic informatics skills and attitudes relevant to the emerging knowledge society                                                                                |
|               |                                 | <b>CO2</b> | Equipping the students effectively utilize the digital knowledge resources for their chosen of study.                                                                                   |
|               |                                 | <b>CO3</b> | Reviewing the basic concepts and functional knowledge in the field of informatics                                                                                                       |
|               |                                 | <b>CO4</b> | Creating awareness about nature of the emerging digital knowledge society                                                                                                               |
|               |                                 | <b>CO5</b> | Creating awareness about social issues and concern in the use of digital technology                                                                                                     |
|               |                                 | <b>CO6</b> | Imparting skills to enable students to use digital knowledge resources in Arabic Giving theoretical and practical experience in Arabic computing                                        |
| <b>AR1645</b> | <b>Project/Dissertation</b>     | <b>CO1</b> | Ensuring that the student can apply and supplement what he learnt in the class rooms and outside to real life situations, occasions, efforts and problem solving.                       |
|               |                                 | <b>CO2</b> | Ensuring that the student can apply his knowledge to situations and problem solving • Estimating the student domains of application, analysis, synthesis, evaluation, critical thinking |
|               |                                 | <b>CO3</b> | Evaluating the effectiveness of course contents learnt throughout the programme                                                                                                         |

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAM IN HISTORY**

**PROGRAM SPECIFIC OUTCOMES**

|       |                                                                                                                                                                                                                                     |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PSO1  | Students become familiar with the political processes and structures; society, economy, and culture; political Ideas and institutions of past and historical thought and historiography evolved in both Indian and global contexts. |
| PSO2  | To understand the methodologies and approaches used by modern historians, or the ways in which history has been written in the past, and to acquire the required knowledge, awareness, and skills for historical research.          |
| PSO3  | To understand events, concepts, ideologies, and hegemonic relationships that evolved historically and to critically approach and introspect the unconsciously assumed power relations and identities.                               |
| PSO4  | To understand the elements of the transition of the world from premodern to modern and to realize how this transition happened and how far it changed the world.                                                                    |
| PSO5  | By analyzing the relationship between the past and the present, students will be able to comprehend the social, cultural, and administrative processes in pre-modern Kerala                                                         |
| PSO6  | Students will also be able to gather ideas on different regional powers and the socio-economic and cultural aspects of South India.                                                                                                 |
| PSO7  | To apprehend the roots of colonialism and capitalism and to analyze the impact of colonial rule                                                                                                                                     |
| PSO8  | To understand the process of nation-making and to visualize the ideological underpinnings behind the national movement                                                                                                              |
| PSO9  | To understand the socio-economic development in post-independent India and to conceive the notion of a secular and democratic form of India                                                                                         |
| PSO10 | To realize the prospects of career-related courses and to assist students with educational and career planning                                                                                                                      |

**COURSE OUTCOME (CO)**

| <b>COURSE CODE</b> | <b>COURSE NAME</b>                                                             | <b>COURSE OUTCOME</b>                                                                                                        |
|--------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>SEMESTER I</b>  |                                                                                |                                                                                                                              |
| <b>HY 1141</b>     | <b>Discipline of History and Social Sciences: Methodology and Perspectives</b> | <b>CO1 To comprehend the myriad disciplines of Social Sciences with particular reference to History and its methodology.</b> |

|                     |                                                              |            |                                                                                                              |
|---------------------|--------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------|
|                     |                                                              | <b>CO2</b> | <b>To recognize the autonomy of the discipline of history and the pure-multi-character of the discipline</b> |
|                     |                                                              | <b>CO3</b> | <b>To apply different theories in understanding the past.</b>                                                |
|                     |                                                              | <b>CO4</b> | <b>To analyze and evaluate the historical process in relation to power relations of the society</b>          |
|                     |                                                              | <b>CO5</b> | <b>To Evaluate the methodology and objectivity of the discipline of history.</b>                             |
| <b>SEMESTER II</b>  |                                                              |            |                                                                                                              |
| HY 1241             | Global History: Socio-Cultural Formations in the early World | <b>CO1</b> | To realize the theoretical and ideological background evolution of the world and human origin                |
|                     |                                                              | <b>CO2</b> | To understand the social evolutions of the early world                                                       |
|                     |                                                              | <b>CO3</b> | To analyze the process of cultural formations of the early world                                             |
|                     |                                                              | <b>CO4</b> | To evaluate the genesis and growth of state and society early world                                          |
| <b>SEMESTER III</b> |                                                              |            |                                                                                                              |
| HY 1341             | Understanding the State and Society in Early India           | <b>CO1</b> | Locate major pre-historic settlements and the evolution of early farming communities                         |
|                     |                                                              | <b>CO2</b> | Examine the evolution of Varna and Jati-based social structure in Early India.                               |
|                     |                                                              | <b>CO3</b> | Critique the social base of heterodox religions of the 6th Century BCE and its influence on power relations. |
|                     |                                                              | <b>CO4</b> | Appraise the cultural achievements of the Guptas                                                             |
| HY1321              | Reconstructing the Past                                      | <b>CO1</b> | To understand the methodology of history                                                                     |

|             |                                                         |     |                                                                                                                                    |
|-------------|---------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------|
|             |                                                         | CO2 | To familiarize new trends in historical studies                                                                                    |
|             |                                                         | CO3 | Locate new kinds of data analyses, knowledge skill                                                                                 |
|             |                                                         | CO4 | To understand INFLIBNET, JSTOR, and other various sites                                                                            |
| SEMESTER IV |                                                         |     |                                                                                                                                    |
| HY 1441     | State and Society in Pre-Colonial India                 | CO1 | To get an overview of the political, cultural, social, and economic life in Medieval India                                         |
|             |                                                         | CO2 | To focus on the regional cultures during the period.                                                                               |
|             |                                                         | CO3 | To appraise the linkage effect of the Medieval Period in subsequent centuries                                                      |
|             |                                                         | CO4 | Interpret the social cultural and administrative features during the Medieval Period                                               |
| HY 1442     | Social formations in Early South India                  | CO1 | To understand the theoretical and ideological background of South Indian social formations                                         |
|             |                                                         | CO2 | To understand the socio-economic, cultural, and political intrusions of the process of the South Indian society                    |
|             |                                                         | CO3 | To analyze the process of the political and economic structure of South India                                                      |
|             |                                                         | CO4 | To evaluate the genesis and growth of new identity formations                                                                      |
| SEMESTER V  |                                                         |     |                                                                                                                                    |
| HY 1541     | Major trends in Historical Thoughts and writings Part I | CO1 | To understand the myriad forms of representing the past and differentiating history from the other forms of representation of past |
|             |                                                         | CO2 | To analyze the genesis and development of historical thought and writing in different times and spaces or societies.               |

|         |                                                          |            |                                                                                                                                  |
|---------|----------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------|
|         |                                                          | <b>CO3</b> | To analyze the philosophical foundations of the discipline of history and its changing nature in accordance with time and space. |
|         |                                                          | <b>CO4</b> | To evaluate the types of historical literature.                                                                                  |
| HY 1542 | Capitalism and Colonialism: Forms of Resistance in India | <b>CO1</b> | To understand the theoretical and ideological background of colonialism and capitalism                                           |
|         |                                                          | <b>CO2</b> | To understand the socio-economic and cultural impingement of colonial intervention                                               |
|         |                                                          | <b>CO3</b> | To analyze the process of colonizing India against the backdrop of theoretical insights                                          |
|         |                                                          | <b>CO4</b> | To evaluate the genesis and growth of critical intervention of the colonial subjects towards the British Raj                     |
| HY 1545 | Transition to Modern World                               | <b>CO1</b> | To understand the theoretical and ideological background of dictatorships                                                        |
|         |                                                          | <b>CO2</b> | To understand the process of World War II                                                                                        |
|         |                                                          | <b>CO3</b> | To analyze the post-war developments in the world                                                                                |
|         |                                                          | <b>CO4</b> | To critically evaluate the role of India in the post-war world                                                                   |
| HY 1543 | Premodern Kerala                                         | <b>CO1</b> | To understand the historical and cultural evolution through the historiography of Kerala history                                 |
|         |                                                          | <b>CO2</b> | To understand the geographical features and uniqueness of Kerala                                                                 |
|         |                                                          | <b>CO3</b> | To evaluate the concept of cultural symbiosis and its impact on the material culture and society of Kerala                       |
|         |                                                          | <b>CO4</b> | To understand and evaluate the significance of the social reform movements in Kerala                                             |
| HY 1544 | Making of Indian Nation in India                         | <b>CO1</b> | To understand the theoretical perceptions of nation and nationalism                                                              |
|         |                                                          | <b>CO2</b> | To evaluate the making process of the nation in India                                                                            |



|             |                                                              |     |                                                                                                                                                    |
|-------------|--------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                                              | CO3 | To analyze the ideological underpinnings behind the construction of the nation in India on the backdrop of theoretical insights                    |
|             |                                                              | CO4 | To account a sound knowledge about changes that took place among the historians regarding the notion of a national movement in India               |
| HY 1551.2   | Indian Environmental History: An Opening                     | CO1 | To understand the general and critical knowledge on Indian environment                                                                             |
|             |                                                              | CO2 | To understand and sensitize academically charging students in a historical context is essential for creating an ecologically prudent consciousness |
|             |                                                              | CO3 | To analyze the present day environmental problems would make the students environmentally responsible                                              |
|             |                                                              | CO4 | To account the empathetic to the plight of poor who are environmentally displaced and marginalized                                                 |
| SEMESTER VI |                                                              |     |                                                                                                                                                    |
| HY1641      | Major trends in Indian Historical thought & writings Part II | CO1 | To understand the myriad developments in the historical thoughts and writings in India from the ancient to the modern sphere                       |
|             |                                                              | CO2 | To analyze the colonial roots of Indian Historiography and evaluate the multiple Indian responses to it.                                           |
|             |                                                              | CO3 | To evaluate the critical responses from the subaltern and Women's history approaches.                                                              |
|             |                                                              | CO4 | To evaluate the Total History approach and post-modern concepts in history                                                                         |
| HY 1642     | Modern Kerala                                                | CO1 | To analyze the changing nature of the Socio, political and economic structure of Kerala against the backdrop of Colonial Modernity.                |
|             |                                                              | CO2 | To evaluate the process of socio-cultural symbiosis and the negotiations and contestations of myriad social categories                             |
|             |                                                              | CO3 | To evaluate the process of democratization of Kerala society and polity.                                                                           |

|         |                         |            |                                                                                                                                   |
|---------|-------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------|
|         |                         | <b>CO4</b> | To critically understand the Kerala Model Experience                                                                              |
| HY 1643 | Contemporary India      | <b>CO1</b> | To understand the process of national integration                                                                                 |
|         |                         | <b>CO2</b> | To understand making process of the constitution                                                                                  |
|         |                         | <b>CO3</b> | To analyze the political and economic changes in the post-independent India                                                       |
|         |                         | <b>CO4</b> | To account for the problems and issues in post-independent India                                                                  |
| HY 1644 | Twentieth Century World | <b>CO1</b> | To understand the theoretical and ideological background of socialist revolutions and their impact on the twentieth-century world |
|         |                         | <b>CO2</b> | To understand the political, socioeconomic, and cultural outcomes of the two World Wars                                           |
|         |                         | <b>CO3</b> | To analyze the process of authoritarian and totalitarian concepts                                                                 |
|         |                         | <b>CO4</b> | To understand the theoretical and ideological background of global politics and the World Wars                                    |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN HISTORY FOR  
FIRST DEGREE PROGRAM IN POLITICS**

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                       | COURSE OUTCOME |                                                                                             |
|----------------|-----------------------------------|----------------|---------------------------------------------------------------------------------------------|
| SEMESTER I     |                                   |                |                                                                                             |
| HY 1131.2      | History of Modern World<br>Part I | CO1            | To understand the theoretical and<br>ideological background of revolution and<br>its impact |

|              |                                  |     |                                                                              |
|--------------|----------------------------------|-----|------------------------------------------------------------------------------|
|              |                                  | CO2 | To know the political, and socio-economic, changes of the 19th-century world |
|              |                                  | CO3 | To analyze the process of economic revolutions                               |
|              |                                  | CO4 | To evaluate the new trends and ideas                                         |
| SEMESTER II  |                                  |     |                                                                              |
| HY1231.4     | History of Modern World Part II  | CO1 | To understand stages of colonialism and colonial expansions                  |
|              |                                  | CO2 | To understand the political outcome of World War I                           |
|              |                                  | CO3 | To analyze the process of socialist revolution in Russia                     |
|              |                                  | CO4 | To critically evaluate the socialist policies after the revolution           |
| SEMESTER III |                                  |     |                                                                              |
| HY 1331.6    | History of Modern World Part III | CO1 | To understand the theoretical and ideological background of dictatorships    |
|              |                                  | CO2 | To understand the process of World War II                                    |
|              |                                  | CO3 | To analyze the post-war developments in the world                            |
|              |                                  | CO4 | To critically evaluate the role of India in the post-war world               |
| SEMESTER IV  |                                  |     |                                                                              |
| HY 1431.8    | Contemporary World               | CO1 | To understand the theoretical and ideological concepts of neo-colonialism    |
|              |                                  | CO2 | To understand the growth and role of third worlds                            |
|              |                                  | CO3 | To analyze the process and functions of post-world war organizations         |
|              |                                  | CO4 | To critically evaluate and debate the contemporary issues of the world       |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN HISTORY FOR FIRST DEGREE PROGRAM IN ECONOMICS**

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                                    | COURSE OUTCOME |                                                                                                                                       |
|----------------|------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                                                |                |                                                                                                                                       |
| HY 1131.1      | History of National Movement in India Part I   | CO1            | To realize the theoretical perceptions of colonialism to imperialism                                                                  |
|                |                                                | CO2            | To evaluate the socio-cultural roots of colonialism                                                                                   |
|                |                                                | CO3            | To analyze the ideological and historical backdrop of the social reform movements and its reactions to the process of making a nation |
|                |                                                | CO4            | To account for a theoretical insight into the national movement                                                                       |
| SEMESTER II    |                                                |                |                                                                                                                                       |
| HY 1231.1      | History of National Movement in India Part II  | CO1            | To understand the theoretical perceptions of nation and nationalism                                                                   |
|                |                                                | CO2            | To evaluate the economic impacts of the British Raj                                                                                   |
|                |                                                | CO3            | To analyze the ideological underpinnings behind the construction of the nation in India in the milieu of theoretical insights         |
|                |                                                | CO4            | To account for a historiographical insight into Gandhian ideology                                                                     |
| SEMESTER III   |                                                |                |                                                                                                                                       |
| HY 1331.5      | History of National Movement in India Part III | CO1            | To understand the historical roots of a national movement                                                                             |
|                |                                                | CO2            | To evaluate the various social class role in the national movement                                                                    |

|             |                    |     |                                                                             |
|-------------|--------------------|-----|-----------------------------------------------------------------------------|
|             |                    | CO3 | To analyze the theoretical perceptions of a national movement               |
|             |                    | CO4 | To account for the making process of the nation in India                    |
| SEMESTER IV |                    |     |                                                                             |
| HY 1431.7   | Contemporary India | CO1 | To understand the process of national integration                           |
|             |                    | CO2 | To understand making process of the constitution                            |
|             |                    | CO3 | To analyze the political and economic changes in the post-independent India |
|             |                    | CO4 | To account for the problems and issues in post-independent India            |

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAM IN POLITICS**

**PROGRAM SPECIFIC OUTCOMES**

**PSO 1** Understand the place of Political Science within the broader spectrum of Social Sciences and allied interdisciplinary areas.

**PSO 2** To improve understanding of basic facts and concepts about political system, including philosophical, constitutional and legal foundations, policy making processes etc.

**PSO 3** Understand the diverse institutions, processes, constitutional and legal frameworks and public policies in one's own country and to compare it across the world.

**PSO 4** Students should be able to differentiate among multiple Political Science perspectives, theories and ideologies from a range of written or spoken genres. They should be able to explain, analyze and articulate contemporary issues and events using such perspectives, theories and ideologies.

**PSO 5** Acquire specialized knowledge about the shaping of the global politics and the diverse theories and approaches that facilitate its explanation.

**PSO 6** Demonstrate the ability to outline and defend a vision of politics for the present and future generations with the aid of democracy, justice, rights, freedom and secularism.

**PSO 7** To promote acquisition of citizenship skills and the ability to understand and appreciate human diversity; and to engage in community life as active citizens.

**PSO 8** To enable students to evaluate and analyze political processes and effectively apply theoretical and analytical skills to address significant issues in the political world by taking political and administrative responsibilities.

**PSO 9** Analyze a phenomenon, an event or a construct with insight, knowledge, reasoning and technical skill by employing appropriate research methodology and draw original and logical conclusions.

**PSO 10** Promote linkages with industry through internships and project works by involving in activities related to Local self-government institutions, Media, Parliamentary Procedures and practices and Survey research and data analysis

#### **COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                                                      | COURSE OUTCOME |                                                                                                                             |
|----------------|------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                                                                  |                |                                                                                                                             |
| PS 1141        | Core I -<br><br>Perspectives of Social<br>and Political Sciences | CO1            | To understand the nature and relevance of<br>Social and Political Sciences.                                                 |
|                |                                                                  | CO2            | To impart basic knowledge in the application<br>of scientific method in social sciences and its<br>limitations. CO3         |
|                |                                                                  | CO3            | To enable the students in placing political<br>science in the wider domains of social<br>sciences and their interrelations. |
|                |                                                                  | CO4            | To familiarise Students with emerging terrains<br>of political science and its critical evaluation                          |
| SEMESTER II    |                                                                  |                |                                                                                                                             |

|              |                                           |     |                                                                                                                                                     |
|--------------|-------------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| PS 1241      | Core II- Introduction to Political Theory | CO1 | To understand the nature and social significance of political theory.                                                                               |
|              |                                           | CO2 | To impart basic knowledge about various approaches to the study of Political theory                                                                 |
|              |                                           | CO3 | To enable the students in the application of various theories and concepts of Political Theory                                                      |
|              |                                           | CO4 | To critically evaluate the different perspectives of key concepts of political theory                                                               |
| SEMESTER III |                                           |     |                                                                                                                                                     |
| PS-1321      | Foundation Course II - Cyber Politics     | CO1 | Understand and describe the basic concepts and ideas related cyber politics.                                                                        |
|              |                                           | CO2 | Familiarise the features of various social media platforms and the emergence of internet based public sphere                                        |
|              |                                           | CO3 | Capability to explain the dynamics and processes associated with cyber politics both nationally and globally                                        |
|              |                                           | CO4 | Acquired knowledge in the field of cyber politics by engaging the critical issues affecting the rights and freedoms of the citizens in the country. |
| PS 1341      |                                           | CO1 | Understand the major features and the essence of Indian constitution                                                                                |
|              |                                           | CO2 | Create awareness about one’s own rights and duties as well as a sense of respect and protection of others rights.                                   |

|                    |                                                     |            |                                                                                                                                 |
|--------------------|-----------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------|
|                    | Core III-Indian Constitution                        | <b>CO3</b> | Familiarize the students about the composition and functions of various Institutions of Union and federal Governments           |
|                    |                                                     | <b>CO4</b> | Critically evaluate Indian judicial system and recent developments                                                              |
| <b>SEMESTER IV</b> |                                                     |            |                                                                                                                                 |
| <b>PS 1441</b>     | Core Course IV- Dynamics of Indian Politics         | <b>CO1</b> | Understand the peculiar features of Indian federal system and nature of Centre-state relations                                  |
|                    |                                                     | <b>CO2</b> | Critically examine the tendency of regionalism and secessionism in India                                                        |
|                    |                                                     | <b>CO3</b> | Understand and evaluate emerging trends in Indian Democracy                                                                     |
|                    |                                                     | <b>CO4</b> | Critically analyse the major factors which pose threat to Indian Democracy and political System                                 |
| <b>PS 1442</b>     | Core Course V- Introduction to Comparative Politics | <b>CO1</b> | To understand theoretical evolution and approaches to the study of Comparative Politics                                         |
|                    |                                                     | <b>CO2</b> | Compare and analyse the basic features of constitutional development in major countries.                                        |
|                    |                                                     | <b>CO3</b> | Familiarise the students about the Federal and Unitary systems of major Political systems and evaluate the changing dimensions. |
|                    |                                                     | <b>CO4</b> | Acquire ability to compare and analyse the political structures in different political systems in a comparative perspective.    |
| <b>SEMESTER V</b>  |                                                     |            |                                                                                                                                 |



|                |                                                         |            |                                                                                                                                  |
|----------------|---------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>PS 1541</b> | Core Course VI- Public Administration                   | <b>CO1</b> | Converse with meaning and nature of Public Administration and familiar with different approaches in public administration        |
|                |                                                         | <b>CO2</b> | Understand critically various principles of organisations and the role of Chief Executive and independent Regulatory Commissions |
|                |                                                         | <b>CO3</b> | Comprehend the significance of Bureaucracy in Public Administration and familiarize the recruitment process and training         |
|                |                                                         | <b>CO4</b> | Understand the features of Financial Administration in India, focusing on the budgetary process and the role of the CAG.         |
|                |                                                         | <b>CO5</b> | Understand the emerging trends in Public Administration in India.                                                                |
| <b>PS 1542</b> | Core Course VII- Ancient and Medieval Political Thought | <b>CO1</b> | Acquire understanding on the ancient Greek ideas on state and society                                                            |
|                |                                                         | <b>CO2</b> | Understand and analyses the Roman Political ideas and compare it with Greek ideas                                                |
|                |                                                         | <b>CO3</b> | Understand ancient Indian wisdom and compare it with other ideas.                                                                |
|                |                                                         | <b>CO4</b> | Analyse and evaluate the Medieval political ideas critically                                                                     |
| <b>PS 1543</b> | Core Course VIII- International Relations               | <b>CO1</b> | To understand the nature and the Scope of International Relations.                                                               |
|                |                                                         | <b>CO2</b> | To impart basic knowledge about basic concepts and theories of International Relations.                                          |

|                |                                      |            |                                                                                                                                                                         |
|----------------|--------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                      | <b>CO3</b> | To enable the students to evaluate foreign policy decisions and its implications on Diplomatic relations.                                                               |
|                |                                      | <b>CO4</b> | To critically evaluate the various issues of global politics.                                                                                                           |
| <b>PS 1544</b> | Core Course IX- Research Methodology | <b>CO1</b> | To introduce the nature and modalities of research in Social Sciences in general and Political                                                                          |
|                |                                      | <b>CO2</b> | To understand the major steps involved in arriving at a research topic and developing it further.                                                                       |
|                |                                      | <b>CO3</b> | To expose students to the practicalities of research in Political Science, particularly in regard to data collection.                                                   |
|                |                                      | <b>CO4</b> | To facilitate students critically analyse the collected data and create a scientific report of their own                                                                |
| <b>PS 1545</b> | Core Course X- Human Rights in India | <b>CO1</b> | Impart basic understanding about the concept of Human Rights, its evolution and importance in our society.                                                              |
|                |                                      | <b>CO2</b> | To Understand the role and functions of international human rights mechanisms in the changing international order                                                       |
|                |                                      | <b>CO3</b> | To have a need based understanding of the institutional arrangements in India at various levels to protect Human Rights.                                                |
|                |                                      | <b>CO4</b> | To develop a critical understanding of the issues faced by socially excluded groups like Dalits, Women, Children, Differently Abled, Transgender at the national level. |

|             |                                          |     |                                                                                                                                          |
|-------------|------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------|
| PS 1551.1   | Open Course I- Human Rights in India     | CO1 | <i>To familiarize with the basic concepts of Human Rights with special focus on Universal Declaration of Human Rights, 1948.</i>         |
|             |                                          | CO2 | <i>To make a detailed understanding about the constitutional provisions and statutory institutions dealing with Human Rights.</i>        |
|             |                                          | CO3 | <i>To develop a critical assessment of the human rights issues faced by vulnerable sessions in the state of Kerala.</i>                  |
|             |                                          | CO4 | <i>To have a critical understanding about the new dimensions of human rights in general.</i>                                             |
| PS 1551.2   | Open Course II- Indian Constitution      | CO1 | <i>To understand the major features and the essence of Indian constitution</i>                                                           |
|             |                                          | CO2 | <i>- To create awareness about one's own rights and duties as well as a sense of respect and protection of others' rights.</i>           |
|             |                                          | CO3 | <i>- To familiarise the students about the composition and functions of various Institutions of Union and federal Governments.</i>       |
|             |                                          | CO4 | <i>To critically evaluate Indian judicial system and recent developments</i>                                                             |
| SEMESTER VI |                                          |     |                                                                                                                                          |
| PS 1641     | Core Course XI- Modern Political Thought | CO1 | To introduce the idea of state and government through the conceptual cues of the social contract theories of the 17th century in Europe. |

|                |                                                                |            |                                                                                                                                                                                                                                     |
|----------------|----------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                | <b>CO2</b> | To provide adequate understanding of the utilitarian tradition and lead the students to maintaining proper awareness of countervailing traditions of the liberals, with special reference to German Idealist philosopher W.H.Hegel. |
|                |                                                                | <b>CO3</b> | To equip students to analyse contemporary political reality with the help of the theoretical tools provided by Socialist theorists.                                                                                                 |
|                |                                                                | <b>CO4</b> | To familiarise students with the application of the notion of governmentality introduced by Michel Foucault.                                                                                                                        |
|                |                                                                | <b>CO5</b> | To evaluate the creative potential of Gandhi's and Ambedkar's views on Social order, modern state craft and methods of conflict resolution.                                                                                         |
| <b>PS 1642</b> | Core Course XII- State and Society in Kerala                   | <b>CO1</b> | Understand the major social and political trajectories that moulded the modern state of Kerala                                                                                                                                      |
|                |                                                                | <b>CO2</b> | Understand the present political structure of Kerala and evaluate the deep rooted societal identities of Kerala and relate its relevance.                                                                                           |
|                |                                                                | <b>CO3</b> | Analyse the aspects of political economy of Kerala.                                                                                                                                                                                 |
|                |                                                                | <b>CO4</b> | Demonstrate the understanding of the Contemporary discourses in Kerala's society                                                                                                                                                    |
| <b>PS 1643</b> | Core Course XIII- Decentralization and Participatory democracy | <b>CO1</b> | To acquire knowledge on the concept of decentralisation and to be able to understand its theoretical perspectives                                                                                                                   |

|                |                                                                                   |            |                                                                                                                                    |
|----------------|-----------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                                   | <b>CO2</b> | To understand the concept of participatory democracy and to internalise its values                                                 |
|                |                                                                                   | <b>CO3</b> | To evaluate the emergence of decentralisation in India and to analyse the features of 73rd and 74th Constitutional Amendment Act   |
|                |                                                                                   | <b>CO4</b> | To familiarise and practice the contrivances of participatory democracy                                                            |
| <b>PS 1644</b> | Core Course XIV- New Social Movements                                             | <b>CO1</b> | To understand the notion of New Social Movements (NSMs) using major approaches and theories.                                       |
|                |                                                                                   | <b>CO2</b> | To explore the gender-based New Social movements with examples from the Western and non-Western World.                             |
|                |                                                                                   | <b>CO3</b> | To evaluate the trajectory and impact of New Social Movements in India.                                                            |
|                |                                                                                   | <b>CO4</b> | To analyse the nature of New Social Movements in Kerala and the underlying reasons for its emergence                               |
| <b>PS 1645</b> | Project/ Dissertation                                                             | <b>CO1</b> | Analyse the theories and issues by employing the appropriate research methodology to draw conclusions and make policy suggestions. |
|                |                                                                                   | <b>CO2</b> | Apply various tools they have learned and present the report in a structured manner.                                               |
|                |                                                                                   | <b>CO3</b> | Inculcate proficiency to identify appropriate research topics and presentation.                                                    |
| PS 1661.1      | Elective Course I- Local Self Government Institutions and Development Initiatives | <b>CO1</b> | To Understand local level governance system                                                                                        |
|                |                                                                                   | <b>CO2</b> | To attain efficiency in formulating and coordinating NGO-PRI ventures.                                                             |

|           |                                                               |            |                                                                                                                                                |
|-----------|---------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------|
|           |                                                               | <b>CO3</b> | Analyse the local level needs and functions as volunteers.                                                                                     |
|           |                                                               | <b>CO4</b> | To work as Trainer in Community Development Programmes.                                                                                        |
| PS 1661.2 | Elective Course II- Media and Politics                        | <b>CO1</b> | To understand the crucial role of media and political communication in a democracy.                                                            |
|           |                                                               | <b>CO2</b> | To analyse the nature of Indian media in the background of globalisation and developmental problems.                                           |
|           |                                                               | <b>CO3</b> | To examine and understand changes in media such as new media, Political Reporting in India, consent manufacturing etc.                         |
|           |                                                               | <b>CO4</b> | To attain practical knowledge and training in media related activities.                                                                        |
| PS 1661.3 | Elective Course III- Parliamentary Procedures and Practices   | <b>CO1</b> | To get awareness about the Parliamentary procedures and practices.                                                                             |
|           |                                                               | <b>CO2</b> | To equip the students to be part of the legislative members array.                                                                             |
|           |                                                               | <b>CO3</b> | To build career as trainers in Parliamentary procedures.                                                                                       |
|           |                                                               | <b>CO4</b> | To cater as partners in Public Policy formulation process with political leadership and explore the possibilities of political representation. |
| PS 1661.4 | Elective Course IV- Survey Research Methods and Data Analysis | <b>CO1</b> | To get a basic understanding of survey research and its methodology.                                                                           |
|           |                                                               | <b>CO2</b> | To participate in research activities of various institutions.                                                                                 |

|  |  |            |                                                                                                   |
|--|--|------------|---------------------------------------------------------------------------------------------------|
|  |  | <b>CO3</b> | To develop analytical skills in content development in research institutions and media platforms. |
|  |  | <b>CO4</b> | To enrich the students to contribute to policymaking bodies and institutions.                     |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN POLITICS FOR FIRST DEGREE PROGRAM IN ECONOMICS, HISTORY AND ENGLISH**

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                       | COURSE OUTCOME |                                                                                                                     |
|----------------|-----------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                                   |                |                                                                                                                     |
| PS 1131.1      | Introduction to Political Science | CO1            | To understand the meaning nature and scope of Political science and its relation with other social science subjects |
|                |                                   | CO2            | To analyse and compare various approaches to study political science.                                               |
|                |                                   | CO3            | To critically evaluate different ideologies in Political Science and its applicability.                             |
|                |                                   | CO4            | To understand the structure and functions of state system and various institutions within it.                       |
| PS 1131.2      |                                   | CO1            | To understand the philosophy and basic features of the Constitution of India.                                       |

|             |                                                  |     |                                                                                                                          |
|-------------|--------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------|
|             | Constitutional Government and Democracy in India | CO2 | To understand the Fundamental Rights, Directive Principles and Fundamental Duties enshrined in the Constitution of India |
|             |                                                  | CO3 | To familiarise the organisation and functions of the Legislature, Executive and Judiciary in India.                      |
|             |                                                  | CO4 | To analyse the electoral process and critically evaluate the nature and development of Party System in India             |
| SEMESTER II |                                                  |     |                                                                                                                          |
| PS 1231.3   | Indian Government and Politics                   | CO1 | To identify the prominent features of Indian Constitution                                                                |
|             |                                                  | CO2 | To create awareness about one’s own rights and duties as well as a sense of respect and protection of other’s rights.    |
|             |                                                  | CO3 | To familiarize the students about the composition and functions of various organs of Government.                         |
|             |                                                  | CO4 | To critically evaluate Indian political system and democratic processes.                                                 |
| PS 1231.4   | Decentralisation and Local Governance            | CO1 | To acquire knowledge on the concept of decentralisation and to be able to understand its theoretical perspective.        |
|             |                                                  | CO2 | To understand the concept of participatory democracy and to internalise its values.                                      |



|                     |                             |            |                                                                                                                                    |
|---------------------|-----------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------|
|                     |                             | <b>CO3</b> | To evaluate the emergence of decentralisation in India and to analyse the features of 73rd and 74th Constitutional Amendment Acts. |
|                     |                             | <b>CO4</b> | To develop a critical perspective on grass-root democracy and nature of the functioning of self-help groups in Kerala.             |
| <b>SEMESTER III</b> |                             |            |                                                                                                                                    |
| <b>PS 1331.5</b>    | Dynamics of Indian Politics | <b>CO1</b> | Discuss and evaluate various types of federalism                                                                                   |
|                     |                             | <b>CO2</b> | Study about the types of Party System, political Parties and Its Dynamics                                                          |
|                     |                             | <b>CO3</b> | Understand the election process and reforms introduced by the election commission                                                  |
|                     |                             | <b>CO4</b> | Critically analyse the major factors which pose threat to Indian Democracy and political System.                                   |
| PS 1331.6           | Human Rights                | <b>CO1</b> | To understand the concept and significance of human rights                                                                         |
|                     |                             | <b>CO2</b> | To understand and analyse the role of the UN in protecting human rights.                                                           |
|                     |                             | <b>CO3</b> | To familiarise the human rights enforcement agencies in India.                                                                     |
|                     |                             | <b>CO4</b> | To critically analyse the human rights issues of marginalised and vulnerable sections in India.                                    |

| SEMESTER IV |                        |     |                                                                                                            |
|-------------|------------------------|-----|------------------------------------------------------------------------------------------------------------|
| PS 1431.7   | International Politics | CO1 | To understand the nature and the scope of International Relations.                                         |
|             |                        | CO2 | To acquire basic idea about basic concepts and theories of International Relations                         |
|             |                        | CO3 | To equip the students to evaluate nature of international organisations and its impact on global politics. |
|             |                        | CO4 | To critically examine the nature of major issues in global politics.                                       |
| PS 1431.8   | New Social Movements   | CO1 | To understand the basic concept and theories regarding new social movements.                               |
|             |                        | CO2 | To understand and analyse the concepts of gender and its importance in new social movements.               |
|             |                        | CO3 | To familiarise and critically analyse the major Dalit/Tribal movements in Kerala.                          |
|             |                        | CO4 | To develop a critical perspective on the major movements in civil society                                  |

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAM IN ECONOMICS**

### **PROGRAM SPECIFIC OUTCOMES**

**PSO1** To develop a conceptual foundation and analytical uses in microeconomics

**PSO2** To understand the concepts and significance of basic micro economics in day to day activities

**PSO3** To introduce a plethora of online resources which will help students teaching learning experience.

**PSO4** To enable the students to conduct and criticize empirical studies in economics and related fields .

**PSO5** . This course introduces a short introduction to Macro economics and determination of income and employment via multiplier

**PSO6** To provide the students an insight into the importance of mathematical methods in economics

**PSO7** To introduce students to the micro foundations of macroeconomics, inflation and unemployment, economic growth and fiscal and monetary policies in an open economy

**PSO8** The course intends to familiarize the students with the broad contours of

Social Sciences, specifically Economics and its methodologies, tools and analysis procedures.

**PSO9** The course is intended to familiarize the students with statistical tools and techniques and enable them to apply these tools in Economics

**PSO10** To ensure that students begin to understand basic concepts of Economic Growth and Development and thereby enable them to acquire multi dimensional aspects of developmental issues

**PSO11** To understand the basic concepts and theories of international trade and enable students to have a basic understanding of the emerging trends, issues and policies in the .field of international economic system

**PSO12** The purpose of this introductory economics course is to enable a student from the non economics background to gain an understanding and an appreciation of the nature and significance of economic activities, conditions, institutions and Indian economy.

**PSO13** The course intends to provide an understanding about growth process in Indian economy, sectoral aspects of the economy by focusing agriculture, industry and service sectors, relations of India with external sector and economic reforms

**PSO14** The course intends to familiarize the students with the basic concepts in Banking and Finance and develop a comprehensive knowledge on the role of banks in the operation of an economy. It also enables them to know the operation of the Indian Financial System and activities in the financial markets

**PSO15** The course is aimed at Introducing the subject matter and scope of public economics, role of government, types of market failures and the concept of public good and Providing a general understanding on the basic fiscal policy instruments

**PSO16** The course intends to create environmental awareness among students and provide exposure to disaster management

#### **COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                    | COURSE OUTCOME |                                                                          |
|----------------|--------------------------------|----------------|--------------------------------------------------------------------------|
| SEMESTER I     |                                |                |                                                                          |
| EC 1141        | Introductory<br>Microeconomics | CO1            | To develop a conceptual foundation and analytical uses in microeconomics |
|                |                                | CO2            | To get an idea on Scarcity, Work and choice                              |
|                |                                | CO3            | To understand the market structure                                       |

|                |                                           |            |                                                                                      |
|----------------|-------------------------------------------|------------|--------------------------------------------------------------------------------------|
|                |                                           | <b>CO4</b> | Get an idea on consumer and producer theory                                          |
| SEMESTER II    |                                           |            |                                                                                      |
| <b>EC 1241</b> | <b>Intermediate Microeconomics</b>        | <b>CO1</b> | To understand laws related to factor inputs                                          |
|                |                                           | <b>CO2</b> | To Understand various forms of risk and uncertainty                                  |
|                |                                           | <b>CO3</b> | To get an understanding about various process in social interactions                 |
|                |                                           | <b>CO4</b> | Able to understand the change involved in general equilibrium and market failures    |
| SEMESTER III   |                                           |            |                                                                                      |
| <b>EC 1341</b> | <b>Introductory Macroeconomics</b>        | <b>CO1</b> | Analysis the economic fluctuations in current economy.                               |
|                |                                           | <b>CO2</b> | Understand the functioning of banks,money,interest ,Fiscal policy and credit markets |
| SEMESTER IV    |                                           |            |                                                                                      |
| <b>EC 1441</b> | <b>Mathematical Methods for Economics</b> | <b>CO1</b> | Able to understand basic mathematical concepts in economics                          |
|                |                                           | <b>CO2</b> | Able to understand various operations of matrix algebra                              |
|                |                                           | <b>CO3</b> | Understand the concepts of differential calculus :application level in economics     |

|            |                                                |     |                                                                     |
|------------|------------------------------------------------|-----|---------------------------------------------------------------------|
|            |                                                | CO4 | Got introduced to Integral calculus                                 |
| EC 1442    | Intermediate<br>Macroeconomcs                  | CO1 | Understand the introduction of open economy macro economics         |
|            |                                                | CO2 | Differentiate Aggregate demand and supply :wages price unemployment |
|            |                                                | CO3 | Got introduced to relevance of Economic growth                      |
|            |                                                | CO4 | Able to understand the micro economic foundation of macro economics |
| SEMESTER V |                                                |     |                                                                     |
| EC 1541    | Methodology and Perspectives of Social Science | CO1 | Have an idea on Economic issues and concepts                        |
|            |                                                | CO2 | Introduced to the research methodology used in social sciences      |
|            |                                                | CO3 | Analyse certain Global economic evens and contemporary issues       |
| EC 1542    | Statistical Methods for Economics              | CO1 | To familiarize with statistical tools and techniques                |
|            |                                                | CO2 | Able to understand the relation between regression and correlation  |

|             |                                 |     |                                                                      |
|-------------|---------------------------------|-----|----------------------------------------------------------------------|
|             |                                 | CO3 | Understand the application of Index numbers and Time series analysis |
|             |                                 | CO4 | Preliminary level application of elements of probability             |
| EC 1543     | Readings in Political Economy   | CO1 | Understand various passages from classical economist                 |
|             |                                 | CO2 | Understand different perspectives of political economies             |
|             |                                 | CO3 | Understand the global economic crises and its aftermath              |
|             |                                 | CO4 | Importance of development thinking                                   |
| EC1544      | Economic Growth and Development | CO1 | Understand concepts of Development                                   |
|             |                                 | CO2 | understand tools for measuring development                           |
|             |                                 | CO3 | Understand the growth models                                         |
| EC1545      | International Economics         | CO1 | Basic understanding of theories in International trade               |
|             |                                 | CO2 | Understand the functioning of BOP and Foreign exchange               |
|             |                                 | CO3 | Understand the theories related with commercial policies             |
| SEMESTER VI |                                 |     |                                                                      |
| EC1641      | Indian Economy                  | CO1 | Overall idea on the growth process in Indian Economy                 |

|                |                                                        |            |                                                                         |
|----------------|--------------------------------------------------------|------------|-------------------------------------------------------------------------|
|                |                                                        | <b>CO2</b> | Provide an Understanding about various sectors in economy               |
|                |                                                        | <b>CO3</b> | Familiarize with Service sector and International trade                 |
|                |                                                        | <b>CO4</b> | Understand the external relations and economic reforms                  |
| <b>EC1642</b>  | <b>Banking and Finance</b>                             | <b>CO1</b> | To know the operation of financial systems                              |
|                |                                                        | <b>CO2</b> | Familiarize with the basic concepts in banking system                   |
|                |                                                        | <b>CO3</b> | Analyzing the structure of Capital market and Money market              |
| <b>EC1643</b>  | <b>Public Economics</b>                                | <b>CO1</b> | Understand the concepts of Public revenue, Expenditure, and public debt |
|                |                                                        | <b>CO2</b> | Focus on budgetary system and fiscal federalism                         |
| <b>EC 1644</b> | <b>Environmental Economics and Disaster Management</b> | <b>CO1</b> | Awareness about environmental economics                                 |
|                |                                                        | <b>CO2</b> | An introduction to theories of externalities                            |
|                |                                                        | <b>CO3</b> | An analysis of environmental policy tools                               |
|                |                                                        | <b>CO4</b> | Focus on global environmental issues and Disaster management in India   |



|                 |                           |            |                                                               |
|-----------------|---------------------------|------------|---------------------------------------------------------------|
| <b>EC1661.1</b> | <b>KERALA<br/>ECONOMY</b> | <b>CO1</b> | Understand structure of Kerala economy                        |
|                 |                           | <b>CO2</b> | Understanding the emerging trends on issues of kerala economy |
|                 |                           | <b>CO3</b> | Analysis on kerala s Economic Development                     |

**NAME OF THE PROGRAMME:COMPLEMENTARY COURSE IN ECONOMICS FOR  
FIRST DEGREE PROGRAM IN POLITICAL SCIENCE AND HISTORY**

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                    | COURSE OUTCOME |                                                                          |
|----------------|--------------------------------|----------------|--------------------------------------------------------------------------|
| SEMESTER I     |                                |                |                                                                          |
| EC1131         | Foundations of Economic Theory | CO1            | To develop a conceptual foundation and analytical uses in microeconomics |
|                |                                | CO2            | To get an idea on Scarcity, Work and choice                              |
|                |                                | CO3            | To understand the market structure                                       |
|                |                                | CO4            | Get an idea on consumer and producer theory                              |
| SEMESTER II    |                                |                |                                                                          |

|        |                   |     |                                                            |
|--------|-------------------|-----|------------------------------------------------------------|
| EC1231 | Money and Banking | CO1 | To know the operation of financial systems                 |
|        |                   | CO2 | Familiarize with the basic concepts in banking system      |
|        |                   | CO3 | Analyzing the structure of Capital market and Money market |

### SEMESTER III

|        |                                                          |     |                                                                         |
|--------|----------------------------------------------------------|-----|-------------------------------------------------------------------------|
| EC1331 | Introduction to International Trade and Public Economics | CO1 | Understand the concepts of Public revenue, Expenditure, and public debt |
|        |                                                          | CO2 | Focus on budgetary system and fiscal federalism                         |
|        |                                                          | CO3 | Basic understanding of theories in International trade                  |
|        |                                                          | CO4 | Understand the functioning of BOP and Foreign exchange                  |
|        |                                                          | CO5 | Understand the theories related with commercial policies                |

### SEMESTER IV

|        |                                   |     |                                        |
|--------|-----------------------------------|-----|----------------------------------------|
| EC1431 | Indian Economy Since Independence | CO1 | Understand structure of Kerala economy |
|--------|-----------------------------------|-----|----------------------------------------|

|  |  |     |                                                               |
|--|--|-----|---------------------------------------------------------------|
|  |  | CO2 | Understanding the emerging trends on issues of kerala economy |
|  |  | CO3 | Analysis on kerala s Economic Development                     |
|  |  | CO4 | Overall idea on the growth process in Indian Economy          |
|  |  | CO5 | Provide an Understanding about various sectors in economy     |
|  |  | CO6 | Familiarize with Service sector and International trade       |
|  |  | CO7 | Understand the external relations and economic reforms        |

**NAME OF THE PROGRAMME:FIRST DEGREE PROGRAM IN  
COMMERCE(FINANCE AND COOPERATION)**

### **PROGRAM SPECIFIC OUTCOMES**

**PSO 1:**The students can get the knowledge, skills and attitudes during the end of the B.com degree course.

**PSO2:**By goodness of the preparation they can turn into a Manager, Accountant, Management Accountant, cost Accountant, Bank Manager, Auditor, Company Secretary, Teacher, Professor, Stock Agents, Government employments and so on.,

**PSO3:**Students will prove themselves in different professional exams like C.A, C S, CMA, MPSC, UPSC. As well as other coerces.

**PSO4:**The students will acquire the knowledge, skill in different areas of communication, decision making, innovations and problem solving in day to day business activities.

**PSO5:**Students will gain thorough systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, communication, compute

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                                        | COURSE OUTCOME |                                                                                                                   |
|----------------|----------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                                                    |                |                                                                                                                   |
| CO 1121        | Methodology and Perspectives of Business Education | CO1            | To create a basic awareness about the business environment and the role of business in economic development.      |
|                |                                                    | CO2            | To provide a holistic, comprehensive and integrated perspective to business education                             |
|                |                                                    | CO3            | To give a fundamental understanding about ethical practices in business.                                          |
| CO 1141        | Environmental Studies                              | CO1            | To enable the students to acquire basic ideas about environment and emerging issues about environmental problems. |
|                |                                                    | CO2            | To give awareness about the need and importance of environmental protection                                       |
| CO 1142        | Management Concepts and Thoughts                   | CO1            | To equip learners with knowledge of management concepts and their application in contemporary organizations       |

|                |                             |            |                                                                                                          |
|----------------|-----------------------------|------------|----------------------------------------------------------------------------------------------------------|
|                |                             | <b>CO2</b> | To facilitate overall understanding of the different dimensions of the management process.               |
| <b>CO 1131</b> | <b>Managerial Economics</b> | <b>CO1</b> | To familiarise students with the economic principles and theories underlying various business decisions. |
|                |                             | <b>CO2</b> | To equip the students to apply the economic theories in different business situations.                   |

## SEMESTER II

|                |                                      |            |                                                                                                                                                                                                                               |
|----------------|--------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 1221</b> | <b>Informatics and Cyber Law</b>     | <b>CO1</b> | To review the basic concepts and fundamental knowledge in the field of informatics and to create an awareness about the nature of the emerging digital knowledge society and the impact of informatics on business decisions. |
|                |                                      | <b>CO2</b> | To create an awareness about the cyber world and cyber regulations.                                                                                                                                                           |
| <b>CO 1241</b> | <b>Financial Accounting</b>          | <b>CO1</b> | To familiarize the students with different methods of depreciation.                                                                                                                                                           |
|                |                                      | <b>CO2</b> | To equip the students to prepare the accounts of specialised business enterprises.                                                                                                                                            |
| <b>CO 1242</b> | <b>Business Regulatory Framework</b> | <b>CO1</b> | To provide a brief idea about the framework of Indian business Laws                                                                                                                                                           |
|                |                                      | <b>CO2</b> | To enable the students to apply the provisions of business laws in business activities                                                                                                                                        |

|                |                             |            |                                                                                                                                          |
|----------------|-----------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 1231</b> | <b>Business Mathematics</b> | <b>CO1</b> | To familiarise the students with the basic mathematical tools. CO2: To impart skills in applying mathematical tools in business practice |
|----------------|-----------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------|

**SEMESTER III**

|                |                                      |            |                                                                                                                                                                           |
|----------------|--------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 1341</b> | <b>Entrepreneurship Development</b>  | <b>CO1</b> | To familiarize the students with the latest programmes of Government in promoting small and medium industries.                                                            |
|                |                                      | <b>CO2</b> | To impart knowledge regarding starting of new ventures.                                                                                                                   |
| <b>CO 1342</b> | <b>Advanced Financial Accounting</b> | <b>CO1</b> | To create awareness of accounts related to dissolution of partnership firms.                                                                                              |
|                |                                      | <b>CO2</b> | To acquaint students with the system of accounting for different branches and departments.                                                                                |
|                |                                      | <b>CO3</b> | To enable students to prepare accounts of consignments                                                                                                                    |
| <b>CO 1343</b> | <b>Company Administration</b>        | <b>CO1</b> | To familiarize the students about the salient provisions of Indian Companies Act 2013.                                                                                    |
|                |                                      | <b>CO2</b> | To acquaint the students with Management and Administration of Companies, Compliance requirements, investigation into the affairs of the company and Winding up procedure |

|                  |                                   |            |                                                                                               |
|------------------|-----------------------------------|------------|-----------------------------------------------------------------------------------------------|
| <b>CO 1361.1</b> | <b>Financial Management</b>       | <b>CO1</b> | To familiarise the students with the conceptual framework of financial management.            |
|                  |                                   | <b>CO2</b> | To enable the students to understand the practical application of financial management.       |
| <b>CO 1361.2</b> | <b>Principles of Co-operation</b> | <b>CO1</b> | To inculcate the principles of co-operation among the students                                |
|                  |                                   | <b>CO2</b> | To acquaint the students with the management and working of co-operatives.                    |
| <b>CO 1331</b>   | <b>E- Business</b>                | <b>CO1</b> | To provide students a clear-cut idea of e-commerce and e-business and their types and models. |
|                  |                                   | <b>CO2</b> | To acquaint students with some innovative e-business systems.                                 |
|                  |                                   | <b>CO3</b> | To impart knowledge on the basics of starting online business                                 |

#### SEMESTER IV

|                |                                |            |                                                                                                                                     |
|----------------|--------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 1441</b> | <b>Indian Financial Market</b> | <b>CO1</b> | To provide a clear-cut idea about the functioning of Indian Financial Market in general and Capital market operations in particular |
| <b>CO 1442</b> | <b>Banking and Insurance</b>   | <b>CO1</b> | To provide a basic knowledge about the theory and practice of banking                                                               |
|                |                                | <b>CO2</b> | To provide a basic understanding of Insurance business.                                                                             |
|                |                                | <b>CO3</b> | To familiarize the students with the changing scenario of Indian Banking and Insurance.                                             |

|                  |                                                   |            |                                                                                                                        |
|------------------|---------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------|
| <b>CO 1443</b>   | <b>Corporate Accounting</b>                       | <b>CO1</b> | To create awareness about corporate accounting in conformity with the provisions of Companies Act, IAS and IFRS.       |
|                  |                                                   | <b>CO2</b> | To help the students in preparation of accounts of banking and insurance companies                                     |
|                  |                                                   | <b>CO3</b> | To enable the students to prepare and interpret financial statements of joint stock companies.                         |
| <b>CO 1461.1</b> | <b>Project Finance</b>                            | <b>CO1</b> | To familiarise the students with the types of project appraisal, risk analysis, project financing costing and valuing; |
|                  |                                                   | <b>CO2</b> | To provide an overview of global project appraisal issues.                                                             |
| <b>CO 1461.2</b> | <b>Co-operative management and administration</b> | <b>CO1</b> | To familiarise the students with the principles and practice of co-operative management and administration.            |
|                  |                                                   | <b>CO2</b> | To enable the students to identify the issues in the process of management and administration of co-operatives.        |
| <b>CO 1431</b>   | <b>Business Statistics</b>                        | <b>CO1</b> | To enable the students to gain understanding of statistical techniques those are applicable to business.               |



|                   |                                             |            |                                                                                                                                                                                            |
|-------------------|---------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   |                                             | <b>CO2</b> | To enable the students to apply statistical techniques in business.                                                                                                                        |
| <b>SEMESTER V</b> |                                             |            |                                                                                                                                                                                            |
| <b>CO 1541</b>    | <b>Fundamentals of Income Tax</b>           | <b>CO1</b> | To familiarize the students about the fundamental concepts of Income Tax.                                                                                                                  |
|                   |                                             | <b>CO2</b> | To enable the students to acquire the basic skills required to compute the tax liability of individual assessee with more emphasis on Income from Salaries and Income from House property. |
| <b>CO 1543</b>    | <b>Marketing Management</b>                 | <b>CO1</b> | To provide an understanding of the contemporary marketing process in the emerging business scenario.                                                                                       |
|                   |                                             | <b>CO2</b> | To study various aspects of application of modern marketing techniques for obtaining a competitive advantage in business organizations.                                                    |
| <b>CO 1551.1</b>  | <b>Fundamentals of Financial Accounting</b> | <b>CO1</b> | To enable the students to acquire knowledge in the basic principles and practices of financial accounting.                                                                                 |

|             |                             |     |                                                                                                                                                               |
|-------------|-----------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                             | CO2 | To equip the students to maintain various types of ledgers and to prepare final accounts                                                                      |
| CO 1561.1   | Financial Services in India | CO1 | To familiarize the students with the structure and functioning of financial service sector in India                                                           |
| CO 1561.2   | Co-operative Legal System   | CO1 | To give an insight into the prevailing co-operative legal system.                                                                                             |
|             |                             | CO2 | To enable the students to understand the legal framework of co-operation                                                                                      |
| CO 1542     | Cost Accounting             | CO1 | To familiarize the students with cost and cost accounting concepts                                                                                            |
|             |                             | CO2 | To make the students learn cost accounting as a distinct stream of accounting                                                                                 |
| SEMESTER VI |                             |     |                                                                                                                                                               |
| CO 1641     | Auditing                    | CO1 | To provide students the knowledge of auditing principles, procedures and techniques in accordance with current legal requirements and professional standards. |
|             |                             | CO2 | To familiarize students with the audit of Companies and the liabilities of the auditor                                                                        |

|                  |                                  |            |                                                                                                                                    |
|------------------|----------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 1642</b>   | <b>Applied Costing</b>           | <b>CO1</b> | To acquaint the students with different methods and techniques of costing.                                                         |
|                  |                                  | <b>CO2</b> | To enable the students to apply the costing methods and techniques in different types of industries.                               |
| <b>CO 1643</b>   | <b>Management Accounting</b>     | <b>CO1</b> | To enable students to acquire sound knowledge of concepts, methods and techniques of management accounting                         |
|                  |                                  | <b>CO2</b> | To make the students develop competence with management accounting usage in managerial decision making and control.                |
| <b>CO 1651.2</b> | <b>Strategic Management</b>      | <b>CO1</b> | To give basic understanding about the concepts related to strategic management.                                                    |
|                  |                                  | <b>CO2</b> | To acquaint the students with the managerial tasks associated with implementing corporate strategy                                 |
| <b>CO 1661.1</b> | <b>Taxation Law and Accounts</b> | <b>CO1</b> | To enable the students to understand the provisions of Income Tax for computing Total Income and Tax liability of various persons. |

|                  |                                |            |                                                                                                 |
|------------------|--------------------------------|------------|-------------------------------------------------------------------------------------------------|
|                  |                                | <b>CO2</b> | To familiarise the students with the procedure of Income Tax Assessment                         |
|                  |                                | <b>CO3</b> | To provide students the basic knowledge of Goods and Service Tax                                |
| <b>CO 1661.2</b> | <b>Co-operative Accounting</b> | <b>CO1</b> | To familiarise the students with the special features of accounting and audit in co-operatives. |
|                  |                                | <b>CO2</b> | To enable the students to understand the procedures of co-operative audit.                      |

**NAME OF THE PROGRAMME:FIRST DEGREE PROGRAM IN MATHEMATICS**

**PROGRAM SPECIFIC OUTCOMES**

**PSO1 :**Acquire knowledge in functional areas of Mathematics and apply in all the fields of learning.

**PSO2:**Equip the student with skills to analyze problems, formulate a hypothesis ,evaluate and validate results and draw reasonable conclusions thereof. .

**PSO3:**Employ Mathematical ideas encompassing logical reasoning,analytical,numerical ability, theoretical skills to model real -world problems and solve them.

**PSO4:**Develop critical thinking,creative thinking,self confidence for eventual success in career.

**PSO5:**Analyze,interpret solutions and to enhance their entrepreneurial skills,Managerial skill and leadership.

**PSO6 :** Recognize the need for life long learning and demonstrate the ability to explore some mathematical content independently.

**PSO7 :** To prepare the students to communicate mathematical ideas effectively and develop their ability to collaborate both intellectually and creatively in diverse contexts.

**PSO8 :** Imbibe effective scientific and technical communication in both oral and writing.

**PSO9 :** Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in mathematical sciences.

### COURSE OUTCOME (CO)

| COURSE CODE  | COURSE NAME                | COURSE OUTCOME |                                                                                                      |
|--------------|----------------------------|----------------|------------------------------------------------------------------------------------------------------|
| SEMESTER I   |                            |                |                                                                                                      |
| MM 1141      | Methods of Mathematics     | CO1            | Define maxima,minima,critical points and points of inflection..                                      |
|              |                            | CO2            | Apply the concept of differentiation in real life situation                                          |
|              |                            | CO3            | Explain logic and various proof techniques                                                           |
|              |                            | CO4            | Illustrate decomposition of an integer in to prime factors.                                          |
| SEMESTER II  |                            |                |                                                                                                      |
| MM 1221      | Foundations of Mathematics | CO1            | Describe the integrals of a function and learn its physical interpretation through various examples. |
|              |                            | CO2            | Demonstarte various applications of integration                                                      |
|              |                            | CO3            | Compute tangent lines to polar curves arc length and area                                            |
|              |                            | CO4            | Sketch conic sections such as parabola ,ellipse and Hyperbola.                                       |
|              |                            | CO5            | Distinguish the cylindrical and spherical coordinate systems.                                        |
| SEMESTER III |                            |                |                                                                                                      |

|             |                                          |     |                                                                                                                                                                                        |
|-------------|------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                          |     |                                                                                                                                                                                        |
| MM 1341     | Elementary Number Theory and Calculus- I | CO1 | Understand linear Diophantine equations, existence of solutions and the methods of solving them.                                                                                       |
|             |                                          | CO2 | Understand the concept of vector valued functions, calculus of vector valued function, tangent and normal vectors and curvature                                                        |
|             |                                          | CO3 | Recognize conceptual variations while advancing from one variable to several variables in calculus and to find the limits, continuity and differentiability of multivariable functions |
|             |                                          | CO4 | Apply multivariable calculus in optimization problems.                                                                                                                                 |
|             |                                          | CO5 | Apply multivariable calculus in optimization problems.                                                                                                                                 |
| SEMESTER IV |                                          |     |                                                                                                                                                                                        |
| MM 1441     | Elementary Number Theory and Calculus-II | CO1 | Learn about some important results in the theory of numbers including Chinese Remainder Theorem, Euler's theorem, Wilson's Theorem and Fermat's Little Theorem                         |
|             |                                          | CO2 | Understands the concept of vector fields and integration of vector valued functions, Green's theorem, Stoke's theorem and Divergence theorem.                                          |
|             |                                          | CO3 | Understands the concept of multiple integration and applying them to find volume, surface area etc.                                                                                    |
|             |                                          | CO4 | Understands the concept of multiple integration and applying them to find volume, surface area etc.                                                                                    |
| SEMESTER V  |                                          |     |                                                                                                                                                                                        |
| MM 1541     | Real Analysis I                          | CO1 | Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence.                   |

|                |                                        |            |                                                                                                                                                           |
|----------------|----------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                        | <b>CO2</b> | Apply the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers.      |
|                |                                        | <b>CO3</b> | Interpret the topological structure of Real Line and apply the knowledge in identifying closed sets, open sets, connected sets etc.                       |
|                |                                        | <b>CO4</b> | Visualize complex numbers as points of $\mathbb{R}^2$ and understand the various operations in the set of complex numbers and also its topology.          |
| <b>MM 1542</b> | <b>Complex Analysis I</b>              | <b>CO1</b> | Visualize complex numbers as points of $\mathbb{R}^2$ and understand the various operations in the set of complex numbers and also its topology.          |
|                |                                        | <b>CO2</b> | Understand the significance of differentiability and analyticity of complex functions leading to the Cauchy-Riemann equations.                            |
|                |                                        | <b>CO3</b> | Define elementary complex functions and understand its properties.                                                                                        |
|                |                                        | <b>CO4</b> | Recognize the mathematical objects called groups and classify them in terms of number of elements and understand the characterizations of subgroups.      |
| <b>MM 1543</b> | <b>Abstract Algebra – Group Theory</b> | <b>CO1</b> | Analyze fundamental properties of permutation groups and link the fundamental concepts of groups and symmetries of geometrical objects using isomorphism. |
|                |                                        | <b>CO2</b> | Explain the significance of the notions of cosets, normal subgroups, factor groups and analyze consequences of Lagrange's theorem.                        |
|                |                                        | <b>CO3</b> | Identify structural preserving maps and will be able to classify finite groups.                                                                           |

|             |                                   |     |                                                                                                                                                                                                 |
|-------------|-----------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                   | CO4 | Understand the genesis of Ordinary Differential equations                                                                                                                                       |
| MM 1544     | Differential Equations            | CO1 | Learn various techniques of getting exact solutions of solvable linear first order and second order Ordinary Differential equations                                                             |
|             |                                   | CO2 | Construct mathematical models in the form of Ordinary Differential equations to suggest possible solutions of the day to day problems arising in physical, chemical and biological disciplines. |
|             |                                   | CO3 | Understand and apply the programming concept of SageMath which is important for problem solving.                                                                                                |
| MM 1545     | LaTeX and SageMath                | CO1 | Understand and apply the typesetting software LaTeX for typesetting mathematics documents.                                                                                                      |
|             |                                   | CO2 | Apply the knowledge of LaTeX for creating Project Report.                                                                                                                                       |
|             |                                   | CO3 | Develop ability to solve problems related to simple and compound interest which would help the students while appearing for competitive examinations                                            |
| MM 1551.2   | Business Mathematics(Open Course) | CO1 | Developing the skill to mathematically formulate the problems of business and economics and solving them using the techniques of calculus                                                       |
|             |                                   | CO2 | Getting introduced to the concepts of index numbers and its use in business and economics                                                                                                       |
|             |                                   | CO3 | Getting introduced to the concepts of index numbers and its use in business and economics                                                                                                       |
| SEMESTER VI |                                   |     |                                                                                                                                                                                                 |
| MM 1641     | Real Analysis II                  | CO1 | Understands the difference between continuity and uniform continuity. Identify functions which are continuous and which are uniformly continuous                                                |
|             |                                   | CO2 | Understands the concept of differentiability and are able to identify differentiable functions, continuous but non differentiable functions.                                                    |
|             |                                   | CO3 | Learn Riemann Integrability and different criterion for Riemann Integrability                                                                                                                   |



|                |                                       |            |                                                                                                                                                           |
|----------------|---------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                       | <b>CO4</b> | Understand the convergence, term by term integration and differentiation of a power series                                                                |
| <b>MM 1642</b> | <b>Complex Analysis II</b>            | <b>CO1</b> | Learn Taylor and Laurent series expansions of functions, classify the nature of singularity, poles and residues and application of Cauchy Residue Theorem |
|                |                                       | <b>CO2</b> | Learn how to evaluate various integrals                                                                                                                   |
|                |                                       | <b>CO3</b> | Understand the concept of conformal mapping and mobius transformations                                                                                    |
|                |                                       | <b>CO4</b> | Recognize the higher algebraic structures like Rings, Integral Domains and Fields and understand the properties of them.                                  |
| <b>MM 1643</b> | <b>Abstract Algebra – Ring Theory</b> | <b>CO1</b> | Understand the concepts like Ideals, Quotient Rings and Ring Homomorphism.                                                                                |
|                |                                       | <b>CO2</b> | Interpret division algorithm, factor theorem and remainder theorem in the rings of polynomials and to construct Quotient Rings.                           |
|                |                                       | <b>CO3</b> | Identify various types of integral domains and compare Principal Ideal domains, Euclidean Domains and Unique factorization domains.                       |
|                |                                       | <b>CO4</b> | Understand the concept of Gaussian Elimination method and apply it in solving system of linear equations                                                  |
| <b>MM 1644</b> | <b>Linear Algebra</b>                 | <b>CO1</b> | Understand the concepts of vector spaces, subspaces, linear independence, bases, dimension and their properties                                           |
|                |                                       | <b>CO2</b> | Understands the concepts of linear transformations and their properties ; the ideas and concepts of determinants, properties and its applications         |
|                |                                       | <b>CO3</b> | Understands the concepts of eigenvalues, eigen vectors, diagonalization of matrices and orthogonality of vectors                                          |

|                  |                            |            |                                                                                                         |
|------------------|----------------------------|------------|---------------------------------------------------------------------------------------------------------|
|                  |                            | <b>CO4</b> | Understands the application of matrices                                                                 |
|                  |                            | <b>CO5</b> | Learn and understands the concept of Laplace Transform and Inverse Laplace Transform                    |
| <b>MM 1645</b>   | <b>Integral Transforms</b> | <b>CO1</b> | Apply Laplace transform to evaluate integrals, solve differential equations and initial value problems. |
|                  |                            | <b>CO2</b> | Understands Fourier series and transforms                                                               |
|                  |                            | <b>CO3</b> | Apply the knowledge of Fourier series and Fourier transforms in various problems                        |
|                  |                            | <b>CO4</b> | Define graphs along with their types and examples                                                       |
| <b>MM 1661.1</b> | <b>Graph Theory</b>        | <b>CO1</b> | Understand the definition of a tree and learn its applications                                          |
|                  |                            | <b>CO2</b> | Understand the notion of planarity                                                                      |
|                  |                            | <b>CO3</b> | Relate graph theory to the real world problems                                                          |
|                  |                            |            |                                                                                                         |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN MATHEMATICS  
FOR FIRST DEGREE PROGRAM IN PHYSICS**

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                                 | COURSE OUTCOME |                                                                                                                                                                               |
|----------------|---------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                                             |                |                                                                                                                                                                               |
| MM 1131.1      | Calculus with<br>Applications in Physics-I  | CO1            | Remember the basics of differentiation like product rule, quotient rule, logarithmic differentiation etc and then learn the Leibnitz Theorem and apply them to solve problems |
|                |                                             | CO2            | Apply differentiation to find stationary points and to find curvature and then learn important theorems like Rolle's and Mean value Theorem and their applications.           |
|                |                                             | CO3            | Understands the basics of integration and applies integration techniques to solve area, volume problems                                                                       |
|                |                                             | CO4            | Understands the concept of convergence of infinite series and applying various tests for convergence, power series and its convergence.                                       |
|                |                                             | CO5            | Define basic vector operations and identify its applications                                                                                                                  |
|                |                                             | CO6            | Explain and solve distance problems using vectors by using parametric equations of lines and planes                                                                           |
| SEMESTER II    |                                             |                |                                                                                                                                                                               |
| MM 1231.1      | Calculus with<br>Applications in Physics II | CO1            | Understand the concept of partial differentiation and learn to find stationary points of multi-variable functions                                                             |
|                |                                             | CO2            | Visualize complex numbers as points of $\mathbb{R}^2$ and understand the various operations in the set of complex numbers                                                     |
|                |                                             | CO3            | Explain the polar representation of complex numbers and interpret complex logarithms and complex powers.                                                                      |
|                |                                             | CO4            | Describe the applications of complex functions to differentiation and integration.                                                                                            |
|                |                                             | CO5            | Associate hyperbolic functions as analogues to trigonometric functions and describe the calculus of hyperbolic functions.                                                     |

|              |                                                            |     |                                                                                                                                                                                                           |
|--------------|------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                                            | CO6 | Learn to find multiple integrals and apply them to find areas and volumes                                                                                                                                 |
|              |                                                            | CO7 | Describe Differentiation of Vectors and its simple applications                                                                                                                                           |
|              |                                                            | CO8 | Explain vector differential operators and to calculate Gradient, Divergence and Curl of a Vector field both in rectangular spherical and cylindrical systems.                                             |
| SEMESTER III |                                                            |     |                                                                                                                                                                                                           |
| MM 1331.1    | Calculus and Linear Algebra                                | CO1 | Understand the genesis of Ordinary Differential equations and Learn various techniques of getting exact solutions of solvable linear first order, second order and higher Ordinary Differential equations |
|              |                                                            | CO2 | Understand the concept of Laplace Transform and apply it to solve initial value problems.                                                                                                                 |
|              |                                                            | CO3 | Compute Line integrals of vector functions and identify their applications                                                                                                                                |
|              |                                                            | CO4 | Evaluate Surface and volume integrals and learn their inter relations and applications.                                                                                                                   |
|              |                                                            | CO5 | Associate Fourier series expansion with a given periodic function and to deduce the sum of numerical series from it.                                                                                      |
|              |                                                            | CO6 | Compute/ Determine Fourier transform of a given non periodic function.                                                                                                                                    |
|              |                                                            | CO7 | Solve system of linear equations, finding eigenvalues and vectors diagonalization of a matrix and its applications                                                                                        |
| SEMESTER IV  |                                                            |     |                                                                                                                                                                                                           |
| MM 1431.1    | Complex Analysis, Special functions and Probability Theory | CO1 | Understand the significance of differentiability and analyticity of complex functions leading to the Cauchy-Riemann equations                                                                             |
|              |                                                            | CO2 | Understand the concepts of contour integration, and learn the role of Cauchy theorem and Cauchy integral formula in evaluation of contour integrals                                                       |
|              |                                                            | CO3 | Identify Taylor and Laurent series expansions of analytic functions, classify the nature of singularity, poles and residues and application of Cauchy Residue                                             |

|  |  |            |                                                                                                     |
|--|--|------------|-----------------------------------------------------------------------------------------------------|
|  |  |            | Theorem in the evaluation of definite integrals                                                     |
|  |  | <b>CO4</b> | Define Factorial, Gamma and Beta functions                                                          |
|  |  | <b>CO5</b> | Describe the formulas involving Gamma functions and define Beta function in terms of Gamma function |

**NAME OF THE PROGRAMME:COMPLEMENTARY COURSE IN MATHEMATICS  
FOR FIRST DEGREE PROGRAM IN CHEMISTRY**

**COURSE OUTCOME (CO)**

| COURSE CODE | COURSE NAME                                | COURSE OUTCOME |                                                                                                                                                                               |
|-------------|--------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I  |                                            |                |                                                                                                                                                                               |
| MM 1131.2   | Calculus with Applications in Chemistry-I  | CO1            | Remember the basics of differentiation like product rule, quotient rule, logarithmic differentiation etc and then learn the Leibnitz Theorem and apply them to solve problems |
|             |                                            | CO2            | Apply differentiation to find stationary points and to find curvature and then learn important theorems like Rolle's and Mean value Theorem and their applications.           |
|             |                                            | CO3            | Visualize complex numbers as points of $R^2$ and understand the various operations in the set of complex numbers                                                              |
|             |                                            | CO4            | Explain the polar representation of complex numbers and interpret complex logarithms and complex powers.                                                                      |
|             |                                            | CO5            | Describe the applications of complex functions to differentiation and integration.                                                                                            |
|             |                                            | CO6            | Associate hyperbolic functions as analogues to trigonometric functions and describe the calculus of hyperbolic functions.                                                     |
|             |                                            | CO7            | Define basic vector operations and identify their applications                                                                                                                |
| SEMESTER II |                                            |                |                                                                                                                                                                               |
| MM 1231.1   | Calculus with Applications in Chemistry-II | CO1            | Understand the concept of partial differentiation and learn to find stationary points of multivariable functions                                                              |
|             |                                            | CO2            | Understands the concept of convergence of infinite series and applying various tests for convergence, power series and its convergence                                        |

|                     |                                                                     |            |                                                                                                                                                                                                                                      |
|---------------------|---------------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                                                                     | <b>CO3</b> | Describe Differentiation of Vectors and its simple applications                                                                                                                                                                      |
|                     |                                                                     | <b>CO4</b> | Explain vector differential operators and to calculate Gradient, Divergence and Curl of a Vector field both in rectangular spherical and cylindrical systems.                                                                        |
|                     |                                                                     | <b>CO5</b> | Learn to find multiple integrals and apply them to find areas and volumes                                                                                                                                                            |
| <b>SEMESTER III</b> |                                                                     |            |                                                                                                                                                                                                                                      |
| <b>MM 1331.2</b>    | <b>Linear Algebra Probability Theory and Numerical Methods</b>      | <b>CO1</b> | Solve system of linear equations, finding eigenvalues and vectors diagonalization of a matrix and its applications                                                                                                                   |
|                     |                                                                     | <b>CO2</b> | Understand the concepts of probability, random variables and distributions                                                                                                                                                           |
|                     |                                                                     | <b>CO3</b> | Describe common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems                                                                                               |
|                     |                                                                     | <b>CO4</b> | Apply numerical methods to various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of system of linear equations, and the solution of first order linear differential equations |
| <b>SEMESTER IV</b>  |                                                                     |            |                                                                                                                                                                                                                                      |
| <b>MM 1431.2</b>    | <b>Differential Equations, Vector Calculus and Abstract Algebra</b> | <b>CO1</b> | Understand the genesis of Ordinary Differential equations and Learn various techniques of getting exact solutions of solvable linear first order, second order and higher Ordinary Differential equations                            |
|                     |                                                                     | <b>CO2</b> | Understand the concept of Laplace Transform and apply it to solve initial value problems.                                                                                                                                            |
|                     |                                                                     | <b>CO3</b> | Compute Line integrals of vector functions and learn their applications                                                                                                                                                              |
|                     |                                                                     | <b>CO4</b> | Evaluate Surface and volume integrals and learn their inter relations and applications.                                                                                                                                              |



|  |  |            |                                                                                                                                                           |
|--|--|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <b>C05</b> | Recognize the mathematical objects called groups and classify them in terms of number of elements and understand the characterizations of subgroups.      |
|  |  | <b>C06</b> | Analyze fundamental properties of permutation groups and link the fundamental concepts of groups and symmetries of geometrical objects using isomorphism. |
|  |  | <b>C07</b> | Understand equivalent representations of Groups and reducibility of the representation                                                                    |
|  |  | <b>C08</b> | Explain orthogonality theorem for irreducible representations, orthogonality property of characters and construct character table                         |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN MATHEMATICS  
FOR FIRST DEGREE PROGRAM IN STATISTICS**

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                                 | COURSE OUTCOME |                                                                                                                                                                               |
|----------------|---------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                                             |                |                                                                                                                                                                               |
| MM 1131.4      | Basic Calculus for Statistics               | CO1            | Remember the basics of differentiation like product rule, quotient rule, logarithmic differentiation etc and then learn the Leibnitz Theorem and apply them to solve problems |
|                |                                             | CO2            | Apply differentiation to find stationary points and to find curvature and then learn important theorems like Rolle's and Mean value Theorem and their applications.           |
|                |                                             | CO3            | Understands the concept of partial differentiation and apply the problem solving techniques                                                                                   |
|                |                                             | CO4            | Apply chain rule in of partial differentiation                                                                                                                                |
|                |                                             | CO5            | Explain Lagrange Multiplier method for constrained optimization and applications                                                                                              |
| SEMESTER II    |                                             |                |                                                                                                                                                                               |
| MM 1231.4      | Advanced Differential and Integral Calculus | CO1            | Understand and apply the concept integration techniques like substitution,hyperbolic functions, integration by parts, trigonometric substitution and partial fraction         |
|                |                                             | CO2            | Compute arc length of curves and area of revolution                                                                                                                           |
|                |                                             | CO3            | Compute double integrals                                                                                                                                                      |
|                |                                             | CO4            | Analyze the convergence of infinite series by various techniques                                                                                                              |
| SEMESTER III   |                                             |                |                                                                                                                                                                               |
| MM 1331.4      | Fourier series, Numerical Methods and ODE   | CO1            | Understand Eulers formulae, even and odd functions, half range series, Fourier transforms and analyze their properties                                                        |
|                |                                             | CO2            | Compute numerical solutions of equations                                                                                                                                      |
|                |                                             | CO3            | Apply different methods for numerical solutions of ordinary differential equations                                                                                            |

|                    |                       |            |                                                                                                                                            |
|--------------------|-----------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                       | <b>CO4</b> | Understand different types of first order differential equations and compute its solutions                                                 |
| <b>SEMESTER IV</b> |                       |            |                                                                                                                                            |
| <b>MM 1431.4</b>   | <b>Linear Algebra</b> | <b>CO1</b> | Understand the concept of vector space and analyze its properties                                                                          |
|                    |                       | <b>CO2</b> | Apply Gram-Schmidt orthogonalization process                                                                                               |
|                    |                       | <b>CO3</b> | Compute rank of a matrix                                                                                                                   |
|                    |                       | <b>CO4</b> | Analyze the solution of a system of linear equations                                                                                       |
|                    |                       | <b>CO5</b> | Analyze whether a matrix is diagonalizable or not                                                                                          |
|                    |                       | <b>CO6</b> | Understand the concept of linear transformation, analyze the relation between matrices of a transformation relative to two different bases |

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAM IN ZOOLOGY**

**PROGRAM SPECIFIC OUTCOMES**

**PSO1:** To develop an interest towards our nature and other living organisms and understand the nature and basic concepts of Zoology and Imparting the need for environmental protection and sustainable development

**PSO2:** Acquire knowledge on major branches of zoology such as Taxonomy, Physiology, Cell biology, Developmental biology, genetics, ecology, applied Zoology and advanced interdisciplinary fields like Bioinformatics, Biophysics, Biochemistry, Biotechnology, Microbiology etc..

**PSO3 :** To create an awareness on our general body plan – organ and organ systems- its anatomy and physiology- health and hygiene and detailed knowledge about communicable and non-communicable human diseases and their management

**PSO4:** Developing knowledge and skill on self employment opportunities in applied fields like Sericulture Apiculture, Aquaculture, Dairy and poultry farming and also in acquiring skill on haematological analysis in the laboratory

**PSO5 :**Develop ability to analyze the environmental pollution through laboratory experiments and impart knowledge on Waste management through vermiculture etc.

**PSO6 :**To identify and get knowledge about various endemic species- to study animal behaviour - by visiting national parks and wild life sanctuaries, making various ecosystem models

### **COURSE OUTCOME (CO)**

| COURSE CODE | COURSE NAME         | COURSE OUTCOMES |                                                                                                                                                                   |
|-------------|---------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I  |                     |                 |                                                                                                                                                                   |
| ZO1141      | Animal Diversity I  | CO1             | Realize the amazing diversity of invertebrates                                                                                                                    |
|             |                     | CO2             | Understand the hierarchical organization of invertebrates                                                                                                         |
|             |                     | CO3             | Be aware of the economic importance of invertebrates with special reference to insect pests that cause serious threat to important crops like paddy, coconut etc. |
|             |                     | CO4             | Trace the evolutionary history of invertebrates and identify correlations.                                                                                        |
|             |                     | CO5             | To understand biological diversity through systematic classification                                                                                              |
|             |                     | CO6             | To acquire knowledge about parasites                                                                                                                              |
| SEMESTER II |                     |                 |                                                                                                                                                                   |
| ZO1241      | Animal Diversity II | CO1             | Distinguish vertebrates and invertebrates                                                                                                                         |
|             |                     | CO2             | Understand systematic position of vertebrates found in different habitats                                                                                         |
|             |                     | CO3             | Learn the economic and ecological importance of vertebrates                                                                                                       |
|             |                     | CO4             | Investigate the interconnections within the evolutionary history of vertebrates                                                                                   |

|              |                                                                         |      |                                                                                                                                     |
|--------------|-------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------|
|              |                                                                         | CO5  | To Evaluate the cellular, tissue, organ and organismal level of organization                                                        |
|              |                                                                         | CO6  | To develop key concept of similarity, behavior and ecological adaptations                                                           |
| SEMESTER III |                                                                         |      |                                                                                                                                     |
| ZO1341       | Experimental Zoology, Instrumentation, Biostatistics and Bioinformatics | CO1  | Understand the opportunities in the field of life science                                                                           |
|              |                                                                         | CO2  | Use of instruments in experiments and research                                                                                      |
|              |                                                                         | CO3  | Apply biostatistics to analyze experimental data and draw meaningful conclusions.                                                   |
|              |                                                                         | CO4  | Use of bioinformatics in experiments and research                                                                                   |
| SEMESTER IV  |                                                                         |      |                                                                                                                                     |
| ZO1441       | Ecology, Habitat Destruction & Disaster Management                      | CO1  | Understand the basic principles of ecology and the functioning of ecosystems                                                        |
|              |                                                                         | CO2  | Create awareness about ecological interactions and also identify the impact of human intervention on the existence of the ecosystem |
|              |                                                                         | CO3  | Assess disaster causes, consequences, and prevention/mitigation strategies.                                                         |
|              |                                                                         | CO4  | Implement remedial measures to mitigate the impact of human activities on ecosystems.                                               |
| SEMESTER V   |                                                                         |      |                                                                                                                                     |
| ZO1541       | Cell and Molecular Biology                                              | CO1  | To acquire knowledge about cell organelles, and their role in living organism                                                       |
|              |                                                                         | CO2  | To make aware about risk assessment, detection, diagnosis, treatment, and prevention of cancer                                      |
|              |                                                                         | CO 3 | To Enable students to recognize the early signs and symptoms of cancer, thus enabling them to seek treatment at an early stage.     |
|              |                                                                         | CO4  | To observe public health perspective of elderly people suffering with chronic age-onset diseases                                    |
|              |                                                                         | CO5  | Understand the principles and mechanism involved in molecular biology                                                               |

|                 |                                                                                 |            |                                                                                                 |
|-----------------|---------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------|
| <b>ZO1542</b>   | <b>Genetics and Biotechnology</b>                                               | <b>CO1</b> | Understand the mechanism and principles of heredity and variation                               |
|                 |                                                                                 | <b>CO2</b> | Know about Genetic counseling and its application                                               |
|                 |                                                                                 | <b>CO3</b> | Learn different genetic disorders, its causes and possible ways to reduce its occurrence        |
|                 |                                                                                 | <b>CO4</b> | Create awareness about genetic principles and biotechnological tools for the welfare of mankind |
| <b>ZO1543</b>   | <b>Immunology and Microbiology</b>                                              | <b>CO1</b> | Gain insight into the principles and mechanisms that govern the field of immunology             |
|                 |                                                                                 | <b>CO2</b> | Recognize the significance and breadth of clinical immunology in healthcare practices           |
|                 |                                                                                 | <b>CO3</b> | Understand various types of microorganisms and their effects                                    |
|                 |                                                                                 | <b>CO4</b> | Analyse the application of microorganisms in various fields                                     |
| <b>ZO1442</b>   | <b>Practical I – Instrumentation Animal Diversity I and Animal Diversity II</b> | <b>CO1</b> | Study organism morphology to understand their physical structure                                |
|                 |                                                                                 | <b>CO2</b> | Understand the anatomy and organ system of invertebrate organisms.                              |
|                 |                                                                                 | <b>CO3</b> | Understand the economically important invertebrates and vertebrates and their significance      |
|                 |                                                                                 | <b>CO4</b> | Understand the principles and the mechanisms of instruments used in Zoology                     |
| <b>ZO1551.1</b> | <b>Public Health and Hygiene</b>                                                | <b>CO1</b> | Understand the importance of public health, hygiene, balanced diet and nutritional disorders    |
|                 |                                                                                 | <b>CO2</b> | Identify the food adulteration                                                                  |
|                 |                                                                                 | <b>CO3</b> | Understand the causes and manifestation of physical and mental diseases                         |
|                 |                                                                                 | <b>CO4</b> | Apply the preventive and therapeutic measures for physical and mental diseases                  |
| <b>ZO1432</b>   | <b>Practical II-Animal Diversity I &amp; II,</b>                                | <b>CO1</b> | Create awareness about morphology and anatomy of organisms                                      |
|                 |                                                                                 | <b>CO2</b> | Identify economically important species.                                                        |
|                 |                                                                                 | <b>CO3</b> | Recognise different types of blood cells and blood groups                                       |

|                    |                                                          |            |                                                                                                                                             |
|--------------------|----------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <b>Functional Zoology and Applied Zoology</b>            | <b>CO4</b> | Understand genetic principles in identifying genetic disorders                                                                              |
| <b>SEMESTER VI</b> |                                                          |            |                                                                                                                                             |
| <b>ZO1641</b>      | <b>Physiology and Biochemistry</b>                       | <b>CO1</b> | Recognize the interrelationship between organ and organ system structures and their corresponding functions within the body.                |
|                    |                                                          | <b>CO2</b> | Comprehend the potential causes of abnormal physiological processes and the resulting diseases.                                             |
|                    |                                                          | <b>CO3</b> | Understand the structure and different types of proteins, lipids and carbohydrates and their significance.                                  |
|                    |                                                          | <b>CO4</b> | Learn the metabolism of biomolecules through various anabolic and catabolic pathways, energy production and also their deficiency disorders |
| <b>ZO1642</b>      | <b>Developmental Biology and Experimental Embryology</b> | <b>CO1</b> | Create awareness about embryological development of organisms                                                                               |
|                    |                                                          | <b>CO2</b> | To achieve basic knowledge of the experimental embryology and used for future studies and research                                          |
|                    |                                                          | <b>CO3</b> | To contribute logical thinking of congenital anomalies and their etiology                                                                   |
|                    |                                                          | <b>CO4</b> | Critically evaluate causes and apply control measures of congenital malformations                                                           |
|                    |                                                          | <b>CO5</b> | Understand the advanced techniques in experimental embryology                                                                               |
| <b>ZO1643</b>      | <b>Ethology, Evolution and Zoogeography</b>              | <b>CO1</b> | Explore basic principles of animal behavior and factors that influence it.                                                                  |
|                    |                                                          | <b>CO2</b> | Know various communication means among animals such as visual, auditory, olfactory, chemical etc.                                           |
|                    |                                                          | <b>CO3</b> | Understand the concept of organic evolution, fossil records and evolutionary history of humans                                              |
|                    |                                                          | <b>CO4</b> | Understand the distributional pattern of animals in various zoogeographical realms                                                          |

|                 |                                                                                                                                       |            |                                                                                                                             |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>ZO1651.2</b> | <b>Ornamental Freshwater fish production</b>                                                                                          | <b>CO1</b> | To make the students aware about the diversity of ornamental fishes and also to recognize both indigenous and exotic fishes |
|                 |                                                                                                                                       | <b>CO2</b> | To familiarize the feeding, and reproductive behaviours of the commercially important ornamental fishes                     |
|                 |                                                                                                                                       | <b>CO3</b> | Familiarize with the water quality management in culture systems/aquariums, various diseases and their control measures     |
|                 |                                                                                                                                       | <b>CO4</b> | To learn the scientific methods in setting up of aquarium                                                                   |
|                 |                                                                                                                                       | <b>CO5</b> | Understand the production, culture and marketing techniques of common indigenous fishes                                     |
|                 |                                                                                                                                       | <b>CO6</b> | To develop students as entrepreneurs in the ornamental fish production sector                                               |
| <b>ZO1644</b>   | <b>Practical II -<br/>Cell Biology,<br/>Genetics,<br/>Bioinformatics,<br/><br/>Biotechnology,<br/>Immunology and<br/>Microbiology</b> | <b>CO1</b> | Distinguish various cell types and bacterial organisms                                                                      |
|                 |                                                                                                                                       | <b>CO2</b> | Recognize the different stages involved in cell division and the structural characteristics of genetic materials.           |
|                 |                                                                                                                                       | <b>CO3</b> | Identify and make awareness about different types genetic syndromes                                                         |
|                 |                                                                                                                                       | <b>CO4</b> | Experiment on enumeration blood cells and typing of blood                                                                   |
| <b>ZO1645</b>   | <b>Practical III-<br/><br/>Physiology and<br/>Biological<br/><br/>Chemistry,<br/>Molecular Biology<br/>and Biostatistics</b>          | <b>CO1</b> | Understand the clinical procedures for blood & urine analysis                                                               |
|                 |                                                                                                                                       | <b>CO2</b> | Isolation and estimation of amino acids and haemoglobin                                                                     |
|                 |                                                                                                                                       | <b>CO3</b> | Understand the structure and function of various vital organs                                                               |
|                 |                                                                                                                                       | <b>CO4</b> | Use of statistical methods to analyze data                                                                                  |
| <b>ZO1646</b>   | <b>Practical IV-<br/><br/>Developmental<br/>Biology, Ecology,<br/><br/>Ethology, Evolution<br/>and Zoogeography</b>                   | <b>CO1</b> | Identify developmental aspects in various stages of different organisms like, chick, frog, human                            |
|                 |                                                                                                                                       | <b>CO2</b> | Estimate the physico-chemical parameters of water sample                                                                    |
|                 |                                                                                                                                       | <b>CO3</b> | Understand the ecological adaptations and evolutionary significance of organisms                                            |
|                 |                                                                                                                                       | <b>CO4</b> | Understand the mechanism of different types of traps in pest management                                                     |



|               |                                        |            |                                                                                                                                    |
|---------------|----------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>ZO1647</b> | <b>Zoology Project and Field study</b> | <b>CO1</b> | Select a suitable research topic and prepare a corresponding presentation.                                                         |
|               |                                        | <b>CO2</b> | Familiarize the students various ecosystems and interrelationship of organism with environment                                     |
|               |                                        | <b>CO3</b> | Students develop research skills including experimental design, collection, data analysis and data analysis and finding solutions. |
|               |                                        | <b>CO4</b> | From field study, students get hands on experience in applying theoretical knowledge they have acquired in the classroom           |
|               |                                        | <b>CO5</b> | Students learn to work independently or in teamwork and collaboration skills                                                       |

**NAME OF THE PROGRAMME:COMPLEMENTARY COURSE IN ZOOLOGY FOR  
FIRST DEGREE PROGRAM IN BOTANY**

**COURSE OUTCOME (CO)**

| COURSE CODE | COURSE NAME        | COURSE OUTCOMES |                                                                           |
|-------------|--------------------|-----------------|---------------------------------------------------------------------------|
| SEMESTER I  |                    |                 |                                                                           |
| ZO1131      | Animal Diversity I | CO1             | Realize the amazing diversity of invertebrates                            |
|             |                    | CO2             | Understand organization of invertebrates                                  |
|             |                    | CO3             | Be aware of the economic importance of invertebrates                      |
|             |                    | CO4             | Trace the evolutionary history of invertebrates and identify correlations |
|             |                    | CO5             | To understand biological diversity through systematic classification      |

|              |                     |     |                                                                                                  |
|--------------|---------------------|-----|--------------------------------------------------------------------------------------------------|
|              |                     | CO6 | To acquire knowledge about parasites                                                             |
| SEMESTER II  |                     |     |                                                                                                  |
| ZO1231       | Animal Diversity II | CO1 | Distinguish vertebrates and invertebrates                                                        |
|              |                     | CO2 | Understand systematic position of vertebrates found in different habitats                        |
|              |                     | CO3 | Learn the economic and ecological importance of vertebrates                                      |
|              |                     | CO4 | Investigate the interconnections within the evolutionary history of vertebrates                  |
|              |                     | CO5 | To Evaluate the cellular, tissue, organ and organismal level of organization                     |
|              |                     | CO6 | To develop key concept of similarity, behavior and ecological adaptations                        |
| SEMESTER III |                     |     |                                                                                                  |
| ZO1331       | Functional Zoology  | CO1 | Impart functional knowledge about human physiology                                               |
|              |                     | CO2 | Identify various precautionary measures to safeguard health                                      |
|              |                     | CO3 | Create awareness about deficiency and imbalance disorders in the body                            |
|              |                     | CO4 | Understand the role of immune system in maintaining life                                         |
| SEMESTER IV  |                     |     |                                                                                                  |
| ZO1431       | Applied Zoology     | CO1 | Understand the basic principles of Apiculture, sericulture, aquaculture and livestock management |
|              |                     | CO2 | Create awareness about human genomics and reproductive biology                                   |
|              |                     | CO3 | Understand genetic and developmental disorders                                                   |
|              |                     | CO4 | Analyse the possibilities of self employment by deploying various livestock management systems   |
|              |                     | CO1 | Create awareness about morphology and anatomy of organisms                                       |

|               |                                                                                                  |            |                                                                |
|---------------|--------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------|
| <b>ZO1432</b> | <b>Practical II-Animal Diversity I &amp; II,<br/><br/>Functional Zoology and Applied Zoology</b> | <b>CO2</b> | Identify economically important species.                       |
|               |                                                                                                  | <b>CO3</b> | Recognise different types of blood cells and blood groups      |
|               |                                                                                                  | <b>CO4</b> | Understand genetic principles in identifying genetic disorders |

**NAME OF THE PROGRAMME:COMPLEMENTARY COURSE IN ZOOLOGY FOR  
FIRST DEGREE PROGRAM IN BIOTECHNOLOGY**

**COURSE OUTCOME (CO)**

| COURSE CODE | COURSE NAME                                | COURSE OUTCOMES |                                                                                                                       |
|-------------|--------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------|
| SEMESTER I  |                                            |                 |                                                                                                                       |
| BV 1231.1   | Animal Diversity – Non-chordata & Chordata | CO1             | Realize the amazing diversity and organization of invertebrates and vertebrates                                       |
|             |                                            | CO2             | Be aware of the economic and ecological importance of invertebrates and vertebrates                                   |
|             |                                            | CO3             | Trace the evolutionary history of invertebrates and understand biological diversity through systematic classification |
|             |                                            | CO4             | Investigate the interconnections within the evolutionary history of vertebrates                                       |
|             |                                            | CO5             | To Evaluate the cellular, tissue, organ and organismal level of organization                                          |
|             |                                            | CO6             | To develop key concept of similarity, behavior and ecological adaptations                                             |
|             |                                            | CO7             | To acquire knowledge about parasites                                                                                  |
| SEMESTER II |                                            |                 |                                                                                                                       |
|             |                                            | CO1             | Impart functional knowledge about human physiology                                                                    |

|              |                                                                              |     |                                                                                                                                              |
|--------------|------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------|
| BV 1231.1    | Animal Physiology & Anatomy                                                  | CO2 | Identify various precautionary measures to safeguard health                                                                                  |
|              |                                                                              | CO3 | Create awareness about deficiency and imbalance disorders in the body                                                                        |
|              |                                                                              | CO4 | Understand the role of immune system in maintaining life                                                                                     |
|              |                                                                              | CO4 | Create an awareness about Human body and also comparative anatomy of organisms                                                               |
| SEMESTER III |                                                                              |     |                                                                                                                                              |
| BV1331.1     | Developmental Biology, Human Genetics and Animal behaviour                   | CO1 | Understand the developmental aspects of animals- events and changes in fertilization – familiarizing advanced prenatal diagnostic techniques |
|              |                                                                              | CO2 | Create awareness about heredity and variation, Mendalian traits, sex linked inheritance and genetic disorders                                |
|              |                                                                              | CO3 | Study stimulus and response, behaviour and different types of learning in animals, social behaviour                                          |
| SEMESTER IV  |                                                                              |     |                                                                                                                                              |
| BV1431.1     | Practical II-Animal Diversity I & II, Functional Zoology and Applied Zoology | CO1 | Create awareness about morphology and anatomy of organisms                                                                                   |
|              |                                                                              | CO2 | Identify economically important species.                                                                                                     |
|              |                                                                              | CO3 | Recognise different types of blood cells and blood groups                                                                                    |
|              |                                                                              | CO4 | Understand genetic principles in identifying genetic disorders                                                                               |

**NAME OF THE PROGRAMME:FIRST DEGREE PROGRAM IN BOTANY**

### **PROGRAM SPECIFIC OUTCOMES**

**PSO1:** The students are expected to acquire knowledge of plant and related subjects so as to understand natural phenomenon, manipulation of nature and environment for the benefit of human beings.

**PSO2 :**To develop ability for the application of acquired knowledge to improve agriculture and other related field to make the country self reliant and sufficient.

**PSO3 :**To develop skill in practical works, experiments and laboratory materials and equipments along with the collection and interpretation of scientific data to contribute the science.

**PSO4 :**To enrich the students with latest developments in the field of information technology, biotechnology , bioinformatics and other related fields of research and development.

### **COURSE OUTCOME (CO)**

| COURSE CODE | COURSE NAME                                                            | COURSE OUTCOME |                                                                                                                                                   |
|-------------|------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I  |                                                                        |                |                                                                                                                                                   |
| BO 1141     | Microtechnique, Angiosperm Anatomy, Reproductive Botany and Palynology | CO1            | Students are able to understand the complexities of cell wall organization, microscopic and sub microscopic structures                            |
|             |                                                                        | CO2            | Students can distinguish various anatomical features of monocots and dicots (stem and root) with respect to permanent tissues and tissue systems. |
|             |                                                                        | CO3            | Identify and differentiate male and female gametophyte development in angiosperms.                                                                |
|             |                                                                        | CO4            | Distinguish monocot and dicot embryo and the basic features of pollen grains.                                                                     |
| SEMESTER II |                                                                        |                |                                                                                                                                                   |
| BO1221      | Methodology& Perspectives in Plant Science                             | CO1            | Students will be familiarized with the fundamental characteristics of Science.                                                                    |
|             |                                                                        | CO2            | Develops an idea about involvement of science in improvement of human life.                                                                       |
|             |                                                                        | CO3            | Create awareness of scientific approach towards life and learns the values of ethics in science.                                                  |

|              |                                                                    |     |                                                                                                                                                                                                          |
|--------------|--------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                                                    | CO4 | Develops skills to interpret scientific data using basic statistical methods.                                                                                                                            |
|              |                                                                    | CO5 | Create skills to prepare specimens for microscopic and gross anatomical studies andfamiliarize with different microscopic methods for sample analysis.                                                   |
| SEMESTER III |                                                                    |     |                                                                                                                                                                                                          |
| BO 1341      | Microbiology, phycology, mycology, lichenology and plant pathology | CO1 | The student can prepare micropreparations and identify the thallus andreproductive structures of lower plant groups like algae, fungi and lichen                                                         |
|              |                                                                    | CO2 | An awareness created among students about various microbes, structure and economic importance                                                                                                            |
|              |                                                                    | CO3 | Students can use effectively the methodology to isolateand identify bacteria present in curd and root nodules                                                                                            |
|              |                                                                    | CO4 | Can identify various plant diseases, etiology of pathogens and control measures                                                                                                                          |
| SEMESTER IV  |                                                                    |     |                                                                                                                                                                                                          |
| BO 1441      | Bryology, pteridology, gymnosperms and palaeobotany                | CO1 | Students are able to make micropreparations of thallus and reproductive structures of as well as better understanding of the life cycle of selected members of Bryophytes, Pteridophytes and Gymnosperms |
|              |                                                                    | CO2 | Can understand the economic and ecologic importance of lower groups of plant kingdom                                                                                                                     |
|              |                                                                    | CO3 | Better understanding of fossilization and importance of Palaeobotany                                                                                                                                     |
|              |                                                                    | CO4 | Identify various parts of fossil plants through micro slides                                                                                                                                             |

### SEMESTER V

|                |                                                                                                  |            |                                                                                                                             |
|----------------|--------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>BO 1541</b> | <b>Angiosperm morphology, systematic botany, economic botany, ethno botany and pharmacognosy</b> | <b>CO1</b> | Ability to identify different types of inflorescences, flowers and fruits, their arrangement and relative position.         |
|                |                                                                                                  | <b>CO2</b> | Familiarization of basic rules of Angiosperm classification and different types of classification.                          |
|                |                                                                                                  | <b>CO3</b> | Preparation and maintenance of Herbarium.                                                                                   |
|                |                                                                                                  | <b>CO4</b> | Identification of plants to their respective families.                                                                      |
|                |                                                                                                  | <b>CO5</b> | Understanding of ethnobotanical and pharmacological significance of plants.                                                 |
| <b>BO 1542</b> | <b>Environmental studies , disaster management, phytogeography &amp; research methodology</b>    | <b>CO1</b> | Develops awareness about natural resources, its conservation and importance of sustainable lifestyles.                      |
|                |                                                                                                  | <b>CO2</b> | Understands and identify different ecosystems and ecosystem processes.                                                      |
|                |                                                                                                  | <b>CO3</b> | Develops deep understanding about biodiversity and importance of its conservation                                           |
|                |                                                                                                  | <b>CO4</b> | Develops skills to identify polluted sites, its major pollutants and recognize the need to mitigate environmental pollution |
|                |                                                                                                  | <b>CO5</b> | Awareness about different types of disasters and to adopt strategies to overcome and reduce the impact                      |
|                |                                                                                                  | <b>CO6</b> | Identify the importance of phytogeographical sites in India                                                                 |
|                |                                                                                                  | <b>CO7</b> | Can devise an experimental design and carry out a project                                                                   |
|                |                                                                                                  | <b>CO8</b> | Students trained about various steps for the conduct of a research project and write a project report.                      |

|             |                                                 |     |                                                                                                                                    |
|-------------|-------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------|
| BO 1543     | Cell biology, genetics and evolutionary biology | CO1 | Students have a better understanding of cell structure and cell organelles                                                         |
|             |                                                 | CO2 | Prepare microslides of cell divisions and identify various stages of mitosis and meiosis                                           |
|             |                                                 | CO3 | Able to workout problems in classical genetics, modified mendelian ratios and populationgenetics                                   |
|             |                                                 | CO4 | Able to understand genetic diseases and their inheritance                                                                          |
|             |                                                 | CO5 | Understand evolutionary principles, theories and methods of speciation                                                             |
| BO 1551.3   | Forestry                                        | CO1 | To get a knowledge about types of forest and silviculture                                                                          |
|             |                                                 | CO2 | To get knowledge about forest produce                                                                                              |
|             |                                                 | CO3 | To understand agroforestry                                                                                                         |
|             |                                                 | CO3 | To analyze the ideological foundations of the Human Right Movement                                                                 |
|             |                                                 | CO4 | To evaluate the process of the historical development of human rights in History                                                   |
| SEMESTER VI |                                                 |     |                                                                                                                                    |
| BO 1641     | Plant physiology and biochemistry               | CO1 | Students get a clear understanding of the basic concepts of Physiology and Biochemistry.                                           |
|             |                                                 | CO2 | Understands photosynthesis, respiration, plant growth regulators, nitrogen metabolism, and stress physiology                       |
|             |                                                 | CO3 | Familiarization of basic physiological practical procedures.                                                                       |
|             |                                                 | CO4 | Students get the basic knowledge about the macromolecules and their overall role in cell metabolism; and secondary plant products. |



|                |                                                                            |            |                                                                                                                                                                                    |
|----------------|----------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                                            | <b>CO5</b> | Identification of protein, reducing and non reducing sugar by qualitative tests                                                                                                    |
| <b>BO 1642</b> | <b>Molecular biology, general informatics &amp; bioinformatics</b>         | <b>CO1</b> | Understands DNA as genetic material, develops awareness about chemical composition and different types of DNA including their replication method.                                  |
|                |                                                                            | <b>CO2</b> | Students understand various molecular aspects of gene expression and regulation of genes                                                                                           |
|                |                                                                            | <b>CO3</b> | Develops awareness about various academic services applied for their studies                                                                                                       |
|                |                                                                            | <b>CO4</b> | To evaluate the Total History approach and post-modern turn in historical thinking and writing                                                                                     |
|                |                                                                            | <b>CO5</b> | Recognizes the need for safe use of internet and also become aware about health issues related to over usage of computers and mobile phones as well as cyber crimes and cyberlaws. |
|                |                                                                            | <b>CO6</b> | Students will be familiarized to molecular phylogeny, Biological Databases, Sequence analysis, Genomics, Proteomics & Comparative genomics                                         |
| <b>BO 1643</b> | <b>Biotechnology, nanobiotechnology, horticulture &amp; plant breeding</b> | <b>CO1</b> | Students are familiarized in preparation of culture solutions, sterilization, inoculation of explants, induction of callus and morphogenesis                                       |
|                |                                                                            | <b>CO2</b> | They are familiarized in biotechnological tools like RFLP, RAPD and PCR techniques                                                                                                 |

|                  |                                           |            |                                                                                                                   |
|------------------|-------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------|
|                  |                                           | <b>CO3</b> | Appreciate the application of equipments and tools in biotechnology                                               |
|                  |                                           | <b>CO4</b> | Understanding of ethical and legal issues in biotechnology and basic knowledge about IPR                          |
|                  |                                           | <b>CO5</b> | Better understanding of nanosystems, and applications of nanomaterials                                            |
|                  |                                           | <b>CO6</b> | Students able to identify and use various horticultural implements                                                |
|                  |                                           | <b>CO7</b> | Can propagate plants through grafting, budding and layering & can prepare manures, fungicides etc                 |
|                  |                                           | <b>CO8</b> | Can effectively do plant breeding methods and understands their practical application in betterment of food crops |
| <b>BO 1661.2</b> | <b>Mushroom cultivation and marketing</b> | <b>CO1</b> | Identify mushrooms, structure and mode of propagation                                                             |
|                  |                                           | <b>CO2</b> | Better understanding of methods of processing and storage of mushrooms                                            |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN BOTANY FOR FIRST DEGREE PROGRAM IN ZOOLOGY**

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME | COURSE OUTCOME |                                                                                 |
|----------------|-------------|----------------|---------------------------------------------------------------------------------|
| SEMESTER I     |             |                |                                                                                 |
| BO 1131        |             | CO1            | To develop skills for preparation and identification of microscopic structures. |

|                     |                                                                              |            |                                                                                                                                                 |
|---------------------|------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <b>Microtechnique,<br/>Angiosperm Anatomy<br/>and Reproductive Botany</b>    | <b>CO2</b> | To distinguish various tissue systems and the internal structures.                                                                              |
|                     |                                                                              | <b>CO3</b> | To acquire basic knowledge about embryo development and pollen grains.                                                                          |
|                     |                                                                              | <b>CO4</b> | To evaluate the new trends and ideas                                                                                                            |
| <b>SEMESTER II</b>  |                                                                              |            |                                                                                                                                                 |
| <b>BO 1231</b>      | <b>Thallophytes, Archegoniatae and plant pathology</b>                       | <b>CO1</b> | To familiarize characteristic features of microbes and their significance in environment                                                        |
|                     |                                                                              | <b>CO2</b> | To generate idea about types of algae, fungi, lichen and their economic as well as evolutionary significance                                    |
|                     |                                                                              | <b>CO3</b> | To familiarize the students the characteristic features, life cycle and evolutionary significance of Bryophytes, Pteridophytes and Gymnosperms. |
|                     |                                                                              | <b>CO4</b> | To impart knowledge about diseases in plants                                                                                                    |
| <b>SEMESTER III</b> |                                                                              |            |                                                                                                                                                 |
| <b>BO 1331</b>      | <b>Systematic botany, economic botany, ethno botany, plant breeding</b>      | <b>CO1</b> | To introduce importance of morphological characters in classification and plant identification.                                                 |
|                     |                                                                              | <b>CO2</b> | To develop skill in identification of plants                                                                                                    |
|                     |                                                                              | <b>CO3</b> | To acquire knowledge about economic, ethnobotanical significance and pharmacognosy of plants                                                    |
|                     |                                                                              | <b>CO4</b> | To get knowledge about plant breeding techniques                                                                                                |
| <b>SEMESTER IV</b>  |                                                                              |            |                                                                                                                                                 |
| <b>BO1431</b>       | <b>Plant physiology, plant ecology, horticulture and plant biotechnology</b> | <b>CO1</b> | To understand physiology of absorption, photosynthesis and respiration.                                                                         |
|                     |                                                                              | <b>CO2</b> | To study ecosystem and ecological modifications                                                                                                 |

|  |  |            |                                                       |
|--|--|------------|-------------------------------------------------------|
|  |  | <b>CO3</b> | To generate awareness about horticultural techniques. |
|  |  | <b>CO4</b> | To familiarize plant tissue culture techniques        |

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAM IN PHYSICS**

### **PROGRAM SPECIFIC OUTCOMES**

**PSO1** Understand the basic laws and explore the fundamental concepts of physics

**PSO2** To understand the concepts and significance of the various physical phenomena.

**PSO3** To carry out experiments to understand the laws and concepts of Physics.

**PSO4** To apply the theories learnt and the skills acquired to solve real time problems.

### **COURSE OUTCOME (CO)**

| COURSE CODE | COURSE NAME                            | COURSE OUTCOME |                                                         |
|-------------|----------------------------------------|----------------|---------------------------------------------------------|
| SEMESTER I  |                                        |                |                                                         |
| PY1141      | BASIC MECHANICS & PROPERTIES OF MATTER | CO 1           | To understand the dynamics of rigid bodies              |
|             |                                        | CO 2           | To get an idea on the physical concepts of oscillations |
|             |                                        | CO 3           | To understand elastic property of materials             |
|             |                                        | CO 4           | Get an idea on fluid dynamics                           |
| SEMESTER II |                                        |                |                                                         |

|              |                                      |     |                                                                                           |
|--------------|--------------------------------------|-----|-------------------------------------------------------------------------------------------|
| PY1241       | HEAT AND THERMODYNAMICS              | CO1 | To understand laws related to flow of heat                                                |
|              |                                      | CO2 | To Understand various thermodynamic processes                                             |
|              |                                      | CO3 | To get an understanding about various thermodynamic processes                             |
|              |                                      | CO4 | Able to understand entropy change involved in various processes                           |
| SEMESTER III |                                      |     |                                                                                           |
| PY1341       | ELECTRODYNAMICS                      | CO1 | Able to understand magnetism                                                              |
|              |                                      | CO2 | Able to calculate electric fields                                                         |
|              |                                      | CO3 | Understand Maxwell's equations                                                            |
|              |                                      | CO4 | Solve problems related to electric fields                                                 |
|              |                                      | CO5 | Understand transient current and a.c circuits                                             |
| SEMESTER IV  |                                      |     |                                                                                           |
| PY1441       | CLASSICAL AND RELATIVISTIC MECHANICS | CO1 | Able to understand dynamics of a system of particles                                      |
|              |                                      | CO2 | Able to understand various conservation laws related to physical systems in motion        |
|              |                                      | CO3 | Understand motion of planets                                                              |
|              |                                      | CO4 | Got introduced to lagrangian and hamiltonianand theoretical details of special relativity |
| SEMESTER V   |                                      |     |                                                                                           |
| PY1541       | QUANTUM MECHANICS                    | CO1 | Understand the origin of quantum mechanics                                                |

|                 |                                                                          |            |                                                                           |
|-----------------|--------------------------------------------------------------------------|------------|---------------------------------------------------------------------------|
|                 |                                                                          | <b>CO2</b> | Differentiate classical and quantum behavior of various physical system   |
|                 |                                                                          | <b>CO3</b> | Got introduced to the mathematical background of quantum mechanics        |
|                 |                                                                          | <b>CO4</b> | Apply the concepts of Quantum Mechanics to solve problems.                |
| <b>PY1542</b>   | <b>STATISTICAL PHYSICS, RESEARCH METHODOLOGY AND DISASTER MANAGEMENT</b> | <b>CO1</b> | Have an idea on statistical physics                                       |
|                 |                                                                          | <b>CO2</b> | Introduced to the research methodology used in physics                    |
|                 |                                                                          | <b>CO3</b> | Analyse certain errors in experiment                                      |
|                 |                                                                          | <b>CO4</b> | Introduced to disaster management processes                               |
| <b>PY1543</b>   | <b>ELECTRONICS</b>                                                       | <b>CO1</b> | Introduced to theory related to circuits                                  |
|                 |                                                                          | <b>CO2</b> | Understand the working of various diode circuits                          |
|                 |                                                                          | <b>CO3</b> | Understand the working of simple transistor and amplifier circuits        |
|                 |                                                                          | <b>CO4</b> | Idea on various oscillator circuits                                       |
| <b>PY1544</b>   | <b>ATOMIC &amp; MOLECULAR PHYSICS</b>                                    | <b>CO1</b> | Understand the preliminary concept of vector atom model                   |
|                 |                                                                          | <b>CO2</b> | Able to understand the origin of atomic spectra                           |
|                 |                                                                          | <b>CO3</b> | Understand the origin of x-rays                                           |
|                 |                                                                          | <b>CO4</b> | Theoretical understanding of molecular spectra and resonance spectroscopy |
| <b>PY1551.5</b> | <b>ENERGY PHYSICS(Open Course)</b>                                       | <b>CO1</b> | Understand different forms of renewable energy                            |
|                 |                                                                          | <b>CO2</b> | Familiarize production of wind,tidal,solar and chemical energy            |
|                 |                                                                          | <b>CO3</b> | Understand the global energy crisis and possible solutions                |

### SEMESTER VI

|                |                                     |            |                                                                                                |
|----------------|-------------------------------------|------------|------------------------------------------------------------------------------------------------|
| <b>PY1642</b>  | <b>NUCLEAR AND PARTICLE PHYSICS</b> | <b>CO1</b> | Understand various nuclear models and basic nuclear properties                                 |
|                |                                     | <b>CO2</b> | Understand radioactivity                                                                       |
|                |                                     | <b>CO3</b> | Understand nuclear reactions                                                                   |
|                |                                     | <b>CO4</b> | Understand nuclear fission process                                                             |
|                |                                     | <b>CO5</b> | Introduced to particle physics                                                                 |
| <b>PY1643</b>  | <b>CLASSICAL AND MODERN OPTICS</b>  | <b>CO1</b> | Understand the optics behind interference                                                      |
|                |                                     | <b>CO2</b> | Understand the phenomena of diffraction                                                        |
|                |                                     | <b>CO3</b> | Understand the phenomena of polarization                                                       |
|                |                                     | <b>CO4</b> | Understand the principle of laser                                                              |
|                |                                     | <b>CO5</b> | Understand the principle behind holography                                                     |
| <b>PY 1641</b> | <b>SOLID STATE PHYSICS</b>          | <b>CO1</b> | Overall idea on crystal structure                                                              |
|                |                                     | <b>CO2</b> | Understand free electron model                                                                 |
|                |                                     | <b>CO3</b> | Familiarize with band theory of semi conductors                                                |
|                |                                     | <b>CO4</b> | Understand dielectric properties of materials                                                  |
| <b>PY1442</b>  | <b>Basic Physics Lab 1</b>          | <b>CO1</b> | Practical knowledge on the concepts learned about oscillations, waves and properties of matter |
|                |                                     | <b>CO2</b> | Familiarize with the precautions and steps of systematic recording of an experiment            |
|                |                                     | <b>CO3</b> | Understand multiple experimental techniques for determining physical quantities.               |

|               |                               |            |                                                                                                               |
|---------------|-------------------------------|------------|---------------------------------------------------------------------------------------------------------------|
|               |                               | <b>CO4</b> | Develop skill in setting up of apparatus for accurate measurement of physical quantities                      |
| <b>PY1645</b> | <b>Advanced Physics Lab 2</b> | <b>CO1</b> | Practical understanding of ideas learned about Optics, magnetism and electricity                              |
|               |                               | <b>CO2</b> | Understand how to use a spectrometer                                                                          |
|               |                               | <b>CO3</b> | Obtain a practical understanding of the refraction of light by a prism                                        |
|               |                               | <b>CO4</b> | Understand the working of different electrical circuits and use it to determine different physical quantities |
| <b>PY1646</b> | <b>Advanced Physics Lab 3</b> | <b>CO1</b> | Practical understanding various electronics circuits                                                          |
|               |                               | <b>CO2</b> | Understand the working of PN junction diodes, Zener diodes and their applications                             |
|               |                               | <b>CO3</b> | Understand the working of transistors and their applications                                                  |
|               |                               | <b>CO4</b> | Understand the working of operational amplifiers and their circuits                                           |
|               |                               | <b>CO5</b> | Understand C++ programming and apply it to find the solution to different physical problems                   |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN PHYSICS FOR  
FIRST DEGREE PROGRAM IN MATHEMATICS**

**COURSE OUTCOME (CO)**



| COURSE CODE  | COURSE NAME                               | COURSE OUTCOME |                                                                                                                       |
|--------------|-------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------|
| SEMESTER I   |                                           |                |                                                                                                                       |
| PY 1131.1    | Mechanics and properties of matter        | CO1            | Recognize the Rotational dynamics of rigid bodies of different shapes and their applications                          |
|              |                                           | CO2            | Understand the concepts of moduli of elasticity and their applications                                                |
|              |                                           | CO3            | Explain the properties of fluids such as surface tension and viscosity and their applications with examples           |
|              |                                           | CO4            | Understand the properties of liquids                                                                                  |
| SEMESTER II  |                                           |                |                                                                                                                       |
| PY1231.1     | Thermal Physics and statistical mechanics | CO1            | Distinguish the various process of heat transmission                                                                  |
|              |                                           | CO2            | Recognize the different thermodynamic processes                                                                       |
|              |                                           | CO3            | Obtain the concept of entropy and apply it to physical situations                                                     |
|              |                                           | CO4            | Identify different statistical distribution                                                                           |
| SEMESTER III |                                           |                |                                                                                                                       |
| PY1331.1     | Optics, Magnetism and Electricity         | CO1            | Differentiate the optical phenomena - interference and diffraction -Newton's rings, air wedge and diffraction grating |
|              |                                           | CO2            | Explain the principle behind the experiments.                                                                         |
|              |                                           | CO3            | Explain the production of ac and its characteristics and also about ac circuits                                       |
|              |                                           | CO4            | Attain knowledge about the theory of magnetism                                                                        |
| SEMESTER IV  |                                           |                |                                                                                                                       |

|                 |                                       |            |                                                                                 |
|-----------------|---------------------------------------|------------|---------------------------------------------------------------------------------|
| <b>PY1431.1</b> | <b>Modern Physics and Electronics</b> | <b>CO1</b> | Recognize different atomic models<br>Understand                                 |
|                 |                                       | <b>CO2</b> | Identify radioactive process and its applications                               |
|                 |                                       | <b>CO3</b> | Understand the concepts Quantum Mechanics, Planck's hypothesis and applications |
|                 |                                       | <b>CO4</b> | Obtain the theoretical concept of working of various electronic circuits        |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN PHYSICS FOR  
FIRST DEGREE PROGRAM IN CHEMISTRY**

**COURSE OUTCOME (CO)**

| COURSE CODE  | COURSE NAME                                      | COURSE OUTCOME |                                                                                                                       |
|--------------|--------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------|
| SEMESTER I   |                                                  |                |                                                                                                                       |
| PY 1131.2    | Rotational dynamics and properties of matter     | CO1            | Recognize the Rotational dynamics of rigid bodies of different shapes and their applications                          |
|              |                                                  | CO2            | Understand the concepts of moduli of elasticity and their applications                                                |
|              |                                                  | CO3            | Explain the properties of fluids such as surface tension and viscosity and their applications with examples           |
|              |                                                  | CO4            | Understand the properties of liquids                                                                                  |
| SEMESTER II  |                                                  |                |                                                                                                                       |
| PY 1231.2    | Thermal Physics                                  | CO1            | Distinguish the various process of heat transmission                                                                  |
|              |                                                  | CO2            | Recognize the different thermodynamic processes                                                                       |
|              |                                                  | CO3            | Obtain the concept of entropy and apply it to physical situations                                                     |
|              |                                                  | CO4            | Identify different statistical distribution                                                                           |
| SEMESTER III |                                                  |                |                                                                                                                       |
| PY1331.2     | Optics,Magnetism and Electricity                 | CO1            | Differentiate the optical phenomena - interference and diffraction -Newton's rings, air wedge and diffraction grating |
|              |                                                  | CO2            | Explain the principle behind the experiments.                                                                         |
|              |                                                  | CO3            | Explain the production of ac and its characteristics and also about ac circuits                                       |
|              |                                                  | CO4            | Attain knowledge about the theory of magnetism                                                                        |
| SEMESTER IV  |                                                  |                |                                                                                                                       |
| PY1431.2     | Atomic physics,Quantum mechanics and Electronics | CO1            | Recognize different atomic models<br>Understand                                                                       |

|  |  |            |                                                                                 |
|--|--|------------|---------------------------------------------------------------------------------|
|  |  | <b>CO2</b> | Identify radioactive process and its applications                               |
|  |  | <b>CO3</b> | Understand the concepts Quantum Mechanics, Planck's hypothesis and applications |
|  |  | <b>CO4</b> | Obtain the theoretical concept of working of various electronic circuits        |

**NAME OF THE PROGRAMME:COMPLEMENTARY COURSE IN PHYSICS FOR  
FIRST DEGREE PROGRAM IN STATISTICS**

**COURSE OUTCOME (CO)**

| COURSE CODE  | COURSE NAME                               | COURSE OUTCOME |                                                                                                                       |
|--------------|-------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------|
| SEMESTER I   |                                           |                |                                                                                                                       |
| PY 1131.3    | Mechanics and properties of matter        | CO1            | Recognize the Rotational dynamics of rigid bodies of different shapes and their applications                          |
|              |                                           | CO2            | Understand the concepts of moduli of elasticity and their applications                                                |
|              |                                           | CO3            | Explain the properties of fluids such as surface tension and viscosity and their applications with examples           |
|              |                                           | CO4            | Understand the properties of liquids                                                                                  |
| SEMESTER II  |                                           |                |                                                                                                                       |
| PY 1231.3    | Thermal Physics and statistical mechanics | CO1            | Distinguish the various process of heat transmission                                                                  |
|              |                                           | CO2            | Recognize the different thermodynamic processes                                                                       |
|              |                                           | CO3            | Obtain the concept of entropy and apply it to physical situations                                                     |
|              |                                           | CO4            | Identify different statistical distribution                                                                           |
| SEMESTER III |                                           |                |                                                                                                                       |
| PY1331.3     | Optics,Magnetism and Electricity          | CO1            | Differentiate the optical phenomena - interference and diffraction -Newton's rings, air wedge and diffraction grating |
|              |                                           | CO2            | Explain the principle behind the experiments.                                                                         |
|              |                                           | CO3            | Explain the production of ac and its characteristics and also about ac circuits                                       |
|              |                                           | CO4            | Attain knowledge about the theory of magnetism                                                                        |
| SEMESTER IV  |                                           |                |                                                                                                                       |

|                 |                                       |            |                                                                                 |
|-----------------|---------------------------------------|------------|---------------------------------------------------------------------------------|
| <b>PY1431.3</b> | <b>Modern Physics and Electronics</b> | <b>CO1</b> | Recognize different atomic models<br>Understand                                 |
|                 |                                       | <b>CO2</b> | Identify radioactive process and its applications                               |
|                 |                                       | <b>CO3</b> | Understand the concepts Quantum Mechanics, Planck's hypothesis and applications |
|                 |                                       | <b>CO4</b> | Obtain the theoretical concept of working of various electronic circuits        |

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAMME IN STATISTICS**

### **SPECIFIC PROGRAMME OUTCOMES**

**PSO1** Demonstrate the ability in collection, presentation, analysis and interpretation of data.

**PSO2** Understand and solve problems in correlation and regression, probability and statistical distributions.

**PSO3** Understand and apply theories of statistical inference involving estimation of parameters and testing of hypothesis.

**PSO4** Understand and apply the techniques used in design of experiments, statistical quality control.

### **COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME              | COURSE OUTCOME |                                                                                                                               |
|----------------|--------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                          |                |                                                                                                                               |
| ST 1141        | Statistical<br>Methods I | CO 1           | Describe origin and meaning of Statistics,<br>its uses and relation with other disciplines<br>and its limitations and misuses |

|              |                                   |      |                                                                                                                                                                                                            |
|--------------|-----------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                   | CO 2 | Describe methods of collection of primary data and sources of secondary data                                                                                                                               |
|              |                                   | CO 3 | Design a questionnaire and a schedule, Classify and tabulate data                                                                                                                                          |
|              |                                   | CO 4 | Diagrammatically represent data through line diagram, bar diagrams, pie diagrams, pictograms, cartograms and graphically represent frequency distribution by frequency polygon, frequency curve and ogives |
|              |                                   | CO 5 | Learn measures of central tendency and measures of dispersion, describe their properties                                                                                                                   |
|              |                                   | CO 6 | Learn moments , skewness and kurtosis and learn various measures of them                                                                                                                                   |
| SEMESTER II  |                                   |      |                                                                                                                                                                                                            |
| ST 1241      | Statistical Methods – II          | CO1  | Describe the concept of correlation and compute Karl Pearson’s correlation coefficient and Spearman’s rank correlation coefficient.                                                                        |
|              |                                   | CO2  | Discuss partial and multiple regressions for three variables.                                                                                                                                              |
|              |                                   | CO3  | Describe the concepts of curve fitting.                                                                                                                                                                    |
|              |                                   | CO4  | Fit the regression equations using the method of least squares.                                                                                                                                            |
|              |                                   | CO5  | Describe data mining and data warehousing.                                                                                                                                                                 |
|              |                                   | CO6  | Define data mining models and algorithms.                                                                                                                                                                  |
| SEMESTER III |                                   |      |                                                                                                                                                                                                            |
| ST 1341      | Probability and Distributions – I | CO1  | Describe random experiment, sample space, events, and types of events.                                                                                                                                     |
|              |                                   | CO2  | Describe various definitions of probability, conditional Probability and multiplication theorem, and their applications in problem solving                                                                 |
|              |                                   | CO3  | Learn the concept of geometric probability                                                                                                                                                                 |

|                    |                                                  |            |                                                                                                                                                                                                                          |
|--------------------|--------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                  | <b>CO4</b> | Describe univariate random variables in Discrete as well as in continuous cases, distribution function, probability mass function and probability density function, apply their properties in problem solving            |
|                    |                                                  | <b>CO5</b> | Describe bivariate random variable, joint distribution function, joint probability mass function, marginal and conditional distributions, independence of random variables and apply their properties in problem solving |
|                    |                                                  | <b>CO6</b> | Describe functions of random variables both in univariate and bivariate cases, transformations of random variable and apply the concepts in problem solving                                                              |
|                    |                                                  | <b>CO7</b> | Describe mathematical expectation, expectation of function of random variables (up to bivariate case) and apply its properties in problem solving                                                                        |
| <b>SEMESTER IV</b> |                                                  |            |                                                                                                                                                                                                                          |
| <b>ST 1441</b>     | <b>Probability and Distributions – II</b>        | <b>CO1</b> | Describe the univariate discrete distributions- Degenerate, Bernoulli, Binomial, Poisson, Geometric and Hyper geometric.                                                                                                 |
|                    |                                                  | <b>CO2</b> | Define multinomial distribution and its properties.                                                                                                                                                                      |
|                    |                                                  | <b>CO3</b> | Describe the univariate continuous distributions-Uniform, Triangular, Gamma, and Beta 2 types, Exponential, Normal, Lognormal and Cauchy.                                                                                |
|                    |                                                  | <b>CO4</b> | Explain the concepts of multivariate normal distribution.                                                                                                                                                                |
|                    |                                                  | <b>CO5</b> | Derive the marginal and conditional distribution of bivariate normal distribution.                                                                                                                                       |
| <b>SEMESTER V</b>  |                                                  |            |                                                                                                                                                                                                                          |
| <b>ST 1541</b>     | <b>Limit Theorems and Sampling Distributions</b> | <b>CO1</b> | Understand the convergence of a sequence of events.                                                                                                                                                                      |



|         |                       |     |                                                                                                                                                                                         |
|---------|-----------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ST 1542 |                       | C02 | Explain the laws of large numbers.                                                                                                                                                      |
|         |                       | C03 | Apply Chebychev's inequality and central limit theorem.                                                                                                                                 |
|         |                       | C04 | Describe central and non-central sampling distributions.                                                                                                                                |
|         |                       | C05 | Make use of tables of $\chi^2$ , t and F distributions.                                                                                                                                 |
|         |                       | C06 | Explain the probability distributions of $r^{\text{th}}$ order statistic. Probability distributions of 1st and nth order statistic from U (0, $\theta$ ) and exponential distributions. |
|         | Estimation            | C01 | Define the desirable properties of a good estimator.                                                                                                                                    |
|         |                       | C02 | Explain whether an estimator satisfy any of the desirable properties or not.                                                                                                            |
|         |                       | C03 | Construct confidence intervals for mean, variance, proportion in a population and difference between means and difference between proportions in two populations.                       |
|         |                       | C04 | Explain Gauss Markov set up.                                                                                                                                                            |
|         |                       | C05 | Illustrate the estimability of a linear parametric function                                                                                                                             |
| ST 1543 | Testing of Hypothesis | C01 | Describe the fundamental concepts of testing of hypothesis.                                                                                                                             |
|         |                       | C02 | State Neyman-Pearson lemma                                                                                                                                                              |
|         |                       | C03 | Apply Neyman Pearson's lemma for mean and variance of a normal population, the Mean of binomial and Poisson distribution                                                                |
|         |                       | C04 | Define most powerful test and UMP test                                                                                                                                                  |
|         |                       | C05 | Explain likelihood ratio test and its properties                                                                                                                                        |

|             |                                                   |     |                                                                                                                |
|-------------|---------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------|
|             |                                                   | CO6 | Apply large sample tests and small sample tests.                                                               |
|             |                                                   | CO7 | Describe non-parametric test.                                                                                  |
| ST 1544     |                                                   | CO1 | Explain the basic concept of sample survey.                                                                    |
|             |                                                   | CO2 | Distinguish between sample survey and census survey                                                            |
|             |                                                   | CO3 | Apply various sampling schemes like SRS, Stratified sampling and Systematic sampling                           |
|             |                                                   | CO4 | Compare the efficiencies of estimates obtained using different sampling techniques.                            |
|             |                                                   | CO5 | Describe the merits and demerits of different sampling techniques                                              |
|             |                                                   | CO6 | Obtain the estimates for population mean using Ratio and Regression estimators, and compare their efficiencies |
| ST 1551.1   | Statistics and Research Methodology (Open Course) | CO1 | Explain the concepts & objectives of research and formulation of research process                              |
|             |                                                   | CO2 | Describe the role of statistics in research                                                                    |
|             |                                                   | CO3 | Organize and present the data collected.                                                                       |
|             |                                                   | CO4 | Design a questionnaire & conduct sample survey                                                                 |
|             |                                                   | CO5 | Explain basic concepts of testing of hypothesis                                                                |
|             |                                                   | CO6 | Explain the methods of writing research reports.                                                               |
| SEMESTER VI |                                                   |     |                                                                                                                |
| ST 1641     | Design of Experiments and Vital Statistics        | CO1 | Carry out one-way and two-way analysis of variances.                                                           |
|             |                                                   | CO2 | Explain the basic concepts and principles of experimental design.                                              |

|                |                                                            |            |                                                                                                              |
|----------------|------------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------|
|                |                                                            | <b>C03</b> | Carry out the analysis of CRD, RBD and LSD.                                                                  |
|                |                                                            | <b>C04</b> | Carry out analysis in RBD and LSD with one or two missing observations.                                      |
|                |                                                            | <b>C05</b> | Carry out the analysis of $2^2$ and $2^3$ factorial experiments                                              |
|                |                                                            | <b>C06</b> | Compute various measures of fertility, mortality and population growth. Construct life tables.               |
| <b>ST 1642</b> | <b>Applied Statistics</b>                                  | <b>C01</b> | Identify the various index numbers and compute them for data sets                                            |
|                |                                                            | <b>C02</b> | Explain the concepts of base shifting, splicing and deflation of index numbers, consumer price index number. |
|                |                                                            | <b>C03</b> | Explain the component of time series and estimate trend and seasonal effect.                                 |
|                |                                                            | <b>C04</b> | Explain the roles and responsibilities of various organizations.                                             |
|                |                                                            | <b>C05</b> | Explain the methods of data collection and dissemination in population census                                |
|                |                                                            | <b>C06</b> | Explain the methods of estimation of National Income                                                         |
| <b>ST 1643</b> | <b>Operations Research and Statistical Quality Control</b> | <b>C01</b> | Explain the evolution and significance of OR                                                                 |
|                |                                                            | <b>C02</b> | Describe the concept of OR                                                                                   |
|                |                                                            | <b>C03</b> | Solve LPP using graphical method and simplex method                                                          |
|                |                                                            | <b>C04</b> | Solve LPP using Big M method and Two-phase method                                                            |
|                |                                                            | <b>C05</b> | Explain the concept of SQC and mention its application                                                       |
|                |                                                            | <b>C06</b> | Construct control chart for variables and attributes                                                         |
|                |                                                            | <b>C07</b> | Describe acceptance sampling plans                                                                           |

|                   |                                                               |            |                                                                                           |
|-------------------|---------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------|
| <b>ST 1661.3:</b> | <b>Inventory Control and Queuing Theory (Elective Course)</b> | <b>C01</b> | Describe inventory control and cost associated with inventories                           |
|                   |                                                               | <b>C02</b> | Explain Economic order quantity (EOQ)                                                     |
|                   |                                                               | <b>C03</b> | Solve Deterministic Inventory problem with and without shortages                          |
|                   |                                                               | <b>C04</b> | Discuss probabilistic inventory Control                                                   |
|                   |                                                               | <b>C05</b> | Explain Newspaper boy problem                                                             |
|                   |                                                               | <b>C06</b> | Discuss the basic concepts of queuing theory                                              |
|                   |                                                               | <b>C07</b> | Derive the steady state solution of M/M/1 queue model , Illustrate cost models in queuing |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN STATISTICS FOR FIRST DEGREE PROGRAM IN MATHEMATICS**

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                      | COURSE OUTCOME |                                                                                                                                                                       |
|----------------|----------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                                  |                |                                                                                                                                                                       |
| ST 1131.1:     | Descriptive Statistics           | CO1            | Explain the concepts of statistical surveys, sampling, census and various sampling methods like simple random sampling, systematic sampling, and stratified sampling. |
|                |                                  | CO2            | Design questionnaires and carry out surveys.                                                                                                                          |
|                |                                  | CO3            | Collect and present raw data using frequency tables as well as appropriate graphs.                                                                                    |
|                |                                  | CO4            | Summarize data using various measures of central tendency, dispersion, skewness and kurtosis.                                                                         |
|                |                                  | CO5            | Explain the concepts of scatter diagram, correlation and calculate the correlation between two variables.                                                             |
|                |                                  | CO6            | Explain the concept of regression, fit various regression equations to given data sets and predict values of response variables.                                      |
|                |                                  | CO7            | Explain various concepts associated with the two regression lines and identify the regression lines for given data sets                                               |
| SEMESTER II    |                                  |                |                                                                                                                                                                       |
| ST 1231.1:     | Probability and Random Variables | CO1            | Distinguish between random and non-random experiments.                                                                                                                |
|                |                                  | CO2            | Evaluate the probabilities of events using classical, statistical and axiomatic approaches.                                                                           |
|                |                                  | CO3            | Identify independent events; calculate conditional probability and application of Bayes' theorem.                                                                     |
|                |                                  | CO4            | Distinguish between discrete and continuous random variables with its probability distributions.                                                                      |

|                     |                                  |            |                                                                                                                            |
|---------------------|----------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------|
|                     |                                  | <b>CO5</b> | Assess the independence of random variables.                                                                               |
|                     |                                  | <b>CO6</b> | Calculate moment generating function and characteristic function.                                                          |
|                     |                                  | <b>CO7</b> | Determine the conditional mean and variance of a random variable.                                                          |
|                     |                                  | <b>CO8</b> | Evaluate the correlation between two random variables                                                                      |
| <b>SEMESTER III</b> |                                  |            |                                                                                                                            |
| <b>ST 1331.1:</b>   | <b>Statistical Distributions</b> | <b>CO1</b> | Define various discrete and continuous standard distributions and explain their theoretical properties.                    |
|                     |                                  | <b>CO2</b> | Solve numerical problems associated with discrete and continuous standard distributions.                                   |
|                     |                                  | <b>CO3</b> | Fit binomial, Poisson and normal distributions to data sets and calculate theoretical frequencies.                         |
|                     |                                  | <b>CO4</b> | Explain the laws of large numbers and apply them to solve numerical problems                                               |
|                     |                                  | <b>CO5</b> | Define sampling distributions (normal, chi-square, Students' t and F) and solve elementary numerical problems.             |
| <b>SEMESTER IV</b>  |                                  |            |                                                                                                                            |
| <b>ST 1431.1:</b>   | <b>Statistical Inference</b>     | <b>CO1</b> | Analyze a sample to draw valid inferences about the parameters of a statistical population.                                |
|                     |                                  | <b>CO2</b> | Explain the properties of estimators and solve numerical problems for the point and interval estimators of the parameters. |
|                     |                                  | <b>CO3</b> | Explain the concept of testing statistical hypotheses.                                                                     |

|  |  |            |                                                                                                     |
|--|--|------------|-----------------------------------------------------------------------------------------------------|
|  |  | <b>CO4</b> | Identify two types of errors, compute level of significance and power of a test.                    |
|  |  | <b>CO5</b> | Conduct tests for hypothesis about the population mean and proportion using large samples.          |
|  |  | <b>CO6</b> | Conduct tests for hypothesis about the homogeneity and independence using chi-square statistics.    |
|  |  | <b>CO7</b> | Conduct tests for hypothesis about the mean and variance for normal population using small samples. |
|  |  | <b>CO8</b> | Carry out and interpret ANOVA.                                                                      |

**NAME OF THE PROGRAMME: FIRST DEGREE PROGRAM IN CHEMISTRY****SPECIFIC PROGRAM OUTCOMES**

**PSO1** Develop scientific outlook, scientific attitude and scientific temper and to develop skill in experimenting, analysing and interpreting data.

**PSO2** Develop research attitude and adopt scientific method of identifying, analysing and solving research problems in an innovative way.

**PSO3** Apply physical & mathematical theories and principles in the context of chemical science

**PSO4** Use chemistry related softwares for drawing structure and plotting graphs.

**PSO5** Identify advances in various branches of Chemistry.

**PSO6** Acquire skill in safe handling of chemicals including hazardous materials and to identify the ingredients in household chemicals.

**PSO7** Predict Analytical procedures, compare experimental, theoretical and graphical methods of analysis

**PSO8** Predict reactions mechanisms in organic reactions.

**PSO 9** Understand the terms, concepts, methods, and experimental techniques of physical, organic, and analytical Chemistry.

**PSO10** Develop critical thinking and adopt healthier attitude towards individual community.

**COURSE OUTCOME (CO)**

| COURSE CODE | COURSE NAME           | COURSE OUTCOME |                                                                            |
|-------------|-----------------------|----------------|----------------------------------------------------------------------------|
| SEMESTER I  |                       |                |                                                                            |
| CH1141      | Inorganic Chemistry I | CO 1           | Understand the diagonal relationships and anomalous behaviour of elements. |
|             |                       | CO 2           | To define various scales of electronegativities and their applications.    |
|             |                       | CO 3           | Discuss the course of development of structure of atom.                    |



|                     |                                                     |             |                                                                                                          |
|---------------------|-----------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------|
|                     |                                                     | <b>CO 4</b> | Apply rules for filling electrons in classifying elements.                                               |
|                     |                                                     | <b>CO 5</b> | Define effective nuclear charge and Slater's rules.                                                      |
| <b>SEMESTER II</b>  |                                                     |             |                                                                                                          |
| <b>CH1221</b>       | <b>Chemistry-its origin methodology and impacts</b> | <b>CO1</b>  | Appreciate the development of scientific theories through years with specific examples.                  |
|                     |                                                     | <b>CO2</b>  | Develop curiosity and scientific attitude towards the application of chemistry in daily life.            |
|                     |                                                     | <b>CO3</b>  | Appraise the current development in chemistry.                                                           |
|                     |                                                     | <b>CO4</b>  | Identify the common ingredients of household synthetic products.                                         |
|                     |                                                     | <b>CO5</b>  | Discriminate and classify chemicals used as drugs, explosives.                                           |
|                     |                                                     | <b>CO6</b>  | To outline procedures for experimentation.                                                               |
| <b>SEMESTER III</b> |                                                     |             |                                                                                                          |
| <b>CH1341</b>       | <b>Inorganic Chemistry II</b>                       | <b>CO1</b>  | Understand various theories of chemical bonding and their limitations.                                   |
|                     |                                                     | <b>CO2</b>  | Predicts stability of atoms and the nature of bonding between atoms.                                     |
|                     |                                                     | <b>CO3</b>  | Discuss various applications of intermolecular interactions.                                             |
|                     |                                                     | <b>CO4</b>  | Understand chemistry of glass, silicates and silicones.                                                  |
|                     |                                                     | <b>CO5</b>  | Discuss Chemistry of Boron compounds, oxy acids and oxides of Phosphorous.                               |
| <b>SEMESTER IV</b>  |                                                     |             |                                                                                                          |
| <b>CH 1441</b>      | <b>Organic Chemistry I</b>                          | <b>CO1</b>  | Recall the fundamentals of organic Chemistry.                                                            |
|                     |                                                     | <b>CO2</b>  | Apply the electron displacement effects to compare acidity, basicity and stability of Organic compounds. |

|                   |                                                                                     |     |                                                                                                                  |
|-------------------|-------------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------|
|                   |                                                                                     | CO3 | Judge the reaction mechanism of substitution and elimination on the basis of the structure of alkyl halides.     |
|                   |                                                                                     | CO4 | Summarise the chemistry of reaction intermediates.                                                               |
| <b>SEMESTER V</b> |                                                                                     |     |                                                                                                                  |
| <b>CH1541</b>     | <b>Physical Chemistry I</b>                                                         | CO1 | Perform numerical problems of gases under a set of conditions.                                                   |
|                   |                                                                                     | CO2 | Determination of colligative properties and molecular mass of solute.                                            |
|                   |                                                                                     | CO3 | Understand the working principle of electrochemical cells.                                                       |
|                   |                                                                                     | CO4 | Representation of lattice planes and calculation of interplanar spacing, draw the crystal structures.            |
| <b>CH 1542</b>    | <b>Inorganic Chemistry III</b>                                                      | CO1 | Discuss the electronic configuration and related properties of transition and innertransition elements.          |
|                   |                                                                                     | CO2 | Understand stability of Complexes.                                                                               |
|                   |                                                                                     | CO3 | Describe isomerism in co-ordination complexes.                                                                   |
|                   |                                                                                     | CO4 | Discuss spectrochemical series, CFSE and their consequences.                                                     |
| <b>CH 1543</b>    | <b>Organic Chemistry II</b>                                                         | CO1 | Distinguish primary, secondary and tertiary alcohols and amines.                                                 |
|                   |                                                                                     | CO2 | Write reaction steps, interconversion of aldose and ketose, chain lengthening and shortening of aldoses.         |
|                   |                                                                                     | CO3 | Explain the structure of glucose, fructose, sucrose, starch and cellulose.                                       |
|                   |                                                                                     | CO4 | Describe the use of Organic reagents in synthesis.                                                               |
| <b>CH 1551.2</b>  | <b>Fundamentals of Chemistry and its application to everyday life (Open Course)</b> | CO1 | Appreciate the evolution of Science and Chemistry and the early form of Chemistry                                |
|                   |                                                                                     | CO2 | Understand the development of Chemistry as a discipline and the role of Chemistry as a central science           |
|                   |                                                                                     | CO3 | Discuss the fundamental properties of atom, structure of atom, classification of elements in to a periodic table |

|                    |                        |      |                                                                                                 |
|--------------------|------------------------|------|-------------------------------------------------------------------------------------------------|
|                    |                        | CO4  | Differentiate between simple molecules and giant molecules and the bonding nature               |
|                    |                        | CO5  | Explain different types of bonding and predict stability                                        |
|                    |                        | CO6  | Compare properties of graphite and diamond and their structural differences                     |
|                    |                        | CO7  | Identify house hold chemicals, their advantages and disadvantages                               |
|                    |                        | CO8  | Become aware of chemical hazards and the precautions in handling chemicals                      |
|                    |                        | CO9  | Beware of food adulterants                                                                      |
|                    |                        | CO10 | Critically select chemical fertilizers, artificial sweeteners, beverages and food preservatives |
| <b>SEMESTER VI</b> |                        |      |                                                                                                 |
| CH 1641            | Physical Chemistry II  | CO1  | Understand basic concepts of thermodynamics, spectroscopy group theory. differentiation         |
|                    |                        | CO2  | Discuss basic concepts of statistical thermodynamics.                                           |
|                    |                        | CO3  | Apply laws of thermodynamics.                                                                   |
|                    |                        | CO4  | Classify processes, properties on a thermodynamic basis.                                        |
| CH 1642            | Organic Chemistry III  | CO1  | Outline the chemistry of simple heterocyclic compounds.                                         |
|                    |                        | CO2  | Classify aminoacids, proteins, drugs, terpenes.                                                 |
|                    |                        | CO3  | Discuss the synthesis of peptides, drugs and polymers.                                          |
|                    |                        | CO4  | Explain the mechanism and techniques of polymerisation.                                         |
| CH 1643            | Physical Chemistry III | CO1  | Recall the basic physical concepts in Quantum mechanics, colloids and adsorption.               |
|                    |                        | CO2  | Derive and interpret important theories in physical chemistry.                                  |

|                  |                                                           |            |                                                                                                                                                  |
|------------------|-----------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|                  |                                                           | <b>CO3</b> | Perform calculations involving physical concepts.                                                                                                |
|                  |                                                           | <b>CO4</b> | Understand terminology in chemistry.                                                                                                             |
|                  |                                                           | <b>CO5</b> | Analyse graphical representations.                                                                                                               |
|                  |                                                           | <b>CO6</b> | Demonstrate the origin of Quantum numbers.                                                                                                       |
| <b>CH 1651.1</b> | <b>Supramolecular, Nano Particles and Green Chemistry</b> | <b>CO1</b> | Become aware of pollution caused by industries                                                                                                   |
|                  |                                                           | <b>CO2</b> | Recognize the principles of nano and green and necessity of green approaches to protect nature and get motivated to more eco-friendly life style |
|                  |                                                           | <b>CO3</b> | Discuss about sustainable development and logical use of natural resources                                                                       |
|                  |                                                           | <b>CO4</b> | Realises the concepts of supramolecular chemistry and its applications, importance of microscale approaches and nano material research           |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN CHEMISTRY  
FOR FIRST DEGREE PROGRAM IN PHYSICS**

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                          | COURSE OUTCOME |                                                                           |
|----------------|--------------------------------------|----------------|---------------------------------------------------------------------------|
| SEMESTER I     |                                      |                |                                                                           |
| CH 1131.1      | Theoretical and analytical chemistry | CO1            | Discuss the rules for filling electrons in atomic orbitals.               |
|                |                                      | CO2            | Correlate stability of atom with electronic configuration.                |
|                |                                      | CO3            | Predict geometry of molecules.                                            |
|                |                                      | CO4            | Discuss theories of Chemical bonding.                                     |
|                |                                      | CO5            | Predict spontaneity of reactions.                                         |
|                |                                      | CO6            | Recognise fundamentals of thermodynamics.                                 |
| SEMESTER II    |                                      |                |                                                                           |
| CH 1231.1      | Physical and industrial chemistry    | CO1            | Apply Hess's law for Thermochemical calculations.                         |
|                |                                      | CO2            | Suggest method for determination of PH                                    |
|                |                                      | CO3            | Discuss petrochemicals and applications.                                  |
|                |                                      | CO4            | . Credit methods of concentrations, extraction of metals from their ores. |
|                |                                      | CO5            | Discuss the applications of van arkel method.                             |
|                |                                      | CO6            | Consumption of natural resources.                                         |
|                |                                      | CO7            | Predict geometry of molecules.                                            |
|                |                                      | CO8            | Use of solar energy.                                                      |
| SEMESTER III   |                                      |                |                                                                           |
| CH 1331.1      | Physical Chemistry II                | CO1            | Discuss electrochemical cells.                                            |
|                |                                      | CO2            | Draw unit cells and structure of crystals.                                |
|                |                                      | CO3            | Understand effect of temperature on molecular velocities.                 |
|                |                                      | CO4            | Calculate cell emf.                                                       |

|                    |                                            |            |                                                                  |
|--------------------|--------------------------------------------|------------|------------------------------------------------------------------|
|                    |                                            | <b>CO5</b> | Constructs electrochemical cells.                                |
|                    |                                            | <b>CO6</b> | Classify between photochemical reactions.                        |
|                    |                                            | <b>CO7</b> | Relate electrolyte concentrations with emf.                      |
|                    |                                            | <b>CO8</b> | Apply the principles of physical chemistry in catalysis.         |
| <b>SEMESTER IV</b> |                                            |            |                                                                  |
| <b>CH1431.1</b>    | <b>Spectroscopy and Advanced materials</b> | <b>CO1</b> | Illustrate isomerism in coordination complexes.                  |
|                    |                                            | <b>CO2</b> | Solve numerical problems in nuclear chemistry.                   |
|                    |                                            | <b>CO3</b> | Appreciate the use of biodegradable polymers.                    |
|                    |                                            | <b>CO4</b> | Apply the importance of energy and environment conservation.     |
|                    |                                            | <b>CO5</b> | Get insight to the emerging area of nano and advanced materials. |
|                    |                                            | <b>CO6</b> | Use of coordination compounds in analysis                        |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN CHEMISTRY FOR FIRST DEGREE PROGRAM IN BOTANY**

**COURSE OUTCOME (CO)**

| COURSE CODE  | COURSE NAME                            | COURSE OUTCOME |                                                                              |
|--------------|----------------------------------------|----------------|------------------------------------------------------------------------------|
| SEMESTER I   |                                        |                |                                                                              |
| CH 1131.3    | Analytical and environmental Chemistry | CO1            | Discuss Bohr atom model and represent electronic configuration of elements.  |
|              |                                        | CO2            | Predict structure of simple molecules based on the concept of hybridisation. |
|              |                                        | CO3            | Identify hydrogen bonding in relation to physical and chemical properties.   |
|              |                                        | CO4            | List the various chemical bonds.                                             |
|              |                                        | CO5            | Apply the VSEPR theory to explain the geometry of the molecules.             |
|              |                                        | CO6            | Discuss the theory of volumetric analysis.                                   |
|              |                                        | CO7            | Become aware of threat of chemical pollutants air, water and soil.           |
| SEMESTER II  |                                        |                |                                                                              |
| CH 1231.3    | Inorganic and Bioinorganic Chemistry   | CO1            | Understand the biological and environmental aspects of organic compounds.    |
|              |                                        | CO2            | Comprehend the meaning of stability of molecules.                            |
|              |                                        | CO3            | Summarise the application of radioactivity.                                  |
|              |                                        | CO4            | Predict the properties of transition metal complexes.                        |
|              |                                        | CO5            | Apply complexation reactions in qualitative and quantitative analysis.       |
| SEMESTER III |                                        |                |                                                                              |
| CH1331.3     | Physical Chemistry                     | CO1            | Classify the reactions on the basis of order and molecularity.               |

|                    |                          |            |                                                                 |
|--------------------|--------------------------|------------|-----------------------------------------------------------------|
|                    |                          | <b>CO2</b> | Understand the effect of temperature on reaction rates.         |
|                    |                          | <b>CO3</b> | Understand the theories of catalysis.                           |
|                    |                          | <b>CO4</b> | Understand the properties of colloids.                          |
| <b>SEMESTER IV</b> |                          |            |                                                                 |
| <b>CH 1431.3</b>   | <b>Organic Chemistry</b> | <b>CO1</b> | Discuss the applications of chromatography and electrophoresis. |
|                    |                          | <b>CO2</b> | Classify amino acids, proteins, carbohydrates.                  |
|                    |                          | <b>CO3</b> | Summarise the concept of optical isomerism                      |
|                    |                          | <b>CO4</b> | Reaction of amino acids.                                        |
|                    |                          | <b>CO5</b> | Discuss extraction process of natural products.                 |
|                    |                          | <b>CO6</b> | Reaction of carbohydrates.                                      |
|                    |                          | <b>CO7</b> | Categorise crude drugs.                                         |
|                    |                          | <b>CO8</b> | Method of evaluating crude drugs.                               |

**NAME OF THE PROGRAMME: COMPLEMENTARY COURSE IN CHEMISTRY  
FOR FIRST DEGREE PROGRAM IN ZOOLOGY**

**COURSE OUTCOME (CO)**



| COURSE<br>CODE | COURSE NAME           | COURSE OUTCOME |                                                                                                                 |
|----------------|-----------------------|----------------|-----------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                       |                |                                                                                                                 |
| CH 1131.4      | Theoretical chemistry | CO1            | Differentiate particle nature and wave nature of matter.                                                        |
|                |                       | CO2            | Associate wave concept with microscopic matter.                                                                 |
|                |                       | CO3            | Apply VSEPR theory.                                                                                             |
|                |                       | CO4            | Describe various types of chemical bonds.                                                                       |
|                |                       | CO5            | Understand periodic classification of elements                                                                  |
|                |                       | CO6            | Comprehend different segments of titrations, Apply the principles of colorimetry to estimate ions and elements, |
|                |                       | CO7            | Recognize the factors affecting environment and solution for it.                                                |
| SEMESTER II    |                       |                |                                                                                                                 |
| CH 1231.4      | Inorganic Chemistry   | CO1            | Understand the biological and environmental aspects of organic compounds.                                       |
|                |                       | CO2            | Comprehend the meaning of stability of nucleus.                                                                 |
|                |                       | CO3            | Application of radioactivity.                                                                                   |
|                |                       | CO4            | Properties of transition metal complexes.                                                                       |
| SEMESTER III   |                       |                |                                                                                                                 |
| CH1331.4       | Organic Chemistry     | CO1            | Classify carbohydrates, aminoacids, proteins,lipids.                                                            |
|                |                       | CO2            | Understand the structure of proteins.                                                                           |
|                |                       | CO3            | Synthesis of amino acids, proteins, peptide,drugs.                                                              |
|                |                       | CO4            | Summarize optical, geometrical isomerism                                                                        |
| SEMESTER IV    |                       |                |                                                                                                                 |

|                 |                           |            |                                                                            |
|-----------------|---------------------------|------------|----------------------------------------------------------------------------|
| <b>CH1431.4</b> | <b>Physical Chemistry</b> | <b>CO1</b> | Classify reactions on the basis of order and molecularity.                 |
|                 |                           | <b>CO2</b> | Discuss different concepts of acids and bases.                             |
|                 |                           | <b>CO3</b> | Calculate rate and order of reactions.                                     |
|                 |                           | <b>CO4</b> | Understand different techniques used for the study of colloids.            |
|                 |                           | <b>CO5</b> | Understand concepts of colloids.                                           |
|                 |                           | <b>CO6</b> | Review the principles underlying the working of sophisticated instruments. |

|                                                                    |
|--------------------------------------------------------------------|
| <b>NAME OF THE PROGRAMME:FIRST DEGREE PROGRAM IN BIOTECHNOLOGY</b> |
|--------------------------------------------------------------------|

**PROGRAM SPECIFIC OUTCOMES**

**PSO1:** Develop basic understanding of the various streams of biotechnology. Apply the knowledge in the modern areas of biotechnology such as medical science, environment, agriculture, industry, proteomics, genomics, metabolomics, bioinformatics, nanobiotechnology etc.

**PSO2:** Understand biotechnology and its power in developing the nation, and to create awareness about biotechnology that will help in eliminating public fear about the contribution of biotechnology and confusion on GM crops, GM foods and transgenic organisms etc. Enhance practical skills and competency to conduct experiments in biotechnology.

**PSO3:** Understand the basic concepts of biotechnology and other interdisciplinary areas. Group project helps in creating analytical thinking and interpreting the inference.

**PSO4 :**Pursue higher studies in Biotechnology and contribute significantly in its development. Inculcate skill to organize scientific events and effective communication. Ascertain their area of interest in research.

**COURSE OUTCOME (CO) FOR BIOTECHNOLOGY CORE COURSES FOR  
MULTIMAJOR BIOTECHNOLOGY PROGRAM**

| COURSE CODE | COURSE NAME                                  | COURSE OUTCOME |                                                           |
|-------------|----------------------------------------------|----------------|-----------------------------------------------------------|
| SEMESTER I  |                                              |                |                                                           |
| BV 1121     | Methodology and Perspective of Biotechnology | CO1            | The students will be able to understand how science works |

|               |                                      |            |                                                                                                                                                                                                                                                                                                                    |
|---------------|--------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                                      | <b>CO2</b> | Students will learn how to apply statistics and IT in Biological science                                                                                                                                                                                                                                           |
|               |                                      | <b>CO3</b> | They will receive a general awareness about biotechnology and its application in various fields.                                                                                                                                                                                                                   |
|               |                                      | <b>CO4</b> | The students will acquire knowledge on safety and ethics in biotechnology                                                                                                                                                                                                                                          |
| <b>BV1143</b> | <b>Biochemistry &amp; Metabolism</b> | <b>CO1</b> | The students will be able to describe the biochemical basis of life and basic understand about the biochemical reactions The course will impart a basic understanding about the concept of the biochemical basis of phenomenon life and metabolic reaction of cells that are essential for the sustenance of life. |
|               |                                      | <b>CO2</b> | Students should learn about the various bio molecules and its functions in the cellular metabolism. It specially focuses on the development of analytical skills in biochemistry by giving more importance to the laboratory experiments of biochemistry                                                           |
|               |                                      | <b>CO3</b> | They will get an understanding about the basic concepts of energy transactions of the biological systems                                                                                                                                                                                                           |

|                    |                                         |            |                                                                                                                                                                                |
|--------------------|-----------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                         | <b>CO4</b> | The students will acquire knowledge on bioenergetics, molecular biology and various applications of biomolecules and its productions and use as medicines and food supplements |
| <b>SEMESTER II</b> |                                         |            |                                                                                                                                                                                |
| <b>BV 1221</b>     | <b>Biophysics &amp; Instrumentation</b> | <b>CO1</b> | The students will be able to understand the fundamentals of biophysics                                                                                                         |
|                    |                                         | <b>CO2</b> | Students will learn sophisticated instrumental techniques used in biotechnology                                                                                                |
|                    |                                         | <b>CO3</b> | They will get an understanding of molecular interactions                                                                                                                       |
|                    |                                         | <b>CO4</b> | The students will acquire knowledge on working principles and applications of microscopy and autoradiography                                                                   |
| <b>BV1245</b>      | <b>Microbiology</b>                     | <b>CO1</b> | The students will be able to understand the structure and classification of microorganisms                                                                                     |
|                    |                                         | <b>CO2</b> | Students will learn sterilisation techniques used in microbiology.                                                                                                             |
|                    |                                         | <b>CO3</b> | They will get an understanding of bacterial genetics and recombination mechanisms                                                                                              |
|                    |                                         | <b>CO4</b> | The students will acquire knowledge on industrial applications of microorganisms                                                                                               |

|              |                                              |     |                                                                                                                                                            |
|--------------|----------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BV 1246      | Biotechniques I (Practical of BV1143 BV1245) | CO1 | This course is the practical of the course BV1143 Biochemistry & Metabolism and BV1245 Microbiology.                                                       |
|              |                                              | CO2 | The course will impart the students hands on training on the analytical techniques and experiments of Biochemistry and Microbiology                        |
|              |                                              | CO3 | They will get an understanding of principles of various experimental protocols and laboratory procedures and safety measures.                              |
|              |                                              | CO4 | The students will acquire knowledge on industrial applications of biochemistry & Microorganisms which are the core components of Biotechnology experiments |
| SEMESTER III |                                              |     |                                                                                                                                                            |
| BV 1344      | Food and Industrial Biotechnology            | CO1 | The students will be able to understand the potential of Food and Industrial biotechnology                                                                 |
|              |                                              | CO2 | Students will learn industrial applications of Food Biotechnology and Bioprocess technology.                                                               |
|              |                                              | CO3 | They will be trained to understandthe commercialimportance of Biotechnology                                                                                |
|              |                                              | CO4 | The students will acquire knowledge on                                                                                                                     |

|             |                            |     |                                                                                                                                                                                                                                            |
|-------------|----------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                            |     | career opportunities in industries R&D                                                                                                                                                                                                     |
| BV 1345     | Molecular Biology          | CO1 | The students will be able to understand the scope and importance of Molecular Biology                                                                                                                                                      |
|             |                            | CO2 | Students will be able to learn structure, function, regulation of gene                                                                                                                                                                     |
|             |                            | CO3 | They will be trained to understand the molecular basis of life                                                                                                                                                                             |
|             |                            | CO4 | The students will gain a very essential foundation for the proper understanding of life at molecular level, which is essential for further studies related to genetic engineering, immunology and other modern applied aspects of biology. |
| SEMESTER IV |                            |     |                                                                                                                                                                                                                                            |
| BV 1446     | Recombinant DNA Technology | CO1 | The students will beable to understand basics of genemanipulation methods and principles                                                                                                                                                   |
|             |                            | CO2 | Students will be able to understand special features of tools neededgenetic engineering procedures                                                                                                                                         |
|             |                            | CO3 | They will be trained to understand the construction of a recombinant DNA                                                                                                                                                                   |
|             |                            | CO4 | The students will gain a very essential understanding of the tools needed for the analysis and identification of a gene                                                                                                                    |

|            |                                                                |     |                                                                                                                                                    |
|------------|----------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------|
|            |                                                                |     | and bio safety and ethics in genetic engineering                                                                                                   |
| BV 1447    | Immunology                                                     | CO1 | The students will be able to understand basics of immune system, immune response and immunology related techniques                                 |
|            |                                                                | CO3 | They will be trained to understand antibody structure and function, and antibody diversity                                                         |
|            |                                                                | CO4 | The students will acquire knowledge on immunological techniques and its implications in disease diagnosis                                          |
| BV 1448    | Biotechniques II (Practical of BV1344, BV1345, BV1446, BV1447) | CO1 | Outline the fundamental steps in a genetic engineering procedure                                                                                   |
|            |                                                                | CO2 | Explain the usefulness of plasmid preparations, how they are performed, and how the concentration and purity of plasmid samples can be determined. |
|            |                                                                | CO3 | Hands on training in nucleic acid extraction and purification                                                                                      |
|            |                                                                | CO4 | To show the main microbiological processes those are used in the biotech industry.                                                                 |
| SEMESTER V |                                                                |     |                                                                                                                                                    |



|                |                                                       |            |                                                                                                                                                                                                                    |
|----------------|-------------------------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BV 1544</b> | <b>Environmental Biotechnology</b>                    | <b>CO1</b> | The students will be able to understand the application of biotechnology in keeping the environment clean and healthy and application of biotechnology in energy production                                        |
|                |                                                       | <b>CO2</b> | Students will learn about ecosystem, biodiversity                                                                                                                                                                  |
|                |                                                       | <b>CO3</b> | They will be trained to understand Pollution types ,sources of pollution, general characteristics of pollutants and controlling measures and biological methods of degradation of pollutants                       |
|                |                                                       | <b>CO4</b> | The students will acquire knowledge on renewable energy sources especially biomass energy and other biological methods                                                                                             |
| <b>BV 1545</b> | <b>Plant Biotechnology &amp; Animal Biotechnology</b> | <b>CO1</b> | The students will be able to understand the basic knowledge in the applied aspects of plant biotechnology and animal biotechnology for the improvement of agriculture and plant based and animal based industries. |
|                |                                                       | <b>CO2</b> | Students will learn about fundamentals of plant tissue culture                                                                                                                                                     |

|                    |                                                     |            |                                                                                                                                           |
|--------------------|-----------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                     | <b>CO3</b> | They will be trained to understand the various techniques of animal cell culture, cloning and tissue culture of plants and animals        |
| <b>BV1552</b>      | <b>OPEN COURSE - Food &amp; Dairy Biotechnology</b> | <b>CO1</b> | The students will be able to understand the basic knowledge in the applied aspects of food microbiology and importance of fermented foods |
|                    |                                                     | <b>CO2</b> | Students will learn about food spoilage and causative agents of food spoilage                                                             |
|                    |                                                     | <b>CO3</b> | They will be trained to understand principles of food preservation and various methods of preservation techniques                         |
|                    |                                                     | <b>CO4</b> | The students will acquire knowledge on different kinds of fermented dairy , meat products etc.                                            |
| <b>SEMESTER VI</b> |                                                     |            |                                                                                                                                           |
| <b>BV 1663.2</b>   | <b>Food &amp; Dairy Biotechnology</b>               | <b>CO1</b> | The students will be able to understand the basic knowledge in the applied aspects of food microbiology and importance of fermented foods |
|                    |                                                     | <b>CO2</b> | Students will learn about food spoilage and causative agents of food spoilage                                                             |
|                    |                                                     | <b>CO3</b> | They will be trained to understand principles of food preservation and various methods of preservation techniques                         |

|                |                                                           |            |                                                                                                                                     |
|----------------|-----------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------|
|                |                                                           | <b>CO4</b> | The students will acquire knowledge on different kinds of fermented dairy , meat products etc.                                      |
| <b>BV 1651</b> | <b>Biotechniques III (Practical of BV1544 and BV1545)</b> | <b>CO1</b> | Explain the basics, methodology and applications of plant tissue culture.                                                           |
|                |                                                           | <b>CO2</b> | Become familiar with sterile techniques, media preparation, DNA extraction methods, gene isolation and nucleotide sequence analysis |
|                |                                                           | <b>CO3</b> | Understanding the various types of ecosystems, biodiversity components, environmental threats and Policy.                           |

**COURSE OUTCOME (CO) OF BOTANY CORE COURSES FOR BIOTECHNOLOGY PROGRAM**

| COURSE CODE | COURSE NAME                                                            | COURSE OUTCOME |                                                                                                                                                                                                                        |
|-------------|------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I  |                                                                        |                |                                                                                                                                                                                                                        |
| BV 1141.1   | Microtechnique, Angiosperm Anatomy, Reproductive Botany and Palynology | CO1            | The course is aimed to bring the basic concept                                                                                                                                                                         |
|             |                                                                        | CO2            | understanding about the simple basics of microtechnique and also the concept and understanding of anatomy of the flowering plants and its relationship to the physiology and environmental adaptability of the plants. |

|              |                                                     |     |                                                                                                                                                                                |
|--------------|-----------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                                     | CO3 | It also gives a basic idea on their production and development of the flowering plants and its adaptation to suit to its environment.                                          |
| SEMESTER II  |                                                     |     |                                                                                                                                                                                |
| BV1241.1     | Environmental studies                               | CO1 | Students should acquire a basic understanding about the structure function of the environment and its interaction with the living systems.                                     |
|              |                                                     | CO2 | It will impart the geographical distribution of plants and the impact of human intervention in the environment and the delicate balance of various factors in the environment. |
|              |                                                     | CO3 | It gives an idea about the various types of biodiversity and the influence of environmental pollution on the biodiversity                                                      |
| SEMESTER III |                                                     |     |                                                                                                                                                                                |
| BV1341.1     | Phycology, mycology, lichenology and phytopathology | CO1 | Students should be exposed to the world of cryptograms and other lower forms of plants. They should understand the various aspects of algae, fungi, lichens.                   |
|              |                                                     | CO2 | They should be exposed to various aspects of algae, its classification and economic importance.                                                                                |
|              |                                                     | CO3 | Students should understand about Lichens and its morphology and structure.                                                                                                     |
|              |                                                     | CO4 | They should understand the importance of flower forms of plants and their economic importance and diseases caused by them.                                                     |
| BV1342.1     | Bryology, pteridology, gymnosperms and palaeobotany | CO1 | This course will help students to understand about the lower plants and its classification.                                                                                    |

|                    |                                                                |            |                                                                                                                                                                                 |
|--------------------|----------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                                | <b>CO2</b> | They will learn the classification, morphology, anatomy and life cycle of Bryophytes, Pteridophytes and Gymnosperms.                                                            |
|                    |                                                                | <b>CO3</b> | Its study will equip the students to learn and to get proper understanding of the Biosphere and about the lower plants                                                          |
|                    |                                                                | <b>CO4</b> | It also imparts the importance of these plants in the ecosystem and its taxonomic and evolutionary relation with other plants in the Biosphere with the study of fossil plants. |
| <b>SEMESTER IV</b> |                                                                |            |                                                                                                                                                                                 |
| <b>BV1441.1</b>    | <b>Plant physiology</b>                                        | <b>CO1</b> | The course should give the fundamentals about the biophysical and biochemical aspects on the functioning of the plant system.                                                   |
|                    |                                                                | <b>CO2</b> | Students should learn the functions of various plant system through very specific experiments, which are very important to understand the basis of life activities.             |
|                    |                                                                | <b>CO3</b> | It should prepare the students pursue higher studies in plant science as well as in Biotechnology.                                                                              |
| <b>BV1442.1</b>    | <b>Cell biology, plant breeding &amp; evolutionary biology</b> | <b>CO1</b> | Students have a better understanding of cell structure and cell organelles                                                                                                      |
|                    |                                                                | <b>CO2</b> | Prepare microslides of cell divisions and identify various stages of mitosis and meiosis                                                                                        |
|                    |                                                                | <b>CO3</b> | Able to work out problems in classical genetics, modified Mendelian ratios and population genetics                                                                              |
|                    |                                                                | <b>CO4</b> | Able to understand genetic diseases and their inheritance                                                                                                                       |
|                    |                                                                | <b>CO5</b> | Understand evolutionary principles, theories and methods of speciation                                                                                                          |

| SEMESTER V  |                                             |     |                                                                                                                    |
|-------------|---------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------|
| BV1541.1    | Angiosperm morphology and systematic botany | CO1 | Ability to identify different types of inflorescences, flowers and fruits, their arrangement and relative position |
|             |                                             | CO2 | Familiarization of basic rules of Angiosperm classification and different types of classification.                 |
|             |                                             | CO3 | Preparation and maintenance of Herbarium.                                                                          |
|             |                                             | CO4 | Identification of plants to their respective families                                                              |
|             |                                             | CO5 | Understanding of ethnobotanical and pharmacological significance of plants.                                        |
| BV1542.1    | Economicbotany, ethnobotany &medical botany | CO1 | Identification of plants to their respective families.                                                             |
|             |                                             | CO2 | Understanding of ethnobotanical and pharmacological significance of plants.                                        |
| SEMESTER VI |                                             |     |                                                                                                                    |
| BV1641.1    | Genetics                                    | CO1 | Able to workout problems in classical genetics, modified mendelian ratios and population genetics                  |
|             |                                             | CO2 | Able to understand genetic diseases and their inheritance                                                          |
|             |                                             | CO3 | Understand evolutionary principles, theories and methods of speciation                                             |
| BV1643.1    | Mushroom cultivation and marketing          | CO1 | Identify mushrooms, structure and mode of propagation                                                              |

|  |  |            |                                                                                   |
|--|--|------------|-----------------------------------------------------------------------------------|
|  |  | <b>CO2</b> | Understand commercial mushroom cultivation, marketing and their nutritional value |
|  |  | <b>CO3</b> | Better understanding of methods of processing and storage of mushrooms            |

**COURSE OUTCOME (CO) OF CHEMISTRY CORE COURSES FOR  
BIOTECHNOLOGY PROGRAM**

| COURSE<br>CODE | COURSE NAME                       | COURSE OUTCOME |                                                                        |
|----------------|-----------------------------------|----------------|------------------------------------------------------------------------|
| SEMESTER I     |                                   |                |                                                                        |
| BV 1142        | Inorganic Chemistry -1            | CO1            | Discuss the rules for filling electrons in atomic orbitals.            |
|                |                                   | CO2            | Correlate stability of atom with electronic configuration.             |
|                |                                   | CO3            | Predict geometry of molecules.                                         |
|                |                                   | CO4            | Discuss theories of Chemical bonding.                                  |
|                |                                   | CO5            | Recognise Nuclear reactions.                                           |
|                |                                   | CO6            | Understand various solvents.                                           |
| SEMESTER II    |                                   |                |                                                                        |
| CH 1231.1      | Physical and industrial chemistry | CO1            | Understand Applications of Nanomaterials.                              |
|                |                                   | CO2            | Suggest methods of Extraction of Lanthanides.                          |
|                |                                   | CO3            | Discuss importance of Organometallic compounds and their applications. |
|                |                                   | CO4            | Understand 18 electron Rule.                                           |
|                |                                   | CO5            | Discuss the applications of Nuclear Chemistry.                         |
|                |                                   | CO6            | Consumption of natural resources.                                      |

|                     |                             |            |                                                                                                                                                                       |
|---------------------|-----------------------------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     |                             | <b>CO7</b> | Familiarise instrumental method of Analysis.                                                                                                                          |
|                     |                             | <b>CO8</b> | Use solvents in chemical reactions.                                                                                                                                   |
| <b>SEMESTER III</b> |                             |            |                                                                                                                                                                       |
| <b>BV1343</b>       | <b>PhysicalChemistry I</b>  | <b>CO1</b> | Students will learn the different states of matter – solid, liquid and gas : and various theories dealing with properties and behaviour of the molecules and atoms    |
|                     |                             | <b>CO2</b> | They should learn the principles of Thermodynamics and group theory related to chemical reactions.                                                                    |
|                     |                             | <b>CO3</b> | Upon course completion, the student will be able to familiarizes with the important topics like defects in crystals and point groups of molecules like water          |
|                     |                             | <b>CO4</b> | Students become aware of the different states of matter, liquid crystals, basics of group theory and thermodynamic properties like entropy, enthalpy and free energy. |
| <b>SEMESTER IV</b>  |                             |            |                                                                                                                                                                       |
| <b>BV1444</b>       | <b>PhysicalChemistry II</b> | <b>CO1</b> | The course will introduce the basics of the developing fields such as spectroscopy, quantum mechanicsand statistical thermodynamics.                                  |
|                     |                             | <b>CO2</b> | The course will make the students aware of the different states of matter and various theories dealing with properties and behaviour of the molecules                 |
|                     |                             | <b>CO3</b> | Students should brcome the aware of quantum mechanics, statistical thermodynamics and its importance in chemistry                                                     |
|                     |                             | <b>CO4</b> | Upon course completion, the student will be able to familiarize with the principles of spectroscopic and non-spectroscopic methods of studying                        |



|             |                      |     |                                                                                                                                                                         |
|-------------|----------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                      |     | molecules and adsorption phenomena. And its application in understanding the properties of molecules.                                                                   |
| SEMESTER V  |                      |     |                                                                                                                                                                         |
| BV1543      | Organic Chemistry I  | CO1 | To learn the basics of Organic chemistry with its various branches. It should impart the basics of hybridisation and various types of reagents                          |
|             |                      | CO2 | The course will give basic idea about aromatic compounds and make the students aware of Arenes and aromaticity                                                          |
|             |                      | CO3 | To understand the basic chemistry of aliphatic and aromatic compounds and substituted compounds                                                                         |
|             |                      | CO4 | Describe the behaviour of aliphatic and aromatic compounds like aromatic aldehydes, ketones and halides. Mechanism of reactions of organic compounds and hybridization. |
| SEMESTER VI |                      |     |                                                                                                                                                                         |
| BV1643      | Organic Chemistry II | CO1 | Describe the isolation and structure of terpenes and alkaloids                                                                                                          |
|             |                      | CO2 | Classify polymers, amino acids, proteins, nucleic acids, vitamins, dyes, enzymes, hormones, oils and fats                                                               |
|             |                      | CO3 | Discuss the principle of UV, IR, NMR and Mass Spectrometry and interpret the structure of simple molecules                                                              |
|             |                      | CO4 | Predict the outcome and mechanism of simple organic reactions and rearrangements                                                                                        |

|  |  |            |                                                                               |
|--|--|------------|-------------------------------------------------------------------------------|
|  |  | <b>CO5</b> | Discuss the synthesis and reactions of organic Nitrogen and Sulphur Compounds |
|--|--|------------|-------------------------------------------------------------------------------|

## POST GRADUATE PROGRAMMES 2023-2024

### POST GRADUATE PROGRAMMES –MA/MSc/MCom

|     |                                                                                                                                                                                                                                   |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PO1 | <b>Critical Thinking:</b> Apply theoretical knowledge to make a critical analysis, intervene using innovative frameworks and evaluate and follow up.                                                                              |
| PO2 | <b>Lifelong Learning:</b> Demonstrate a degree of mastery over the area as per the specialization of the program.                                                                                                                 |
| PO3 | <b>Communication:</b> Speak, read, write and listen clearly in person and through electronic media in English/language of the discipline, and make meaning of the world by connecting people, ideas, books, media and technology. |
| PO4 | <b>Research Skill:</b> To provide them with the skills and knowledge to work towards a research degree in an area of their choice                                                                                                 |
| PO5 | <b>Environment and Sustainability:</b> Understand the impact of technology and business practices in societal and environmental contexts, and sustainable development.                                                            |
| PO6 | <b>Social Interaction:</b> Elicit views of others, mediate disagreements and help reach conclusions in group settings.                                                                                                            |
| PO7 | <b>Problem Solving:</b> Apply rigorous, analytic, highly numerate approach to analyze, execute tasks and solve problems in daily life and at work                                                                                 |
| PO8 | <b>Computational Thinking:</b> Understand data-based reasoning through translation of data into abstract concepts using computing technology-based tools.                                                                         |

# NAME OF THE PROGRAMME: POST GRADUATE PROGRAM IN ENGLISH LANGUAGE AND LITERATURE

## PROGRAM SPECIFIC OUTCOMES

**PSO1:**To demonstrate an understanding of the formal structure of various genres

**PSO2:**To demonstrate the ability to understand and explain the complexities and subtleties of human experience

**PSO3:**To develop the necessary research and language skills to do independent and innovative research

**PSO4:**To show they have understood contemporary pedagogic principles and practices in both language and literature

## COURSE OUTCOME (CO)

| COURSE<br>CODE | COURSE NAME           | COURSE OUTCOME |                                                                                                                                     |
|----------------|-----------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                       |                |                                                                                                                                     |
| EL 511         | BRITISH LITERATURE I  | CO1            | Comprehended the various socio-political and literary movements from the Anglo-Saxon to the age of Transition.                      |
|                |                       | CO2            | Identified the writers and their works of the period from Anglo-Saxon to the age of Transition.                                     |
|                |                       | CO3            | Analysed the characteristic literary styles of the essayists, dramatists, and writers from Anglo-Saxon to the age of Transition.age |
| EL 512         | BRITISH LITERATURE II | CO1            | comprehended the various socio-political and literary movements from the Romantic Age period to 20th century.                       |

|             |                     |            |                                                                                                                                            |
|-------------|---------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------|
|             |                     | <b>CO2</b> | Identified the writers and their works of the period from Romantic Age period to 20th century.                                             |
|             |                     | <b>CO3</b> | Analysed the characteristic literary styles of the essayists, dramatists, and writers from Romantic Age period to 20th century.            |
| EL.513      | SHAKESPEARE STUDIES | <b>CO1</b> | gained competence to critically analyse the selected plays and sonnets of Shakespeare.                                                     |
|             |                     | <b>CO2</b> | gained an understanding of the critical perspectives on Shakespeare.                                                                       |
|             |                     | <b>CO3</b> | developed an overview of Shakespeare performances and adaptations and their influence on English language and literature through the ages. |
| EL.514      | LANGUAGE STUDIES    | <b>CO1</b> | understood the basic concepts, branches and history of linguistics.                                                                        |
|             |                     | <b>CO2</b> | learned to describe and analyze language units based on their phonological, morphological and syntactical features                         |
|             |                     | <b>CO3</b> | learned to explain the transformation of sentences based on TG grammar                                                                     |
|             |                     | <b>CO4</b> | gained competence to use language effectively with a conscious understanding of its features, syntactic structures and uses                |
| SEMESTER II |                     |            |                                                                                                                                            |
| EL.521      | WORLD LITERATURES I | <b>CO1</b> | Recognised the various socio-cultural and political experiences and expressions seen in world literatures                                  |
|             |                     | <b>CO2</b> | Learned the theoretical grounding to read literatures in English from different regions                                                    |

|        |                      |            |                                                                                                                                          |
|--------|----------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------|
|        |                      | <b>C03</b> | Recognised the ways in which transcultural flows affect the readings of texts across social and historical borders                       |
|        |                      | <b>C04</b> | Analysed the discursive reach of English in shaping imaginative journeys across continents                                               |
|        |                      | <b>C05</b> | gained an understanding through reading, discussion and writing about literatures in different genres                                    |
| EL.522 | LITERATURES OF INDIA | <b>C01</b> | learned to distinguish the theoretical positions that present Indian literature as an essentialist category                              |
|        |                      | <b>C02</b> | identified the category of ' Literatures of India' in relation to the emerging discourses of nation, marginality, region, and resistance |
|        |                      | <b>C03</b> | learned to interpret the reading of literatures of India in vernacular ways through insightful critical perceptions                      |
|        |                      | <b>C04</b> | understood the role of translation in the making and unmaking of literary traditions                                                     |
| EL.523 | GENDER STUDIES       | <b>C01</b> | Interrogated and analyzed gendered performance and power in a range of social spheres.                                                   |
|        |                      | <b>C02</b> | analyzed patriarchal socio-political-historic structures and cultural representations and discourses                                     |
|        |                      | <b>C03</b> | Explored and deepened their gender-related perspectives on gender laws, activism, policy/advocacy.                                       |

|              |                                                   |            |                                                                                                                                  |
|--------------|---------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------|
|              |                                                   | <b>CO4</b> | Arrived at critically informed readings of literary texts and cultural practices with an understanding of the politics of gender |
|              |                                                   | <b>CO5</b> | understood the positioning of intersectional gender identities in the process of development.                                    |
| EL.524       | CRITICAL STUDIES                                  | <b>CO1</b> | critically analysed literary and cultural texts using the foundational concepts explored in this course.                         |
|              |                                                   | <b>CO2</b> | gained the critical acumen to negotiate contested knowledge systems                                                              |
|              |                                                   | <b>CO3</b> | learned to steer the theoretical paradigms and unsettle disciplinary boundaries.                                                 |
| SEMESTER III |                                                   |            |                                                                                                                                  |
| EL 231       | LINGUISTICS AND STRUCTURE OF THE ENGLISH LANGUAGE | <b>CO1</b> | To enable students to get a fundamental understanding of the basic nature, branches, and history of linguistics                  |
|              |                                                   | <b>CO2</b> | To attempt a comparison of RP, GIE and Malayalam sounds based on contrastive linguistics                                         |
|              |                                                   | <b>CO3</b> | To examine the features of language units at the phonological, morphological and syntactical levels                              |
|              |                                                   | <b>CO4</b> | To familiarize the students with history and developments of Modern Grammar                                                      |
| EL232        | CRITICAL STUDIES II                               | <b>CO1</b> | Represent the important theoretic schools that have radically changed the perception of literature as a cultural phenomena.      |

|                 |                                            |            |                                                                                                                                                                                           |
|-----------------|--------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |                                            | <b>CO2</b> | Familiarize the students with the basic premises of the foundational schools of modern thought, particularly on the construction of the subject, language, and socio-cultural formations. |
|                 |                                            | <b>CO3</b> | Discuss the intellectual milieu in Europe that led to the emergence of theories of structuralism, post structuralism, psychoanalysis, marxism and feminism                                |
|                 |                                            | <b>CO4</b> | Familiarize the students with the primary conceptual apparatus of these systems of thought                                                                                                |
|                 |                                            | <b>CO5</b> | Enable the students to analyze literary phenomena using the theoretical tools provided by the above schools                                                                               |
| <b>EL 233.3</b> | <b>Canadian and Australian Literatures</b> | <b>CO1</b> | Introduce the students to Canadian and Australian Literature                                                                                                                              |
|                 |                                            | <b>CO2</b> | Familiarize the students with major literary figures in Canada and Australia                                                                                                              |
|                 |                                            | <b>CO3</b> | Help students understand the socio-cultural contexts that nourish the emergence of these literatures                                                                                      |
|                 |                                            | <b>CO4</b> | Make them understand the ethnic and cultural diversity of Canada and Australia                                                                                                            |
|                 |                                            | <b>CO5</b> | Interrogate the idea of multiculturalism and national culture                                                                                                                             |
|                 |                                            | <b>CO6</b> | Contextualise the emergence of 'Englishes'                                                                                                                                                |
| <b>EL 234.2</b> | <b>African and Caribbean Literatures</b>   | <b>CO1</b> | Introduce the students to different literary genres from African and Caribbean literature                                                                                                 |



|                    |                                       |            |                                                                                                                  |
|--------------------|---------------------------------------|------------|------------------------------------------------------------------------------------------------------------------|
|                    |                                       | <b>CO2</b> | Familiarize them with the historical and cultural context of literary works                                      |
|                    |                                       | <b>CO3</b> | Help students understand the impact of colonialism, race, class, ethnicity and gender                            |
|                    |                                       | <b>CO4</b> | Enable them to gain a broad knowledge of the major texts and major concerns of African and Caribbean literatures |
| <b>SEMESTER IV</b> |                                       |            |                                                                                                                  |
| <b>EL 243.2</b>    | <b>SOUTH ASIAN LITERATURES</b>        | <b>CO1</b> | To introduce South Asian Literature as a discipline                                                              |
|                    |                                       | <b>CO2</b> | To introduce history, culture and literature of south asia                                                       |
| <b>EL244.2</b>     | <b>REGIONAL LITERATURE IN ENGLISH</b> | <b>CO1</b> | To introduce the great linguistic and literary diversity of India                                                |
|                    |                                       | <b>CO2</b> | Enable to cultivate a political sensibility                                                                      |
|                    |                                       | <b>CO3</b> | To give a historical awareness of regional literary movements                                                    |
|                    |                                       | <b>CO3</b> | Explore the hegemonic and ideological underpinning of different social imaginations                              |
|                    |                                       | <b>CO4</b> | Delineate the possible forms of resistance and politics of subversion                                            |
| <b>EL241</b>       | <b>ENGLISH LANGUAGE TEACHING</b>      | <b>CO1</b> | Acquire knowledge about current and historical theories of L1 & L2 acquisition                                   |
|                    |                                       | <b>CO2</b> | Assess critically the implications of various approaches, methods and techniques                                 |
|                    |                                       | <b>CO3</b> | Develop the ability to critically evaluate syllabi, teaching materials and evaluation process                    |
| <b>EL242</b>       | <b>CULTURAL STUDIES</b>               | <b>CO1</b> | Acquire a critical lens that would help explore cultures of production,                                          |

|  |  |            |                                                                                               |
|--|--|------------|-----------------------------------------------------------------------------------------------|
|  |  |            | consumption, regulation and dissent                                                           |
|  |  | <b>CO2</b> | Analyse the politics of culture and the matrices that constitute myriad cultural imaginations |
|  |  | <b>CO3</b> | Explore the hegemonic and ideological underpinning of different social imaginations           |
|  |  | <b>CO4</b> | Delineate the possible forms of resistance and politics of subversion                         |

## NAME OF THE PROGRAMME: POST GRADUATE PROGRAM IN MALAYALAM

### PROGRAM SPECIFIC OUTCOMES

- PSO 1.** Ability to explore higher learning opportunities and breadth of subjects in Malayalam language and literature.
- PSO 2.** Acquiring knowledge about different literary forms and updating existing concepts.
- PSO 3.** Achieving comparative analysis in literature approach.
- PSO 4.** Acquiring subtlety in the dialectical variety and aesthetic application of language.
- PSO 5.** Insight into the field of literature and cultural studies.
- PSO 6.** Able to approach diverse fields of knowledge with interest and develop interdisciplinary analytical skills.
- PSO 7.** Ability to publish papers in research journals.
- PSO 8.** Conceptual and aesthetic perspectives are formed.

## COURSE OUTCOME (CO)

| COURSE CODE | COURSE NAME                 | COURSE OUTCOME |                                                                                               |
|-------------|-----------------------------|----------------|-----------------------------------------------------------------------------------------------|
| SEMESTER I  |                             |                |                                                                                               |
| ML211       | Pracheena Malayalam         | CO1            | To develop an understanding ofPracheena Malayalam Literature                                  |
| ML212       | Madhyakala Sahityam         | CO1            | To familiarize students with Madhyakala Sahityam/ Literature                                  |
| ML213       | Keralasamskaram             | CO1            | To develop an understanding ofKeralasamskaram                                                 |
| ML 214      | Malayalavyakaranam          | CO1            | To familiarize students with the phonological and grammatical structure of Malayalam Language |
|             |                             | CO2            | To generate ability to analyze actual speech in terms of the principle of linguistics         |
|             |                             | CO3            | Introduce the students to various forms of speech and writing in Malayalam.                   |
|             |                             | CO4            | Explore linguistic variations in Malayalam language.                                          |
| SEMESTER II |                             |                |                                                                                               |
| ML 221      | Aadhunika sahityam – Gadyam | CO 1           | To familiarize students with Aadhunika Gadya sahityam.                                        |
| ML222       | Aadunika sahityam – Padyam  | CO 1           | To generate enthusiasm among students for Aadunika sahityam-Padyam.                           |
| ML223       | Bharathiya Kavyamemamsa     | CO 1           | To learn Bharathiya Kavyamemamsa                                                              |
| ML224       | Sahityameemamsa paschatyam  | CO 1           | To introduce students to Sahityameemamsa paschatyam.                                          |

| SEMESTER III |                                                                |      |                                                                                                                       |
|--------------|----------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------|
| ML231        | Samakalikasahityam – gadyam                                    | CO 1 | To familiarize students with Samakalika Gadya sahityam.                                                               |
| ML232        | Sahityacharitra vijñaneeyam                                    | CO 1 | To introduce students to Sahityacharitra vijñaneeyam.                                                                 |
| ML233        | Sanskrit paper – 1                                             | CO 1 | To enable students to have in-depth knowledge of Sanskrit.                                                            |
| ML234        | Malayala Vimarsanam                                            | CO 1 | To introduce students to Malayala Vimarsanam.                                                                         |
| SEMESTER IV  |                                                                |      |                                                                                                                       |
| ML241        | Samakalikasahityam – padyam                                    | CO 1 | To familiarize students with Samakalika Padya sahityam.                                                               |
| ML242        | Sanskriti paper – 2                                            | CO 1 | To further enhance the knowledge in Sanskrit.                                                                         |
| ML243        | Aadhunika Bhashashastram                                       | CO 1 | To familiarize students with Aadhunika Bhashashastram.                                                                |
| ML244        | Optional paper: Nadodivijñaneeyam                              | CO 1 | To develop an understanding of Nadodivijñaneeyam.                                                                     |
| ML245        | Dissertation/ project/ comprehensive viva/Research Methodology | CO 1 | To enable students to come up with good-quality Dissertation/ project/ comprehensive viva/Research Methodology works. |
|              |                                                                | CO 2 | Equip students to conduct these.                                                                                      |
|              |                                                                | CO 3 | To develop deep knowledge about Research methodology and practice.                                                    |

## **NAME OF THE PROGRAMME: POST GRADUATE PROGRAM IN ARABIC**

### **PROGRAM SPECIFIC OUTCOMES**

**PSO 1:** Equipping the students to handle Arabic language in Real life situations with working knowledge in different walks of life

**PSO 2:** Preparing them to obtain suitable jobs in the fields of Arabic language, Education. Translation. Media, Management and Hospitality

**PSO3:** Perfecting the mastery of Arabic language with sufficient knowledge in applied grammar

**PSO4:** Acquiring proficiency in professional translation & business Arabic 5 Surveying of the Literature and evaluation of Arabic literary thought through various ages

**PSO 5:** Equipping the learners for devising various critical techniques for literary appreciation

**PSO 6:** Introducing the students to new literary schools and trends in Arabic literature

**PSO 7:** Assessing the influence of western literature and culture in the Arabic literature 0  
Evaluating the conflicting values of traditionalism and modernism in contemporary Arabic

**PSO 8:** Understanding literary development as cultural and communicative events in different periods

**PSO 9:** Evaluating the interface of literature and popular culture, arts, religion, rationalism and politics.

**PSO 10:** Evaluating different approaches, methods and techniques of language learning

**PSO 11:** Surveying the development of Arabic Language and Literature in India,

**PSO 12:**Contributions of notable Arabic Institutions, Arabic scholars in India and their works

**PSO 13:**Examining the development of Arabic Language and Literature in Kerala

**PSO15:** Studying the concepts of Arabic rhetoric and prosody

**PSO 16:**Understanding the basic principles and components of Linguistics

**PSO 17:** Examining different types of critical approaches and the varying trends of literary theories

**PSO 18:** Estimating the scope of fiction and drama in modern Arabic literature

**PSO19:**Assessing the influence of Qur'an and Hadith on Arabic Literature

**PSO20:**Evaluating political and cultural dimensions in the history of Modern Arab World

**PSO21:** Creating general awareness and knowledge in the areas of Essay Writing, Autobiographical and Travelogue Literature in Arabic

**PSO22:** Studying different methods of research and analytical techniques.

**PSO23:**Understanding how to prepare a research paper scientifically

**PSO24:** Understanding the concept and role of journalism and films in society

**PSO25:** Studying the evolution of women's writing in Arabic

### **COURSE OUTCOME (CO)**

| <b>COURSE<br/>CODE</b> | <b>COURSE NAME</b> | <b>COURSE OUTCOME</b> |
|------------------------|--------------------|-----------------------|
| <b>SEMESTER I</b>      |                    |                       |

|                              |                                             |            |                                                                                                                                                   |
|------------------------------|---------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AL 211</b>                | <b>Applied Grammar &amp; Morphology – 1</b> | <b>CO1</b> | Perfecting the mastery of Arabic language with sufficient knowledge in applied grammar and morphology                                             |
|                              |                                             | <b>CO2</b> | Understanding the unique nature and function of various Arabic structures                                                                         |
|                              |                                             | <b>CO3</b> | Familiarization with Arabic grammatical & morphological concepts and Its practical applications                                                   |
|                              |                                             | <b>CO4</b> | Imparting syntactical concepts in a communicative approach                                                                                        |
| <b>Course II<br/>AI. 212</b> | <b>Classical Literature in Arabic</b>       | <b>CO1</b> | Understanding literary works and development as cultural and communicative events-different periods, genres and movements, literature and society |
|                              |                                             | <b>CO2</b> | Surveying of the literature and evaluation of literary thought in Classical Arabic                                                                |
|                              |                                             | <b>CO3</b> | Evaluating the interface of literature and popular culture, arts, religion, nationalism                                                           |
|                              |                                             | <b>CO4</b> | Analyzing the literary creations, authors, movements and trends through Jahiliyya, Islamic & Umayyad periods                                      |
|                              |                                             | <b>CO5</b> | Estimating the scope of various genres of classical Arabic prose and poetry.                                                                      |
| <b>AL 213</b>                | <b>Indian Arabic Literature</b>             | <b>CO1</b> | Getting a general awareness on the development of Arabic Language and Literature in India.                                                        |
|                              |                                             | <b>CO2</b> | Analyzing the salient features of Arabic knowledge. Literature & education in India                                                               |
|                              |                                             | <b>CO3</b> | Surveying the contributions of notable Arabic institutions, pioneer Arabic scholars in India and their works                                      |

|                            |                                              |            |                                                                                                                                                    |
|----------------------------|----------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|                            |                                              | <b>CO4</b> | Examining the development of Arabic Language and Literature in Kerala                                                                              |
| <b>AL 214</b>              | <b>Modern Poetry in Arabic</b>               | <b>CO1</b> | Understanding the distinct features of Modern poetry in Arabic                                                                                     |
|                            |                                              | <b>CO2</b> | Introducing the students to new literary schools and trends in Arabic literature                                                                   |
|                            |                                              | <b>CO3</b> | Estimating the sexpe of various genres of Contemporary Arabic poetry                                                                               |
|                            |                                              | <b>CO4</b> | Assessing the influence of western literature and culture in the Arabic literature                                                                 |
|                            |                                              | <b>CO5</b> | 5. Evaluate the conflicting values of traditionalism and modernism in contemporary Arabic                                                          |
| <b>SEMESTER II</b>         |                                              |            |                                                                                                                                                    |
| <b>Course V<br/>AL 221</b> | <b>Applied Grammar &amp; Morphology – II</b> | <b>CO1</b> | Perfecting the mastery of Arabic language with sufficient knowledge in applied grammar and morphology                                              |
|                            |                                              | <b>CO2</b> | Understanding the unique nature and function of various Arabic structures                                                                          |
|                            |                                              | <b>CO3</b> | Familiarization with Arabic grammatical & morphological concepts and its practical applications                                                    |
|                            |                                              | <b>CO4</b> | Imparting syntactical concepts in a communicative approach                                                                                         |
| <b>AL 222</b>              | <b>Medieval Literature in Arabic</b>         | <b>CO1</b> | Understanding literary works and development as cultural and communicative events- different periods, genres and movements. literature and society |



|              |                                        |     |                                                                                                                                                              |
|--------------|----------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                        | CO2 | A general survey of the literature and evaluation of literary thought in Medieval Arabic                                                                     |
|              |                                        | CO3 | Interface of literature and popular culture, arts, religion, nationalism and politics.                                                                       |
|              |                                        | CO4 | Analytical and depth knowledge of the literary creations, authors, movements and trends- through various periods                                             |
|              |                                        | CO5 | Estimating the scope of various genres of Medieval Arabic prose and poetry.                                                                                  |
| AL 223       | Translation: Theory and Practice       | CO1 | Introducing the students to the basic concepts of translation                                                                                                |
|              |                                        | CO2 | Acquiring mastery in employing different translation methods                                                                                                 |
|              |                                        | CO3 | Fahrtzing les finques of translation and language use.                                                                                                       |
| AL 224       | Arabic Rhetoric, Prosody & Linguistics | CO1 | 1. Understanding the concepts of Arabitethefort and prosoly                                                                                                  |
|              |                                        | CO2 | Acquiring mastery in literary techniques                                                                                                                     |
|              |                                        | CO3 | Familiarizing with the differences between literary texts and other plexes of scientific texts                                                               |
|              |                                        | CO4 | Understanding the basic principles and components of linguistics                                                                                             |
|              |                                        | CO5 | Examining the nature of Arabic as a Semitic language.                                                                                                        |
| SEMESTER III |                                        |     |                                                                                                                                                              |
| AL 231       | Literary Criticism: Theory & Practice  | CO1 | Understanding the unique nature and function of literature. Examining the different types of critical approaches and the varying trends of literary theories |

|                |                                                       |            |                                                                                                           |
|----------------|-------------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------|
|                |                                                       | <b>CO2</b> | Evaluating literature in objective terms and undertake in-depth studies of different genres of Literature |
|                |                                                       | <b>CO3</b> | Differentiating the classical and modern literary theories and concepts                                   |
|                |                                                       | <b>CO4</b> | Evaluation & appreciation of the complex nature of literary study.                                        |
| <b>AL 232</b>  | <b>Novel &amp; Drama</b>                              | <b>CO1</b> | Appreciation and analysts of the narrative elements in literature                                         |
|                |                                                       | <b>CO2</b> | Understanding the basic differences between traditional narration and modern fiction                      |
|                |                                                       | <b>CO3</b> | Estimating the scope of fiction and drama in modern Arabic literature                                     |
|                |                                                       | <b>CO4</b> | Tracing the development of drama and fiction in the Arab world:                                           |
| <b>AL 233</b>  | <b>Professional Translation &amp; Business Arabic</b> | <b>CO1</b> | Acquiring proficiency in professional translation & business Arabic                                       |
|                |                                                       | <b>CO2</b> | Estimating the scope of translation as a profession                                                       |
|                |                                                       | <b>CO3</b> | Familiarizing techniques of commercial translation in various fields                                      |
|                |                                                       | <b>CO4</b> | Getting an in-depth analyst of the ways & means of document translation in Arabic                         |
| <b>AL234 C</b> | <b>Mahjar Literature</b>                              | <b>CO1</b> | Understanding the distinct features of Mahjar literature in Arabic                                        |
|                |                                                       | <b>CO2</b> | Introducing new literary schools and trends in American Arabic literature                                 |
|                |                                                       | <b>CO3</b> | Estimating the scope of various genres of Mahjar literature.                                              |
|                |                                                       | <b>CO4</b> | Assessing the Influence of western literature and culture in Mahjar literature                            |

|                    |                                                      |            |                                                                                                                                 |
|--------------------|------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                      | <b>CO5</b> | Evaluating the conflicting values of Mahjar and Arab world writers in Arabic                                                    |
| <b>SEMESTER IV</b> |                                                      |            |                                                                                                                                 |
| <b>AL 241</b>      | <b>History of Contemporary Arab World</b>            | <b>CO1</b> | Evaluation the political and cultural dimensions in the history of Modern Arab World                                            |
|                    |                                                      | <b>CO2</b> | Tracing the evolution of the contemporary Arab world.                                                                           |
|                    |                                                      | <b>CO3</b> | Examining the influence of colonialism in the psych of the Arab world.                                                          |
|                    |                                                      | <b>CO4</b> | Assessing how the Palestine issue influenced the course of Arab world.                                                          |
|                    |                                                      | <b>CO5</b> | Studying the issues and concerns of the contemporary Arab world                                                                 |
| <b>AL 242</b>      | <b>Essay Writing, Autobiography &amp; Travelogue</b> | <b>CO1</b> | 1. Creating general awareness and knowledge in the areas of Essay Writing, Autobiographical and Travelogue Literature in Arabic |
|                    |                                                      | <b>CO2</b> | Analyzing the development of Essay Writing, Autobiographical and Travelogue Literature in Arabic                                |
|                    |                                                      | <b>CO3</b> | Evaluating prominent Arab Writers in the field of Essay. Autobiography and Travelogue                                           |
|                    |                                                      | <b>CO4</b> | Examining major Works in the areas of Essay Writing. Autobiographical and Travelogue Literature in Arabic                       |
| <b>AL 243</b>      | <b>Methodology of Research &amp; Education</b>       | <b>CO1</b> | Introducing the basic canons of scientific enquiry and data collection.                                                         |
|                    |                                                      | <b>CO2</b> | Studying different methods of research and analytical techniques.                                                               |
|                    |                                                      | <b>CO3</b> | Understanding how to prepare a research paper scientifically                                                                    |

|                 |                                     |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------|-------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |                                     | <b>CO4</b> | Imparting experience in understanding various stages of a research work.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                 |                                     | <b>CO5</b> | Understanding the different approaches, methods and techniques of language learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                 |                                     | <b>CO6</b> | Analyzing contemporary learning theories and concepts and acquire the basic skills.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                 |                                     | <b>CO7</b> | Getting an acquaintance with the recent developments in the curriculum revisions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                 |                                     | <b>CO8</b> | Examining the content and scope of school curriculum in Arabic language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>AL 234 D</b> | <b>Women's Writing in Arabic</b>    | <b>CO1</b> | Studying the evolution of women's writing in Arabic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                 |                                     | <b>CO2</b> | Evaluating the peculiarities of women writers in their literature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                 |                                     | <b>CO3</b> | Assessing the height reached by the women's writing in Arabic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                 |                                     | <b>CO4</b> | Examining the attitude of society towards promoting women as a writer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>AL 245</b>   | <b>Dissertation &amp; Viva Voce</b> |            | It should be about 50 written pages and properly bound. The students should be familiar with recent research methodology. The topics of dissertation should be based on Arabic language, Culture, History and Literature. The dissertations should have originality. Translation of work will also be permitted. Every student should have a supervising teacher who handles P.G. Classes. Dissertations should be submitted at the end of Semester IV. The work can be started in Semester III. Maximum marks for Dissertation will be 75 and there will be a dissertation viva voce for 25 marks also. |
| <b>AL 246</b>   | <b>Comprehensive Viva Voce</b>      |            | There will be a comprehensive Viva Voce at the end of the 4 semester for 100 marks: The Viva Voce                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|  |  |  |                                                                       |
|--|--|--|-----------------------------------------------------------------------|
|  |  |  | examination shall cover the whole syllabus of M. A. Arabic programme. |
|--|--|--|-----------------------------------------------------------------------|

**NAME OF THE PROGRAMME: POST GRADUATE  
PROGRAM IN COMMERECE**

**PROGRAM SPECIFIC OUTCOMES**

PSO1 :Demonstrate knowledge of key concepts and theories underlying qualitative decision making

PSO2: Compare International markets and environment through the lens of commerce discipline

PSO3:Apply critical and analytical skills and methods to the identification, evaluation and resolution of complex problems

PSO4:Inculcate a global mindset of entrepreneurship and managerial skills.

**COURSE OUTCOME (CO)**

| COURSE<br>CODE | COURSE NAME                              | COURSE OUTCOME |                                                                                                                                       |
|----------------|------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------|
| SEMESTER I     |                                          |                |                                                                                                                                       |
| CO 211         | Business Ethics and Corporate Governance | CO1            | To convey basic understandings on the theories of Business Ethics                                                                     |
|                |                                          | CO2            | To provide a understanding on Corporate Governance practices and the provisions of the Companies Act relating to corporate governance |

|               |                                                    |            |                                                                                                                 |
|---------------|----------------------------------------------------|------------|-----------------------------------------------------------------------------------------------------------------|
| <b>CO 212</b> | <b>Legal Framework for Business</b>                | <b>CO1</b> | To enable student acquire updated knowledge and develop understanding of the regulatory framework for business  |
|               |                                                    | <b>CO2</b> | To make students aware of opportunities available in various legal compliances so as to enable them employable. |
|               |                                                    | <b>CO3</b> | To expose students in emerging trends in good governance practices including governance.                        |
| <b>CO 213</b> | <b>Research Methodology</b>                        | <b>CO1</b> | To provide an insight into the fundamentals of social science research.                                         |
|               |                                                    | <b>CO2</b> | To understand the need, significance and relevance of research and research design.                             |
|               |                                                    | <b>CO3</b> | To acquire practical knowledge and required skills in carrying out research                                     |
| <b>CO 214</b> | <b>Planning and Development Administartion</b>     | <b>CO1</b> | To generate an overall insight on planning process in Indian Economy                                            |
| <b>CO 215</b> | <b>Advanced corporate Accounting and Reporting</b> | <b>CO1</b> | To acquaint the students about important accounting standards                                                   |

|               |                                    |            |                                                                                                                                                                                                              |
|---------------|------------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                                    | <b>CO2</b> | To gain ability to prepare financial statements including consolidated financial statements of group companies and financial reports of various types of entities by applying relevant accounting standards. |
|               |                                    | <b>CO3</b> | To expose the students to advanced accounting issues and practices such as insurance Department of Economics claims, investment accounting and liquidation of companies.                                     |
| SEMESTER II   |                                    |            |                                                                                                                                                                                                              |
| <b>CO 221</b> | <b>E-Business &amp; Cyber Laws</b> | <b>CO1</b> | To equip the students with the emerging trends in business                                                                                                                                                   |
|               |                                    | <b>CO2</b> | To equip the students to introduce and explore the use of information technology in all aspects of business.                                                                                                 |
|               |                                    | <b>CO3</b> | To familiarise with the students cyber world and cyber regulations                                                                                                                                           |
| <b>CO 222</b> | <b>Strategic Management</b>        | <b>CO1</b> | To create a conceptual awareness on various strategies.                                                                                                                                                      |
|               |                                    | <b>CO2</b> | To familiarise students with the formulation, implementation and evaluation of strategies                                                                                                                    |

|              |                                                    |     |                                                                                                                               |
|--------------|----------------------------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------|
| CO 223       | Quantitative Techniques and Financial Econometrics | CO1 | To impart expert knowledge in the application of Quantitative Techniques and Business Econometrics in research.               |
|              |                                                    | CO2 | To impart knowledge in the use of SPSS in processing and analysis of data.                                                    |
| CO 224       | International Business                             | CO1 | To introduce the concept of international business and to create awareness on the changes in the international business arena |
| CO 225       | Investment Management                              | CO1 | To provide a general understanding about investment avenues and personal finance.                                             |
|              |                                                    | CO2 | To give a broader understanding about behavioural finance and how it equips to decide personal investment.                    |
| SEMESTER III |                                                    |     |                                                                                                                               |
| CO 231U      | Income Tax Planning and Management                 | CO1 | To impart deep knowledge about the latest provisions of Income Tax Act                                                        |
|              |                                                    | CO2 | To develop application and analytical skill of the provisions of Income Tax Law for Income Tax planning and Management.       |



|             |                                                       |     |                                                                                                                                                                                     |
|-------------|-------------------------------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CO 232F     | Security Analysis and Portfolio Management            | CO1 | To provide a comprehensive understanding on the principles of security analysis and develop the skill in portfolio management.                                                      |
|             |                                                       | CO2 | Equip the students to value the real worth of securities                                                                                                                            |
| CO 233F     | International Financial Management                    | CO1 | To familiarise the students with the international financial markets and instruments.                                                                                               |
|             |                                                       | CO2 | To convey an understanding about foreign exchange risk management                                                                                                                   |
| CO 234F     | Strategic Cost and Management Accounting              | CO1 | To comprehend and familiarize the established techniques, methods and practices in Strategic Cost and Management Accounting to the students.                                        |
|             |                                                       | CO2 | To introduce the evolving Strategic approaches and techniques in Cost and Management field and to developed industrial behaviour among the students in the emerging business areas. |
| SEMESTER IV |                                                       |     |                                                                                                                                                                                     |
| CO 241 W    | Goods and Service Tax & Customs Duty-Law and Practice | CO1 | To gain expert knowledge of the principles and law relating to Goods and Service Tax and Customs Act.                                                                               |

|                 |                                           |            |                                                                                                                                             |
|-----------------|-------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------|
|                 |                                           | <b>CO2</b> | To impart skill in applying and analysing the provisions of Goods and Service Tax Act and Customs Act in handling practical situations.     |
| <b>CO 242 F</b> | <b>Risk Management and Derivatives</b>    | <b>CO1</b> | To understand the risk management process and its application                                                                               |
|                 |                                           | <b>CO2</b> | To give a broader awareness on derivatives and its applications                                                                             |
| <b>CO 243F</b>  | <b>Accounting Standards</b>               | <b>CO1</b> | To acquaint the students to understand the structure, process and organizational set up involved in evolving accounting standards in India. |
|                 |                                           | <b>CO2</b> | To enable the students to apply some key standards while preparing and presenting the financial statements                                  |
| <b>CO 244S</b>  | <b>Management Optimization Techniques</b> | <b>CO1</b> | To convey basic principles and application of optimization tools of resource utilization.                                                   |
|                 |                                           | <b>CO2</b> | To provide an insight into optimal project implementation Techniques under deterministic and probabilistic conditions.                      |

## NAME OF THE PROGRAMME: POST GRADUATE PROGRAM IN MATHEMATICS

### PROGRAM SPECIFIC OUTCOMES

**PSO 1** Interconnect concepts in various fields of Mathematics..

**PSO 2** Enrich mathematical concepts and encourage research.

**PSO 3** Able to convey mathematical to the society

**PSO 4** Acquire knowledge about scientific method and skills in mathematical computations.

**PSO 5** Utilize the domain knowledge to face real life problems

**PSO 6** Enhancement of critical thinking skills and attitudes to become a thinker and professional.

**PSO 7** Creating academic excellence in mathematics and allied subjects.

**PSO 8** Explore and discover new fields in different dimensions.

### COURSE OUTCOME (CO)

| COURSE CODE | COURSE NAME    | COURSE OUTCOME |                                                                                               |
|-------------|----------------|----------------|-----------------------------------------------------------------------------------------------|
| SEMESTER I  |                |                |                                                                                               |
| MM 511      | Linear Algebra | CO1            | Understand the concepts of vector spaces,subspaces,bases ,dimension and their properties.     |
|             |                | CO2            | Acquire the skill in matrix manipulation and linear modelling problems                        |
|             |                | CO3            | Relate matrices and linear transformations                                                    |
|             |                | CO4            | Compute eigen values and eigen vectors of linear transformations and use them in applications |

|                    |                                                                    |            |                                                                                                                                                    |
|--------------------|--------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                                    | <b>CO5</b> | Enhance the ability to reason mathematically and prepare them for research                                                                         |
|                    |                                                                    | <b>CO6</b> | Apply the knowledge to many fields in engineering ,statistics and computer science                                                                 |
| <b>MM 512</b>      | <b>Real Analysis</b>                                               | <b>CO1</b> | Understand the concepts and result in analysis and apply these results to other branches of mathematics and real world applications.               |
|                    |                                                                    | <b>CO2</b> | Demonstrate the importance of Riemann stieltjes integrals,Riemann condition,sufficient condition for the existence of Riemann Stieltjes integrals. |
|                    |                                                                    | <b>CO3</b> | Analyse the concepts of sequence of functions.its properties and what extent the property is transferred to its limit functions.                   |
|                    |                                                                    | <b>CO4</b> | Understand and demonstrate the concepts of multivariable differential calculus.                                                                    |
|                    |                                                                    | <b>CO5</b> | Enhance the ability to apply the concepts in geometrical situation.                                                                                |
| <b>MM513</b>       | <b>Ordinary Differential Equations and Calculus of Variations.</b> | <b>CO1</b> | To understand the concepts of Ordinary Differential Equations.                                                                                     |
|                    |                                                                    | <b>CO2</b> | Classify the problems and recognize appropriate methods to solve differential equations.                                                           |
|                    |                                                                    | <b>CO3</b> | Apply the methods of solving differential equations to real world problems.                                                                        |
|                    |                                                                    | <b>CO4</b> | Find the extremum of an integral using Euler's formula.                                                                                            |
|                    |                                                                    | <b>CO5</b> | Solve an isoperimetric problem.                                                                                                                    |
| <b>MM514</b>       | <b>Basic Topology</b>                                              | <b>CO1</b> | Understanding metrics as a generalization of distance in real and complex plane and discuss the basic concepts of metric spaces.                   |
|                    |                                                                    | <b>CO2</b> | Compare the concepts of open and closed sets of real line and complex plane to abstract spaces.                                                    |
|                    |                                                                    | <b>CO3</b> | To develop the students ability to handle abstract ideas of mathematics and mathematical proofs.                                                   |
|                    |                                                                    | <b>CO4</b> | Construction of topological spaces with desired properties                                                                                         |
|                    |                                                                    | <b>CO5</b> | Improve skills in mathematical reading ,writing and communication.                                                                                 |
|                    |                                                                    | <b>CO6</b> | Appreciate the importance of topology as a fundamental subject in mathematics with connections to many other branches of the knowledge .           |
| <b>SEMESTER II</b> |                                                                    |            |                                                                                                                                                    |

|              |                          |            |                                                                                                                                                                |
|--------------|--------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MM521</b> | <b>Abstract Algebra</b>  | <b>CO1</b> | Get familiarized with different algebraic structures                                                                                                           |
|              |                          | <b>CO2</b> | Understand the Fundamental theorem of finitely generated abelian groups and list abelian groups of finite orders.                                              |
|              |                          | <b>CO3</b> | Apply Sylow's theorems to classify simple groups.                                                                                                              |
|              |                          | <b>CO4</b> | Discuss different field extensions and examine the existence of zeros of irreducible polynomials over extension fields.                                        |
|              |                          | <b>CO5</b> | Solve the polynomial equation by radicals along with the understanding of ruler and compass constructions.                                                     |
|              |                          | <b>CO6</b> | Establish the connection between the concept of field extensions and Galois theory                                                                             |
| <b>MM522</b> | <b>Measure Theory</b>    | <b>CO1</b> | Create a frame work to generalize integration theory                                                                                                           |
|              |                          | <b>CO2</b> | Understand why and for what the theory of measures was introduced.                                                                                             |
|              |                          | <b>CO3</b> | Formulate complex problems using appropriate measure theory techniques.                                                                                        |
|              |                          | <b>CO4</b> | Apply the theory of measure to solve variety of problems at an appropriate level of difficulty.                                                                |
|              |                          | <b>CO5</b> | Understand the notion of different types of convergence.                                                                                                       |
|              |                          | <b>CO6</b> | Apply the theory of measures in probability theory..                                                                                                           |
| <b>MM524</b> | <b>Advanced Topology</b> | <b>CO1</b> | Understand more about point set topology and the concepts of algebraic topology.                                                                               |
|              |                          | <b>CO2</b> | Apply abstract algebra to understand topological properties..                                                                                                  |
|              |                          | <b>CO3</b> | Construct new topological spaces from existing ones and comparing their properties.                                                                            |
|              |                          | <b>CO4</b> | Learn to use algebraic techniques to prove algebraic properties such as fundamental group and Brouwer fixed point theorem.                                     |
|              |                          | <b>CO5</b> | Gain experience in applying algebraic topology to solve problems in other branches of mathematics and to carry out advanced research work in pure mathematics. |
|              |                          | <b>CO6</b> | To develop the students ability to handle abstract ideas of mathematics and mathematical proofs in topology.                                                   |
|              |                          | <b>CO7</b> | Develop capacity for mathematical reasoning through analyzing, proving and explaining concepts from algebraic topology.                                        |
| <b>MM523</b> |                          | <b>CO1</b> | To understand the concepts of PDE's.                                                                                                                           |

|              |                                                      |     |                                                                                                                    |
|--------------|------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------|
|              | Partial differential Equations and integral Equation | CO2 | To solve the real world problems using PDE's                                                                       |
|              |                                                      | CO3 | To solve the wave equation and the heat equation.                                                                  |
|              |                                                      | CO4 | Understand the concepts,methods and structure of integral equation theory.                                         |
|              |                                                      | CO5 | To solve mathematical problems using techniques from integral equation theory.                                     |
| SEMESTER III |                                                      |     |                                                                                                                    |
| MM231        | Complex Analysis                                     | CO1 | Understand elementary properties and examples of analytic functions.                                               |
|              |                                                      | CO2 | Describe the properties of Reimann Steiltjes integral.                                                             |
|              |                                                      | CO3 | Represent analytic functions as power series and find the zeroes of an analytic function.                          |
|              |                                                      | CO4 | Discuss Cauchy's theorem and integral formula and derive homotopic version of Cauchy's theorem.                    |
|              |                                                      | CO5 | Classify the singularities of a function.                                                                          |
| MM232        | Functional Analysis 1                                | CO1 | Recall the basic concepts regarding sets, linear spaces, linear maps etc.                                          |
|              |                                                      | CO2 | Understand and apply the concepts of normed spaces.                                                                |
|              |                                                      | CO3 | Describe the continuity of linear maps.                                                                            |
|              |                                                      | CO4 | Analyze the proofs of Hahn Banach theorems and apply it                                                            |
|              |                                                      | CO5 | Explain the fundamental concepts of functional analysis and their role in modern mathematics and applied contexts. |
| MM233        | Operations Research                                  | CO1 | Formulate linear programming models and the graphical solutions of linear programs in two variables.               |
|              |                                                      | CO2 | Express linear programs in standard forms.                                                                         |
|              |                                                      | CO3 | Evaluate solution of a linear programming problem using simplex method.                                            |
|              |                                                      | CO4 | Understand project management and assignment problems.                                                             |
|              |                                                      | CO5 | Explain Kuhn Tucker theory and non linear programming.                                                             |
| MM234        | Graph Theory                                         | CO1 | Understand the basic concepts of graphs, directed graphs etc                                                       |
|              |                                                      | CO2 | Determine whether a graph is planar or non planar.                                                                 |
|              |                                                      | CO3 | Explain walks, paths, circuits, connected graphs, bipartite graphs etc.                                            |

|                    |                                  |            |                                                                                                                                                  |
|--------------------|----------------------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                  | <b>CO4</b> | Understand the concept of Eulerian and Hamiltonian graphs and apply it to describe the Konigsberg problem, utility problem, seating problem etc. |
|                    |                                  | <b>CO5</b> | Explain the concept of graph coloring, strong digraphs, Ramsey number and Turan's theorem.                                                       |
| <b>SEMESTER IV</b> |                                  |            |                                                                                                                                                  |
| <b>MM241</b>       | <b>Number Theory</b>             | <b>CO1</b> | Recall arithmetical function and Dirichlet multiplication                                                                                        |
|                    |                                  | <b>CO2</b> | Understand the characters of finite abelian Groups                                                                                               |
|                    |                                  | <b>CO3</b> | Apply fundamental theorem of arithmetic.                                                                                                         |
|                    |                                  | <b>CO4</b> | Explain quadratic residues, reciprocity law and Jacobi symbol                                                                                    |
|                    |                                  | <b>CO5</b> | Describe the existence and number of primitive roots.                                                                                            |
| <b>MM242</b>       | <b>Functional Analysis II</b>    | <b>CO1</b> | Explain the fundamental concepts of functional analysis and define self-adjoint and unitary linear operators.                                    |
|                    |                                  | <b>CO2</b> | Demonstrate capacity for mathematical reasoning through analyzing, proving and explaining concepts from functional analysis.                     |
|                    |                                  | <b>CO3</b> | Analyze and apply projection and Riesz representation theorems.                                                                                  |
|                    |                                  | <b>CO4</b> | Distinguish between spectrum and resolvent set of a linear operator.                                                                             |
|                    |                                  | <b>CO5</b> | Discuss compact linear operators and apply definition to prove theorems.                                                                         |
| <b>MM243</b>       | <b>Theory of Wavelet</b>         | <b>CO1</b> | Recall discrete Fourier transform, elementary Hilbert space.                                                                                     |
|                    |                                  | <b>CO2</b> | Construct wavelets on $Z_n$                                                                                                                      |
|                    |                                  | <b>CO3</b> | Explain Fourier Series, Fourier Transform, etc                                                                                                   |
|                    |                                  | <b>CO4</b> | Find iteration step for wavelets on $Z$                                                                                                          |
| <b>MM244</b>       | <b>Advanced Complex Analysis</b> | <b>CO1</b> | Recall the basic concepts in complex analysis                                                                                                    |
|                    |                                  | <b>CO2</b> | Understand the concepts of compactness and convergence in space of analytic functions                                                            |
|                    |                                  | <b>CO3</b> | Describe Riemann Mapping theorem, Weierstrass factorization theorem, Gamma function, Riemann zeta function etc.                                  |

|              |                             |            |                                                                                                                 |
|--------------|-----------------------------|------------|-----------------------------------------------------------------------------------------------------------------|
|              |                             | <b>CO4</b> | Analyze and apply Runge,s theorem, Mittag-Leffler theorem, Monodromy theorem□<br>Hadamard factorization theorem |
|              |                             | <b>CO5</b> | Understand genus & order of an entire function                                                                  |
| <b>MM245</b> | <b>Dissertation/Project</b> | <b>CO1</b> | Demonstrate library research skills in the area of Mathematics                                                  |
|              |                             | <b>CO2</b> | Engage in an independent mathematical project                                                                   |
|              |                             | <b>CO3</b> | Defend and Produce a mature oral presentation of a non-trivial mathematical topic                               |
|              |                             | <b>CO4</b> | Evaluate his own understanding from his performance in viva.                                                    |

**NAME OF THE PROGRAMME: POST GRADUATE  
PROGRAM IN PHYSICS**

**PROGRAM SPECIFIC OUTCOMES**

**PSO1.** Understand and apply basic principles of Physics and basic interaction laws that governs our universe.

**PSO2 .**Understandthe basicdifferences in classical and quantum mechanical approach ,their realm and applicability in certain domain.

**PSO3 .**Understand and acquire basic knowledge in various techniques in optical spectroscopy and interpretation of spectra.

**PSO4 .**Understand and apply statistical methods in solving real Physics problems

**COURSE OUTCOME (CO)**

| <b>COURSE<br/>CODE</b> | <b>COURSE NAME</b> | <b>COURSE OUTCOME</b> |
|------------------------|--------------------|-----------------------|
| <b>SEMESTER I</b>      |                    |                       |



|             |                                          |     |                                                                                                                              |
|-------------|------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------|
| PH 211      | CLASSICAL MECHANICS                      | CO1 | Students are able to learn the concepts of Lagrangian and Hamiltonian mechanics and use them to solve problems in mechanics. |
|             |                                          | CO2 | Able to learn concepts of generating functions, Poisson brackets Hamilton Jacobi equations and action angle variables.       |
|             |                                          | CO3 | To equip the students to deal with central force problem and analyzing Kepler’s laws.                                        |
|             |                                          | CO4 | To inculcate the students the concepts of special and general theory of relativity and related problems.                     |
|             |                                          | CO5 | To acquaint the students about the theory of small oscillations and Euler’s equations of motions of rigid bodies.            |
| PH212       | Mathematical Physics                     | CO1 | To apply and analyze the various vector and matrix operations and to perform complex analysis for solving physical problems. |
|             |                                          | CO2 | To demonstrate and utilize the concepts of Fourier series and its transforms.                                                |
|             |                                          | CO3 | To explain and differentiate different probabilistic distributions.                                                          |
|             |                                          | CO4 | To apply partial differential equations and special functions for solving mathematical problems.                             |
|             |                                          | CO5 | To illustrate and apply concepts of group theoretical operations and tensors                                                 |
| PH 213      | BASIC ELECTRONICS                        | CO1 | To equip the students design and analyze different analogue and digital circuits.                                            |
|             |                                          | CO2 | To summarize the knowledge of basic arithmetic and data processing circuits and memory devices.                              |
|             |                                          | CO3 | To equip the students to explain various components in optical communications systems and microwave devices.                 |
|             |                                          | CO4 | To measure and analyze the different electronic signals.                                                                     |
| SEMESTER II |                                          |     |                                                                                                                              |
| PH 221      | MODERN OPTICS AND ELECTROMAGNETIC THEORY | CO1 | To demonstrate the linear and nonlinear optical phenomena.                                                                   |
|             |                                          | CO2 | To explain and discuss propagation of electromagnetic waves through different media.                                         |
|             |                                          | CO3 | To restate formulations and relativistic effects in electrodynamics.                                                         |

|                     |                                                                        |            |                                                                                                                   |
|---------------------|------------------------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------|
|                     |                                                                        | <b>CO4</b> | To analyse the propagation of electromagnetic waves through waveguides.                                           |
|                     |                                                                        | <b>CO5</b> | To use radiation theory in developing different antennas.                                                         |
| <b>PH 222</b>       | <b>THERMODYNAMICS, STATISTICAL PHYSICS AND BASIC QUANTUM MECHANICS</b> | <b>CO1</b> | To explain the basic thermodynamic relations, Maxwell's equations and its consequences.                           |
|                     |                                                                        | <b>CO2</b> | To equip the students to demonstrate and apply classical and quantum statistics in different physical phenomena.  |
|                     |                                                                        | <b>CO3</b> | To distinguish the different phase transitions using Ising model.                                                 |
|                     |                                                                        | <b>CO4</b> | Outline and apply foundations of quantum mechanics.                                                               |
| <b>PH 223</b>       | <b>COMPUTER SCIENCE AND NUMERICAL TECHNIQUES</b>                       | <b>CO1</b> | To summarize computer hardware and its operating systems.                                                         |
|                     |                                                                        | <b>CO2</b> | Explain internal architecture of microprocessors 8085 and create assembly language programming.                   |
|                     |                                                                        | <b>CO3</b> | To develop and compile programs in python                                                                         |
|                     |                                                                        | <b>CO4</b> | Apply numerical methods to solve physical problems.                                                               |
| <b>PH 251</b>       | <b>GENERAL PHYSICS PRACTICALS</b>                                      | <b>CO1</b> | To measure and analyze various physical quantities.                                                               |
|                     |                                                                        | <b>CO2</b> | To calculate error in various general physics experiments.                                                        |
|                     |                                                                        | <b>CO3</b> | To develop experimental skills                                                                                    |
|                     |                                                                        | <b>CO4</b> | Calibration of experimental setups and evaluate physical parameters using experimental observations               |
| <b>PH 252</b>       | <b>Electronics and Computer Science Practicals</b>                     | <b>CO1</b> | To design and construct various electronic circuits and its validation.                                           |
|                     |                                                                        | <b>CO2</b> | To calculate error in various electronics experiments.                                                            |
|                     |                                                                        | <b>CO3</b> | To develop experimental and programming skills                                                                    |
|                     |                                                                        | <b>CO4</b> | To learn handling various electronic instruments and components such as CRO, power supply, multimeter etc.        |
| <b>SEMESTER III</b> |                                                                        |            |                                                                                                                   |
| <b>PH231</b>        | <b>ADVANCED QUANTUM MECHANICS</b>                                      | <b>CO1</b> | To extend the use of approximation methods viz variation, WKB, time dependent and time independent perturbations. |

|                    |                                          |            |                                                                                                                |
|--------------------|------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------|
|                    |                                          | <b>CO2</b> | To summarize different types of symmetry, conservation laws and quantum theory of scattering.                  |
|                    |                                          | <b>CO3</b> | To distinguish different approximation methods, to study the structure and properties of many electron systems |
|                    |                                          | <b>CO4</b> | To compute eigen values of angular momentum and evaluation of CG coefficients.                                 |
|                    |                                          | <b>CO5</b> | Infer the requirements of relativistic quantum mechanics.                                                      |
| <b>PH 232</b>      | <b>ATOMIC AND MOLECULAR SPECTROSCOPY</b> | <b>CO1</b> | Explain different symmetry operations and deduction of molecular structure.                                    |
|                    |                                          | <b>CO2</b> | Distinguish and classify the different spectra shown by atoms and molecules                                    |
|                    |                                          | <b>CO3</b> | Illustrate the various spectroscopic experimental techniques.                                                  |
|                    |                                          | <b>CO4</b> | Understand application of spectroscopy in structure determination of molecules                                 |
| <b>PH 233 E</b>    | <b>ADVANCED ELECTRONICS -I</b>           | <b>CO1</b> | To summarize various techniques of digital and analog communication systems.                                   |
|                    |                                          | <b>CO2</b> | Generalize the idea of information theory                                                                      |
|                    |                                          | <b>CO3</b> | Illustrate various techniques for digital signal processing based Fourier and Z transform.                     |
|                    |                                          | <b>CO4</b> | Understand the new trends in wireless communication system                                                     |
| <b>SEMESTER IV</b> |                                          |            |                                                                                                                |
| <b>PH 233N</b>     | <b>ADVANCED NUCLEAR PHYSICS</b>          | <b>CO1</b> | To outline and analyze nuclear properties, structure, models and reactions.                                    |
|                    |                                          | <b>CO2</b> | To illustrate the mechanisms of nuclear fission and fusion.                                                    |
|                    |                                          | <b>CO3</b> | Explain various nuclear detectors and particle accelerators.                                                   |
|                    |                                          | <b>CO4</b> | To differentiate elementary particles and discuss their interactions.                                          |
| <b>PH 241</b>      | <b>CONDENSED MATTER PHYSICS</b>          | <b>CO1</b> | Discuss crystal physics, lattice vibrations, models of thermal properties and band theory of solids.           |
|                    |                                          | <b>CO2</b> | Explain the theoretical concepts of semiconductors, dielectric, magnetic and superconducting materials.        |

|                 |                                        |            |                                                                                                |
|-----------------|----------------------------------------|------------|------------------------------------------------------------------------------------------------|
|                 |                                        | <b>CO3</b> | To describe the synthesis and characterization techniques of nanomaterials.                    |
|                 |                                        | <b>CO4</b> | To apply the concepts in condensed matter physics to meet the challenges.                      |
| <b>PH 242</b>   | <b>NUCLEAR AND PARTICLE PHYSICS</b>    | <b>CO1</b> | To describe and analyze nuclear structure, models and reactions.                               |
|                 |                                        | <b>CO2</b> | To illustrate the mechanisms of nuclear fission and fusion reactions.                          |
|                 |                                        | <b>CO3</b> | Discuss various nuclear detectors and particle accelerators.                                   |
|                 |                                        | <b>CO4</b> | To classify elementary particles and discuss their interactions.                               |
| <b>PH 243 E</b> | <b>ADVANCED ELECTRONICS-II</b>         | <b>CO1</b> | Demonstrate microprocessor architecture, programming and interfacing devices                   |
|                 |                                        | <b>CO2</b> | Outline the basic concepts of embedded systems, artificial intelligence and neural networks.   |
|                 |                                        | <b>CO3</b> | Illustrate fundamental data communications codes, radar and satellite communication systems.   |
|                 |                                        | <b>CO4</b> | Understand how analog and digital technologies are used for satellite communication            |
| <b>PH 261</b>   | <b>Advanced Physics Practicals</b>     | <b>CO1</b> | To measure and analyze various physical quantities.                                            |
|                 |                                        | <b>CO2</b> | To calculate error in various advanced physics experiments.                                    |
|                 |                                        | <b>CO3</b> | To develop experimental skills                                                                 |
|                 |                                        | <b>CO4</b> | To analyze and point out results of experimental data.                                         |
| <b>PH 262 E</b> | <b>Advanced Electronics Practicals</b> | <b>CO1</b> | To design and construct various electronic circuits and its validation.                        |
|                 |                                        | <b>CO2</b> | To calculate error in various electronics experiments.                                         |
|                 |                                        | <b>CO3</b> | To develop and test assembly language programs using microprocessors.                          |
|                 |                                        | <b>CO4</b> | To become familiar with the architecture and instruction set of intel 8085/8086 microprocessor |

## NAME OF THE PROGRAMME: POST GRADUATE PROGRAM IN ZOOLOGY

### PROGRAMSPECIFIC OUTCOMES

- PSO1** Acquire in-depth knowledge on different branches of Zoology and thereby develop inquisitiveness to explore advanced courses of learning and research.
- PSO2** Integrate biological knowledge to allied disciplines and to inculcate interest in biodiversity, various ecosystems, its interactions and laws governing their conservation.
- PSO3** Apply ethical principles and commit to professional ethics and responsibilities in research and teaching.
- PSO4** Acquire necessary skills in the observation and study of nature, biological techniques, handle analytical equipments, research methodologies, with scientific temper and ethics leading to research.
- PSO5** Create empathy and care towards the ecosystem and biomes.
- PSO6** Coordinate and present appropriate applications of knowledge through effective written, verbal, graphical/ virtual communications and interact fruitfully with people from diverse background

### COURSE OUTCOME (CO)

| COURSE CODE       | COURSE NAME                                 | COURSE OUTCOME |                                                                                                                                                                               |
|-------------------|---------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SEMESTER I</b> |                                             |                |                                                                                                                                                                               |
| <b>ZO 511</b>     | <b>Systematics And Evolutionary Biology</b> | <b>CO1</b>     | Understand the basic principles of taxonomy and systematics. Recognize the importance of Zoological nomenclature, International Code of Zoological Nomenclature               |
|                   |                                             | <b>CO2</b>     | Understand and apply new trends in systematics especially chemo and cytotaxonomy, numerical taxonomy, cladistics, molecular systematics, and DNA bar coding                   |
|                   |                                             | <b>CO3</b>     | Acquire enhanced knowledge about the mechanism of natural selection, the process involved in the Gradualism and punctuated equilibrium along with anagenesis and cladogenesis |

|                    |                                                                 |            |                                                                                                                                 |
|--------------------|-----------------------------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                                 | <b>CO4</b> | Comprehend concepts regarding Neutral theory of molecular evolution; molecular divergence; molecular drive, Molecular clocks    |
| <b>ZO 512</b>      | <b>Biochemistry</b>                                             | <b>CO1</b> | Classify and compare the structure, biological importance and metabolism of carbohydrates, proteins, nucleic acids, and lipids. |
|                    |                                                                 | <b>CO2</b> | Summarize the tissue protein diseases and inborn errors associated with protein metabolism                                      |
|                    |                                                                 | <b>CO3</b> | Differentiate the disorders associated with lipid metabolism CO6: Understand energy metabolism                                  |
|                    |                                                                 | <b>CO4</b> | Understand energy metabolism and Summarize the concepts of enzyme kinetics                                                      |
| <b>ZO 513</b>      | <b>Biophysics, Instrumentation And Computer Science</b>         | <b>CO1</b> | Understand the concept of energy and laws of thermodynamics along with new trends in radiation biophysics and nanotechnology    |
|                    |                                                                 | <b>CO2</b> | Understand the principle, working and applications of microscopes, centrifugation, electrophoretic and chromatographic methods. |
|                    |                                                                 | <b>CO3</b> | Acquire knowledge on the principle and components of instruments of biomedical research.                                        |
|                    |                                                                 | <b>CO4</b> | Understand the basics of computer hardware, software, languages, networking and current trends in the field of computer science |
| <b>SEMESTER II</b> |                                                                 |            |                                                                                                                                 |
| <b>ZO 521</b>      | <b>Advanced Physiology And Functional Anatomy</b>               | <b>CO1</b> | Understand the various physiological process and associated systems in the body.                                                |
|                    |                                                                 | <b>CO2</b> | Differentiate the structure and functions of various organs in the human body                                                   |
|                    |                                                                 | <b>CO3</b> | Understand the role of nutrition in health.                                                                                     |
|                    |                                                                 | <b>CO4</b> | Understand the environment's influence on the physiological function and performance                                            |
| <b>ZO 522</b>      | <b>Genetics, Quantitative Analysis And Research Methodology</b> | <b>CO1</b> | Understand the principles of Mendelian genetics and its application                                                             |
|                    |                                                                 | <b>CO2</b> | Explore the application of genetics in the field of microbiology, medicine and forensics                                        |
|                    |                                                                 | <b>CO3</b> | Understand the basic principles of biostatistics and its application in biology to students and                                 |

|               |                                                                                                                         |            |                                                                                                                                                                                                                              |
|---------------|-------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                                                                                                                         |            | familiarize them with important statistical tools for data analysis.                                                                                                                                                         |
|               |                                                                                                                         | <b>CO4</b> | Acquire knowledge in research methodology, research problem formulation, research design and scientific documentation                                                                                                        |
| <b>ZO 523</b> | <b>Cell Biology, Molecular Biology And Bioinformatics</b>                                                               | <b>CO1</b> | Understand the fundamental aspects of structure of plasma membrane, cell interactions, membrane transport and chromatin structure, process of cell growth, cell cycle, cell-cell signalling and molecular biology of cancer. |
|               |                                                                                                                         | <b>CO2</b> | Understand the mechanism and significance of DNA replication, transcription, translation, post transcriptional and translational modifications and of gene expression                                                        |
|               |                                                                                                                         | <b>CO3</b> | Acquire basic knowledge about the Genome, methods of genome sequencing, biological sequence analyzing tools and the scope of Bioinformatics                                                                                  |
|               |                                                                                                                         | <b>CO4</b> | Understand the significance and application of Biological Databases, Evolutionary Analysis and Molecular Phylogeny and familiarizing with the phylogenetic software.                                                         |
| <b>ZO 514</b> | <b>Practical I Systematics And Evolutionary Biology, Biochemistry, Biophysics, Instrumentation And Computer Science</b> | <b>CO1</b> | Understand the principle of animal taxonomy, various preservation techniques, preservation media used, various tools and materials for taxidermy                                                                             |
|               |                                                                                                                         | <b>CO2</b> | To make the student skillful in various biochemical analysis including volumetric titrations, quantitative estimation of biomolecules in given samples, estimation of pKa and isoelectric point etc.                         |
|               |                                                                                                                         | <b>CO3</b> | To learn various Biophysical instrument for measuring & drawing microscopic organisms and perform statistical analysis of given data.                                                                                        |
| <b>ZO 524</b> | <b>Practical II Advanced Physiology, Functional Anatomy, Genetics, Biostatistics,</b>                                   | <b>CO1</b> | Quantify blood cells and the effect of tonicity on diameter of RBC.                                                                                                                                                          |
|               |                                                                                                                         | <b>CO2</b> | Develop skills in biostatistical methods and tools in analyzing data and representation of data using appropriate software.                                                                                                  |

|                     |                                                        |            |                                                                                                                                                                                                 |
|---------------------|--------------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <b>Bioinformatics, Cell, And Molecular Biology</b>     | <b>CO3</b> | Learn methods and techniques of biochemical assays.                                                                                                                                             |
|                     |                                                        | <b>CO4</b> | Develop skills in histological localization of protein and glycogen in paraffin sections.                                                                                                       |
| <b>SEMESTER III</b> |                                                        |            |                                                                                                                                                                                                 |
| <b>ZO 531</b>       | <b>Microbiology And Biotechnology</b>                  | <b>CO1</b> | Understand nutrition, growth, and communication of microbes.                                                                                                                                    |
|                     |                                                        | <b>CO2</b> | Explain the concept of fermentation and differentiate the types of fermenters.                                                                                                                  |
|                     |                                                        | <b>CO3</b> | Understand recombinant DNA technology and explain application of biotechnology in healthcare.                                                                                                   |
|                     |                                                        | <b>CO4</b> | Critically evaluate the ethical, legal, and social issues of Biotechnology and acquire knowledge in the recent trends in biotechnology.                                                         |
| <b>ZO 532</b>       | <b>Ecology, Ethology And Biodiversity Conservation</b> | <b>CO1</b> | Understand the components of ecosystem, concepts of ecosystem energetics, types of succession and acquire in depth knowledge in the concepts of habitat, niche, guild, and species interactions |
|                     |                                                        | <b>CO2</b> | Analyze the complex animal behaviour patterns, fundamentals and different factors regulating the animal behaviour                                                                               |
|                     |                                                        | <b>CO3</b> | Understand the types of learning process and the neural mechanism of learning and memory                                                                                                        |
|                     |                                                        | <b>CO4</b> | Generate interest in biodiversity among the learns and understand the conservation strategies in India                                                                                          |
|                     |                                                        | <b>CO5</b> | Analyze the importance of international conventions, treaties for the conservation of global biodiversity                                                                                       |
| <b>ZO 533</b>       | <b>Immunology And Developmental Biology</b>            | <b>CO1</b> | Understand the basis of immunogenicity and antigenicity, including the factors determining immune response and antigen interactions with immune cells                                           |
|                     |                                                        | <b>CO2</b> | Acquire a comprehensive knowledge in intricate mechanisms involved in antigen-antibody binding, complement system and its role in enhancing immune responses                                    |
|                     |                                                        | <b>CO3</b> | Familiarise with the processes involved in fertilization, embryonic development, and the                                                                                                        |



|             |                                                                                                         |     |                                                                                                                                                                    |
|-------------|---------------------------------------------------------------------------------------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                                                                                                         |     | fascinating phenomenon of embryonic induction and differential gene expression.                                                                                    |
|             |                                                                                                         | CO4 | Explain the principles and mechanisms underlying developmental processes and develop skills in experimental techniques employed in developmental biology research. |
| ZO 534      | Practical III<br>Microbiology,<br>Biotechnology,<br>Ecology, Immunology<br>And Developmental<br>Biology | CO1 | Develop skills in microbial enumeration and determination of quality of milk.                                                                                      |
|             |                                                                                                         | CO2 | Develop knowledge on isolation DNA from tissues.                                                                                                                   |
|             |                                                                                                         | CO3 | Develop skills in induced breeding in fishes and regeneration studies in planarians.                                                                               |
|             |                                                                                                         | CO4 | Develop expertise in vital staining of chick blastoderm and tracing the development.                                                                               |
| SEMESTER IV |                                                                                                         |     |                                                                                                                                                                    |
| ZO 541      | Pollution Biology &<br>Environmental<br>Physiology                                                      | CO1 | Understand the basics and causes of different types of pollution including water pollution, noise pollution and its abatement technologies.                        |
|             |                                                                                                         | CO2 | Understand the causes, and effects of terrestrial, industrial, and radioactive pollution                                                                           |
|             |                                                                                                         | CO3 | Impart knowledge on morphological and physiological adaptations about temperature and pressure variation                                                           |
|             |                                                                                                         | CO4 | Understand the eco-physiological adaptations of freshwater, marine, estuarine and terrestrial animals                                                              |
| ZO 542      | Environmental<br>Management                                                                             | CO1 | Evaluate the extent of human exploitation of earth resources and its effects.                                                                                      |
|             |                                                                                                         | CO2 | Acquire current knowledge about the environmental policies and the significance environmental education.                                                           |
|             |                                                                                                         | CO3 | Impart knowledge on the principles and concepts environmental impact assessment and sustainable development                                                        |
|             |                                                                                                         | CO4 | Application of pollution abatement technologies using microbes.                                                                                                    |
| ZO 543      | Practical IV -<br>Pollution Biology &                                                                   | CO1 | Develop skill for the estimation of soil quality parameters and water quality parameters.                                                                          |

|               |                                               |            |                                                                                                                                             |
|---------------|-----------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------|
|               | <b>Environmental Physiology</b>               | <b>CO2</b> | Conduct short term bioassay and determination of LC50 of fish exposed to a given pollutant                                                  |
|               |                                               | <b>CO3</b> | Estimate the effect of polluting agents on the oxygen consumption of fishes                                                                 |
|               |                                               | <b>CO4</b> | Determine the temperature and pH preferences of fishes                                                                                      |
| <b>ZO 544</b> | <b>Practical V - Environmental Management</b> | <b>CO1</b> | At the end of the course the students will be able to: Gain expertise in the determination of BOD and COD of polluted water                 |
|               |                                               | <b>CO2</b> | Estimation of water quality parameters.                                                                                                     |
|               |                                               | <b>CO3</b> | Estimation of species diversity of local aquatic and terrestrial habitats.                                                                  |
|               |                                               | <b>CO4</b> | Working with the laboratory instruments water and soil quality estimation                                                                   |
| <b>ZO 201</b> | <b>PROJECT</b>                                | <b>CO1</b> | Develop an enthusiasm in addressing various environmental issues and aptitude for research.                                                 |
|               |                                               | <b>CO2</b> | Develop the skills necessary to identify suitable research topics and effectively present them through comprehensive training and guidance. |
|               |                                               | <b>CO3</b> | Develop scientific aptitude, problem solving skills and skill in scientific writing                                                         |

## NAME OF THE PROGRAMME: POST GRADUATE PROGRAM IN CHEMISTRY

### PROGRAM SPECIFIC OUTCOMES

**PSO1.** Develop better understanding of the current chemical principles, methods, and theories, with the ability to critically analyse at an advanced level.

**PSO2.** Acquire solid knowledge of classical and modern experimental techniques and interpretation of results, thereby acquire the ability to plan and carry out independent projects.

**PSO3** .Develop the qualities of time management and organization, planning and executing experiments.

**PSO4** .Have a good level of awareness of the problems associated with health, safety and environment.

**PSO5.** Understand how chemistry relates to the real world and be able to communicate their understanding of chemical principles to a lay audience and as well apply the knowledge when situation warrants.

**PSO6.** Learn to search scientific literature and databases, extract and retrieve the required information and apply it in an appropriate manner.

**PSO7.** Demonstrate proficiency in undertaking individual and/or team-based laboratory investigations using appropriate apparatus and safe laboratory practices.

**PSO8.** Develop analytical solutions to a variety of chemical problems identified from application contexts; critically analyse and interpret qualitative & quantitative chemical information's.

**PSO9 .** Set the scene to make use of the wide range of career options open to Chemistry graduates.

### **COURSE OUTCOME (CO)**

| COURSE CODE | COURSE NAME           | COURSE OUTCOME |                                                                              |
|-------------|-----------------------|----------------|------------------------------------------------------------------------------|
| SEMESTER I  |                       |                |                                                                              |
| CL 211      | INORGANIC CHEMISTRY 1 | CO1            | Recall the basic concepts of crystal field theory.                           |
|             |                       | CO2            | Understand Jahn –Teller theorem                                              |
|             |                       | CO3            | Describe MOT, and diagrams                                                   |
|             |                       | CO4            | Describe crystal field theory, and spectrochemical series.                   |
|             |                       | CO5            | Explain correlation analysis, applications of TG, DTA, DSC.                  |
| CL 212      | ORGANIC CHEMISTRY1    | CO1            | Recall the concepts of chiral centre, chiral axis, and chiral plane.         |
|             |                       | CO2            | Understand the different types of mechanism of substitution.                 |
|             |                       | CO3            | Predict the products or reactants or reagents in selected type of reactions. |
|             |                       | CO4            | Importance of stereochemistry.                                               |
|             |                       | CO5            | Free radical reactions, structure.                                           |
| CL213       | PHYSICAL CHEMISTRY 1  | CO1            | Postulates of quantum mechanics.                                             |
|             |                       | CO2            | Gas- solid interface and adsorption isotherms                                |
|             |                       | CO3            | Understand different types of surfaces, properties.                          |
|             |                       | CO4            | Understand catalysis and theories on reaction rates.                         |

|               |                                         |            |                                                                                                                                                                                                                         |
|---------------|-----------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CL 214</b> | <b>INORGANIC CHEMISTRY PRACTICALS I</b> | <b>CO1</b> | Interpret data from an experiment, including the construction of appropriate graphs and the evaluation of graphs                                                                                                        |
|               |                                         | <b>CO2</b> | Estimate volumetrically the concentration of Zn, Mg and Ni using EDTA and the volumetric estimation of Fe.                                                                                                              |
|               |                                         | <b>CO3</b> | Estimate colorimetrically the concentration of Chromium – (using Diphenyl carbazide), Iron (using thioglycollic acid), Iron (using thiocyanate), Manganese (using potassium periodate), Nickel (using dimethyl glyoxime |
|               |                                         | <b>CO4</b> | Carry out the preparation of the metal complexes Potassium trioxalatochromate (III), Tetraammoniumcopper (II) sulphate, Hexamminecobalt (III) chloride.                                                                 |
|               |                                         | <b>CO5</b> | Record the UV spectra, IR spectra, magnetic susceptibility, TG, DTA and XRD of the complexes prepare.                                                                                                                   |
| <b>CL215</b>  | <b>ORGANIC CHEMISTRY PRACTICAL I</b>    | <b>CO1</b> | Interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.                                                                                                       |
|               |                                         | <b>CO2</b> | Determine the correct method for separation of a binary mixture and make the separated compounds in pure form                                                                                                           |
|               |                                         | <b>CO3</b> | Develop thin layer chromatogram of a compound and determine its purity.                                                                                                                                                 |
|               |                                         | <b>CO4</b> | Separate two compounds by column chromatography.                                                                                                                                                                        |
|               |                                         | <b>CO5</b> | Utilize the synthetic procedures and reagents to convert a compound into another. Differentiate the products by spectroscopic methods                                                                                   |
|               |                                         | <b>CO6</b> | Use green chemical principles in the synthesis.                                                                                                                                                                         |
| <b>CL216</b>  | <b>PHYSICAL CHEMISTRY PRACTICALS I</b>  | <b>CO1</b> | Interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.                                                                                                       |
|               |                                         | <b>CO2</b> | Construct the Freundlich and Langmuir isotherms for adsorption of acetic/oxalic acid on active charcoal/ alumina and determine the concentration of acetic/ oxalic acids.                                               |
|               |                                         | <b>CO3</b> | Determine the rate constant, Arrhenius parameters, rate constant and concentration using kinetics                                                                                                                       |
|               |                                         | <b>CO4</b> | Construct the phase diagram and determine the composition of an unknown mixture                                                                                                                                         |

|             |                        |      |                                                                                                                                                                                      |
|-------------|------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             |                        | CO5  | Construct the ternary phase diagram of acetic acid chloroform-water system and out the procedure in an unfamiliar situation to find out the composition of given homogenous mixture. |
|             |                        | CO6  | Construct the tie-line in the ternary phase diagram of acetic acid chloroform-water system                                                                                           |
|             |                        | CO7  | Determine distribution coefficient using distribution law                                                                                                                            |
|             |                        | CO8  | Determine the equilibrium constant employing the distribution law.                                                                                                                   |
|             |                        | CO9  | Determine the coordination number of Cu <sup>2+</sup> in copperammonia complex.                                                                                                      |
|             |                        | CO10 | Determine K <sub>f</sub> of solid solvent, molar mass of non-volatile solute, mass of solvent and composition of given solution                                                      |
|             |                        | CO11 | Determine K <sub>T</sub> of salt hydrate, molar mass of solute, mass of salt hydrate and composition of given solution.                                                              |
|             |                        | CO12 | Determine surface tension and parachor of liquids.                                                                                                                                   |
|             |                        | CO13 | Ascertain the relationship between surface tension with concentration of a liquid and use this to find out the composition of given homogeneous mixture.                             |
| SEMESTER II |                        |      |                                                                                                                                                                                      |
| CL221       | INORGANIC CHEMISTRY II | CO1  | Determine the splitting of terms in weak and strong fields.                                                                                                                          |
|             |                        | CO2  | Applies magnetic measurements in the determination of structure of transition metal complexes.                                                                                       |
|             |                        | CO3  | Identify electronic configurations and term symbols of lanthanides and actinides.                                                                                                    |
|             |                        | CO4  | Elaborates the importance of beach sands of Kerala andtheir importance.                                                                                                              |
| CL222       | ORGANIC CHEMISTRY II   | CO1  | Discuss the fundamentals,operating principles and instrumentation of separation techniques.                                                                                          |
|             |                        | CO2  | Differentiate the principle and applications of phase transfer catalysis with examples.                                                                                              |
|             |                        | CO3  | Describe the various methods of determining reaction mechanisms and basic thermodynamic principles oforganic reactions.                                                              |

|              |                         |     |                                                                                                                                                                                                                |
|--------------|-------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                         | CO4 | Explain the Hammet parameters of reaction and design an experiment to confirm the mechanism of a reaction.                                                                                                     |
|              |                         | CO5 | Identify different types of rearrangement reactions, determine the product of the reaction applying migratory aptitude, and reproduce for the mechanism of the reaction.                                       |
| CL223        | PHYSICAL CHEMISTRY II   | CO1 | Apply quantum mechanical principles in solving both real and imaginary spherical harmonics systems-multi electron systems and analyse spectral lines.                                                          |
|              |                         | CO2 | Describe and explain the physical and chemical principles that underlie molecular structure determination techniques like microwave, vibrational, Raman and electronic spectroscopy.                           |
|              |                         | CO3 | Predictlikely spectral characteristics of given molecular species and be able to rationalise those characteristics on the basis of structural and electronic arguments.                                        |
|              |                         | CO4 | Acquire knowledge of basics of statistical mechanics and compare statistical methods.                                                                                                                          |
| SEMESTER III |                         |     |                                                                                                                                                                                                                |
| CL 231       | INORGANIC CHEMISTRY III | CO1 | Demonstrate knowledge of advanced content in the areas of inorganic chemistry such as in organometallic compounds, bioinorganic compounds, spectroscopic methods in inorganic chemistry and nuclear chemistry. |
|              |                         | CO2 | Examine the bonding in simple and polynuclear carbonyls with and without bridging and complexes with linear pi-donor ligands.                                                                                  |
|              |                         | CO3 | Explain the structure and bonding of ferrocene and dibenzenechromium with the help of MO theory.                                                                                                               |
|              |                         | CO4 | Understand fundamental reaction types and mechanisms in organometallics and to employ them to understand selected catalytic processes in industry.                                                             |
|              |                         | CO5 | Contrasts the thermodynamic and kinetic stability of complexes, analyses the factors affecting stability of complexes and explains the methods of determining stability constants.                             |
| CL 232       | ORGANIC CHEMISTRY III   | CO1 | Describe and explain the physical and chemical principles that underlie molecular structure                                                                                                                    |

|        |                                   |     |                                                                                                                                                                                             |
|--------|-----------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |                                   |     | determination techniques such as UV-Visible, IR, mass and NMR spectroscopy.                                                                                                                 |
|        |                                   | CO2 | Apply knowledge of molecular structure determination using UV-Visible, IR, mass and NMR spectroscopic techniques to identify and/or characterize chemical compounds from experimental data. |
|        |                                   | CO3 | Predict likely spectral characteristics of given molecular species; solve the structures of unknown molecules using appropriate spectroscopic techniques.                                   |
|        |                                   | CO4 | Discuss organic transformations with organometallic compounds and predict the products of reactions.                                                                                        |
|        |                                   | CO5 | Devise combinatorial method to create a library of compounds.                                                                                                                               |
| CL 233 | PHYSICAL CHEMISTRY III            | CO1 | Understand the theories of chemical bonding and their application with help of approximate methods predict the nature of orbitals and molecular spectra.                                    |
|        |                                   | CO2 | Compare MO and VBT.                                                                                                                                                                         |
|        |                                   | CO3 | Understand the properties of gases and liquids and the nature of intermolecular forces in them.                                                                                             |
|        |                                   | CO4 | Describe the principle behind the determination of surface tension and coefficient of viscosity.                                                                                            |
|        |                                   | CO5 | Describe and explain the physical and chemical principles that underlie molecular structure determination techniques like NMR, ESR, Mossbauer, NQR and PES Spectroscopy.                    |
|        |                                   | CO6 | Judge the degrees of freedom of systems and understand theories of irreversible thermodynamic systems.                                                                                      |
| CL 234 | INORGANIC CHEMISTRY PRACTICALS II | CO1 | Interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.                                                                           |
|        |                                   | CO2 | Estimate a simple mixture of ions by volumetric and gravimetric methods.                                                                                                                    |
|        |                                   | CO3 | Perform COD, BOD, DO and TDS analysis.                                                                                                                                                      |
|        |                                   | CO4 | Analyse the XRD of simple substances.                                                                                                                                                       |
|        |                                   | CO5 | Interpret TG and DTA curves.                                                                                                                                                                |

|             |                                  |     |                                                                                                                                                           |
|-------------|----------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| CL 235      | ORGANIC CHEMISTRY PRACTICALS-II  | CO1 | Interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.                                         |
|             |                                  | CO2 | Predict likely spectral characteristics of given molecular species; solve the structures of unknown molecules using appropriate spectroscopic techniques. |
|             |                                  | CO3 | Develop paper chromatogram of a compound and determine its purity.                                                                                        |
|             |                                  | CO4 | Estimate quantitatively the Aniline, Phenol,glucose,Ascorbic acid and Aspirin in a sample.                                                                |
|             |                                  | CO5 | Estimate colorimetrically paracetamol, protein and ascorbic acid.                                                                                         |
| CL 236      | PHYSICAL CHEMISTRY PRCTICALS -II | CO1 | Interpret data from an experiment, including the construction of appropriate graphs and the evaluation of errors.                                         |
|             |                                  | CO2 | Determine the strength of strong /weak acids by conductometric titrations.                                                                                |
|             |                                  | CO3 | Verify Onsager equation and Kohlraush’s law conductometrically.                                                                                           |
|             |                                  | CO4 | Determine the activity and activity coefficient of electrolytes.                                                                                          |
|             |                                  | CO5 | Employ spectrophotometry in determining unknown concentration.                                                                                            |
| SEMESTER IV |                                  |     |                                                                                                                                                           |
| CL 241      | CHEMISTRY OF ADVANCED MATERIALS  | CO1 | Understand dimensions, synthesis, physicochemical properties of nanomaterials and its applications.                                                       |
|             |                                  | CO2 | Understand and apply characterization tools for analysing nano structures.                                                                                |
|             |                                  | CO3 | Outline and recognize the types of polymerization, kinetics and mechanisms.                                                                               |
|             |                                  | CO4 | understand the stereochemical aspects and methods for the determination of molecular weights of polymers                                                  |
|             |                                  | CO5 | discuss the synthesis and applications of selected classes of speciality polymers.                                                                        |
| CL 242      | APPLIED ANALYTICAL CHEMISTRY     | CO1 | Explain the thermal and radiochemical methods used in analytical chemistry.                                                                               |
|             |                                  | CO2 | explain the application of radio isotopes and the need for a safe disposal of nuclear waste.                                                              |



|                 |                                |            |                                                                                                                                                                            |
|-----------------|--------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 |                                | <b>CO3</b> | Explain the principle underlying the methods used in food analysis.                                                                                                        |
|                 |                                | <b>CO4</b> | Explain the importance of DNA finger printing and ballistics in forensic analysis.                                                                                         |
|                 |                                | <b>CO5</b> | Explain the methods of analysis and the principles involved in the analysis of biological fluids, enzymes, drugs and alcoholic beverages.                                  |
| <b>CL243(b)</b> | <b>Visit to R&amp;D Centre</b> | <b>CO1</b> | Understand the relevance of independent supervised research in a chemistry field                                                                                           |
|                 |                                | <b>CO2</b> | The need of welldeveloped judgement.                                                                                                                                       |
|                 |                                | <b>CO3</b> | Adaptability and accountability as a practitioner or learner                                                                                                               |
| <b>CL243(a)</b> | <b>DISSERTATION</b>            | <b>CO1</b> | Demonstrate an advanced theoretical and technical knowledge of chemistry as a creative endeavour; analyse, interpret and critically evaluate scientific information.       |
|                 |                                | <b>CO2</b> | present information, articulate arguments and conclusions, in a variety of modes, to audiences in their field of research                                                  |
|                 |                                | <b>CO3</b> | As part of a team or individually, design, conduct, analyse and interpret results of an experiment, and effectively communicate these in written reports and other formats |
|                 |                                | <b>CO4</b> | develop an understanding of the requirements to undertake independent research in a chemistry field.                                                                       |
|                 |                                | <b>CO5</b> | demonstrate an understanding of the relationship between scientific research and the progress of new knowledge in a global scenario.                                       |