



NSS COLLEGE N E M M A R A

Re-accredited with 'A' grade by NAAC
Affiliated to University of Calicut

PROGRAMME OUTCOME AND SPECIFIC OUTCOME



**IQAC
NSS COLLEGE NEMMARA**

The Institution offers programmes sanctioned by the University of Calicut and the broad framework of the National Policy on Education and Global standards are incorporated in the University Curriculum. Accentuating the knowledge and learning process is the fulcrum of higher education. Broadening the horizon of academic learning by incorporating various participatory mechanisms to shape a new dawn in higher education is an ongoing effort of our Institution.

The academic learning efficacy of any programme and courses depends on the Programme Outcome (POs) and Course Outcomes (COs). The college has developed its POs and COs with a particular view taking into consideration the mission and goals of the programmes. For all the undergraduate and postgraduate programmes, the POs and COs are drafted following discussions with all the stakeholders.

The programmes offered by College cater to multiple interests of the student community and also at building the human capital needed by the society and nation. The POs and COs are primarily designed at imparting knowledge and skills which is critical for building students' competence and personality. These learning outcomes focus on values and ethics along with enhancing their interpersonal communication skills. The POs/COs are thus in keeping with the prime motto of the college i.e. empowering students and preparing them to be catalysts of change.

NSS COLLEGE, NEMMARA

Course Outcomes, Programme Outcomes and
Program Specific Outcomes

- Commerce & Management
 - History
 - Economics
 - English
 - Malayalam
 - Mathematics
 - Physics
 - Chemistry
 - Botany
 - Zoology
 - Instrumentation
 - Sanskrit
 - Hindi
 - M.Com
 - M.Sc. Chemistry

**POST GRADUATE DEPARTMENT OF
COMMERCE AND MANAGEMENT STUDIES**

Bachelor of Commerce (B. Com) Programme Outcomes (PO)

- PO 1. To equip students to exploit opportunities being newly created in different industries, service sectors etc.
- PO 2. To provide effective business and professional communication skills for the students.
- PO 3. To develop self-employment and entrepreneurial skills among students so as to make them competent in the career.
- PO 4. Capabilities for students to make decisions at personal and professional level will increase after the completion of the course.

Programme Specific Outcomes (PSO)

- PSO 1. Students will be able to do their higher education and can make research in the field of finance and commerce.
- PSO 2. Students will learn new developments in advanced accounting which is useful for their careers in business.
- PSO 3. Students will gain in depth knowledge in different areas of commerce, finance, auditing, taxation, accounting, management etc.

SEMESTER I

BCM01 – BUSINESS MANAGEMENT

The study approach enables students to understand and analyze different aspects of management to become skilled manager in a corporate business world. On completing the course students will be able to

1. Familiarize the students with current management practices.
2. Understand the importance of ethics in business.
3. Acquire knowledge and capability to develop ethical practices for effective management.

BCM01 MANAGERIAL ECONOMICS

Course Outcomes

This course aims to equip the students with the concepts and principles of economics relevant for business and managerial decision making. On completing the course students will be able to

1. Acquire knowledge regarding relevant economic concepts applicable in managerial decision making.
2. Design competition strategies including costing, pricing, product differentiation and market environment according to the natures of products and the structures of markets.
3. Make optimal business decisions by integrating the concepts of economics.

SEMESTER TWO

BCM2B02 FINANCIAL ACCOUNTING

Course Outcomes

This course designs to equip the students with skills for the accounting business entities. It also intends to provide knowledge about the preparation of final accounts of proprietary concerns accounting for issue of securities and recent changes in accounting standards etc. On completing the course students will be able to

1. Equip with the skills of preparing financial statements for various types of organization.

2. Acquire knowledge about financial reporting standards and to understand corporate accounting methods.

BCM2C02 MARKETING MANAGEMENT

Course Outcomes

The course intends to provide an insight with marketing principles and also to familiarize them with the process of marketing in modern business firm. On completing the course students will be able to

1. Understand about the concepts, principles, tools and techniques of marketing.
2. Familiarize with latest trends in marketing.

SEMESTER THREE

BCM3A11 BASIC NUMERICAL METHODS

Course Outcomes

The course equip the students to acquire knowledge of numerical equations, matrices progression, financial mathematics and descriptive statistics. On completing the course, the students will be able to understand these concepts and their applications.

BCM3A12 PROFESSIONAL BUSINESS SKILLS

Course Outcomes

The course equips the students with professional business skills for coping the micro and macro environment. On completing the course students will be able to

1. To update and expand basic informatics skills of the students.
2. To equip the students to effectively utilize the digital knowledge resources for their study.

BCM3BO3 BUSINESS REGULATIONS

Course Outcomes

The course acquaints the students with knowledge about regulatory frame work for business entities. On completing the course students will be able to

1. Familiarize with certain statutes concerning and affecting business organisations in their operations.

BCM3BO4 CORPORATE ACCOUNTING

Course Outcomes

The course outcome is to enable students to understand the basic and fundamental concepts of corporate accounting and make them aware of major changes introduced in the areas of corporate accounting. On completing the course students will be able to

1. Acquire conceptual knowledge of the fundamentals of the corporate accounting and the techniques of preparing the financial statements.

BCM3C03 HUMAN RESOURCES MANAGEMENT

Course Outcomes

This course aims to familiarize the students with major concepts of human resource management. On completing the course students will be able to

1. Familiarize with different aspects of managing human resources in an organization.
2. Equip with basic knowledge and skills required for the acquisition, development and retention of human resources.

SEMESTER FOUR

BCM4A13 ENTREPRENEURSHIP DEVELOPMENT

Course Outcomes

This course provides an insight to students about entrepreneurship traits and qualities and on completing the course students will be able to

1. Familiarize with the concepts of entrepreneurship.
2. To identify and develop the entrepreneurial talents of the students.
3. To generate innovative business ideas in the emerging industrial scenario.

BCM4A14 BANKING AND INSURANCE

Course Outcomes

On completing the course students will be able to

1. Acquire knowledge about basics of Banking and Insurance.
2. Familiarize with modern trends in banking.

BCM4B05 COST ACCOUNTING

Course Outcomes

The course objective is to acquaint the students with the basic concepts and tools for Cost accounting. On completing the course students will be able to

1. Familiarize with the various concepts and elements of cost.
2. Cost consciousness in cost control and reduction.

BCM4B06 CORPORATE REGULATIONS

Course Outcomes

The course objective is to familiarize the students with corporate law and to make them aware of the applications of importance of company law in the management of organization. On completing the course students will be able to

1. Familiarize with corporate laws and to make them aware of the importance of corporate governance in the management of organisations.

BCM4C04 QUANTITATIVE TECHNIQUES FOR BUSINESS

Course Outcomes

The outcome of the course is to familiarize students with the use of quantitative techniques in managerial decision making. On completing the course, the students will be able to

1. Understand and develop knowledge base of various concepts of quantitative techniques.
2. Develop skills for effectively analyze and apply quantitative techniques in decision making.

SEMESTER FIVE

BCM5B07 ACCOUNTING FOR MANAGEMENT

Course Outcomes

The objective of the course is to give a conceptual understanding of methods and techniques of management accounting practices in various organizations. On completing the course, the students will be able to

1. Understand the concepts and relevance of management accounting.
2. Understanding about the use of accounting and costing data for planning, control and decision making process.

BCM5B08 BUSINESS RESEARCH METHODS

Course Outcomes

The course objective is to provide an insight in to the fundamentals of business research and to acquire practical knowledge and required skills in carrying out research. On completing the course, the students will be able to

1. Understand and develop insight and knowledge base of various concepts in research.
2. Develop skills for conducting business research.

BCM5B09 INCOME TAX LAW AND ACCOUNTS

Course Outcomes

The course aims to familiarize the students with the concepts and practices of Income tax. On completing the course, the students will be able to

1. Equip with application of principles and provisions of Income Tax Act 1961 amended up to date.

BCM5B10 FINANCIAL MARKETS AND SERVICES

Course Outcomes

The course objective is to impart knowledge about the recent developments in the area of Indian financial system. On completing the course, the students will be able to

1. Understand about structure, organization and working of financial system in India.

BCM5B11 FINANCIAL MANAGEMENT

Course Outcomes

The course aims to provide basic knowledge about the various concepts of financial management and its application in decision making. On completing the course, students will be able to

1. Familiarize with the concepts, tools and practices of financial management.
2. Understand the decisions and processes of financial management in a business firm.

SEMESTER SIX

BCM6B12 INCOME TAX AND GST

Course Outcomes

On completing the course students will be able to

1. Equip with application of principles and provisions of Income Tax Act 1961 and GST Act 2016.

BCM6B13 AUDITING AND CORPORATE GOVERNANCE

Course Outcomes

The course aims to provide a basic knowledge about auditing and corporate governance. On completing the course students will be able to

1. Understand the auditing principles and techniques and to familiarize with issues and practices of corporate governance in the global and Indian context.

BCM6B14 FUNDAMENTALS OF INVESTMENT

Course Outcomes

The objective of the course is to enable the students to acquire the basic knowledge of different avenues of investment. On completing the course students will be able to

1. Familiarize with the world of investments.
2. Understand the theoretical frame work for the analysis and valuation of investments.

BCM6B15 FINANCIAL DERIVATIVES

Course Outcomes

This course aims to provide the students with an understanding of the various financial derivatives available in the financial sector in India. On completing the course students will be able to

1. Know about various risks associated with the derivatives available in the Indian and global financial markets.

B.A. HISTORY

PROGRAMME OUTCOMES

Studying history is indispensable in our times. It helps in developing a sense of observation and also understand how people and societies and people behaved. A proper Historical knowledge is important for understanding WHAT had actually happened in the past, HOW it happened and WHY it so happened. A sense of objectivity is to be developed. Earlier historical studies were merely concentrated on the political aspects of the past but today it has become a discourse on the impact of various historical events in shaping the contemporary life of the people. In accordance with the present concept of history, under graduate courses are designed to create a sense of the past, present and future by emphasizing the interdisciplinary method. Studying history objectively helps students to understand the issues deeply and enquire as to why the things are the way they are.

Writing history today underscores the process of reconstructing the past with complete reference to the sources of information; more, the historian is now expected to explain the reasons for arriving at a conclusion, in other words, a mere description of events does not suffice any more. In order to do this, students must find evidence about the past, ask questions of that evidence, need to take different approaches for research, and come up with explanations that make sense of what the evidence says about the peoples, events, places, and time periods under consideration. Thus historical interpretations are constantly changing and evolving.

PROGRAMME SPECIFIC OUTCOMES

The course that we teach our undergraduate students not only satisfies these conditions moreover it discusses the methodology of history, regional, national and world history of various periods of the past. It is thus expected that a student who has successfully completed her undergraduate studies with history as a subject of study would:

1. Students would be able to know their past and would be able to form a logical connection between the past and the present.
2. Students should understand basic skills for research & writing, tools of historical analysis and understand academic honesty, a concept presented to them in history classes.
3. They would learn how to trace back their own history with the support of various sources of information.

4. Students will demonstrate in discussion and written work their understanding of different peoples and cultures in past environments and of how those cultures changed over the course of the centuries & their present existence.
5. This would create interest in some of them to go for post-graduation and write academic papers in future.

History

Core course outcome

<p>HIS1B01 The Trends in Historiography</p>	<p>This is designed to make the students understand the major trends in historical writing and thought and to have a basic knowledge about the subject.</p> <ul style="list-style-type: none"> ● Develop a sense of historical writing ● Understand the philosophical base of history ● Inculcate the habit of evaluating historical writings ● Instill the spirit of scientific enquiry
<p>HIS2B02 Trends in Indian Historiography</p>	<p>This helps the students to get knowledge about the basic understanding about historiography in the Indian context. Basic ideas about major trends is unveiled.</p> <ul style="list-style-type: none"> ● Recognize the philosophical base of Indian history ● Acquire the sense of historical writing ● Promote a sense of historical writing of our land
<p>HIS3B03 World History 1</p>	<p>Aims to provide a historical outline about the ancient world</p> <ul style="list-style-type: none"> ● To analyze the nature and behavior of pre-literate and non-literate people of the world in the early period. ● Students will be familiarized with various societies and their achievements

<p>HIS3B04 Indian History 1</p>	<p>Aims to provide a broad historical outline about India, age old culture, first phase of urbanization in north, gangetic plains role in socio-political foundation, Mauryans and social formation.</p> <ul style="list-style-type: none"> ● Acquire knowledge about the patterns social life existed in India during the early period. ● Students can learn cultural changes and influence of geographical and climatic conditions. ● . It enables them to analyses the progress achieved by the people in different periods
<p>HIS4B05 World History 2</p>	<p>This course designed to create awareness about medieval world through which students could know different world systems, society, economy, culture of Central Asia, West Asia, East Asia and how intellectual interchange took place.</p> <ul style="list-style-type: none"> ● Enable the students to understand about the nature of medieval European society ● To understand the contributions of Arabs civilization ● Help to understand about the various ideologies of that time
<p>HIS4B06 Indian History 2</p>	<p>Highlights the nature of state and society in medieval India, State formation economic pattern, social and cultural transformation about Indian ocean and Arabian Sea, their role and influence.</p> <ul style="list-style-type: none"> • To understand the Islamic culture and its expansion. • To understand the contributions of Persian and Turkish rulers in the realm of administration, trade, monetary system, law and order.
<p>HIS5BO7 World History 3</p>	<p>This course designed in such a way as to make the students aware of major events in the world, provide basic understanding of economic, social, political ideas exposing the miseries of wars, emphasizing the need for democracy and international peace.</p> <p>Students will understand the major events, personalities, ideologies</p> <p>Major revolutions, political processes turning points in world history</p>

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HIS5B09 Kerala Society and Culture: Ancient and Medieval	<p>An overview is provided to the students of state and society in premodern kerala society.</p> <ul style="list-style-type: none"> ● Students will learn a brief narrative of historical events of the growth of Kerala from a geographical division to a political entity ● Students will perceive the knowledge a chronological framework of the history from the very early age itself ● Students will observe the significance of various source materials for the reconstruction of Kerala history and the they will also learn to distinguish between primary and secondary sources ● Students will comprehend the development of various political setup in the history of Kerala
HIS5B08 Indian History 3	<p>Creates an understanding about nature of Indian state in the medieval times</p> <ul style="list-style-type: none"> ● Helps to understand the political changes of India in the medieval period. ● To understand the Islamic culture and its expansion. ● To understand the contributions of Persian and Turkish rulers in the realm of administration, trade, monetary system, law and order. ● changes in the outlook toward Religious-Bhakti movements, Foundation of Ibadat Khana, Dinillahi, Sufism etc. ● Architectural contribution of Sultanate
HIS6B11 India History 4	<p>Helps in understanding the background for colonial domination and the series of issues leading to the struggle for independence</p> <ul style="list-style-type: none"> ● Enable the students to recognize the socio economic and political conditions of pre European era in India ● Identify the methods and tactics adopted by the british to control Indian political and economic life ● Develop practical skills in the study and understanding of historical events in national movement ● Enable the students to aware about the events leads making of Indian constitution and its application in Indian democracy

<p>HIS5DOI Historical Tourism</p>	<p>Imparts knowledge about Kerala and India, their tourist potential and the need for sustainable tourism</p> <ul style="list-style-type: none"> • Students will understand the major tourist places
<p>HIS6B19(Elective) History of Human rights</p>	<p>Aims to create a basic understanding about human rights, evolution, the challenge, how its protection is guaranteed</p> <p>Evolution of human rights Challenges , violations, interventions</p>
<p>HIS(2)CO1(complementary) HIS4(3)CO1 Modern Indian History</p>	<p>Designed to introduce the students of allied disciplines of history as complementary course , focusses on modern India, colonialism, national movement, Gandhian era</p> <p>Focusses on India from the colonial days to the present times</p> <p>The colonial policies , the colonial rule, the national movement, long period of struggles, Gandhi’s ideas, ideology</p>
<p>HIS(2)C03,HIS4(3)C03, Social and Cultural History of Britain</p>	<p>Designed for allied subjects ,as a complementary course, emphasis is on social and cultural history of Britain</p> <p>Main focus on history of Britain , its evolution, culture, society.</p> <p>Early history to that of mercantilism , its rise as a colonial power, Elizabethan, Victorian ages</p>

<p>HIS6B14 Indian heritage and plurality of cultures</p>	<p>This course gives a picture of diverse culture in multi cultural systems, values, and ideologies of India of secular movements.</p> <p>Unity in diversity Nation building process through the realization of these values and ideologies of secular movements</p>
<p>HIS6B15 Course Work -Dissertation</p>	<p>To know whether the students has understood the different techniques and methods of writing history, how to write local history and thereby enrich the knowledge</p> <ul style="list-style-type: none"> ● Students will find, interpret, and use primary sources appropriately analyze the context in which the sources were created ● Students will able to differentiate primary and secondary sources ● Students will quote the sources accurately and effectively ● Students will develop knowledge of the chronology, narration, geographical features, major events, cultural heritage, personalities and turning points of the history of their local area ● Students will present orally their research in an organized, coherent, and compelling fashion through viva voce

BA ECONOMICS

Programme Outcomes

PO: 1. Students understand the theoretical and practical knowledge that makes accurate analysis of the economic situation possible. PO: 2. Students understand and evaluate the interrelation between the economy and society. PO: 3. Students understand and evaluate the economic problems from a global perspective and take a local approach to solving them. PO: 4. Students understand different economic system and analyse the implications of decisions related to economic policy. PO: 5. Students respond to the economic problems arising from society in general and the different units that interact therein (e.g. institutions, private companies and sectors of the economy). PO: 6. Students assimilate skill needed to carry a careers in government and private enterprise as well as those pursuing graduate degrees in professional schools or in the field of economics. PO: 7. Students develop the attitude to conduct research in the socio economic issues arising in their environment. PO: 8. Students assimilate the necessary skills for analyzing the data set related to socioeconomic issues. PO: 9. Students develop the capacity to analyze the socio-political and economic issues in the language of an economist. PO: 10. Students analyse economic data, interpret the economic events and visualise the economic future of the nation.

Programme Specific Outcomes

PSO: 1. Students critically evaluate and apply the theories and techniques of economics. PSO: 2. Students demonstrate subject-specific thinking skills that are readily transferable to problem solving and decision making in a wider context. PSO: 3. Students develop interest for lifelong learning, employing a range of practical and professional skills. PSO: 4. Student find, evaluate, synthesize and use information from a variety of sources PSO: 5. Students articulate an awareness of the social and community contexts within their disciplinary field PSO: 6. Students assimilate knowledge of fundamental concepts and theoretical propositions PSO: 7. Students understand the methodology by which economic ideas are framed, tested and modified. PSO: 8. Students take up a career in economics and related areas. PSO: 9. Students analyse the economic issues of national and international importance and realize the dynamics behind them. PSO: 10. Students generalise how the economic policies of the government and governmental institutions affect the common people. PSO: 11. Students critically evaluate and apply the theories and techniques of economics. PSO: 12. Students demonstrate subject-specific „thinking“ skills that are readily transferable to problem solving and decision making in a wider context.)

Course Outcomes

Semester	Course code	Name of Course	Outcome
I	ECO1 B01	Microeconomics I	Students explain what economics is and explain why the subject is important
II	ECO2 B02	Macroeconomics I	Students understand and generalize the concept of money and money supply in the economy and evaluate monetary policy of different Governments.
III	ECO3 B03	Quantitative Methods for Economic Analysis I	Students understand the skill in statistical and mathematical techniques that are required for a meaningful study of applied economics and for carrying out empirical analysis.
	ECO3 B04	Microeconomics II	Students define and analyses the characteristics of different market structure
IV	ECO4 B05	Quantitative Methods for Economic Analysis II	Students understand and demonstrate sound quantitative skills to collect analyse and interpret empirical data related to socio- economic issues.
	ECO4 B06	Macroeconomics II	Students understand and analyse the reasons for economic recessions and suggest the appropriate instruments of monetary and fiscal policy.
V	ECO5 B07	Fiscal Economics	Students understand various concepts of tax, explain the tax and non tax revenue and compare and contrast the direct tax and indirect tax and its benefits.
	ECO5B08	Indian Economic Development	Develop ideas of the basic characteristics of Indian economy, its potential on natural resources.
	ECO5 B09	Economics of Capital Market	Students understand the basic structure of financial system and classify financial market, financial instruments, financial assets, financial institutions and financial services
	ECO5 B10	Mathematical Economics	Students understand the language of mathematical economics and internalize how the whole body of economics is been influenced by mathematical science.
VI	ECO6 B11	Financial Economics	Students understand risk and return and analyse various types of risks. They evaluate the measurement of risk and return of an asset, measurement of risk and return of a portfolio.
	ECO6 B12	International Economics	Students identify the issues and prospects of current international trade order with respect to India and its major trade partners
	ECO6 B13	Development of Economic Thought	Students understand developments in major field of economics and explain different Schools of thought in economics.
	ECO6 B14	Economics of Growth and Development	Students understand the theoretical framework for growth and development discourses under different schools of economic thoughts and develop better insights and knowledge on issues and challenges on economic development.
	ECO6 B15	Project/Research methodology	After completing this course the students prepare researchprojects and work with a research problem.

BA ENGLISH LANGUAGE AND LITERATURE

PROGRAMME OUTCOME

1. Enable students to gain certain skills, like the ability to read, interpret and evaluate texts through the study of literatures in English.
2. Acquire the ability to speak, write, read and listen clearly for effective communication.
3. Explore wider and universal issues, promoting students' better understanding of themselves and of the world around them.
4. To equip students with critical reading and thinking habits and to familiarize them to critical reading of socio-cultural contexts.
5. Application of functional grammar and mechanics that enhance conceptual clarity, communicative style and style of writing.
6. A basic knowledge of research methodology and other areas related to the faculty of research.
7. Comprehended the current modes of writings – that which encompasses the issues related to race, gender, ethnicity, climate change etc. and realize the role of literature in inculcating social sensitiveness.

PROGRAMME SPECIFIC OUTCOME

1. Understand the origin and development of literatures in English with a special focus on various movements and the important works belonging to such movements.
2. Understand the literary theories related to various aspects of literature.
3. Understand literature in multi-disciplinary aspects and appreciate the links that literary studies have with disciplines like Philosophy, History, Political Science, Sociology, Anthropology and the Sciences.
4. Understand the basics of disciplines like Film Studies, Culture Studies, Women's Writing, Dalit Writings, Post-colonial writing, and Indian writing in English.

COURSE OUTCOME

Semester -1 ENG1B01-INTRODUCING LITERATURE

1. To introduce students to the language of literature, i.e., the meaning-making devices, verb phrases, collocations, linkers, sense groups and their functions in the literary text.
2. To train the students to identify the linguistic structures of poetic texts: symbols, metaphors, and other tropes and equip them in poetic conventions
3. To recognize diverse points of view within a single text and to understand the rationale of polyphony
4. To prepare students in reading literary/cultural texts closely, beyond the literal.
5. To enable students to recognize the dominant voice/s within the text and its agendas
6. To encourage questioning the text in order to perceive marginalized voices - the voices of the child, Dalit, transgender and female.

Semester-2 ENG2B02-APPRECIATING POETRY

1. To introduce the students to the basic elements of poetry, including the stylistic and rhetorical devices employed in poetry, and to various genres of poetry.
2. To facilitate students to attain various perspective in reading poetry like gender, race, caste, ethnicity, religion, region, environment and nation.
3. To familiarize the learners with different forms of poetry written in British and American literature.
4. To create awareness among the learners about different forms and themes of poetry produced across the globe in the history of literature.

Semester-3 ENG3B03-APPRECIATING PROSE

1. To familiarize the students with different types of prose writing.
2. To introduce to them the basic concepts of style and literary devices in prose.
3. To acquaint them with cultural diversity and divergence in perspectives.
4. To develop their critical thinking abilities and write creatively and critically.

ENG3B04-ENGLISH GRAMMAR AND USAGE

1. To familiarize the students with the key concepts of English grammar and to use them more sensitively in their day-to-day communication needs.
2. To help students towards a better language use through the understanding of the sentence patterns in English.
3. To help the students develop a sense of English grammar, idioms, syntax, semantics and their usage.
4. To develop the logical and analytical skills in the use of language for communication.
5. To familiarize students with contemporary English usage

Semester 4 ENG4B05-APPRECIATING FICTION

1. To help students discover the pleasures in reading fiction.
2. To aid students gain an insight into the human condition and the complexities of life.
3. To acquaint the students with different types of fiction and analyze them.

ENG4B06 -LITERARY CRITICISM

1. To have an understanding of important texts and movements in the history of literary criticism.
2. To examine how literary criticism shapes literature and culture across centuries.
3. To recognize and critique the major arguments underlying critical writings.
4. To relate critical perspectives to the history of eastern and western ideas.

Semester 5 ENG5B07-APPRECIATING DRAMA AND THEATRE

1. To introduce the students to the basic elements of drama, including the historical progress of drama in different continents.
2. To foster an ability in the students for appreciating drama as an art form.

3. To familiarize the students with the different genres and masters of drama.
4. To facilitate the learners to critically go beyond the theatrical performances to the texts and approach them critically from various standpoints.

ENG5B08-LITERARY THEORY

1. To cultivate among the students an understanding of important texts and movements in the history of literary theory.
2. To enable the learners to critically approach literature and culture in the context of theory.
3. To enrich the students through various perspectives of thinking and critique the major arguments presented in theory.
4. To promote a pluralistic perspective of culture and literature in a multicultural society.

ENG5B09- LANGUAGE AND LINGUISTICS

1. To lead to a greater understanding of the human mind, of human communicative action and relations through an objective study of language
2. To familiarize students with key concepts of Linguistics and develop awareness of latest trends in Language Study.
3. To help students towards a better pronunciation and to improve the general standard of pronunciation in every day conversation and in reading.
4. To help the students develop a sense of English grammar, syntax and usage.
5. To improve writing and speech skills.

ENG5B10- INDIAN WRITING IN ENGLISH

1. To provide an overview of the various phases of the evolution of Indian writing in English
2. To introduce students to the thematic concerns, genres and trends of Indian writing in English
3. To expose students to the pluralistic aspects of Indian culture and identity.

Semester 6 ENG6B11-VOICES OF WOMEN

1. To equip students to steer clear of misconceptions regarding women and to evolve a human perspective about them.
2. To arouse a keen interest in analysing critically the diversity of women's experiences across the world and to marvel at their creative skills.
3. To perceive gender as a social construct.

ENG6B12 -CLASSICS OF WORLD LITERATURE

1. To acquaint the students with the classic literatures and thereby composite cultures of the world.
2. To enable students to develop cross cultural perspectives.
3. To enhance the literary sensibility of students.

ENG6B13-FILM STUDIES

1. To appreciate film as an art form and its aesthetics.
2. To understand how film connects with history, politics, technology, psychology and performance.
3. To critically appraise the nature of representation on screen and how class, race ethnicity and sexuality are represented.
4. To develop analytical skills so that the student can produce informed and thorough close readings of films.

ENG6B14-NEW LITERATURES IN ENGLISH

1. To expose the students to diverse cultures and modes of expression.
2. To enable them to explore issues of cultural plurality and hybridity
3. To expose the learners to literary negotiations of colonization and decolonization, identity, inequality, marginalization and so on.

ELECTIVE COURSES

ENG6B15 -LITERATURE OF THE MARGINALIZED

1. To sensitize the students on issues pertaining to the marginalized
2. To educate the students about the evolving patterns of generic and other technical possibilities that the marginalized use to represent their predicament.
3. To communicate to the students how marginality is very often a contextual factor related to the socio cultural reality.
4. To discuss how the question of marginality has evolved by giving space to new and till now avoided categories of outcasts, bodily and culturally and how such people develop their own styles of articulation and subsequent theoretical foundations.

ENG6B16-DIGITAL LITERATURE AND ENGLISH

1. To have an understanding of the important concepts of digital literature.
2. To familiarize the history and politics of electronic literature and introduce its difference from the conventional idea of literature.
3. To encourage the students to read and appreciate literature which is produced electronically.

ENG6B17-WRITING FOR THE MEDIA

1. To familiarize the students with the latest trends in media
2. To understand the specificities and possibilities of the different kinds of media
3. To impart necessary technical writing skills

ENG6B18-TRANSLATION STUDIES

1. To introduce students to the basic theories of translation studies
2. To familiarize them with the diverse techniques and strategies of translation
3. To cultivate the skill to translate texts from one language to the other

ENG6B19-ENGLISH LANGUAGE EDUCATION

1. To expose them to the practical ways of teaching English language using different methods.
2. To help learner develop a taste for teaching English effectively.
3. To develop in learners ability for critical reflections on their own and fellow-learners' method of teaching English.

ENG6B20-SHAKESPEARE

1. To expose students to the universality of Shakespeare and his relevance for all times
2. To appreciate the polyphonic quality of Shakespeare's works and to learn the different modes of approaching Shakespeare
3. To develop the students' skill of formulating his/her own critical position

• കേരളപഠനം- അധിനിവേശകാലം, അ
നികാലം ചരിത്ര ലിഖന നാഴിക കല്ലെ പരിചയം
ദക,
ചരിത്ര വിമർശനം കമായി വിലയിരുത്തുക

സംഖ്യ 3

- നവീന മലയാളകവിത

ആ നീക- ഉ രാ നീക കവിതകളെ പരിചയം ക

- ശ്രീകലാസാഹിത്യം

നാടകരചന - നാടകസൃഷ്ടനം - രംഗാവതരണകലകളുടെ ചരി ു അറി ക - ജനകീയ, ജന ിയകലകളുടെ ആസൃഷ്ടന ു വിലയിെ ്രം

സംഖ്യ 4

- ഈച്ചിന, മധ്യകാല മലയാളകവിത

പദ്യചരി ു, അതിെ വിവിധ പാശ്ച

പരിചയം ക - നാടോടിപാരമ്പര്യ ു കവിത

ഁ പരിചയം ക

- മലയാള നോവൽസാഹിത്യം

സാഁ ഹരിക ഉ പന്മെമ്മ നിലയിൽ നോവലിനെ പരിചയം ക- വടതട മായ സാ ഹരികാ വേക്കളെ പരിചയം ക

സംഖ്യ 5

- മലയാളവടാകരണം

ഭാഷ കൈകൾടം ചെ mതിനാവശ്യമായ വടാകരണ പരി ണം നേക

- പാ ഹരിതസാഹിത്യസിദ്ധ പാശ്ച

പാ ഹരിതസാഹിത്യ സിദ്ധ പാശ്ച വിമർശനരീതികളും പരിചയം ുക

- മലയാളസാഹിത്യവിമർശനം

സാഹിത്യ ികളെ വിമർശനാ കമായിവിലയിെ ഹ ുശേഷി കൈകൾ ക

- നാടോടി വി ണിയം

നാടോടി പാരമ്പര്യെ ു കലകളെ ു പരിചയം ക - ഹാശിക നീമകൾ സംര ി ാനും ശേഷി നേടുക

സംഖ്യ 6

- ഗദ്യസാഹിത്യം

അപ്പോൾ ഈ വളർ യും വികാസവും അറിയുക

• പൗര 5 സാഹിത്യസമിപ്ത ഷൾ
അരതീയ ൂ (അവിധ മായ സംഘര5ശാ) സ ഷരള പരിചയര ങക

• നവസം അപഠനഷൾ
സം അപഠനമ കകൾ പരിചയര ങക - ലേരിത്, ി, പരി ിതി
ധഅരകരള പരിചരരപങക

• മാധമപഠനം
മാധമമേഖല പരിചയര ങക - മാധമ വർ ന ിന് പേ
അഠനം നൽകുക - മാധമദുരുപേയാഗ ദുഷ്4പവണതകള ?ി
അറിയുക

• ഗവേഷണരീതിശാ ൂ
ഗവേഷണതര ര5 നർ ുക - അഷാസാഹിത്യ മേഖലകളിലെ
ഗവേഷണം
രേ അ ഹരി ി ക

PROGRAMME OUTCOME-PHYSICS

Programme Specific Outcomes

- 1:** Understand the basic concepts of fundamentals of mechanics, properties of matter and electrodynamics
- 2:** Understand the theoretical basis of quantum mechanics, relativistic physics, nuclear physics, optics, spectroscopy, solid state physics, astrophysics, statistical physics, photonics and thermodynamics
- 3:** Understand and apply the concepts of electronics in the designing of different analog and digital circuits
- 4:** Understand the basics of computer programming and numerical analysis
- 5:** Apply and verify theoretical concepts through laboratory experiments

BSc. Physics Core and Complementary Course			
1	PH1 B01 -	Core course I - Mechanics I	<ol style="list-style-type: none"> 1. Understand and apply the basic concepts of Newtonian Mechanics and work-energy theorem to physical systems 2. Understand and apply the rotational dynamics of rigid bodies
	PHY1 C01-	Complementary Course I: Properties of matter and Thermodynamics	Understand the basic principles of elasticity and thermodynamics, concepts of surface tension and aspects of viscosity.
	API1C01	General and Applied Physics (Complementary)	Understand the basic principles of elasticity and aspects of viscosity. Understand the basic concepts of interference, and important principles of laser physics.
2	PHY2 B02	Core course II - Mechanics II	<ol style="list-style-type: none"> 1. Understand the features of non-inertial systems and fictitious forces 2. Understand and analyze the features of central forces with respect to planetary forces. 3. Understand the basic ideas of Harmonic Oscillations. 4. Understand and analyze the basic concepts of wave motion
	PHY2 C02	Complementary Course II: Optics, Laser, Electronics	Understand the basic concepts of interference, diffraction, polarization, fundamentals of electronics and important principles of laser physics.
	API2C02	Basics Electronic Devices and	Understand the basic principles of rectifiers, transistor and dc power

		Circuits (Complementary)	supplies. Understand the working and designing of transistor amplifiers and oscillators
3	PHY3 B03	Core course III - Electrodynamics I	<ol style="list-style-type: none"> 1. Understand and apply the fundamentals of vector calculus 2. Understand and analyze the electrostatic and magnetic properties of physical systems 3. Understand the mechanism of electric and magnetic field in matter.
	PHY3 C03	Complementary Course III: Mechanics, Relativity, Waves and Oscillations	<ol style="list-style-type: none"> 1. Understand the basic ideas of frames of reference and the principles of conservation of energy and momentum 2. Understand the concepts of relativity 3. Understand the basic ideas of oscillations and waves 4. Understand the basic ideas of modern physics
	API3C03	Digital Integrated Circuits (Complementary)	Understand the basics of Digital Integrated Circuits
4	PHY4 B04	Core course IV - Electrodynamics II	<ol style="list-style-type: none"> 1. Understand the basic concepts of electrodynamics, behavior of transient currents and basic aspects of ac circuits 2. Understand and analyze the properties of electromagnetic waves 3. Understand and apply electrical network theorems
	PHY4 C04	Complementary Course IV: Electricity, Magnetism and Nuclear Physics	<ol style="list-style-type: none"> 1. Understand the basic ideas of static and current electricity 2. Understand the concepts of magnetism 3. Describe the fundamental concepts of nuclear physics 4. Understand the basic ideas of cosmic rays and elementary particles
	API4C04	Op-Amp and Applications (Complementary)	
SEMSTER 1-4	PHY4 B05	Core Course V: PHYSICS Practical	Apply and illustrate the concepts of properties of matter, electricity and magnetism, optics, spectroscopy and heat through experiments
	PHY4 C05	Complementary Course V: PHYSICS Practical	Apply and illustrate the concepts of properties of matter, electricity and magnetism, optics and spectroscopy through experiments
	API4C05(L)	PHYSICS Practical (Complementary Lab.)	Apply and illustrate the concepts of properties of matter, electricity and magnetism, analog and digital electronics through experiments
SEMESTER 5	PHY5 B06	Core Course VI - Computational Physics	Understand the Basics of Python programming, applications of Python modules and basic techniques of numerical analysis.

			Understand and apply computational techniques to physical problems
	PHY5 B07	Core Course VII - Quantum Mechanics	Understand the particle properties of electromagnetic radiation Describe Rutherford – Bohr model of the atom Understand the wavelike properties of particles Understand and apply the schrödinger equation to simple physical systems Apply the principles of wave mechanics to the hydrogen atom
	PHY5 B08	Core Course VIII - Optics	Understand the fundamentals of Fermat’s principles and geometrical optics Understand and apply the basic ideas of interference, polarization and diffraction of light. Describe the basic principles of holography and fibre optics
	PHY5 B09	Core Course IX- Electronics (Analog and Digital)	Understand the basic principles of rectifiers, transistor and dc power supplies Understand the working and designing of transistor amplifiers and oscillators Understand the basic operation of Op –Amp and its applications Understand the basics of digital electronics
	PHY5 D01(1)	Open Course - Non Conventional Energy Sources	Understand the importance of non-conventional energy sources Understand basic aspects of solar energy Understand basic principles of wind energy conversion Understand the basic ideas of geothermal and biomass energy and recognize their merits and demerits Understand the basic ideas of oceans and chemical energy resources and recognize their merits and demerits
SEMESTER 6	PHY6 B10	Core Course X – Thermodynamics	Understand the zero and first laws of thermodynamics Understand the thermodynamics description of the ideal gas Understand the second law of thermodynamics and its applications Understand the basic ideas of entropy Understand the concepts of thermodynamic potentials and phase transitions
	PHY6 B11	Core Course XI - Statistical Physics, Solid State Physics,	Understand the basic principles of statistical physics and its applications Understand the basic aspects of crystallography in solid state physics

		Spectroscopy and Photonics	Understand the basic elements of spectroscopy Understand the basic ideas of microwave and infra red spectroscopy Understand the fundamental ideas of photonics
	PHY6 B12	Core Course XII - Nuclear Physics and Particle Physics	Understand the basic aspects of nuclear structure and fundamentals of radioactivity Understand the basic principles of elementary particle physics Understand the principle and working of particle detectors and accelerators Describe the different types of nuclear reactions and their applications
	PHY6 B13	Core Course XIII - Relativistic Mechanics and Astrophysics	Understand the fundamental ideas of special relativity. Understand the basic concepts of general relativity and cosmology. Understand the basic techniques used in astronomy. Describe the evolution and death of stars. Describe the structure and classification of galaxies.
	PHY6 B14	Core Course XIV - Elective - Biomedical Physics.	Understand the basic principles of biophysics, fundamentals of medical instrumentation, principles of ultrasound and x-ray imaging, Describe the applications of lasers in medicine
SEMESTER 5-6	PHY6 B15	Core Course Practical XV Practical II	Apply and verify theoretical concepts of properties of matter, electricity and magnetism, optics, spectroscopy and heat through laboratory experiments
	PHY6 B16	Core Course Practical XVI Practical III	Apply and verify theoretical concepts of semiconductor diode and transistor, transistor amplifier and oscillator and digital electronics through experiments. Analyze and apply computational techniques in Python programming
	PHY6 B17	Core Course XVII Project/Research methodology	Understand research methodology Understand, formulate, design and implement a research project Identify and enumerate the scope and limitations of a research project

Courses offered for B.Sc. Chemistry Programme under CBCSS Pattern (2019 onwards)

UNDERGRADUATE PROGRAMME IN CHEMISTRY

Programme Objective

This curriculum has been prepared with the objective of giving sound knowledge and understanding of chemistry to undergraduate students. The goal of the syllabus is to make the study of chemistry stimulating, relevant and interesting. It has been prepared with a view to equip students with the potential to contribute to academic and industrial environments. This curriculum will expose students to various fields in chemistry and develop interest in related disciplines.

Programme Outcome

1. To understand the subject of Chemistry and acquire systematic knowledge of fundamental concepts of Chemistry.
2. To study various branches of chemistry and training on various theoretical and applied aspects of chemistry.
3. To acquire ability to solve chemistry related issues and problems.
4. To develop skills in experimental techniques and interpretation of results.

Programme specific outcome

To understand basic facts and concepts in chemistry.

To apply the principles of chemistry.

To appreciate the achievements in chemistry and to know the role of chemistry in nature and in society.

To familiarize with the emerging areas of chemistry and their applications in various spheres of chemical sciences and to apprise the students of its relevance in future studies.

To develop skills in the proper handling of instruments and chemicals.

To familiarize with the different processes used in industries and their applications.

To develop an eco-friendly attitude by creating a sense of environmental awareness.

To be conversant with the applications of chemistry in day-to-day life.

Course Outcome

SEMESTER I

CHE1B01 THEORETICAL AND INORGANIC CHEMISTRY- I

Course outcomes	To gain detailed knowledge of the principle of volumetric analysis and properties of <i>s</i> and <i>p</i> block elements.
	To understand the basic groundwork for a research project.
	To analyze basic theory of acid base concept.

SEMESTER II
CHE2B02 THEORETICAL AND INORGANIC CHEMISTRY- II

Course outcomes	To understand the importance and the impact of quantum revolution in science.
	To understand and apply the concept that the wave functions of hydrogen atom are nothing but atomic orbitals.
	To understand that chemical bonding is the mixing of wave functions of the two combining atoms.
	To understand the concept of hybridization as linear combination of orbitals of the same atom.

SEMESTER III
CHE3B03 PHYSICAL CHEMISTRY - I

Course outcomes	To understand the properties of gaseous state and how it links to thermodynamic systems.
	To understand the concepts of thermodynamics and it's relation to statistical thermodynamics.
	To apply symmetry operations to categorize different molecules.

SEMESTER IV
CHE4B04 ORGANIC CHEMISTRY- I

Course outcomes	To apply the concept of stereochemistry to different compounds.
	To understand the basic concepts of reaction mechanism.
	To analyse the mechanism of a chemical reaction.
	To analyse the stability of different aromatic systems.

SEMESTER IV
CHE4B05(P) INORGANIC CHEMISTRY PRACTICAL – I

Course outcomes	To develop skills in quantitative analysis and preparing inorganic complexes.
	To understand the principles behind quantitative analysis.
	To apply appropriate techniques of volumetric quantitative analysis in Estimations.

SEMESTER V
CHE5B06 INORGANIC CHEMISTRY – III

Course outcomes	To understand the principles behind quantitative and qualitative analysis.
	To understand basic processes of metallurgy and to analyse the merits of different alloys.
	To understand the applications of different inorganic polymers.
	To analyse different polluting agents and the principles of solid waste management

CHE5B07 ORGANIC CHEMISTRY – II

Course outcomes	To understand the importance of functional groups in organic chemistry.
	To apply organometallic compounds in the preparation of different functional groups.
	To apply different reagents for the inter conversion of aldehydes, carboxylic acids and acid derivatives.
	To analyze the importance of active methylene compounds in organic preparations.

CHE5B08 PHYSICAL CHEMISTRY – II

Course outcomes	To apply the concept of kinetics, catalysis and photochemistry to various chemical and physical processes.
	To characterize different molecules using spectral methods.
	To understand various phase transitions and its applications.

SEMESTER VI

CHE6B09 INORGANIC CHEMISTRY – IV

Course outcomes	To understand the principles behind different instrumental methods.
	To understand the importance of metals in living systems.
	To distinguish geometries of coordination compounds and to analyze the importance of CFT.

CHE6B10 ORGANIC CHEMISTRY – III

Course outcomes	To elucidate the structure of simple organic compounds using spectral techniques.
	To understand the basic components and importance of DNA, carbohydrates and natural products.
	To distinguish different pericyclic reactions.

CHE6B11 PHYSICAL CHEMISTRY – III

Course outcomes	To understand the basic concepts of electrochemistry, colligative properties and solid state.
	To relate the properties of materials/solids to the geometrical properties and chemical compositions.

CHE6B12 ADVANCED AND APPLIED CHEMISTRY

Course outcomes	To understand the importance of nanomaterials and green approach in chemistry.
	To understand the uses and importance of computational calculations in molecular design.
	To understand the role and opportunities of chemistry as a discipline in modern civilization.

CHE6B13(E2) POLYMER CHEMISTRY

Course outcomes	To understand various classification of polymers and types of polymerisation methods.
	To analyze the importance of processing techniques.
	To characterize different commercial polymers and to understand the significance of recycling.

SEMESTER VI

CHE6B14(P) PHYSICAL CHEMISTRY PRACTICAL

Course outcomes	To enable the students to develop analytical skills in determining the physical properties (physical constants).
	To understand the principles of Refractometry, Potentiometry and Conductometry.

CHE6B15(P) ORGANIC CHEMISTRY PRACTICAL

Course outcomes	To develop analytical skills in organic qualitative analysis.
	To apply the concept of melting or boiling points to check the purity of compounds.
	To analyse individual amino acids from a mixture using chromatography.

CHE6B16(P) INORGANIC CHEMISTRY PRACTICAL-II

Course outcomes	To develop analytical skills in inorganic quantitative analysis.
	To develop skill in quantitative analysis using gravimetric and colorimetric methods.

CHE6B17(P) INORGANIC CHEMISTRY PRACTICAL-III

Course outcomes	To develop skills in inorganic quantitative analysis.
	To analyse systematically mixtures containing two cations and two anions.

CHE6B18(Pr) PROJECT WORK

Course outcome	To develop skill in scientific research, critical thinking and reasoning.
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COMPLEMENTARY COURSES

SEMESTER I

CHE1C01 GENERAL CHEMISTRY

Course outcomes	To understand the theories of quantitative and qualitative analysis.
	To understand the theories of chemical bonding and the importance of metals in biological systems.
	To understand the uses of radioactive isotopes.

SEMESTER II
CHE2C02 PHYSICAL CHEMISTRY

Course outcomes	To understand the importance of free energy in defining spontaneity.
	To realise the theories of different states of matter and their implication.
	To understand the basic principles of electrochemistry.

SEMESTER III
CHE3C03 ORGANIC CHEMISTRY

Course outcomes	To understand the basic theory and concepts of organic chemistry.
	To understand the basic structure and importance of carbohydrates, nucleic acids, alkaloids and terpenes.

SEMESTER IV
CHE4C04 PHYSICAL AND APPLIED CHEMISTRY

Course outcomes	To understand the basic concepts behind colloidal state and nanochemistry.
	To understand the importance of green chemistry and pollution prevention.
	To understand the extent of chemistry in daily life.

SEMESTER IV
CHE4C05(P) CHEMISTRY PRACTICAL

Course outcomes	To understand the basic concepts of inter group separation.
	To enable the students to develop analytical and preparation skills.

OPEN COURSES

SEMESTER V
CHE5D02 CHEMISTRY IN DAILY LIFE

Course outcomes	To understand the basics of polymer chemistry and to explain the functions of biomolecules, vitamins, enzymes, hormones and nucleic acid.
	To describe food additives and food habits and to explain the uses of pesticides and fertilizers and their impacts on the environment.
	To understand advantages and disadvantages of cleansing agents and cosmetics and to recognize the common classes of drugs in pharmaceutical industry and their application.
	To understand the basic concepts and processes in petroleum industry

UG PROGRAMME IN BOTANY

PROGRAMME OUTCOMES

1. **Critical Thinking:** Take informed actions after identifying the assumptions that frame student's thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at their ideas and decisions (intellectual, organizational, and personal) from different perspectives.
2. **Problem Solving:** Understand and solve problems of relevance to society to meet the specified needs using the knowledge, skills and attitudes acquired.
3. **Effective Communication:** Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.
4. **Effective Citizenship:** Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
5. **Environment and Sustainability:** Understand the issues of environmental contexts and sustainable development.
6. **Self-directed and Life-long Learning:** Acquire the ability to engage in independent and life long learning in the broadest context of socio-technological changes

PROGRAMME SPECIFIC OUTCOMES

1. **Scope and importance of Botany:** Understand scope and importance of Botany in every field especially in dealing with societal and environmental issues, agriculture, ethics and healthcare.
2. **Environmental concern:** Understand the and the role of plants in sustaining life on earth and the interrelationship between human beings and nature, create awareness on natural resources and their importance in sustainable development, analyze the importance biodiversity conservation, biodiversity loss and develop conservation strategies.
3. **Scientific temper:** Develop scientific temper and undertake scientific projects.
4. **Practical applications:** Identify and classify plants according to the principles of plant systematics, apply techniques like plant propagation methods, organic farming, mushroom cultivation, preparation of biofertilizers, biopesticides etc. in daily life.

5. Awareness on life processes: Understand plant life processes, biomolecules, basic hereditary and evolutionary principles.

COURSE OUTCOMES

CORE COURSE	COURSE OUTCOMES
ANGIOSPERM ANATOMY, REPRODUCTIVE	By the end of the course,
BOTANY AND PALYNOLOGY	<p>students are expected to:</p> <ol style="list-style-type: none"> 1. Demonstrate the ability to differentiate plant organs by observing anatomical features. 2. Understand the non-living inclusions of plants and their significance. 3. Differentiate tissues and their functions. 4. Illustrate primary and secondary (normal and anomalous) structures of plant organs. 5. Explain various developmental details of angiosperms. 6. Realize the significance and applications of palynology.
MICROBIOLOGY, MYCOLOGY, LICHENOLOGY AND PLANT PATHOLOGY	<p>By the end of the course, students are expected to:</p> <ol style="list-style-type: none"> 1. Understand basics of microbial life and their economic importance. 2. Develop general awareness on the diversity of microorganisms, fungi and lichens. 3. Analyze the ecological role played by bacteria, fungi and lichens 4. Identify plant diseases and find out control measures. 5. Realize the significance of plant diseases as far as crop production is concerned.
PHYCOLOGY, BRYOLOGY AND PTERIDOLOGY	<p>By the end of the course, students are expected to:</p> <ol style="list-style-type: none"> 1. Appreciate the diversity and evolutionary significance of lower plant groups. 2. Classify algae, bryophytes and pteridophytes. 3. Understand the economic and ecological importance of lower plant groups.
METHODOLOGY AND PERSPECTIVES IN PLANT SCIENCE	<p>By the end of the course, students are expected to:</p> <ol style="list-style-type: none"> 1. Develop scientific temper and problem solving skills. 2. Undertake scientific projects and prepare project reports 3. Summarize, organize and display Quantitative
GYMNOSPERMS, PALAEOBOTANY, PHYTOGEOGRAPHY AND EVOLUTION	<p>By the end of the course, students are expected to:</p> <ol style="list-style-type: none"> 1. Understand the role of gymnosperms as a connecting link between pteridophytes and angiosperms 2. Appreciate the process of organic evolution. 3. Realize the importance of fossil study. 4. Understand the climatic conditions of the past and realize the changes happened. 5. Recognize the phytogeographic zones of India.
MORPHOLOGY	<p>By the end of the course, students are expected to:</p> <ol style="list-style-type: none"> 1. Appreciate the diverse morphology of angiosperms. 2. Identify and classify plants based on taxonomic principles. 3. Make scientific illustrations of vegetative and reproductive structures of plants. 4. Develop the skill of scientific imaging of plants. 5. Realize the importance of field study. 6. Change their attitude towards over exploitation of rare/endemic plants.

TISSUE CULTURE, HORTICULTURE, ECONOMIC BOTANY AND ETHNOBOTANY	By the end of the course, students are expected to: 1. Critically evaluate the advantages of tissue culture and horticulture over conventional methods of propagation. 2. Apply various horticultural practices in the field. 3. Experiment on the subject and try to become entrepreneurs. Identify the economically important plants.
CELL BIOLOGY AND BIOCHEMISTRY	By the end of the course, students are expected to: 1. Appreciate the ultra-structure of a plant cell. 2. Enumerate the functions of each cell organelle. 3. Draw and explain the structure of biomolecules
GENETICS AND PLANT BREEDING	By the end of the course, students are expected to: 1. Appreciate the facts behind heredity and variations. 2. Understand the basic principles of inheritance. 3. Solve problems related to classical genetics. 4. Predict the pattern of inheritance. 5. Understand various plant breeding techniques. 6. Realize the role of plant breeding in increasing crop productivity.
BIOTECHNOLOGY, MOLECULAR BIOLOGY AND BIOINFORMATICS	By the end of the course, students are expected to: 1. Analyze the role of biotechnology in daily life. 2. Understand the basic aspects of bioinformatics. 3. Explain the concepts in molecular biology.
PLANT PHYSIOLOGY AND METABOLISM	By the end of the course, students are expected to: 1. Identify the physiological responses of plants. 2. Analyze the role of external factors in controlling the physiology of plants 3. Explain the metabolic processes taking place in each cell. 4. Appreciate the energy fixing and energy releasing processes taking place in cells
ENVIRONMENTAL SCIENCE	By the end of the course, students are expected to: 1. Realize the importance of ecological studies. 2. Develop environmental concern in all their actions and practise Reduce, Reuse and Recycle. 3. Try to reduce pollution and environmental hazards and change their attitude towards throwing away plastic wastes. 4. Spread awareness of the need of conservation of biodiversity and natural resources. 5. Analyze the reasons for climate change and find out ways to combat it.

CORE COURSE ELECTIVES

CORE COURSE ELECTIVES	COURSE OUTCOMES
GENETIC ENGINEERING	By the end of the course, students are expected to:1. Appreciate various techniques employed in genetic engineering 2. Develop general awareness on genetically modified organisms. 3. Understand the ethical, social and legal issues associated with genetic engineering
ADVANCED ANGIOSPERM SYSTEMATICS	By the end of the course, students are expected to: 1. Develop deep knowledge in angiosperm systematics. 2. Demonstrate ability to identify and classify plants in a faster and better way. 3. Apply imaging technologies in plant systematics
GENETICS AND CROP IMPROVEMENT	By the end of the course, students are expected to:1. Understand various techniques employed for increasing crop productivity. 2. Identify diseases affecting crop plants. 3. Attain general awareness on various crop research stations of the country.

COMPLEMENTARY COURSE

COURSE	COURSE OUTCOMES
ANGIOSPERM ANATOMY AND MICROTECHNIQUE	By the end of the course, students are expected to: 1. Explain the types, structure and functions of plant tissues. 2. Explain primary and secondary (normal and anomalous) structures of plant organs. 3. Identify plant organs by observing anatomical features. 4. Illustrate primary and secondary (normal and anomalous) structures of plant organs 5. Apply the histochemical techniques in laboratory works.
CRYPTOGAMS, GYMNOSPERMS AND PLANT PATHOLOGY	By the end of the course, students are expected to: Analyze the role of the lower plants in the process of evolution. 2. Explain the ecological significance of lower plants. 3. Identify plant diseases and take remedial measures to control them.
MORPHOLOGY, SYSTEMATIC BOTANY, ECONOMIC BOTANY, PLANT BREEDING AND HORTICULTURE	By the end of the course, students are expected to 1. Appreciate the diverse morphology of angiosperms. 2. Identify and classify plants based on taxonomic principles 3. Make scientific illustrations of vegetative and reproductive structures of plants 4. Identify the economically important plants 5. Understand the basic principles of plant breeding 6. Apply various horticultural practices in the field.
PLANT PHYSIOLOGY, ECOLOGY AND GENETICS	By the end of the course, students are expected to: 1. Explain the physiological processes in plants. 2. Understand the basic principles of heredity and variation. 3. Realize the importance of ecology. 4. Spread awareness of the necessity of conservation of biodiversity and natural resources 5. Solve problems related to classical genetics

OPEN COURSE

OPEN COURSE	COURSE OUTCOMES
GENERAL BOTANY	By the end of the course, students are expected to: 1 Have a general awareness on various branches of plant science 2. Develop environmental concern in all their activities. 3. Realize the importance of plants in everyday life.
APPLIED BOTANY	By the end of the course, students are 1. expected to: Develop general awareness on applied aspects of Plant science. 2. Realize the role of plants in everyday life. 3. Apply vegetative propagation methods in everyday life. 4. Realize the economic importance of plants

B Sc ZOOLOGY

Delivery pattern	Paper	Paper code	Outcomes
First semester	Animal diversity. Nonchordata-I	ZOL1B01	<ul style="list-style-type: none"> ○ Know animal kingdom ○ To make aware of sole characters of protozoa, porifera, coelenterate and helminthes ○ Identify the environmental role of phylum protozoa, porifera, coelenterate and helminthes ○ Distinguish the diversity from protozoa, porifera, coelenterate and helminthes ○ Exercise labelling diagrams
Second semester	Animal diversity Nonchordata-II	ZOL2B02	<ul style="list-style-type: none"> ○ Identify the animal diversity from phylum Annelida, Arthropoda, Mollusca, Echinodermata etc. ○ Capacitate to describe unique characters of Annelida, Arthropoda, Mollusca, Echinodermata ○ Differentiate characters of non-chordates ○ Know economic importance of molluscs ○ aware the importance of arthropods
Third semester	Animal diversity Chordata-I	ZOL3B03	<ul style="list-style-type: none"> ○ make aware the general perceptions about chordates ○ Obtain the information about different taxa of chordates ○ Capacitate to describe unique characters of urochordates and cephalochordates ○ to develop skills that differentiate poisonous and non poisonous snakes ○ Classify the characters of amphibia and its parental care ○ Comprehend the morphological, ecological and anatomical characters of piscine taxa
Fourth semester	Animal diversity Chordata-II	ZOL4B04	<ul style="list-style-type: none"> ○ Recognize diverse mammalian taxa ○ Know the environmental role of mammals ○ understand anatomical and morphological characters of birds
Fifth semester	Environmental biology, wild life conservation and toxicology	ZOL5B06	<ul style="list-style-type: none"> ○ Understand the relations of organisms with environment ○ To know the status of wild life conservation and biodiversity ○ To identify the effects of environmental pollutions ○ Catogerialize the environmental conservation methods ○ Understand population dynamics and ecological energetics

			<ul style="list-style-type: none"> ○ Make aware of the pesticides and insecticides problems and importance of organic farming. ○ To know the importance of sustainable ecosystem management.
	Ethology, evolution and zoogeography	ZOL5B07	<ul style="list-style-type: none"> ○ Understand the origin of life on earth ○ Know organic evolution ○ Identify zoogeographical regions with their climatic and faunal particularities ○ Know different types of animal behaviour with classical experiments.
	Cell biology and Genetics	ZOL5B08	<ul style="list-style-type: none"> ○ Understand cell theory, structure and function of different cell organelles ○ Develop knowledge about cell cycle, membrane transport, cell-cell contact and cytoskeleton ○ To know the concepts of classical and modern genetics and its applications ○ Learns human genetics, applied genetics, population genetics and microbial genetics
	General methodology in science, biostatistics and informatics	ZOL5B09	<ul style="list-style-type: none"> ○ Recognize the descriptive statistics ○ Distinguish the applications and uses of statistics ○ Acquire knowledge about social informatics and IT applications
Sixth semester	Biochemistry	ZOL6B10	<ul style="list-style-type: none"> ○ Realize the structure and function of biomolecules. ○ Know the importance of enzymes and vitamins ○ Acquire a depth knowledge in production of various products using biochemistry ○ To understand different metabolic process. ○ To know about enzyme classification and kinetics. ○ Application of biochemistry in various field
	Physiology and endocrinology	ZOL6B11	<ul style="list-style-type: none"> ○ To know the anatomy, mechanism of working and functions of different human organ systems ○ Define physiology and its branches ○ Know the process of metabolism ○ Learns various glands and their functions in body <ul style="list-style-type: none"> ○ To understand the process of respiration, transport of nutrients, excretion etc.
	Molecular biology and bioinformatics	ZOL6B12	<ul style="list-style-type: none"> ○ Understand the basic biomolecules and their structural organization. ○ Acquire knowledge on central dogma and the process involved as transcription, translation, replication, gene regulation mechanisms etc ○ Understand application level of molecular biology with tools and techniques.

		<ul style="list-style-type: none"> ○ Understand the concept of genomics and proteomics ○ Know databases and various tools in bioinformatics ○ Understand the applications of bioinformatics in various fields of biology.
Reproductive biology, developmental biology and teratology	ZOL6B13	<ul style="list-style-type: none"> ○ Understand the basic concepts as gametogenesis, fertilization and early development ○ Aware about human reproductive system, fertility control and prenatal diagnosis ○ Know the developmental process of primitive to advanced organisms in different phylum ○ Understand the environmental disruption of animal development.
Biotechnology, microbiology and immunology	ZOL6B14	<ul style="list-style-type: none"> ○ Comprehend the prospects and challenges of microbes in various field ○ Understand cell culture techniques ○ Learn on application of genetic engineering ○ Understand the scope of biotechnology ○ Understand the function of biosensors
Human genetics (Elective Paper)	ZOL6B14BE01	<p>To understand human chromosome constitution. To identify the genetic defects and disorders and their genetic background. To understand cellular, evolutionary and population genetics. To aware the concept of genetic counselling To understand the applications of gene therapy.</p>

BA/B.Sc Degree Programme Sanskrit Common Course

Course	Outcome
Kavya Literature and applied Grammar	Attain general awareness of Sanskrit Kavya Literature
	Evaluate the Sanskrit Kavya Literature, its origin and development
	Understand the tradition of Sanskrit Lyrics
	Cultivate moral values among students through the study of Subhashitas
	Understand the basic principles of grammar
Semester II	
Prose and applied grammar	Attain general awareness of Sanskrit prose literature
	Understand the history and greatness of Sanskrit prose literature
	Evaluate modern Sanskrit literature through the study of prose
	Understand the tradition of Sanskrit fables
	Get familiarize with the Sanskrit fables in detail through the study of Pancatantra
	Understand the basic principles of grammar
Semester III	
Drama and alankara	Understand the vast literary heritage of Sanskrit dramas
	Appreciate the works of important play writers in Sanskrit
	Evaluate Sanskrit drama literature through the study of urubhanga
	Recognize the literary merits of Bhasa
	Understand the general features of alankaras in Sanskrit literature and how far it is useful in the appreciation of
Semester IV	
History of Sanskrit literature, Kerala culture and translation	Understand the poetic merits and development of epics and their impact on later Sanskrit literature
	Evaluate Indian history through the study of Sanskrit historical

	kavyas
	Appreciate literary legends of Kerala and their immense contributions to the field of Sanskrit literature
	Evaluate the Kerala Sanskrit theatre
	Understand the method of translation

	Create the ability to write in Sanskrit language
B.Com/BBA DEGREE PROGRAMME SANSKRIT COMMON COURSE	
Prose Subhashitas and basic grammar	To Understand the basic grammatical peculiarities of Sanskrit language through simple stories
	To Understand the basic grammatical peculiarities of Sanskrit language through simple stories
	To evaluate the contents so as to develop the capacity of critical evaluation
	To get transformed into a better human.
Semester II	
Ancient state craft and Translation	Understand ancient Indian culture and life style
	Understand the ancient system of trade, commerce and management
	Apply the language skills so as to develop the command over Sanskrit language
	Critically evaluate the measures employed by the ancient as well as the modern society for the welfare of a state
B.Sc DEGREE PROGRAMME (L.R.P) INSTRUMENTATION COMMON COURSE	
Poetry and grammar	Attain general awareness in the style of Sanskrit poetry
	Understand the special features of Kalidas literature
	Enable the student to develop the grammatical features in Sanskrit language
	Evaluate critically the poetic features of Sanskrit literature
	Critically analyse the aesthetic sence of ancient literature and modern literature
	Apply the moral values in social life through the knowledge of ancient didactic literature in Sanskrit
	Apply the grammatical and linguistic speculation in modern literature also
Semester II	
Drama and translation	Attain the basic features of the concept of theatre in Sanskrit

	Understand the origin and development of Sanskrit drama
	Evaluate the development of Sanskrit theatre
	Textual analysis of Bhasa's theatre
	Critically analyse the Sanskrit theatre and modern theatre
	Cultivate the skill of translation methods

	apply the modes of translation in a multilingual platform
BA MALAYALAM COMPLEMENTARY SANSKRIT	
Prose poetry and Translation (1st and 2nd Semester)	Make the student aware about the prose literature in Sanskrit
	Familiarize the student with the basic principles of Sanskrit Grammar
	Critically analyse the similar verses and prose literature from the Malayalam literature
	Enable the students to translate Sanskrit passages into Malayalam
Sanskrit theatre and Kerala culture (3rd and 4th Semester)	Familiarize dramatic features of Sanskrit theatre to students
	Enable the student to know the general characteristics features of Sanskrit drama
	Understand the students the wealth of knowledge preserved in Sanskrit
	Critically analyse the contributions of Kerala Sanskrit authors familiar to Malayalam literature

BA/BSC Common Course Hindi

Course Out Come

Course	Out Come
Prose & Drama	Approach literary texts in terms of genre, gender and the canon. Understand and use academic conventions: referencing and bibliography .Exposed to the origin and development of Hindi drama and its various themes and forms of different ages and stages. Help students explore how writers use the resources languages as a creativity to explore the entire range of human experience through dramas as a literary form.
Grammar and Translation	Getting the difference between spoken and written Hindi enable the students to understand the factors that influence use of grammar and vocabulary in speech and writing. Students will get the ways in which grammar has been described. Students can define the link between translation theory and translation practice and effects of translation theory on translation practice, contribution of translation practice to translation theory.
Poetry in Hindi	Students can get an idea of common techniques underlying free verse and traditional forms of poetry .Identify personal experiences that can be used when writing poems. Understand the basic terminology and practical elements of poetry.
Novel and Short stories	Enable the students to analyse literature and fiction using appropriate theoretical, historical and cultural apparatus .Students will get a knowledge of various cultural aspects, construction of gender, nation and race throughout the history. Fiction helps the students to learn human values and the behavioural patterns from great works of art, and develop the ability to understand human race.

BCOM/BBA Common Course In Hindi	
<i>Course Out Come</i>	
Course	OutCome
Prose forms in Hindi literature	<p>Approach literary texts in terms of genre, gender</p> <p>.Understand and use academic conventions: Referencing and bibliography</p> <p>.The student will be aware of socio -political and economic conditions of the society from different periods.</p>
Poetry correspondence and translation	<p>Understand the common techniques underlying free verse and traditional forms of poetry .Identify personal experiences that can be used when writing poems .Understand the basic terminology and practical elements of poetry.</p> <p>Define the link between translation theory and Translation practice.</p> <p>Define the effects of translation theories on Translation practice.</p> <p>Define the contribution of translation practice to Translation theory.</p> <p>Understand the importance of correspondence.</p>
BSC Instrumentation(LRP PROGRAMME) Common course in Hindi	
Course	outcome
Prose and one act plays	<p>Students can approach literary texts in terms of genre, gender and canon. Understand and use academic conventions referencing and bibliography.</p> <p>The student will be aware of sociopolitical and economic conditions of the society from different periods. Be able to compare and contrast the genre with other dramatic forms.</p>
Poetry and short stories	<p>Understand the common techniques underlying free verse and traditional forms of poetry. Identify personal experiences that can be used when writing poems. Understand the basic terminology and practical elements of poetry. Students get to know various cultures and construction of gender , nation and race throughout the history. The prescribed fictions helps the students to learn human values and the behavioural patterns from great works of art, and develops the ability to understand human race.</p>

N.S.S COLLEGE NEMMARA

POST GRADUATE DEPARTMENT OF COMMERCE AND MANAGEMENT STUDIES

Master of Commerce (M. Com)

Programme Outcomes (PO)

- PO 1. To equip the students to develop conceptual, applied and research skills and competencies for right decision making relevant to finance and allied areas.
- PO 2. To enable a student well versed in recent trends of domestic and international finance.
- PO 3. To develop skills for the conduct of business, accounting & taxation.
- PO 4. To provide in-depth understanding of core areas of commerce and its related areas.

Programme Specific Outcomes (PSO)

- PSO 1. Develop an ability to apply the acquired knowledge in the areas of finance and managerial problem solving.
- PSO 2. Develop managerial and administrative skills to work in various entities.
- PSO 3. Equip the students to enroll for professional courses.

Course Outcome (CO)

SEMESTER ONE

MCM1C01 BUSINESS ENVIRONMENT AND POLICY

Course Outcome

This course intends to develop conceptual knowledge of Business Environment. The course enables students to understand and analyze the different environmental issues and its impact on business performance. On completing the course students will be able to

1. Familiarize with the concepts macro-economic environment in which the business organization operates.
2. Get an idea about the policies of the government and assess their impact on business.

MCM1C02 CORPORATE GOVERNANCE AND BUSINESS ETHICS

Course Outcomes

This course aims to acquaints the students with the corporate governance concepts and ethical issues in business. On completing the course students will be able to

1. Acquire knowledge of corporate ethics.
2. Understand the emerging trends in good governance practices.
3. Create corporate financial reports in the global and Indian context.

MCM1C03 QUANTITATIVE TECHNIQUES FOR BUSINESS DECISIONS

Course Outcomes

This course provides the students with skills to apply quantitative techniques in problem solving. On completing the course students will be able to

1. Learn the process of applying appropriate quantitative techniques for validating findings and interpreting results for sound business decision making.

MCM1C04 MANAGEMENT THEORY AND ORGANISATIONAL BEHAVIOR

Course Outcomes

The course intends to provide an insight to students with various management theories and also to familiarize them with behavioral aspects organization. On completing the course students will be able to

1. Understand the different concepts of organizational behavior.
2. Analyze the individual and group behavior.
3. Understand and deal with organizational change.

MCM1C05 ADVANCED MANAGEMENT ACCOUNTING

Course Outcomes

The course enables the students to acquire knowledge of various management accounting methods and practices. On completing the course, the students will be able to understand these concepts and their applications.

1. Understand and apply tools, techniques and concepts in managerial decision-making process.
2. Inculcate analytical skills in interpreting and diagnosing business problems.

SEMESTER TWO

MCM2C06 ADVANCED CORPORATE ACCOUNTING

Course Outcomes

The course acquaints the students with knowledge about corporate accounting. On completing the course students will be able to

1. Provide knowledge and skills in theory and practice of corporate financial accounting.
2. Provide insight in to some of the important accounting standards of IFRS/Ind AS.
3. Enable problem solving abilities among students in matters of various corporate situations such as consolidation of group information, corporate restructuring and liquidation.

MCM2C07 ADVANCED STRATEGIC MANAGEMENT

Course Outcomes

This course aims to familiarize the students with the role of strategic management in the operations of business organizations. On completing the course students will be able to

1. Understand the concepts of strategic management.
2. Impart knowledge about the various strategic management tools for optimum entity performance.

MCM2C08 STRATEGIC COST ACCOUNTING

Course Outcomes

This course provides an insight to students about strategic cost accounting principles and on completing the course students will be able to

1. Enable the students to know the applications of cost accounting tools, techniques and concepts in managerial decision-making process.
2. Provide students adequate knowledge of cost management and control techniques and to enable them to apply these for managing business.

MCM2C09 INTERNATIONAL BUSINESS

Course Outcomes

On completing the course students will be able to

1. Acquire knowledge about the concepts of international business.
2. Familiarize with trends in international business.

MCM2C10 MANAGEMENT SCIENCE

Course Outcomes

The course objective is to acquaint the students with the basic concepts and tools for quantitative analysis. On completing the course students will be able to

1. Familiarize students with concepts of management science and tools supporting decision making
2. Enable students to apply management science techniques in appropriate decision situations.

SEMESTER THREE

MCM3C11 FINANCIAL MANAGEMENT

Course Outcomes

The course objective is to familiarize the students with concepts of financial management and to make them aware of the its applications in the management of organization. On completing the course students will be able to

1. Acquaint the students with the basic analytical techniques and methods of financial management of the entities.
2. Provide the students the exposure to certain advanced analytical techniques that are used for taking financial policy decisions.

MCM3C12 INCOME TAX: LAW, PRACTICE AND TAX PLANNING I

Course Outcomes

The outcome of the course is to familiarize students with the application of tax laws and the major trends. On completing the course, the students will be able to

1. Enable students to understand computation of income under various heads, taxable income of various entities, tax planning and procedure of assessment.

MCM3C13 RESEARCH METHODOLOGY

Course Outcomes

The aim of the course is to give a conceptual understanding of various research methods for students. On completing the course, the students will be able to

1. Acquaint students with process and methodology of research.
2. Enable students to identify research problems, collect and analyze data and present results.

MCM3EF01 INVESTMENT MANAGEMENT

Course Outcomes

The course objective is to provide an insight in to the fundamentals of investment management and to acquire practical knowledge and required skills in managing investment. On completing the course, the students will be able to

1. Establish a conceptual framework for the study of security analysis and portfolio management.
2. Provide the students the ability to understand and utilize the skill of optimizing returns.

MCM3EF02 FINANCIAL MARKETS AND INSTITUTIONS

Course Outcomes

The course aims to familiarize the students with the various concepts and developments in Indian and global financial markets. On completing the course, the students will be able to

1. Provide a sound information and knowledge of broad framework of financial markets and institutions.
2. An understanding of the inter linkage and regulatory frame work within which the system operates in India.

SEMESTER FOUR

MCM4C14 FIANCIAL DERIVATIVES AND RISK MANAGEMENT

Course Outcomes

The course objective is to impart knowledge about various derivatives mechanisms. On completing the course, the students will be able to

1. Apply the derivative mechanisms like option, futures, Swap etc. for hedging financial risk in

the market.

MCM4C15 INCOME TAX: LAW, PRACTICE AND TAX PLANNING II

Course Outcomes

The course aims to provide knowledge about the various tax assessment and updates Indian tax laws. On completing the course, students will be able to

1. Acquaint the students with theoretical and practical knowledge of assessment and tax planning of different assesses.
2. Familiarize the students with major and latest provisions of the India tax laws and related pronouncements under the law.

MCM4EF03 INTERNATIONAL FINANCE

Course Outcomes

On completing the course students will be able to

1. Understand the concept and significance of international finance.
2. Understand the international financial markets and exchange theories.
3. Get an idea about foreign exchange exposure and risk management.

MCM4EF04 ADVANCED STRATEGIC FIANACIAL MANAGEMENT

Course Outcomes

The course aims to provide a knowledge about advanced strategic management tools and to acquaint the students with its application On completing the course students will be able to

1. Build an understanding about the concepts, vital tools and techniques used for financial decision making by a business firm.

Courses offered for M.Sc. Chemistry Programme under CBCSS Pattern (2019 onwards)

Programme Objective

This post-graduate course in chemistry aims to provide an integrated knowledge and training in various theoretical and applied aspects of chemical science leading to Masters Degree and to train competent manpower who can take challenges in Teaching, Research and Development.

Programme Outcome

1. To become knowledgeable in the subject of Chemistry and acquire systematic understanding of fundamental concepts of Chemistry.
2. To acquire an integrated knowledge of various branches of chemistry and training on various theoretical and applied aspects of chemistry.
3. To apply knowledge for solve chemistry related issues and problems.
4. To develop solid knowledge of classical and modern experimental techniques and interpretation of results; thereby acquire the ability to plan and carry out independent projects.

Programme specific outcome

1. To understand how chemistry relate to the real world and able to communicate their understanding of chemical principles to others and to apply knowledge when situation demands.
2. To demonstrate the basic principles of instrumental methods of analysis and operate advanced instruments to execute in-depth analysis of chemical problems.
4. To develop skill for searching scientific literature and databases, extract and retrieve the required information and apply it in an appropriate manner.
5. To understand proficiency in undertaking individual or team-based laboratory investigations using appropriate apparatus and safe laboratory practices.
6. To develop analytical solutions to a diversity of chemical problems identified from application contexts; critically analyze and interpret.

Course Outcome

SEMESTER 1

CHE1C01- QUANTUM MECHANICS AND COMPUTATIONAL CHEMISTRY

Course Outcome
After completion of the entire course, the student should be able to
1. Account for the basic principles and concepts of quantum mechanics.
2. Apply the postulates of quantum mechanics to simple systems with translational motions - the particle-in-a-box, harmonic oscillator, as well as rotational motion - planar rigid rotor, one particle rigid rotator, hydrogenic atoms
3. Derive the variational principle and perturbation principle and use them to calculate properties for simple systems of chemical interest.
4. Define and explain the Hartree-Fock self-consistent field method.
5. Identify advantages and disadvantages for modelling various chemical problems.

CHE1C02- ELEMENTARY INORGANIC CHEMISTRY

Course Outcome

After completion of the entire course, the student should be able to

1. Apply various concepts of acids and bases – Arrhenius, Bronsted-Lowry, Solvent system, Lux-Flood, Lewis and Usanovich concepts HSAB concept
2. Predict the periodic anomalies of non-metals and post-transitional metals Predict the stability and topology of different polyhedral boranes and related compounds.
3. Study the properties and applications of various silicates, transition and inner transition metals
4. Introduce modern materials- nanomaterials, synthetic procedures and application of various nanomaterials

CHE1C03- STRUCTURE AND REACTIVITY OF ORGANIC COMPOUNDS

Course Outcome

After completion of the entire course, the student should be able to

1. Review about the mechanic aspects of various interactions present in organic molecules and also delivers concept based on aromaticity.
2. Analyse the concepts of conformation and configuration in organic chemistry.
3. Study the concepts of isomerism and its classifications. Demonstrate strategies for the stereospecific / stereoselective organic transformations towards chiral target molecules.
4. Develop synthetic strategy to get product with predicted configuration.

CHE1C04- THERMODYNAMICS, KINETICS AND CATALYSIS

Course Outcome

After completion of the full course the student should be able to

1. Apply the concepts of thermodynamics to derive relations between molecular properties and to predict spontaneity of processes. .
2. Apply the laws of chemical kinetics to calculate rate / rate constants of different types of reactions. Calculate thermodynamic parameters from kinetic data.
3. Apply the principles of acid and enzyme catalysis to solve any given kinetic data.

SEMESTER II

CHE2C05- GROUP THEORY and CHEMICAL BONDING

Course Outcome

After completion of the full course the student should be able to

1. Analyze the symmetrical aspects of any given molecule.
2. Apply symmetry and Group Theory in Quantum mechanics and spectroscopy
3. Apply group theory to study the bonding in diatomic and polyatomic compounds
4. Construct character table of the molecule and predict the spectral properties.

CHE2C06-- CO-ORDINATION CHEMISTRY

Course Outcome

After completion of the full course the student should be able to

1. Study about stereochemistry of coordination compounds and their stability
2. Describe and explain the structure, bonding and electronic spectra of metal complexes
3. Explain various reaction mechanisms of coordination complexes - redox reaction mechanism and various photochemical reactions associated with complexes

CHE2C07-- REACTION MECHANISM IN ORGANIC CHEMISTRY

Course Outcome
After completion of the full course the student should be able to
1. Analyze the mechanistic and stereochemical aspects of substitution, addition and elimination reactions, considering various influencing factors
2. Explain the reactivity, the stereo chemical aspects and various reactions possible with carbonyl compounds
3. Apply the concepts of Frontier orbital theory in the study of ionic, radical and pericyclic reactions.
4. Design molecular structure with various functional groups, which follows same kind of reaction mechanism.

CHE2C08-- ELECTROCHEMISTRY, SOLID STATE CHEMISTRY AND STATISTICAL THERMODYNAMICS

Course Outcome

After completion of the full course the student should be able to

1. Describe the theories effecting ionic conductance and apply the concepts to calculate conductance behavior of a given system and to learn the working principle and advancement in futuristic electrochemical devices.
2. Define the parameters of different crystal systems and apply it to understand crystal structure.
3. Explain the different types of statistics and calculate the thermodynamic probability of any given thermodynamic system.
4. Predict the electrical properties of materials based on the valence band and conduction band energy level.

CHE1L01 & CHE2L04 – INORGANIC CHEMISTRY PRACTICALS– I & II

Course Outcome

After completion of the full course the student should be able to

1. Identify the cations in a mixture of unknown salts.
2. Estimate the amount of a given metal ion by complexometric, cerimetric and colorimetric determinations.

CHE1L02 & CHE2L05 – ORGANIC CHEMISTRY PRACTICALS– I & II

Course Outcome

After completion of the full course the student should be able to

1. Acquire knowledge on safe laboratory practices of handling laboratory glassware, equipment and chemical reagents.
2. Separate organic compounds from the organic binary mixture and identify the functional group(s) present
3. Develop a method to separate various organic compound mixtures having more than two using distillation/crystallization/sublimation etc.

CHE1L03 & CHE2L06 – PHYSICAL CHEMISTRY PRACTICALS– I & II

Course Outcome

After completion of the full course the student should be able to

1. Perform experiments based on various laws of physical chemistry and Interpret the results obtained from various experiments.
2. Operate various sophisticated instruments.
3. Construct phase diagram of various eutectic systems having binary mixture.

SEMESTER III
CHE3C09 – MOLECULAR SPECTROSCOP

Course Outcome
After completion of the full course the student should be able to
1. Explain the fundamentals of spectroscopy. Correlate the structure of molecule with UV-Visible and IR spectral data.
2. Interpret NMR and ESR spectra.
3. Structural elucidation of organic compounds using electronic, vibrational and NMR and mass spectroscopy

CHE3C10 – ORGANOMETALLIC AND BIOINORGANIC CHEMISTRY

Course Outcome After completion of the full course the student should be able to
1. Distinguish the different types of ligands with respect to the type of interaction with the metal.
2. Evaluate the structure, bonding and reactions of organometallic compounds and metal clusters.
3. Identify the role of metals in biological systems

CHE3C11 - REAGENTS AND TRANSFORMATIONS IN ORGANIC CHEMISTRY

Course Outcome After completion of the full course the student should be able to
1. Compare the differences in reactivity of various oxidizing agents with mechanistic illustrations.
2. Describe the synthesis and application of different types of polymers in laboratory and in industries.
3. Design synthetic scheme for heterocyclic aromatic and nonaromatic organic compounds.
4. Illustrate the mechanistic pathway of different rearrangements reactions and identify the products.

CHE3E01 - SYNTHETIC ORGANIC CHEMISTRY (ELECTIVE)

Course Outcome After completion of the full course the student should be able to
1. Detailed study of reactivity of various oxidizing agents with mechanistic illustrations.
2. Explain the reactivity, the stereo chemical aspects and various reactions of carbonyl compounds and coupling reactions
3. Predict the required protecting groups and functional group equivalents for a particular organic transformation
4. Design a synthetic pathway for simple to complex organic molecules by retrosynthetic approach.

SEMESTER IV

CHE4C12- INSTRUMENTAL METHODS OF ANALYSIS

Course Outcome After completion of the full course the student should be able to
1. Describe various errors during chemical analysis
2. Explain the concepts of various conventional analytical techniques
3. Explain the theory, instrumentation and application of various electroanalytical techniques, optical techniques, chromatographic and surface characterization techniques.

CHE4E05 - INDUSTRIAL CATALYSIS (ELECTIVE)

Course Outcome After completion of the full course the student should be able to
1. Insight about adsorption and various kinds of adsorption isotherms
2. Use adsorption isotherms as a tool for obtaining the surface area and rate constants in case of heterogeneous catalysis.
3. Deep knowledge in phase transfer catalysis, biocatalysis and industrial organic synthesis

CHE4E08 – ORGANOMETALLIC CHEMISTRY (ELECTIVE)

Course Outcome

After completion of the full course the student should be able to

1. Distinguish the different types of ligands with respect to the type of interaction with the metal.
2. Evaluate the structure, bonding and reactions of organometallic compounds and metal clusters.
3. Understand the structure and properties of organometallic polymers

CHE3L07 & CHE4L10 – INORGANIC CHEMISTRY PRACTICALS– III & IV (3 Credits)

Course Outcome

After completion of the full course the student should be able to

1. Estimation involving quantitative separation of suitable binary mixtures of ions in solution
2. Ion-exchange separation and estimation of binary mixtures
3. Synthesis of metal complexes

CHE3L08 & CHE4L11 – ORGANIC CHEMISTRY PRACTICALS– III & IV (3 Credits)

Course Outcome

After completion of the full course the student should be able to

1. Insight into the quantitative analysis of organic molecules using volumetric and spectrophotometric techniques.
2. Acquire an idea in identification as well as separation of mixtures by chromatographic techniques
3. Skilled in extraction of natural products and chromatographic techniques.

CHE3L09 & CHE4L12 – PHYSICAL CHEMISTRY PRACTICALS– III & IV

Course Outcome

After completion of the full course the student should be able to

1. Insights into the practical physical chemistry- kinetics, adsorption, phase diagram of three component system, cryoscopic methods
2. Learn the practical aspects of Computational chemistry.
3. Able to use polarimeter and spectrophotometer.

SEMESTER IV

CHE4P01 & CHE4VO2 -Research Project & Viva Voice

Course Outcome

After completion of the full course the student should be able to

- C.O.1: Identify and hypothesise an advanced level research problem.
- C.O.2: Design experiments and validate the hypothesis of an advanced level research problem.

BSc INSTRUMENTATION Programme Outcome, Programme Specific Outcome and Course Outcome		
Programme Outcome		BSc INSTRUMENTATION Programme is one such course in science stream under Choice Based Credit and Semester System of University of Calicut. This restructured undergraduate science course provides students with a broad exposure to the critical domains of sciences with adequate background of mathematical sciences. Instrumentation is the eyes and ears of the control system allowing the operators to see what is going on within the plant or system being controlled. This ability is not just important to the real world but also the design laboratory since if we can see what is going on and determine how to make it operate more efficiently, with less wasted effort and energy, and a greater level of safety and cost effectiveness thus creating a better product. The tools and techniques of computer applications, modern instrumentation, electronics and analytical techniques have a major role in curriculum. The open courses offered ensure adequate exposure to global and local concerns that explore the many aspects of societal relevance in environmental science. It also gives opportunity to explore the multi-disciplinary nature of science. These students can continue to take up courses such as MSc Instrumentation, MSc Biomedical Instrumentation, MSc Electronics & Instrumentation, MSc Instrumentation Technology, MCA and MBA.
Programme Specific Outcome		The BSc Instrumentation graduates will be useful as scientific and laboratory assistants to assist design specialties as well as maintenance personal in industries especially in oil and gas sector. Biomedical Instrumentation introduced in the curriculum will make graduates useful in the medical field. The project work will equip them to cater to the specialized needs of industry, scientific laboratories, medical electronics and precision technology fields. This course is to equip 10+2 (Science Group) students with the theory of Instrumentation and also to train them in achieving technical expertise in instrumentation. We aim to provide a solid foundation in all aspects of Instrumentation and to show a broad spectrum of modern trends in the subject and also to develop experimental, computational and mathematical skills of students. The syllabi are framed in such a way that it generates graduates of the calibre sought by industries and public service as well as academic teachers and researchers of the future.
Sem	Course	Outcomes. At the end of the course students will be able to:
1	INS1B01 APPLIED MATHEMATIC S	<ul style="list-style-type: none"> ➤ Examine the continuity of various functions and can perform the algebraic evaluation of the limits. ➤ Understand the concept of derivatives and which will help them to apply in problems

		<ul style="list-style-type: none"> ➤ Acquiring fundamental concept of definite integrals and application of those integrals ➤ Acquire fundamental concepts of probability and statistics which enable them to apply and solve problems in their area of interest
2	INS2B02 PRINCIPLES OF INSTRUMENTATION	<ul style="list-style-type: none"> ➤ Explain functional elements of measurement systems and classification of instruments ➤ Explain units of signals and input-output configuration of instruments/measurement systems ➤ Explain static characteristics of instruments and errors in measurements ➤ Explain loading effects of measuring instruments
3	INS3B03 SIGNALS AND SYSTEMS	<ul style="list-style-type: none"> ➤ Solve problems from following topics: signal classification, representation, basic signal operations and properties of systems ➤ Apply theory of convolution to find response of continuous-time LTI system ➤ Apply Fourier representations to analyse the spectral characteristics of continuous-time periodic and aperiodic signals ➤ Apply the Laplace transform for the analysis of continuous-time systems
	INS3B04 INDUSTRIAL INSTRUMENTATION I	<ul style="list-style-type: none"> ➤ Explain principle, working and industrial applications of techniques used for the measurement of force, torque and speed. ➤ Explain principle, working and industrial applications of techniques used for pressure measurement. ➤ Explain principle, working and industrial applications of techniques used for the measurement of level and weight ➤ Explain principle, working and industrial applications of techniques used for the measurement of humidity and pH
	A11 PROGRAMMING IN PYTHON	<ul style="list-style-type: none"> ➤ Understand various statements, data types and functions in Python ➤ Develop programs in Python programming language ➤ Understand the basics of Object oriented programming using Python
	A12 SENSORS AND TRANSDUCERS	<ul style="list-style-type: none"> ➤ Explain resistance, inductance and capacitance transducers. ➤ Perceive the concepts of temperature transducers. ➤ Perceive the concepts level transducers and pressure ➤ Explain flow transducers, electromagnetic transducers, radiation sensors and sound transducers
	INS4B05 INDUSTRIAL INSTRUMENTATION II	<ul style="list-style-type: none"> ➤ Explain principle, working and industrial applications of techniques used for the measurement of flow
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		<ul style="list-style-type: none"> ➤ Explain principle, working and industrial applications of control valves ➤ Explain principle, working and industrial applications of techniques used for the measurement of viscosity and air pollution ➤ Explain principle, working and industrial applications of techniques used for the measurement of density, techniques used for gas and liquid sampling and gas analysers
	INS4B06 ELECTRIC CIRCUITS AND MEASURING INSTRUMENTS	<ul style="list-style-type: none"> ➤ Apply basic network theorems for solving electrical circuits ➤ Understand the basic principle of operation of indicating instruments Understand energy measurement, resistance measurement and measurement of magnetic parameters ➤ Understand the operation of CRO, potentiometers and digital measurement techniques
	A13 DATA COMMUNICATION AND OPTICAL FIBERS	<ul style="list-style-type: none"> ➤ To Acquaint with the structure of Data Communications System and its components. ➤ To Familiarize with different network terminologies and transmission media. ➤ To gain knowledge of the different multiplexing techniques, Telephone system, Mobile system – GSM. ➤ To become familiar with the functions of a Datalink layer and switching. ➤ To acquire the knowledge of Optical Fibre Cable and its working
	A14 MICROPROCESSORS ARCHITECTURE AND PROGRAMMING	<ul style="list-style-type: none"> ➤ Study general architecture of microprocessor. ➤ Write assembly language programs, both simple programs and interfacing programs . ➤ Know how to interface peripheral devices with 8085. ➤ Study the architecture of 8086 and additional features compared to 8085
5	INS5B07 ANALYTICAL INSTRUMENTATION	<ul style="list-style-type: none"> ➤ Explain the instrumentation and operation of UV-Visible Spectroscopy ➤ Explain the instrumentation and operation of IR, FTIR and Raman spectrometry ➤ Explain the basic principle and operation of NMR, ESR and X-Ray spectroscopy ➤ Explain the instrumentation and operation of Mass spectrometry and chromatographic techniques
	INS5B08 CONTROL SYSTEMS	<ul style="list-style-type: none"> ➤ Model the LTI system using differential equations, block diagrams and Laplace transforms ➤ Explain the transient and steady state characteristics of LTI systems in time domain ➤ Explain the frequency domain characteristics of LTI systems

		<ul style="list-style-type: none"> ➤ Analyse the stability of LTI systems using Routh stability criteria, Root locus, Bode plot and Nyquist stability criteria ➤ Design cascade compensators using root locus and bode plots
	INS5B09 BIOMEDICAL INSTRUMENTATION	<ul style="list-style-type: none"> ➤ Explain human physiology and anatomy of important systems ➤ Perceive the concept of origin of bio-potential ➤ Explain the electro-physiological measurements ➤ Perceive the concept of measurements of various non-electrical parameters from human body ➤ Perceive the concepts of electrical safety in medical environments ➤ Explain various medical imaging modalities, assistive and therapeutic equipments
	INS5B10 OPTOELECTRONIC INSTRUMENTATION	<ul style="list-style-type: none"> ➤ Explain the basic principles and working of interferometers and optical devices based on modulation of light ➤ Explain the operating principles and structure of laser ➤ Explain applications of laser ➤ Explain fiber characteristics measurements, fiber optic sensors and their components
	INS5B11 MICROCONTROLLERS	<ul style="list-style-type: none"> ➤ Explain the evolution and Classification of microcontrollers and generalize the architecture of microcontrollers 8051 timing diagram, memory, stack, registers and ports ➤ Demonstrate machine, assembly, and high level languages and explain Instruction sets and addressing modes of 8051 microcontroller. ➤ Develop an idea about serial communication, interrupt system and design programs to handle Timers in assembly language and C language. ➤ Explain interfacing of memory, LCD, matrix keyboard, stepper, DC motor ADC and DAC, sensors, relays to 8051 microcontroller
	Open Course : INS5D03 ELEMENTS OF ENVIRONMENTAL SCIENCE	<ul style="list-style-type: none"> ➤ After the completion of the course, students will be able to understand the concepts associated with Environmental Science.
6	INS6B12 PROCESS CONTROL INSTRUMENTATION	<ul style="list-style-type: none"> ➤ Summarize the concept, principle, blocks and evaluation of process control ➤ Explain different discontinuous and continuous controller used in process ➤ Build analog and digital circuit to realize the discontinuous and continuous control modes ➤ Explain the control loop characteristics and tuning
	INS6B13 INSTRUMENT SYSTEM DESIGN	<ul style="list-style-type: none"> ➤ Acquire knowledge about system design concepts. Perceive the concepts of design and selection of instrumentation systems with suitable measuring devices and final control elements.

		<ul style="list-style-type: none"> ➤ Explain the responsibilities of an engineer in a project and instrument project control. ➤ Acquire an ability to perform and supervise installation and commissioning of instrumentation systems and to know about the electric and intrinsic aspect of selection and safety
	INS6B14 PLC AND SCADA	<ul style="list-style-type: none"> ➤ Explain general architecture of PLC, components of PLC and applications ➤ Understand the basic programming concepts and various logical Instructions used in Programmable logic controller (PLC). ➤ Perceive the concepts of DCS system
	INS6B15B INSTRUMENTATION IN PETROCHEMICAL INDUSTRIES	<ul style="list-style-type: none"> ➤ Explain the origin and favourable geological conditions for the formation and accumulation of petroleum and natural gas. Also Understand the modern oil finding techniques and its feasibility for oil production ➤ Acquire knowledge on crude oil and its products .also Understand the manufacturing techniques involved in petroleum derivatives ➤ Explain the important parameters to be monitored and analyzed in Petrochemical Industry. ➤ Perceive the principles and theory of instrumentation needed to implement process control in petrochemical industry.
	INS6B16(P) MICROCONTROLLER LAB	<ul style="list-style-type: none"> ➤ Understand Assembly language programming of 8051 family using Keil Microvision tool. ➤ Understand Embedded C Programming using KeilMicrovision tool ➤ Use of microcontroller kits with interfacing peripheral devices
	INS6B16(P) INSTRUMENTATION AND PROCESS CONTROL LAB	<ul style="list-style-type: none"> ➤ After the completion of the course, students will be able to work with various instruments associated with instrumentation and process control.
	INS6B18(Pr) PROJECT	<ul style="list-style-type: none"> ➤ Work in a team to select a problem for project work ➤ Review and evaluate the available literature on the chosen problem ➤ Formulate the methodology to solve the identified problem ➤ Apply the principles, tools and techniques to solve the problem ➤ Prepare and present project report