

PO, PSO & CO

Programme Outcomes (POs),
Programme Specific Outcomes (PSOs)
and Course Outcomes (COs)

Undergraduate Programmes



**Internal Quality
Assurance Cell**

**ST. ALOYSIUS
COLLEGE EDATHUA**

UNDER GRADUATE PROGRAMMES

**PROGRAMME OUTCOMES (POs),
PROGRAMME SPECIFIC OUTCOMES (PSOs)
&
COURSE OUTCOMES (COs)**

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PROGRAMME OUTCOMES (POs) - UG

Sl. No.	POs	Graduate Attributes
PO1	Ability to communicate effectively and possess scientific temper and modern outlook of the world.	<i>Communication Skill</i>
PO2	Develop ecological consciousness and imbibe the principles of Swachh Bharat in deeds and actions.	<i>Environment and Sustainability</i>
PO3	Become committed and compassionate men and women, respecting the dignity of each individual.	<i>Ethics</i>
PO4	Engage in life-long learning to acclimatize themselves in an ever-changing world.	<i>Life-long Learning</i>
PO5	Ability to work effectively as an individual, and as a team member.	<i>Individual and Team Work</i>
PO6	Ability to apply the scientific knowledge acquired in classrooms and labs in real-life situations and be motivated and ready to pursue higher education.	<i>Disciplinary Knowledge</i>
PO7	Become worthy global citizens who will emerge as future leaders, entrepreneurs and efficient administrators.	<i>Leadership Readiness/Qualities</i>

B.A. ECONOMICS

(CBCS-Under Graduate Degree Programme, 2017 admission onwards, M.G. University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Create a deep knowledge in the subject and there by prepare them for employment and future studies.
PSO2	Master the ability to forecast the effectiveness of the policies made by the government and other agencies.
PSO3	Develop a comprehensive knowledge about the historic, political and economic features of our nation and the world.
PSO4	Evaluate various social and economic problems in the society and develop answers to the problems as global citizens.
PSO5	Acquire skills to enhance the economic way of thinking and research.

COURSE OUTCOMES (COs)

CORE COURSES

SEMESTER 1

EC1CRT01- PERSPECTIVES AND METHODOLOGY OF ECONOMICS

- CO1:** Outline the nature, subject matter and importance of learning economics and how economics differ from other science and social science streams.
- CO2:** Discuss about the tools and basic models of Economics.
- CO3:** Assess the difference between various schools of thought in Economics.
- CO4:** Discuss the concepts of research designing.
- CO5:** Illustrate the methods of data collection and analysis by setting a hypothesis.

SEMESTER 2

EC2CRT02- MICRO ECONOMIC ANALYSIS I

- CO1:** Restate the fundamental ideas and basic models of Microeconomics.
- CO2:** Assess the market equilibrium, forecasting and its key players-Demand and Supply.
- CO3:** Analyze the consumer behaviour using cardinal, ordinal and modern utility norms.
- CO4:** Identify the various cost concepts related to firm's decision making.
- CO5:** Illustrate the optimum production of a firm, theoretically and empirically.

SEMESTER 3

EC3CRT03- MICRO ECONOMIC ANALYSIS II

- CO1:** Assess the concept of market and different types of market faced by an individual firm.

- CO2:** Evaluate the equilibrium of firm under the market conditions of perfect competition, monopoly, monopolistic competition and oligopoly.
- CO3:** Construct the price determination of various factors of production.
- CO4:** Explain functional relationship and various theories of factor market.
- CO5:** Discuss the fundamentals and basic theories of welfare economics.

EC3CRT04- ECONOMICS OF GROWTH & DEVELOPMENT

- CO1:** Conceptualize growth and development using various indices.
- CO2:** Rate the various issues and theories of growth and development.
- CO3:** Evaluate the importance of education, health and nutrition for economic development.
- CO4:** Assess how development is related with poverty and population
- CO5:** Explain how gender equality is important to economic development.

SEMESTER 4

EC4CRT05- MACRO ECONOMICS I

- CO1:** Illustrate the different types of macroeconomic models.
- CO2:** Discuss the importance of microeconomics in daily life and the difference between microeconomics and macroeconomics.
- CO3:** Assess the concept of national income and various methods of calculating national income.
- CO4:** Rate the classical school of economics and their basic macroeconomic theories.
- CO5:** Assess the contributions of J.M. Keynes to macroeconomics and analyze the Keynesian consumption function.
- CO6:** Discuss the Orthodox Keynesian models in macroeconomics.

EC4CRT06- PUBLIC ECONOMICS

- CO1:** Identify the concepts of public finance, public goods and the difference between public and private finance.
- CO2:** Interpret the various sources of public revenue and theories related to public revenue.
- CO3:** Analyze various types of taxation as a source of revenue to the government.
- CO4:** Illustrate the need public expenditure and public debt with the help of supporting theories.
- CO5:** Evaluate the financial relationship between Centre government and state governments in India.

SEMESTER 5

EC5CRT07- QUANTITATIVE TECHNIQUES

- CO1:** Solve problems on basic mathematical methods like progression, interest, Net Present Value.
- CO2:** Use differential calculus to find the maxima and minima in case of economic functions.
- CO3:** Discuss various types of functions and solve problems on set theory, matrices and different types of equations.
- CO4:** Compute the probability of events and explain the type events, the addition rule and multiplication rule of probability.
- CO5:** Illustrate the use of Binomial and Normal distributions to calculate the probability.

EC5CRT08- MACRO ECONOMICS II

- CO1:** Rate various theories related to consumption and investment.
- CO2:** Inspect the relationship between money, inflation and unemployment and compose solutions for the problems related to inflation.

- CO3:** Discuss the measurement of money supply and inflation in India.
- CO4:** Analyze the importance of fiscal policy and monetary policy in framing an economy.
- CO5:** Evaluate post Keynesian and recent developments in macroeconomics.

EC5CRT09- ENVIRONMENTAL ECONOMICS

- CO1:** Discuss the importance of preserving natural resources and ecosystem.
- CO2:** Identify different types of pollutions and other hazards and assess its negative impact on environment.
- CO3:** Explain various national and international laws that are designed to protect the nature.
- CO4:** Use economic models to analyze various environmental problems.
- CO5:** Restate the role of the UNO and other international agencies to protect human rights and environmental rights.

EC5CRT10- INTRODUCTORY ECONOMETRICS

- CO1:** Illustrate the idea of regression analysis and design it to interpret economic data.
- CO2:** Construct and verify the hypotheses used for analyzing economic data.
- CO3:** Solve statistical tests to investigate whether the classical assumptions of regression are satisfied.
- CO4:** Design new econometric models and rate various econometric models available in economics literature.

EC5OPT03- GENDER ECONOMICS

- CO1:** Explain the basic concepts of gender and assess various indicators of gender development and equality.

- CO2:** Discuss how gender is related to poverty, health, education and demography.
- CO3:** Analyze the reasons for gender inequality around the globe and particularly in India.
- CO4:** Explain national and international policies to promote gender equality and discuss about international agencies that supplement the same.

SEMESTER 6

EC6CRT11 - QUANTITATIVE METHODS

- CO1:** Discuss the basic concepts of statistics and its application in Economics.
- CO2:** Identify appropriate sampling and data collection methods for a given situation.
- CO3:** Calculate measures of central tendency and measures of dispersion in grouped and ungrouped data cases.
- CO4:** Identify the type of linear relationship using scatter plot and correlation coefficient.
- CO5:** Employ regression technique to model pattern in the data and to make predictions data collection.
- CO6:** Demonstrate understanding of the concepts of time series and the measurement of trend.

EC6CRT12- INTERNATIONAL ECONOMICS

- CO1:** Compare and contrast various traditional and modern theories in international economics.
- CO2:** Compose the Balance of Payment and Balance of Trade statistics of an economy.
- CO3:** Rate the gains from international trade and assess trade policies.
- CO4:** Evaluate the functioning of foreign exchange market and its movements.
- CO5:** Discuss about various international agencies and their relations with the member nations.

EC6CRT13- MONEY & FINANCIAL MARKETS

- CO1:** Analyze the functioning of banking and non-banking financial institutions in India.
- CO2:** Explain the functions of money in general and the money demand and supply in India in particular.
- CO3:** Illustrate the structure and functioning of Indian money market.
- CO4:** Discuss the structure and assess the functions of Indian capital markets.
- CO5:** Evaluate the operations and trends in equity market, derivative market and other kinds of financial markets throughout the world.

EC6CRT14- INDIAN ECONOMY

- CO1:** Explain the structural changes in the Indian economy over the years and changes in the role of government as an active economic agent.
- CO2:** Discuss the demographic features and changes in India over the years as a result of India's population policy.
- CO3:** Assess the role of agricultural, industrial and service sectors in development of Indian economy.
- CO4:** Examine the role of Planning Commission in India's economic development and the functions of NITI Ayog as a promoter of economic development.
- CO5:** Illustrate the economic, social and demographic changes in Kerala economy as a result of Kerala's specific model of development.

EC6CBT03- HISTORY OF ECONOMIC THOUGHT

- CO1:** Assess the methodological evolution and explain history of economic thought.
- CO2:** Identify and evaluate the contributions of all the ancient schools of economic thought.

- CO3:** Evaluate the pros and cons of various intellectual streams in Economics.
- CO4:** Explain the ideas and contributions of Indian economists from Kautilya to Amartya Sen.

COMPLIMENTARY COURSES

1. HISTORY

SEMESTER 1

HY1CMT02 - SOCIAL FORMATIONS IN PRE- MODERN INDIA

- CO1:** Explain the historical construction of India's ancient past civilizations.
- CO2:** Compare and contrast how Feudalism affected the social and cultural scenario of India.
- CO3:** Illustrate the vast culture and cultural changes in South India.
- CO4:** Discuss the social formation occurred in the period of Mughals and how it influences the present Indian society.

SEMESTER 2

HY2CMT04 - HISTORY OF THE FREEDOM MOVEMENT IN INDIA

- CO1:** Explain the importance and consequences of India's First War of Independence.
- CO2:** Investigate how First World War changed the social and political history of India.
- CO3:** Evaluate how various freedom struggles overtime contributed to India's Independence.
- CO4:** Rate how Gandhian ideologies influenced India's freedom struggle and formation of a new India.
- CO5:** Discuss the role of Dr B.R. Ambedkar in framing India's constitution.

2. POLITICS

SEMESTER 3

PS3CMT01- AN INTRODUCTION TO POLITICAL SCIENCE

- CO1:** Explain the importance of the subject Political Science and major concepts used in the subject.
- CO2:** Discuss the idea of State and the role of State in modern world.
- CO3:** Examine the constitutional design and institutional framework of government.
- CO4:** Restate and analyze various political ideologies and their contributions to the society.

SEMESTER 4

PS4CMT05- INDIAN CONSTITUTION: SOCIAL ISSUES IN INDIA

- CO1:** Describe the history of formation of Indian Constitution after India's freedom.
- CO2:** Discuss the salient features of Indian constitution and its structure.
- CO3:** Explain the fundamental rights and duties of an Indian citizen.
- CO4:** Illustrate the relationship between the Centre and state governments and with the decentralized bodies.
- CO5:** Outline the structure of Indian political system and recommend solutions for the challenges faced by the Indian political system.

B.A. ENGLISH

(MODEL-II, TEACHING ENGLISH IN LOWER CLASSES)

(CBCS-Under Graduate Degree Programme, 2017 admission onwards, M.G. University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Develop skill sets required for teaching lower classes.
PSO2	Ability to use better English language skills for career advancement.
PSO3	Identify more avenues in the teaching profession world over.
PSO4	Become competent in the teaching of literary works looking at its various nuances compelling thought and perspective.
PSO5	Outline various genres in English Literature and do a comprehensive study of the structural and aesthetic components constituting the same.

COURSE OUTCOMES (COs)

(A) COMMON COURSES

SEMESTER 1

EN1CCO1- FINE TUNE YOUR ENGLISH

- CO1:** Become competent in the use of English Grammar and vocabulary.
- CO2:** Become capable of effective communication skills.
- CO3:** Use English language as a tool for career advancement.
- CO4:** Identify common errors in English to better academic writing skills.

SEMESTER 2

EN2CCO3- ISSUES THAT MATTER

- CO1:** Become aware of issues of concern that are of contemporary relevance.
- CO2:** Develop a rational and empathetic outlook on such matters.
- CO3:** Become active participants in promoting sustainable measures for protecting our environment.
- CO4:** Examine colonialism through the lens of issues faced by the colonized natives.

SEMESTER 3

EN2CCO5- LITERATURE AND/AS IDENTITY

- CO1:** Evaluate the issues concerning diasporic identity through literature.
- CO2:** Analyze the conflict-ridden experiences of people belonging to crisis affected regions of South Asia.
- CO3:** Examine the literary creations by authors of their life experiences to understand the question of identity representation and its relevance.

CO4: Investigate the distinctiveness of native communities to decipher their history, tradition and culture.

SEMESTER 4

EN2CC07- ILLUMINATIONS

CO1: Discuss motivating stories in literature.

CO2: Engage with examples of those people who have overcome various hardships in life and emerged successful in their respective fields.

CO3: Develop an optimistic attitude in life.

CO4: Locate various works in specific categories of writing, taking into notice the expansiveness of the literary output.

(B) VOCATIONAL COURSES

SEMESTER 1

EN1VO01 (T)-SCHOOL ORGANIZATION

CO1: Discuss the administrative aspects behind the running of a school in India in detail.

CO2: Outline the powers and responsibilities of authorities concerned in the system of management of a school.

CO3: Analyze the importance of examination and other assessment mechanisms.

CO4: Illustrate the constitution of student bodies and parent-staff associations in a school.

SEMESTER 2

EN2VO02 (T)- CONVERSATIONAL ENGLISH

CO1: Explain the relevance of better language skills in society.

CO2: Plan conversation skill improvement sessions through activity exercises with the aid of language lab.

CO3: Analyze the use of vocabulary in various registers.

CO4: Select a suitable matrix in evaluating the language skill potential of students through various assessment methods.

SEMESTER 3

EN3VO03 (TC)- METHODOLOGY OF TEACHING ENGLISH

CO1: Analyze the principles behind learning a foreign language.

CO2: Discuss various methodologies behind teaching English.

CO3: Describe the application of teaching methodology through practical sessions in select schools.

CO4: Design new methodologies in teaching English based on the potential of students.

SEMESTER 4

EN4VO04 (TC)- EDUCATIONAL TECHNOLOGY

CO1: Explain various technical aid in teaching with the help of language lab

CO2: Design teaching plans based on the curriculum.

CO3: Explain the importance of promoting active learning behaviour in classrooms.

CO4: Construct ways of facilitating online classroom environment more accessible for the students.

(C) COMPLEMENTARY COURSES

SEMESTER 1

EN1CM01 (T)- EDUCATION IN INDIA

CO1: Outline an in-depth study of the development of education system in India.

- CO2:** Devise various methods for teaching English to Indian students.
- CO3:** Examine the role of Education in Indian Democracy.
- CO4:** Identify the best method of teaching students in accordance with the differing classroom environments.

SEMESTER 2

EN2CM02 (T) - EDUCATIONAL PSYCHOLOGY

- CO1:** Explain the relevance of educational psychology through the study of various experiments done in the field.
- CO2:** Devise teaching methodology for students belonging to different categories from advanced learners to slow learners.
- CO3:** Inspect various stages in the development of a student from childhood to adolescence to familiarize the target audience.
- CO4:** Plan methods to bring slow learners to improve their learning abilities.

SEMESTER 3

EN3CM03- THE EVOLUTION OF LITERARY MOVEMENTS: THE SHAPERS OF DESTINY

- CO1:** Analyze the history of Britain to contextualize various works in British Literature.
- CO2:** Assess how historical events help shape the present.
- CO3:** Explain literature as a way of representing History through the study of literary background constituting British Literature.
- CO4:** Examine British culture and tradition in order to have a better awareness about the Island nation.

SEMESTER 4

EN4CM04- THE EVOLUTION OF LITERARY MOVEMENTS: THE CROSS CURRENTS OF CHANGE

- CO1:** Examine various social movements that had the effect of changing the cultural fabric of

society.

- CO2:** Analyze the discourse of subaltern studies with special emphasis on gender studies and anti- Dalit protests.
- CO3:** Investigate the theories associated with enlightenment philosophy that propagated the virtues of humanism.
- CO4:** Outline the history of Kerala Renaissance and how it resulted in social awakening of the masses against caste-based discrimination.

(D) CORE COURSES

SEMESTER 1

EN1CR01- METHODOLOGY OF LITERARY STUDIES

- CO1:** Outline the history of English literature.
- CO2:** Analyze the basics of literary theory starting from the traditional approach.
- CO3:** Explain basic literary terms that will enable a bridge to understanding the fundamentals of literary theory and criticism.
- CO4:** Inspect into contemporary trends in literary theory and criticism.

SEMESTER 2

EN2CR02- INTRODUCING LANGUAGE AND LITERATURE

- CO1:** Analyze the evolution of English language and various theories associated with the same.
- CO2:** Outline the overview of different ages in the history of English literature as a preface to various literary works.
- CO3:** Explain various theories involving film studies to help read movies with a critical point of view.

CO4: Inspect loan words from other languages into English as a process of analyzing cultural exchange between geographical areas.

SEMESTER 3

EN3CR03- HARMONY OF PROSE

CO1: Analyze prose literature both Western and Non- Western.

CO2: Explain different ways of writing prose texts in detail.

CO3: Investigate the texts in writing with the perspective of enhancing academic writing skills.

EN3CR04- SYMPHONY OF VERSE

CO1: Examine rules of prosody with the perspective of understanding the language of poetry better.

CO2: Analyze the historical underpinnings of poetry by contextualizing poetry into different periods in History.

CO3: Compare and contrast various categories of writing poetry with the intention of recognizing the structural differences in them.

SEMESTER 4

EN4CR05- MODES OF FICTION

CO1: Analyze different narrative modes of fiction.

CO2: Examine fiction from all across the world.

CO3: Juxtapose literary works with various moments in literary history.

CO4: Create pieces of short fiction for understanding the features specific to fiction.

EN4CR06- LANGUAGE AND LINGUISTICS

- CO1:** Explain advanced British English pronunciation for academic or career advancement.
- CO2:** Analyze pronunciations of English with regional variations in terms of dialectical differences.
- CO3:** Compare and contrast various theories concerning the development of the syntax of the English language in order to facilitate a deeper understanding of the English language.
- CO4:** Locate theoretical advancements in Linguistics to definite periods to recognize the trajectory of the development of various grammatical functions.

SEMESTER 5

EN5CR07- ACTS ON THE STAGE

- CO1:** Create a platform for the performance of drama.
- CO2:** Analyze major playwrights and their works.
- CO3:** Locate drama as a major part of the literary oeuvre.
- CO4:** Design dramas for the stage and explain what goes into the making of a theatre.

EN5CR08- LITERARY CRITICISM AND THEORY

- CO1:** Explain various developments in the field of Literary Criticism and Theory.
- CO2:** Analyze the nuances of literary theory with the purpose of critiquing a work of literature.
- CO3:** Examine the Indian Schools of Literary Criticism.
- CO4:** Examine contemporary developments in the field of literary theory and criticism.

EN5CR09- INDIAN WRITING IN ENGLISH

- CO1:** Inspect the position of Indian Languages in the world literatures.
- CO2:** Analyze the concerns of identity formulation through the literary works of diasporic

writers.

- CO3:** Examine some of the classics in Indian English literature across the genres.
- CO4:** Investigate the possibilities of cross-cultural literary exchanges in order to understand the recognition of Indian culture by a non-native audience.

EN5CREN01- ENVIRONMENTAL SCIENCE AND HUMAN RIGHTS

- CO1:** Create participation towards the implementation of Sustainable Development Goals as envisaged by the United Nations.
- CO2:** Explain the ethical concerns based on Human Rights violation by having a proper understanding of their rights offered in the national and international forums.
- CO3:** Analyze the role of literature in the protection of environment and promotion of human rights through the analysis of various literary works.
- CO4:** Investigate several Environment and Human Rights movements across India.

SEMESTER 6

EN6CR10- POSTCOLONIAL LITERATURES

- CO1:** Explain history of colonialism and its socio-economic-psychological implications on those subjected to foreign rule through select works.
- CO2:** Analyze the language of postcolonial literatures.
- CO3:** Explain the phenomenon of neo-colonialism as the new signpost in the history of post colonialism.

EN6CR11- WOMEN WRITING

- CO1:** Investigate the major landmarks in the feminist movement.
- CO2:** Analyze the cinematic adaptations of the literary works to have a visual account of the phenomenon of feminism.
- CO3:** Discuss the politics of power ensconced in anti-feminist discourse.

CO4: Inspect contemporary movements associated with gender studies such as the “Me-Too Movement.”

EN6CR12- AMERICAN LITERATURE

CO1: Investigate the factors that shaped America including the migration and the world wars.

CO2: Inspect the myriad identities from different corners of the world that has come together to complete the nation that is America.

CO3: Analyze major authors in American literature.

EN6CR13- MODERN WORLD LITERATURE

CO1: Explain the notions of canon by ransacking literatures from various identities and cultures.

CO2: Analyze the ideas of central and the peripheral literatures.

CO3: Discuss the major authors and works from various corners of the world.

B.Sc. CHEMISTRY

(CBCS-Under Graduate Degree Programme, 2017 admission onwards, M.G. University)

PROGRAM SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Comprehend the fundamental concepts in Chemistry.
PSO2	Develop aptitude in the learning of emerging and advanced areas of Chemistry.
PSO3	Acquire skills in the proper handling of apparatus, chemicals and develop analytical skills in Chemistry.
PSO4	Master skills in critical thinking and scientific reasoning.
PSO5	Analyze the impact of chemistry in the society and environment.

COURSE OUTCOMES (COs)

SEMESTER I

CH1CRT01-GENERAL AND ANALYTICAL CHEMISTRY

- CO1:** Describe the methodology and perspectives of Science and the importance of Science in the development of culture.
- CO2:** Do self-directed experimentation work and research in chemistry under the guidance and supervision of a mentor.
- CO3:** Explain various atomic properties of elements and learn the arrangement of elements in the periodic table.
- CO4:** Analyze experimental parts of the theory and evaluate the analytical data.

SEMESTER II

CH2CRT02- THEORETICAL AND INORGANIC CHEMISTRY

- CO1:** Describe the various theories of chemical bonding with examples.
- CO2:** Explain various atomic models and the structure of atom.
- CO3:** Compare the properties of s,p,d and f block elements.
- CO4:** Predict the magnetic behaviour of various molecules based on Molecular orbital theory.

CHCRP01-VOLUMETRIC ANALYSIS

- CO1:** Analyze quantitatively various compounds using Acidimetry and Alkalimetry.
- CO2:** Analyze quantitatively various compounds using Complexometry.
- CO3:** Analyze quantitatively various compounds using Permanganometry dichrometry
- CO4:** Analyze quantitatively various compounds using Iodimetry and iodometry.

SEMESTER III

CH3CRT03-ORGANIC CHEMISTRY-I

- CO1:** Predict the structure and stability of various reaction intermediates in organic reactions and compare various electronic displacements.
- CO2:** Differentiate the optical and geometric isomers of various organic compounds.
- CO3:** Predict the aromaticity of an organic compound.
- CO4:** Discuss the preparation, reactions, and properties of alkanes, halo alkanes, aromatic hydrocarbons and aryl halides.

SEMESTER IV

CH4CRT04-ORGANIC CHEMISTRY-II

- CO1:** Describe the preparation, reactions, and properties of alcohols, phenols, ethers and epoxides.
- CO2:** Describe the preparation, reactions, and properties of carbonyl compounds, carboxylic acids, aromatic sulfonic acids and their derivatives.
- CO3:** Explain the reaction mechanisms of various name reactions.
- CO4:** Relate various name reactions in organic chemistry.

CH4CRP02-QUALITATIVE ORGANIC ANALYSIS

- CO1:** Analyze systematically different functional groups.
- CO2:** Determine Melting point of various compounds.
- CO3:** Determine Boiling point of various compounds.
- CO4:** Prepare derivatives of various of organic compounds.

SEMESTER V

CH5CRT05- ENVIRONMENTAL STUDIES AND HUMAN RIGHTS

- CO1:** Describe the status of current environmental issues.
- CO2:** Explain the basic rights of an individual living in a society.
- CO3:** Outline the preventive measures for pollutants.
- CO4:** Justify the ambient soil conditions for the growth of crops.
- CO5:** Conserve energy and explore new renewable energy sources.
- CO6:** Control pollution in air, water and soil.

CH5CRT06- ORGANIC CHEMISTRY-III

- CO1:** Discuss the preparation and reactions of nitrogen compounds.
- CO2:** Describe the preparation and properties of heterocyclic compound.
- CO3:** Describe the classification and chemical properties of polymers and carbohydrates
- CO4:** Explain synthesis, classification and applications of dyes.

CH5CRT07- PHYSICAL CHEMISTRY-I

- CO1:** Outline the structure, properties and defects in different types of solids.
- CO2:** Explain the theory of real gases.
- CO3:** Outline different adsorption isotherms and electrical properties of molecules.
- CO4:** Illustrate the theories, models and properties of liquid state.

CH5CRT08- PHYSICAL CHEMISTRY-II

- CO1:** Examine the chemical aspects of quantum mechanics.
- CO2:** Solve Schrodinger equation.

- CO3:** Explain the interaction of various components of EM radiation with matter.
- CO4:** Calculate the rotational and vibrational energy levels and internuclear distance.
- CO5:** Explain the interaction of UV/Vis radiation with molecules.
- CO6:** Predict the NMR/ESR spectra of simple molecules/and radicals.

CH5OPT01- OPEN COURSE- CHEMISTRY IN EVERYDAY LIFE

- CO1:** Explain the effects of food additives.
- CO2:** Understand the effects of cosmetics on the body.
- CO3:** Understand principle of water purification.
- CO4:** Learn the fundamentals of nanomaterials.

SEMESTER VI

CH6CRT09- INORGANIC CHEMISTRY

- CO1:** Distinguish the crystal field splitting pattern in coordination compounds.
- CO2:** Describe the structure and bonding in selected organometallic compounds.
- CO3:** Assign structure to metal carbonyls based on the electron counting scheme.
- CO4:** Explain various applications of bio-inorganic compounds.

CH6CRP03- QUALITATIVE INORGANIC ANALYSIS

- CO1:** Analyze systematically the cations present in a mixture.
- CO2:** Analyze systematically the anions present in mixture.
- CO3:** Explain the principle involved in inorganic analysis.
- CO4:** Compare the solubility product values of various ions.

CH6CRT10- ORGANIC CHEMISTRY-IV

- CO1:** Describe structure and functions of different natural products like carbohydrates and amino acids.
- CO2:** Describe structure and functions of different natural products like proteins, vitamins, lipids, steroids and nucleic acids.
- CO3:** Compare the biological functions of different natural products.
- CO4:** Explain the basic concepts of supramolecular chemistry.

CH6CRP04- ORGANIC PREPARATION AND LABORATORY TECHNIQUES

- CO1:** To separate two compounds by TLC.
- CO2:** To separate two compounds by distillation and solvent extraction.
- CO3:** To purify compounds by crystallization.
- CO4:** To prepare different derivatives of different organic compounds.

CH6CRT11- PHYSICAL CHEMISTRY-III

- CO1:** Analyze the laws of thermodynamics.
- CO2:** Demonstrate the application of chemical equilibrium.
- CO3:** Explain various concepts in phase equilibria.
- CO4:** Discuss the kinetics of reaction.

CH6CRP05- PHYSICAL CHEMISTRY PRACTICAL

- CO1:** To determine transition temperature of salt hydrates.
- CO2:** To find out the CST of phenol water system.
- CO3:** To determine equivalence point by conductometric and potentiometric titrations.
- CO4:** To determine MW of compounds by Rast's method.

CO5: To determine viscometrically the percentage composition of mixture.

CH6CRT12- PHYSICAL CHEMISTRY-IV

CO1: Define binary liquid mixture, azeotrope, CST and Colligative properties.

CO2: Explain the applications of conductance measurements.

CO3: Find out the symmetry elements and point group of small molecules.

CO4: Summarize the basics of photochemistry.

CH6CRP06- PHYSICAL CHEMISTRY PRACTICAL

CO1: Estimate compounds gravimetrically.

CO2: Explain the principle of gravimetric analysis.

CO3: Analyze and explain the procedure in preparing, collecting, treating, and weighing a precipitate.

CO4: Explain procedures for the gravimetric estimation of various compounds.

CHOICE BASED COURSE:

CH6CBT03- SOIL AND AGRICULTURAL CHEMISTRY

CO1: Justify the ambient soil conditions for the growth of crops.

CO2: Illustrate various plant nutrients and fertilizers.

CO3: Differentiate between pesticides, fungicides and herbicides.

CO4: Explain the different type of soils present in Kerala.

COMPLEMENTARY COURSES (MATHEMATICS FOR B.Sc. CHEMISTRY):

SEMESTER 1

MM1CMT01- PARTIAL DIFFERENTIATION, MATRICES, TRIGONOMETRY AND NUMERICAL METHODS

- CO1:** Identify functions of different variables and acquire knowledge in partial differentiation.
- CO2:** Find Solutions of Homogeneous and Non-Homogeneous linear equations.
- CO3:** Discuss about Cayley Hamilton Theorem and its Applications.
- CO4:** Identify the hyperbolic and Circular functions and Summation of different types of series.
- CO5:** Find solution of algebraic and transcendental equations using different methods.

SEMESTER2

MM2CMT01-INTEGRAL CALCULUS AND DIFFERENTIAL EQUATIONS

- CO1:** Assess the volume of solids using Cross Sections.
- CO2:** Examine the length of an arc of a curve whose equation in parametric form.
- CO3:** Illustrate the area and volume by applying the technique of double and triple integral.
- CO4:** Solve first order linear differential equations.
- CO5:** Explain the origin of first order Partial Differential Equations
- CO6:** Solve linear Partial Differential Equation of First Order.

SEMESTER 3

MM3CMT01- VECTOR CALCULUS, ANALYTICGEOMETRY AND ABSTRACT ALGEBRA

- CO1:** Differentiate Vector Fields.
- CO2:** Illustrate gradient vector fields and find potential functions.

CO3: Assess the line integrals, surface area and surface integrals.

CO4: Examine the path independence.

SEMESTER IV

MM4CMT01- FOURIER SERIES, LAPLACE TRANSFORM AND COMPLEX ANALYSIS

CO1: Describe the idea of periodic functions, trigonometric series.

CO2: Find Fourier series of functions of any period and of even and odd functions and half range expansions.

CO3: Examine the fundamental ideas about power series method of solving differential equations.

CO4: Explain the mathematical theory behind the famous equations used in Physics such as Legendre equation and Legendre Polynomials, Rodrigues' Formula, etc.

CO5: Describe the concept of analytic functions, elementary complex functions and their properties.

CO6: Apply the theory and techniques of complex integration.

COMPLEMENTARY COURSES (PHYSICS FOR B.Sc. CHEMISTRY):

SEMESTER-I

PH1CMT02- PROPERTIES OF MATTER AND THERMODYNAMICS

CO1: Define states of matter.

CO2: Construct an idea of properties of solids and illustrate the use of material with their properties.

CO3: Develop the following concepts and solve problems involving them (a) Hooke's Law and other stress-strain laws, (b) Determination of rigidity modulus, (c) Uniform and Non-uniform bending, (d) I Section girder.

- CO4:** Construct an idea of properties of liquids and explain different phenomena associated with it.
- CO5:** Explain the motion of fluids by developing understanding of viscosity, Poiseuille's Law and Bernoulli's Equation.
- CO6:** Illustrate the laws of thermodynamics, understand its implications and explain cyclic processes and apply this to heat engines.

SEMESTER-II

PH2CMT02- MECHANICS AND SUPERCONDUCTIVITY

- CO1:** Discuss the physical quantities of accelerated motion of objects.
- CO2:** Explain different terms associated with rotational mechanics and obtain solutions to physical problems of rotational mechanics.
- CO3:** Assess the moment of inertia of different structures using parallel and perpendicular axes theorem.
- CO4:** Explain oscillatory motion and design and classify different oscillators.
- CO5:** Describe the concept of wave motion and able to construct different models describing wave motion.
- CO6:** Explain the basic superconductor parameters: critical temperature, critical current density, critical magnetic field. Understand the most important theories to explain superconductivity and discuss the applications of High temperature superconductors.

SEMESTER-III

PH3CMT02- MODERN PHYSICS AND MAGNETISM

- CO1:** Explain different atom models and its basic features.
- CO2:** Describe atomic nucleus and classify the nucleus according to their properties and salient features. Explain radioactivity and discuss different aspects of nuclear energy in

nuclear reactors and radio carbon dating.

- CO3:** Identify the main aspects of the historical development of quantum mechanics and discuss and interpret experiments that reveal the wave properties of matter.
- CO4:** Explain the central concepts and principles in quantum mechanics, such as the Schrödinger equation, the wave function and its statistical interpretation, the uncertainty principle, stationary and non-stationary states, time evolution of solutions.
- CO5:** Describe the properties of materials and application of semiconductor electronics. Apply the knowledge of semiconductors to illustrate the functioning of basic electronic devices.
- CO6:** Describe the properties of magnetic materials and classify it by its properties and explain Earth's Magnetism and its elements.

SEMESTER-IV

PH4CMT02- OPTICS AND SOLID-STATE PHYSICS

- CO1:** Discuss the interference phenomenon and explain the significance of it by illustrating examples. Resolving numerical examples of interference in different context.
- CO2:** List out different types of diffraction and categorize various physical problems of diffraction.
- CO3:** Explain the concept of polarization and describe various theorems of it. Design and illustrate Polaroids and find the applications of it.
- CO4:** Explain the working of laser and compare different types of lasers. Predict the applications of lasers. Illustrate the working of Optical Fiber by designing a working model of it.
- CO5:** Discuss dielectric material and its properties.
- CO6:** Develop an understanding crystal structure and crystallographic techniques.

PRACTICAL

SEMESTER I & II

PH2CMP01- COMPLEMENTARY PHYSICS PRACTICAL 1

- CO1:** Determine Volume of cylinder (solid and hollow), sphere, beaker and glass piece using Vernier Calipers, Screw gauge and Beam balance.
- CO2:** Determine of Radius of gyration and moment of inertia and acceleration due to gravity (g) using Symmetric Compound Pendulum.
- CO3:** Understand the surface tension and viscosity of fluid by different experimental techniques.
- CO4:** Find focal length of lens and optical constants of different media using liquid lens arrangement.
- CO5:** Analyze the expression for young's modulus by studying the bending behaviour of beams and cantilever.
- CO6:** Find moment of inertia of rotationally symmetric body (solid sphere OR cylinder OR disc) from their period of oscillation on a torsion axle.

SEMESTER III & IV

PH4CMP02- COMPLEMENTARY PHYSICS PRACTICAL-2

- CO1:** Construct and demonstrate electrical connection for measurement of resistivity by Carey Foster's Bridge.
- CO2:** Examine the effect horizontal component of earth's magnetic field on magnetic materials.
- CO3:** Construct and Demonstrate logic gates and verify the results.
- CO4:** Find the dynamics of Asymmetric Compound Pendulum and to determine ' g ' and moment of inertia.
- CO5:** Determine focal length of lens and optical constants of different media.

CO6: Find and analyze the interference patterns using air wedge and Newtons rings arrangement.

B.Sc. PHYSICS

(CBCS-Under Graduate Degree Programme, 2017 admission onwards, MG University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Understand the basic concepts, theories and principles of various branches of Physics and realize the contributions of great physicists.
PSO2	Acquire skills to read, understand and interpret physical information – verbal, mathematical and graphical.
PSO3	Obtain solutions to physical questions by use of qualitative and quantitative reasoning and by experimental investigation.
PSO4	Develop experimental, observation, computational, mathematical and data analysis skills of students through a wide range of experiments and practical at laboratories.
PSO5	Create positive attitude towards the environment, ecosystem and energy conservation and develop awareness of how human rights can be translated into social and political reality.
PSO6	Provide opportunities to find links across different areas of knowledge, develop and evaluate ideas and information related to the project work and give an exposure to practical working environment and industrial practices.

COURSE OUTCOMES (COs)

CORE COURSES

SEMESTER-I

PH1CRT01- METHODOLOGY AND PERSPECTIVES OF PHYSICS

- CO1:** Construct the insight of the Development of physics in the last century and list out the contributions of great scientists.
- CO2:** Compare and contrast the Contributions of Indian physicists.
- CO3:** Identify basic concepts, theories and principles and its applications of physics in everyday life.
- CO4:** Use the operations with basic number systems and identify its applications in digital electronics.
- CO5:** Construct the idea of application of vectors in physics and illustrate it with examples.
- CO6:** Examine and describe Experimental methods and error analysis.

SEMESTER-II

PH2CRT02- MECHANICS AND PROPERTIES OF MATTER

- CO1:** Describe the concept of wave motion and able to construct different models describing wave motion.
- CO2:** Analyze different phenomena associated with wave motion.
- CO3:** Explain oscillatory motion and design and classify different oscillators.
- CO4:** Explain different terms associated with rotational mechanics and obtain solutions to physical problems of rotational mechanics.
- CO5:** Construct an idea of properties of solids and illustrate use of material with their properties.
- CO6:** Construct an idea of properties of liquids and explain different phenomena associated

with it.

SEMESTER-III

PH3CRT03- OPTICS, LASER AND FIBER OPTICS

- CO1:** Discuss the interference phenomenon and explain the significance of it by illustrating examples.
- CO2:** Resolving numerical examples of interference in different context.
- CO3:** List out different types of diffraction and categorize various physical problems of diffraction.
- CO4:** Explain the concept of polarization and describe various theorems of it.
- CO5:** Design and illustrate Polaroids and find the applications of it.
- CO6:** Explain the working of laser and compare different types of lasers. Predict the applications of lasers including working of optical fiber.

SEMESTER-IV

PH4CRT04- SEMICONDUCTOR PHYSICS

- CO1:** Describe the properties of materials and application of semiconductor electronics.
- CO2:** Apply the knowledge of semiconductors to illustrate the functioning of basic electronic devices.
- CO3:** Demonstrate the switching and amplification application of the semiconductor devices.
- CO4:** Demonstrate the control applications using semiconductor devices.
- CO5:** Identify the fabrication methods of integrated circuits.
- CO6:** Classify and describe the semiconductor devices for special applications.

SEMESTER V

PH5CRT05- ELECTRICITY AND ELECTRODYNAMICS

- CO1:** Discuss the theory of moving coil ballistic galvanometer.
- CO2:** Discuss variation of alternating current with time and define basic parameters and determine mean value and rms values of ac.
- CO3:** Analyze LCR series circuits and LCR parallel resonant circuit.
- CO4:** Illustrate Superposition, Reciprocity, Thevenin's, Norton's & Maximum power transfer theorems and describe Maxwell's equations in different media.
- CO5:** Explain Seebeck effect, Laws of thermo emf, Peltier effect and Thomson effect.
- CO6:** Apply Gauss's law in different cases: solid sphere, infinite wire, infinite plane sheet and Discuss the Propagation of electromagnetic waves in different media.

PH5CRT06- CLASSICAL AND QUANTUM MECHANICS

- CO1:** Describe principle of virtual work and D'Alembert's principle.
- CO2:** Solve Linear Harmonic oscillator, Planetary motion and Simple Pendulum problems using Lagrange's equation of motion.
- CO3:** Illustrate Calculus of variations to find out Euler Lagrange's equations for shortest distance between two points, Brachistochrone problem.
- CO4:** Identify the limitations of classical mechanics and find the need of quantum mechanics.
- CO5:** Explain the time dependent Schrodinger equation for wave function and examine the Harmonic Oscillator problem in the perspective of quantum mechanics.
- CO6:** Discuss the historical development and origin of quantum theory and state the postulates of quantum mechanics.

PH5CRT07- DIGITAL ELECTRONICS AND PROGRAMMING

- CO1:** Compare Digital and analog systems, compare operators, logic symbols and truth tables of different logic gates.
- CO2:** Summarize combinational and sequential logic systems.
- CO3:** Use Sum of product method, product of sum method for reducing Boolean expressions and solve Boolean functions using Karnaugh map.
- CO4:** Compare and contrast encoders, decoders, multiplexers and demultiplexers.
- CO5:** Illustrate and classify Flip-flops, Registers and Counters.
- CO6:** Construct C++ programs using loops.

PH5CRT08- ENVIRONMENTAL PHYSICS AND HUMAN RIGHTS

- CO1:** Explain the Causes, effects and control measures of environmental pollution.
- CO2:** Discuss environmental ethics and various environment protection acts such as air act, water act, wildlife protection act and forest conservation act.
- CO3:** Categorize renewable and non-renewable energy sources.
- CO4:** Classify solar heat energy convertors such as solar cooker, solar still, solar dryer, solar pond and summarize the need and characteristics of solar photovoltaic (PV) systems.
- CO5:** Classify three Generations of Human Rights (Civil and Political Rights; Economic, Social and Cultural Rights) and discuss fundamental human rights in Indian Constitution.
- CO6:** Identify the relationship between Conservation of natural resources and human rights.

OPEN COURSE

PH5OPT02 - PHYSICS IN DAILY LIFE

- CO1:** Recall Fundamental and derived quantities, Units and dimensions.

- CO2:** Distinguish between Fundamental phenomenon of light such as reflection, refraction, diffraction, interference and scattering.
- CO3:** Apply the knowledge of lens in correcting defects of the eye – myopia, hypermetropia, presbyopia and astigmatism.
- CO4:** Develop the basic idea of Voltage and current, ohms law, Electric energy, electric power and calculation of energy.
- CO5:** Discuss different phases of matter and different forms of energy.
- CO6:** Develop idea of Universe - Planets, solar system, lunar and solar eclipses, constellations, different types of stars, Galaxies, black hole, Satellites, Artificial satellites.

SEMESTER-VI

PH6CRT09- THERMAL AND STATISTICAL PHYSICS

- CO1:** Apply first law of Thermodynamics to isochoric process, isobaric process and adiabatic process.
- CO2:** Describe the parts of heat engines and apply Second law to explain the working of Carnot Refrigerator.
- CO3:** Understand the concept of entropy and change in entropy.
- CO4:** Establish the relation of thermodynamic potentials with their variables.
- CO5:** Understand the temperature dependence of black body radiation.
- CO6:** Discuss the need for quantum statistics to derive Bose – Einstein and Fermi – Dirac distribution laws and find application of B- E and F- D statistics.

PH6CRT10- RELATIVITY AND SPECTROSCOPY

- CO1:** Extend the Lorentz transformation to concepts of Length contraction, time dilation and

relativistic Mass.

- CO2:** Outline the introductory concepts of general theory of relativity.
- CO3:** Describe Vector Atom model and discuss Zeeman Effect.
- CO4:** Summarize the principle of Nuclear magnetic Resonance (NMR) and of Electron spin resonance (ESR).
- CO5:** Examine the Rotational and Vibrational Spectra of diatomic molecules.
- CO6:** Compare and explain IR, Microwave and Raman Scattering spectroscopies.

PH6CRT11- NUCLEAR, PARTICLE PHYSICS AND ASTROPHYSICS

- CO1:** Illustrate General properties of nucleus and classify Models of Nuclear structure.
- CO2:** Compare and explain Nuclear Radiation Detectors, Counters and Particle Accelerators.
- CO3:** Describe Gamow's theory of α decay and explain the working of nuclear fission and nuclear fusion reactors.
- CO4:** Classify elementary particles and instantiate the quark model of elementary particles.
- CO5:** Distinguish Latitude effect, Azimuth effect and Altitude effect of cosmic rays.
- CO6:** Illustrate stellar evolution and classify different types of stars.

PH6CRT12: SOLID STATE PHYSICS

- CO1:** Define the fundamental terms needed to study the structure of a crystal and distinguish the different crystal structures with examples.
- CO2:** Discuss the classical and quantum theories of free electron model.
- CO3:** Discuss band theory qualitatively using Kronig – Penney model.
- CO4:** Explain the phenomenon of superconductivity and discuss the fundamental properties of superconductors.

CO5: Define Josephson effect and discuss how it is used in SQUIDs.

CO6: Explain BCS theory of superconductivity qualitatively.

CHOICE BASED COURSE

PH6CBT03- COMPUTATIONAL PHYSICS

CO1: Solve Nonlinear Equations by Bisection, Newton Raphson, Regula-Falsi, Secant and Fixed-point iteration methods.

CO2: Solve system of linear algebraic equations by Gauss elimination method, Gauss-Jordan method Factorization and Iterative methods.

CO3: Apply Regression and interpolation methods in Curve fitting.

CO4: Explain trapezoidal rule and Simpson's 1/3 and 1/8 rule for numerical integration.

CO5: Explain Euler's method and first and second order Runge-Kutta method to find the numerical solution of differential equation.

CO6: Compose and write algorithms of various computational problems.

PHYSICS CORE PRACTICAL

SEMESTER I & II (FIRST YEAR)

PH2CRP01– MECHANICS AND PROPERTIES OF MATTER (CORE PRACTICAL 1)

CO1: Determine viscosity of a liquid by Variable and constant pressure head methods.

CO2: Determine the surface tension and viscosity of fluid by different experimental techniques.

CO3: Verify the expression for young's modulus by analyzing bending behaviour beams.

CO4: Apply the knowledge of dynamics of different types of pendulums to determine 'g'.

CO5: Verify and illustrate the concept of moment of inertia and its significance.

CO6: Determine the elastic behaviour and working of torsional pendulum.

SEMESTER III & IV (SECOND YEAR)

PH4CRP02– OPTICS AND SEMICONDUCTOR PHYSICS (CORE PRACTICAL 02)

CO1: Determine refractive index of material of the prism and liquid by using spectrometer.

CO2: Distinguish between P-N junction diode and Zener diode.

CO3: Demonstrate voltage regulation using Zener diode.

CO4: Determine focal length of lens and optical constants of different media.

CO5: Illustrate the theory and experiment of interference using air wedge and newtons rings.

CO6: Construct half wave, full wave and bridge rectifiers.

SEMESTER V & VI

PH6CRP03– ELECTRICITY, MAGNETISM AND LASER (CORE PRACTICAL :03)

CO1: Measure resistance of wire, convert galvanometer into voltmeter and ammeter and Calibrate ammeter, low range and high range voltmeter using Potentiometer.

CO2: Find m and Bh and sketch magnetic flux variation using field along the axis of a circular coil.

CO3: Find magnetic moment of a bar magnet using Searle's vibration magnetometer.

CO4: Determine wavelength of Laser using Grating and determine slit width by Single slit diffraction using laser.

CO5: Measure resistivity of wire using Carey Foster's bridge.

CO6: Verify Thevenin's and Norton's theorems.

PH6CRP04 – DIGITAL ELECTRONICS (CORE PRACTICAL:04)

CO1: Realize logic gates – AND, OR and NOT – Using diodes, transistors etc. and using

universal gates.

- CO2:** Verification of truth table of NAND, NOR, XOR and XNOR gates and verify De Morgan's theorems – using IC 7400.
- CO3:** Construct and verify A/D converter using IC 741 and BCD to 7 segment decoder.
- CO4:** Realize Half adder using gates and verify its truth table.
- CO5:** Construct Astable and Monostable Multivibrator using Transistor and IC 555.
- CO6:** Construct SR and JK Flip Flops using IC 7400 & 7410 and verify truth table.

PH6CRP05 – THERMAL PHYSICS, SPECTROSCOPY AND C++ PROGRAMMING

(CORE PRACTICAL:05)

- CO1:** Use Thermistor and Carey Foster's bridge to find Temperature coefficient of resistance.
- CO2:** Write and execute Computer programming in C++ to generate Fibonacci series and to convert a decimal number into binary number.
- CO3:** Write and execute Computer programming in C++ to Solve a quadratic equation and for sorting the numbers in ascending and descending order.
- CO4:** Calculate 'g' from experimental data of Simple Pendulum using Computer programming in C++.
- CO5:** Write and execute Computer programming in C++ to Convert temperature scale.
- CO6:** Find Dispersive power and Resolving power of grating and prism using Spectrometer and find Cauchy's constants.

PH6CRP06 – ACOUSTICS, PHOTONICS AND ADVANCED SEMICONDUCTOR PHYSICS (CORE PRACTICAL:06)

- CO1:** Use Sonometer to Determine frequency of AC.

- CO2:** Determine frequency of given tuning fork, unknown mass and verification of laws of strings using sonometer and Melde's string.
- CO3:** Measure and draw V- I characteristics of solar cell and different colours of LED.
- CO4:** Construct and study Weinbridge Oscillator using IC 741 and Pulse Width Modulator using IC 555.
- CO5:** Construct Regulated power supply using Zener diode and IC 741 and study line and load regulations.
- CO6:** Construct and study Voltage multipliers –Doubler & Tripler.

PH6PRO01– PROJECT AND INDUSTRIAL VISIT

- CO1:** Identify the need of lifelong learning and adapt to changing needs of profession and society and get updated with current state-of-art.
- CO2:** Express ideas clearly and effectively, both verbally and in written form.
- CO3:** Find links across different areas of knowledge and generate, develop and evaluate ideas and information related to the project.
- CO4:** Develops ability to work with peers, building teamwork and group skills.
- CO5:** Inspect and realize practical working environment and industrial practices.

COMPLEMENTARY COURSES (MATHEMATICS FOR B.Sc. PHYSICS)

SEMESTER 1

MM1CMT01- PARTIAL DIFFERENTIATION, MATRICES, TRIGONOMETRY AND NUMERICAL METHODS

- CO1:** Identify functions of different variables and acquire knowledge in partial differentiation.

- CO2:** Find Solutions of Homogeneous and Non-Homogeneous linear equations.
- CO3:** Discuss about Cayley Hamilton Theorem and its Applications.
- CO4:** Identify the hyperbolic and Circular functions and Summation of different types of series.
- CO5:** Find solution of algebraic and transcendental equations using different methods.

SEMESTER 2

MM2CMT01- INTEGRAL CALCULUS AND DIFFERENTIAL EQUATIONS

- CO1:** Assess the volume of solids using Cross Sections.
- CO2:** Examine the length of an arc of a curve whose equation in parametric form.
- CO3:** Illustrate the area and volume by applying the technique of double and triple integral.
- CO4:** Solve first order linear differential equations.
- CO5:** Explain the origin of first order Partial Differential Equations.
- CO6:** Solve linear Partial Differential Equation of First Order.

SEMESTER 3

MM3CMT01- VECTOR CALCULUS, ANALYTIC GEOMETRY AND ABSTRACT ALGEBRA

- CO1:** Differentiate Vector Fields.
- CO2:** Illustrate gradient vector fields and find potential functions.
- CO3:** Assess the line integrals, surface area and surface integrals.
- CO4:** Examine the path independence.

SEMESTER 4

MM4CMT01- FOURIER SERIES, LAPLACE TRANSFORM AND COMPLEX ANALYSIS

- CO1:** Describe the idea of periodic functions, trigonometric series.
- CO2:** Find Fourier series of functions of any period and of even and odd functions and half range expansions.
- CO3:** Examine the fundamental ideas about power series method of solving differential equations.
- CO4:** Explain the mathematical theory behind the famous equations used in Physics such as Legendre equation and Legendre Polynomials, Rodrigues' Formula, etc.
- CO5:** Describe the concept of analytic functions, elementary complex functions and their properties.
- CO6:** Apply the theory and techniques of complex integration.

COMPLEMENTARY COURSES (CHEMISTRY FOR B.Sc. PHYSICS)

SEMESTER I

CH1CMT01- Basic Theoretical and Analytical Chemistry

- CO1:** Describe atomic structure and bonding.
- CO2:** Explain fundamental concepts in chemistry.
- CO3:** Explain principles of analytical methods.
- CO4:** Compare the different chromatographic methods used in analytical chemistry.

SEMESTER II

CH2CMT02- BASIC ORGANIC CHEMISTRY

- CO1:** Draw the optical and geometric isomers of various organic compounds.
- CO2:** Predict the structure and stability of various reaction intermediates.
- CO3:** Explain various electronic displacements and type of organic reactions.
- CO4:** Explain the synthesis and properties of natural and synthetic polymers

CH2CMP01- VOLUMETRIC ANALYSIS (PRACTICAL)

CO1: Quantitative analyze various compounds using acidimetry and alkalimetry.

CO2: Quantitative analyze various compounds using permanganometry.

CO3: Quantitative analyze various compounds using dichrometry.

CO4: Quantitative analyze various compounds using iodometry.

SEMESTER III

CH3CMT03- PHYSICAL CHEMISTRY-I

CO1: Differentiate the properties of solid, liquid and gas.

CO2: Explain the properties of surface chemistry and colloids.

CO3: Explain properties related to phase equilibria.

CO4: Differentiate defects in solids.

SEMESTER IV

CH4CMT05- PHYSICAL CHEMISTRY-II

CO1: Assess the IR and UV –Vis spectrum of organic molecules.

CO2: Explain the applications of conductance measurements.

CO3: Explain the synthesis of nanomaterial.

CO4: Discuss the kinetics of reactions.

CH4CMP02- PHYSICAL CHEMISTRY (PRACTICAL)

CO1: To determine transition temperature of salt hydrates.

CO2: To find out the CST of phenol water system.

CO3: To determine equivalence point by conductometric and potentiometric titrations.

CO4: To determine MW of compounds by Rast's method.

B.Sc. ZOOLOGY

(MODEL II - AQUACULTURE)

(CBCS-Under Graduate Degree Programme, 2017 admission onwards, M.G. University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Develop aptitude for learning the Science of Nature and its Life Processes by acquiring the theoretical knowledge and practical experience of Zoology and its allied branches.
PSO2	Extend his/her support for the conservation of biosphere and natural resources and also for the sustainable development to maintain a natural balance in Local, National & World level.
PSO3	Master basic skills for using ICT and biological instrument to become a competent person in the ever-growing field of Biology.
PSO4	Apply the principles of modern branches of Zoology for keeping good standard in life/health (Individual and Community life/health).
PSO5	Identify problems as scientific or not, adopt standard methodology to synthesize solution to the problem (within the broad discipline of Zoology).
PSO6	Design self-employment in certain applied branches of Zoology (such as aquaculture, apiculture, vermiculture, quail farming etc.) and also to pursue higher studies and research in Zoology or its allied branches.

COURSE OUTCOMES (COs)

CORE ZOOLOGY

SEMESTER - 1

ZY1CRT01- GENERAL PERSPECTIVES IN SCIENCE & PROTISTAN DIVERSITY

- CO1:** Create curiosity to learn the philosophy of science, its concepts and scope.
- CO2:** Develop scientific attitude and perspectives.
- CO3:** Classify different levels of biological diversity through the systematics.
- CO4:** Develop outline on protistan diversity and parasitic forms of lower invertebrates.

SEMESTER- 2

ZY2CRT02- ANIMAL DIVERSITY- NON-CHORDATA

- CO1:** Create curiosity in learning the Non-Chordate diversity of life.
- CO2:** Compare and contrast the diversity of life and their biological importance.
- CO3:** Discuss the evolutionary significance of invertebrate fauna.
- CO4:** Describe various non-chordate phyla based on their general characters and classification.

SEMESTER-3

ZY3CRT03- ANIMAL DIVERSITY- CHORDATA

- CO1:** Develop interest to learn about the classification, diversity and systematic position of chordates.

- CO2:** Discuss about the fish diversity and their structural modifications to lead aquatic life.
- CO3:** Identify the morphological and anatomical organization of frog, rabbit etc.
- CO4:** Examine the economic importance of some chordate classes and adaptations of selected vertebrates such as birds, aquatic mammals etc.

SEMESTER -4

ZY4CRT04- RESEARCH METHODOLOGY, BIOPHYSICS AND BIOSTATISTICS

- CO1:** Develop aptitude for natural inquiry about biological phenomena in a scientific way
- CO2:** Discuss on various research designs and different steps involved in writing a project proposal.
- CO3:** Describe on different types of research communication.
- CO4:** Use statistical methods in biological studies.
- CO5:** Acquire skills for the effective use of different types of biological techniques.

SEMESTER -5

ZY5CRT05- ENVIRONMENTAL BIOLOGY AND HUMAN RIGHTS

- CO1:** Identify various environmental issues and their conservation strategies.
- CO2:** Discuss about natural resources, their protection, conservation, factors polluting the environment, their impacts and control measures.
- CO3:** Describe on toxicology, its impact on human health and remedial measures.
- CO4:** Examine the concept of Human rights- & its manifestations.

ZY5CRT06- CELL BIOLOGY AND GENETICS

- CO1:** Examine the phenomenon of life on a cellular perspective.

- CO2:** Discuss on various biophysical mechanisms of a cell.
- CO3:** Examine the role of genes for the transmission of characters from parent to offspring.
- CO4:** Identify various human genetic disorders and the way in which they affect the well-being of an individual.

ZY5CRT07- EVOLUTION, ETHOLOGY AND ZOOGEOGRAPHY

- CO1:** Discuss about the evolutionary history of earth - living and nonliving evolutionary concepts and theories.
- CO2:** Describe about the distribution of animals on earth, its pattern, evolution and causative factors.
- CO3:** Compare and contrast various animal behavior.
- CO4:** Identify the mechanism and factors affecting evolution.

ZY5CRT08- HUMAN PHYSIOLOGY, BIOCHEMISTRY AND ENDOCRINOLOGY

- CO1:** Examine the biochemistry of common food substances, their structure, function and metabolism.
- CO2:** Discuss on the structure and function of various organs and organ systems of man.
- CO3:** Examine the need for balanced diet, mental health and exercise.
- CO4:** Get an outline on the role of hormones in regulating various physiological processes.

ZY5OPT01 (OPEN COURSE)- VOCATIONAL ZOOLOGY (APICULTURE, VERMICULTURE, & ORNAMENTAL FISH CULTURE)

- CO1:** Get an outline about the economically important animals.
- CO2:** Discuss on the process of aquarium management, vermicomposting and apiculture.

CO3: Examine the resources available for ornamental fish culture, vermicomposting and apiculture.

CO4: Acquire skill for waste management through vermiculture and organic farming.

SEMESTER -6

ZY6CRT09- DEVELOPMENTAL BIOLOGY

CO1: Discuss on how a single celled zygote forms multicellular organism?

CO2: Describe on the environmental influences on the prenatal life.

CO3: Examine prenatal birth defects and diagnosis.

CO4: Explain the recent trends in stem cell research and its applications.

ZY6CRT10- MICROBIOLOGY AND IMMUNOLOGY

CO1: Discuss on the Methods in Microbiology: Sterilization and disinfection - physical and chemical methods.

CO2: Compare and contrast various types of Culture media, method of isolation of pure colony and culture preservation techniques etc.

CO3: Discuss on epidemiology, symptomology, diagnosis and treatment of Bacterial disease - tetanus, Viral disease – AIDS, fungal – candidiasis.

CO4: Explain on various types of vaccines and recent trends in vaccine preparation.

CO5: Discuss on the structure, types and functions of antibodies.

ZY6CRT11- BIOTECHNOLOGY, BIOINFORMATICS AND MOLECULAR BIOLOGY

CO1: Describe on recombinant DNA technology and its significance.

CO2: Discuss on various biological databases.

CO3: Examine the flow of information from DNA to RNA and RNA to proteins.

CO4: Describe the structure of DNA and different types of RNA.

ZY6CRT12- OCCUPATIONAL ZOOLOGY (AQUACULTURE, APICULTURE, VERMICULTURE & QUAIL FARMING)

CO1: Create interest in the field of applied zoology as a means of self-employment.

CO2: Use the scientific knowledge on apiculture for self-employment.

CO3: Identify the scope of ornamental fish culture.

CO4: Compose waste management unit through the application of vermiculture.

CO5: Discuss about the methodology of Quail farming.

ZY6CBT03- NUTRITION, HEALTH & LIFESTYLE MANAGEMENT

CO1: Describe the general concept of health and various parameters that define health and wellness.

CO2: Compare various types of nutrients and their role in health.

CO3: Explain on food safety, food laws & regulations.

CO4: Discuss on how to attain good life style practices, physical fitness and healthy food habits?

AQUACULTURE- (VOCATIOAL SUBJET FOR B.Sc. ZOOLOGY)

SEMESTER 1

ZA1VO1U- PRINCIPLES AND METHODS IN AQUACULTURE

CO1: Discuss on the scope and importance of aquaculture.

CO2: Explain the concept of recycling organic waste for maximum aquatic production.

CO3: Describe on how to construct and prepare a pond for fish culture?

CO4: Classify various cultivable finfish and shell fish.

ZA1VO2U- HATCHERY AND CULTURE TECHNIQUES

CO1: Discuss on the culture practices of various indigenous edible and ornamental finfishes and edible shellfishes.

CO2: Examine different technologies of seed production of common cultivable species.

CO3: Describe on various live feeds available for aquatic organisms and understand their culture methods.

CO4: Identify the techniques of culturing Crustaceans and Bivalve mollusks.

SEMESTER -2

ZA2VO3U- CAPTURE FISHERY

CO1: Describe on various types of craft and gears used in capture fishery.

CO2: Discuss about the inland capture fishery resources and marine fishery resources of India.

CO3: Explain on how to manage and conserve fishery resources?

CO4: Identify different types of commercially important marine shell fishes.

ZA2VO4U- BIOLOGY OF FISHES

CO1: Discuss on the morphological and anatomical organization of finfishes and shellfishes.

CO2: Describe the basic principles of Taxonomy of cultivable organisms.

CO3: Examine the natural food of fishes and the pattern of growth.

CO4: Explain the reproductive biology of fishes.

SEMESTER-3

ZA3VO5U-FISHERIES ENVIRONMENT

CO1: Examine the ecology of fresh water habitat and marine habitat.

CO2: Identify the various instruments used in marine biological sampling.

CO3: Describe on remote sensing techniques and satellite remote sensing of fish stocks.

CO4: Identify the ecological indicator organisms.

ZA3VO6U- FISH NUTRITION

CO1: Discuss about the nutritional needs of aquatic organisms in culture.

CO2: Explain the basic concept of energy budgeting, food additives and varieties of feed ingredients used in Aqua feeds.

CO3: Relate the principles of feed formulation and equipment used in feed manufacture.

CO4: Explain on various growth promoters that can be applied in fish feed.

SEMESTER 4

ZA4VO7U- REPRODUCTIVE PHYSIOLOGY AND ENDOCRINOLOGY

CO1: Discuss on variety of reproductive techniques in finfishes and shellfishes and the factors controlling reproduction.

CO2: Explain the endocrine and neurosecretory system of finfishes and shellfishes.

CO3: Describe the embryonic development of fishes.

CO4: Identify the techniques of induced breeding, and cryopreservation of fish gametes.

ZA4V08U- MICROBIOLOGY, PATHOLOGY AND POSTHARVEST TECHNOLOGY

- CO1:** Describe on biochemical composition of fishes.
- CO2:** Compare the characteristics of fresh fish and spoilage fish.
- CO3:** Identify the various agencies involved in fish spoilage.
- CO4:** Discuss on various methods used in fish processing and preservation.
- CO5:** Identify various fish diseases and learns its remedial measures.

COMPLEMENTARY COURSE (CHEMISTRY FOR B.Sc. ZOOLOGY)

SEMESTER I

CH1CMT01- BASIC THEORETICAL AND ANALYTICAL CHEMISTRY

- CO1:** Describe atomic structure and bonding.
- CO2:** Explain fundamental concepts in chemistry.
- CO3:** Explain principles of analytical methods.
- CO4:** Compare the different chromatographic methods used in analytical chemistry.

SEMESTER II

CH2CMT02- BASIC ORGANIC CHEMISTRY

- CO1:** Draw the optical and geometric isomers of various organic compounds.
- CO2:** Predict the structure and stability of various reaction intermediates.
- CO3:** Explain various electronic displacements and type of organic reactions.
- CO4:** Explain the synthesis and properties of natural and synthetic polymers.

CH2CMP01- VOLUMETRIC ANALYSIS (PRACTICAL)

CO1: Quantitative analyze various compounds using acidimetry and alkalimetry.

CO2: Quantitative analyze various compounds using permanganometry.

CO3: Quantitative analyze various compounds using dichrometry.

CO4: Quantitative analyze various compounds using iodometry.

SEMESTER III

CH3CMT04- INORGANIC AND ORGANIC CHEMISTRY

CO1: Discuss the principle and applications of nuclear chemistry.

CO2: Discuss the applications of bioinorganic chemistry.

CO3: Explain the synthesis, properties and reaction of heterocyclic chemistry.

CO4: Explain the chemistry of fertilizers, pesticides, drugs, food additives and cosmetics.

SEMESTER IV

CH4CMT06- ADVANCED BIO-ORGANIC CHEMISTRY

CO1: Describe the chemistry, structure and functions of different natural products like terpenoids, alkaloids and carbohydrate.

CO2: Differentiate the functions of nucleic acids and enzymes.

CO3: Explain the functions of amino acids and proteins.

CO4: Describe the structure and functions of vitamins, lipids and steroids.

CH4CMP03- ORGANIC CHEMISTRY (PRACTICAL)

CO1: Analyze systematically different functional groups.

CO2: Determine Melting point of various compounds.

CO3: Determine Boiling point of various compounds.

CO4: Prepare derivatives of various of organic compounds.

B.Sc. MATHEMATICS

(CBCS-Under Graduate Degree Programme, 2017 admission onwards, M.G. University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Apply appropriate mathematical techniques in a multidisciplinary environment.
PSO2	Explain and discuss core areas of pure mathematics including geometry, algebra, mathematical analysis and discrete mathematics.
PSO3	Analyze and apply mathematical arguments in a logical and critical manner.
PSO4	Compare, relate and use quantitative models arising in social science, business and other contexts for further extension of their studies
PSO5	Categorize and examine advanced areas of mathematics and statistics, chosen by the student from the given courses for future research and societal applications.
PSO6	Attain prominent career in industry, banks, offices and for further academic study.

COURSE OUTCOMES (COs)

SEMESTER I

MM1CRT01- FOUNDATION OF MATHEMATICS

- CO1:** To describe fundamental ideas about sets and functions.
- CO2:** To construct truth tables and get an idea about Boolean algebra and logic gates in circuits.
- CO3:** Able to analyze statements using truth tables.
- CO4:** Able to construct simple proofs.
- CO5:** To identify mathematical symbols and explain standard methods of proofs.
- CO6:** Able to solve polynomial equations.

SEMESTER II

MM2CRT01- ANALYTIC GEOMETRY, TRIGONOMETRY AND DIFFERENTIAL CALCULUS

- CO1:** Discuss the concept of higher order derivatives and their applications. Parametric Equations of curves and their applications are introduced to the student.
- CO2:** Compose higher order derivatives by applying Leibnitz Theorem.
- CO3:** Apply L'Hospital's rule for computing limits of indeterminate forms.
- CO4:** Acquire ability to apply the theorem in a correct mathematical way.
- CO5:** Explain the concepts of Trigonometric functions, their properties and summation of trigonometric series.
- CO6:** Categorize the standard equations of parabola, hyperbola, and ellipse and explain the parametric forms of parabola, hyperbola, and ellipse

SEMESTER III

MM3CRT01- CALCULUS

- CO1:** Find curvature and related parameters of a given curve.
- CO2:** Find partial derivatives of functions of more than one variable.
- CO3:** Examine how the ideas of maxima and minima can be used to solve practical problems.
- CO4:** Compose the area and volume of solids using definite integrals.
- CO5:** Examine the arc length of a given curve and area enclosed by curves.
- CO6:** Use of cylindrical and spherical co-ordinates in evaluating triple integrals and apply triple integrals to finding volumes of solid objects.

SEMESTER IV

MM4CRT0- VECTOR CALCULUS, THEORY OF NUMBERS AND LAPLACE TRANSFORM

- CO1:** Apply vector calculus to real world problems.
- CO2:** Develop proficiency in the analysis of vector valued functions.
- CO3:** Discuss the various properties of the gradient, the curl and divergence.
- CO4:** Solve vector problems by applying Green's theorem, Divergence theorem and Stoke's theorem.
- CO5:** Discuss the Laplace transform of a given function and the basic definitions and theorems in number theory.
- CO6:** Ability to apply number theory algorithms and procedures to basic problems.

SEMESTER V

MM5CRT01- MATHEMATICAL ANALYSIS

- CO1:** To discuss the concept of Algebraic and Completeness properties of real numbers.

- CO2:** To describe sequences and their limits and also about its convergence and divergence.
- CO3:** Explain Bolzano-Weierstrass Theorem, The Cauchy Criterion.
- CO4:** To discuss the basic ideas of series and absolute convergence.
- CO5:** To explain various tests for absolute and non-absolute convergence of series.
- CO6:** To discuss the Limit Concepts.

MM5CRT02- DIFFERENTIAL EQUATIONS

- CO1:** To identify various types of differential equations of first order and obtain its solution.
- CO2:** To find the complementary function and particular integrals of linear differential equation.
- CO3:** To illustrate the orthogonal trajectory of the system of curves on a given surface.
- CO4:** Describe the origin of partial differential equation and distinguish the integrals of first order linear partial differential equation into complete, general and singular integrals.
- CO5:** To use the method of solution of Lagrange for solving the first order partial differential equation.
- CO6:** To categorize the fundamental ideas about the power series solution of equations in Physics such as Legendre's equation, Bessel's equation, Airy's equation, etc.

MM5CRT03- ABSTRACT ALGEBRA

- CO1:** Explain important mathematical concepts in abstract algebra such as definition of a group, order of a finite group and order of an element.
- CO2:** Identify and explain different types of subgroups such as normal subgroups, cyclic subgroups their structure and characteristics.
- CO3:** Explain many mathematical concepts studied in abstract mathematics such as permutation groups, factor groups and Abelian groups.
- CO4:** Describe about major mathematicians or important contribution in the development of

group theory.

CO5: Apply the results from group theory to study the properties of rings and fields and also to some advanced level of abstract algebra and its applications.

MM5CRT04- HUMAN RIGHTS AND ENVIORNMENTAL MATHEMATICS

CO1: To investigate how and why things happen, and make their own decisions about complex environmental issues.

CO2: To identify various problems with respect to the environment.

CO3: To find the inter-relationship between man and environment for protecting the nature and natural resources and acquiring basic knowledge about environment.

CO4: To create an idea of Indian Constitution, its Articles and about Human Rights.

CO5: To Identify Fibonacci Numbers and Golden Ratio in nature.

CO6: To examine g.c.d of numbers using Euclidean Algorithm and solving Linear Homogeneous Recurrence Relations with Constant Coefficients. (LHRRWCC).

MM5GET02-APPLICABLE MATHEMATICS (Open Course)

CO1: Examine the basic ideas of Mathematics such as quadratic equations, trigonometry, etc.

CO2: Able to write competitive examinations with confidence.

CO3: Discuss mathematical concepts and problem-solving skill.

CO4: Apply short cut methods for solving problems.

SEMESTER VI

MM6CRT01- REAL ANALYSIS

CO1: To compare Continuity and Uniform Continuity.

CO2: To discuss the concept of Derivatives, L'Hospitals Rule.

- CO3:** Able to analyze Taylor's Theorem and Mean value Theorem.
- CO4:** To categorize the concepts of Reimann integration and related theorems.
- CO5:** To Identify the properties of pointwise convergence and absolute convergence of sequences.
- CO6:** To categorize the ideas of series of function.

MM6CRT02- GRAPH THEORY AND METRIC SPACES

- CO1:** Construct some important classes of graph theoretic problems.
- CO2:** Explain the concept of trees in practical life applications such as current flow, linguistic grammar and apply some basic algorithms for graphs.
- CO3:** Identify graph applications in day-to-day problems through graph Modeling and also the fundamental concepts in graph theory for further research needs.
- CO4:** Compare and examine various metric spaces evolved from its basic practical definition of usual distance in Euclidean plane.
- CO5:** Will be able to investigate into topological properties of metric spaces which consequently sow a strong platform for further research

MM6CRT03- LINEAR ALGEBRA

- CO1:** Identify vectors in n-space which is useful in representing data.
- CO2:** Discuss linear system of equations using matrix as a tool.
- CO3:** Examine the geometric ideas and the relationship of vector space theory and matrix theory.
- CO4:** Explain eigen values and eigen vectors which are significant in dynamic problems.
- CO5:** Relate the concepts of linear transformation and matrix representation.
- CO6:** Able to find the null space, range space of linear transformations.

MM6CRT04- COMPLEX ANALYSIS

- CO1:** To describe the basic concepts in complex analysis like modulus, amplitude, polar forms etc.
- CO2:** To examine important concept like analytic functions, entire functions, harmonic functions and elementary functions.
- CO3:** To compare and contrast between real functions and complex functions.
- CO4:** To discuss about complex integration.
- CO5:** To discuss with series representation of analytic function and analyze the various applications of complex integration.
- CO6:** To discuss about singular, poles and evaluation of complex integrals.

MM6CBT01- OPERATIONS RESEARCH

- CO1:** To solve LPP using Graphical method, Simplex Method and Big-M Method.
- CO2:** To form dual of an LPP and theorems of duality with proof.
- CO3:** To solve transportation and assignment problem.
- CO4:** To find different solution methods of Games without saddle points.

COMPLEMENTARY COURSE (PHYSICS FOR B.Sc. MATHEMATICS)

SEMESTER-I

PH1CMT01- PROPERTIES OF MATTER AND ERROR ANALYSIS

- CO1:** Define states of matter.
- CO2:** Construct an idea of properties of solids and illustrate the use of material with their properties.

CO3: Develop the following concepts and solve problems involving them (a) Hooke's Law and other stress-strain laws, (b) Determination of rigidity modulus, (c) Uniform and Non- uniform bending, (d) I Section girder.

CO4: Construct an idea of properties of liquids and explain different phenomena associated with it.

CO5: Study the motion of fluids by developing understanding of viscosity, Poiseuille's Law and Bernoulli's Equation.

CO6: Examine and describe Experimental methods and error analysis.

SEMESTER-II

PH2CMT01- MECHANICS AND ASTROPHYSICS

CO1: Discuss the physical quantities of accelerated motion of objects.

CO2: Explain different terms associated with rotational mechanics and obtain solutions to physical problems of rotational mechanics.

CO3: Assess the moment of inertia of different structures using parallel and perpendicular axes theorem.

CO4: Explain oscillatory motion and design and classify different oscillators.

CO5: Describe the concept of wave motion and able to construct different models describing wave motion.

CO6: Discuss various theories of evolution of stars and explain various physical parameters that affecting the star.

SEMESTER-III

PH3CMT01- MODERN PHYSICS AND ELECTRONICS

CO1: Explain different atom models and its basic features.

CO2: Describe atomic nucleus and classify the nucleus according to their properties and

salient features. Explain radioactivity and discuss different aspects of nuclear energy in nuclear reactors and radio carbon dating.

- CO3:** Familiar with the main aspects of the historical development of quantum mechanics and be able to discuss and interpret experiments that reveal the wave properties of matter.
- CO4:** Understand the central concepts and principles in quantum mechanics, such as the Schrödinger equation, the wave function and its statistical interpretation, the uncertainty principle, stationary and non-stationary states, time evolution of solutions.
- CO5:** Describe the properties of materials and application of semiconductor electronics. Apply the knowledge of semiconductors to illustrate the functioning of basic electronic devices.
- CO6:** Use the operations with basic number systems and identify its applications in digital electronics.

SEMESTER-IV

PH4CMT01- OPTICS AND ELECTRICITY

- CO1:** Discuss the interference phenomenon and explain the significance of it by illustrating examples. Resolving numerical examples of interference in different context.
- CO2:** List out different types of diffraction and categorize various physical problems of diffraction.
- CO3:** Explain the concept of polarization and describe various theorems of it. Design and illustrate Polaroids and find the applications of it.
- CO4:** Explain the working of laser and compare different types of lasers. Predict the applications of lasers. Illustrate the working of Optical Fiber by designing a working model of it.
- CO5:** Discuss dielectric material and its properties.

CO6: Describe transient current, its growth and decay and analyze working of various AC circuits in it.

COMPLEMENTARY COURSE (STATISTICS FOR B. Sc. MATHEMATICS)

SEMESTER 1

ST1CMT01- DESCRIPTIVE STATISTICS

CO1: Identify appropriate sampling and data collection processes.

CO2: Present data objectively using tables, diagrams and graphs.

CO3: Calculate measures of central tendency and measures of dispersion in grouped and ungrouped data cases.

CO4: Examine the significance of moments and kurtosis.

CO5: Explain index numbers as a method to identify trends in data set.

SEMESTER 2

ST2CMT02- PROBABILITY THEORY

CO1: Compute the probability of events and use the basic probability rules, including additive and multiplicative laws.

CO2: Explain the concept of probability distribution and probability density functions.

CO3: Calculate probabilities, and derive the marginal and conditional distributions of bivariate random variables.

CO4: Use correlation coefficient to describe the direction and strength of a linear relationship.

CO5: Explain regression technique as a method to model pattern in the data and to make predictions.

SEMESTER 3

ST3CMT03- PROBABILITY DISTRIBUTIONS

- CO1:** Explain the concept of moments, MGF and characteristic function of random variables.
- CO2:** Identify the type of statistical situation to which different standard distributions can be applied.
- CO3:** Use standard normal curve to calculate the area under normal curve.
- CO4:** Apply Tchebycheff`s inequality, Bernoulli`s law of large numbers, Weak law of large numbers and Central Limit Theorem to calculate probabilities.
- CO5:** Compare the different sampling distributions.

SEMESTER 4

ST4CMT04 - STATISTICAL INFERENCE

- CO1:** Use different estimation methods to find point and interval estimators.
- CO2:** Discuss the properties of good estimators.
- CO3:** Define null hypothesis, alternative hypothesis, type 1 and type 2 error, level of significance and test statistic.
- CO4:** Conduct statistical hypotheses testing to test for means, proportions and variance in one and two sample cases.
- CO5:** Examine the association between the attributes and test goodness of fit using Chi-square test.

B.SC. PHYSICS

(MODEL III - ELECTRONIC EQUIPMENT MAINTENANCE)

(CBCS-Under Graduate Degree Programme, 2017 admission onwards, M.G. University)

PROGRAMME SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Understand the basic concepts, theories and principles of various branches of Physics and realize the contributions of great physicists.
PSO2	Explain a broad spectrum of modern trends in physics and to develop experimental, computational and mathematics skills of students.
PSO3	Develop their experimental, observation and data analysis skills through a wide range of experiments through practical at laboratories.
PSO4	Create positive attitude towards the environment, ecosystem and energy conservation.
PSO5	Provide an exposure to practical working environment and industrial practices.
PSO6	Provide opportunities to find links across different areas of knowledge and generate, develop and evaluate ideas and information related to the project.

COURSE OUTCOMES (COs)

CORE COURSE 1- PHYSICS

SEMESTER-I

PH1CRT01- METHODOLOGY AND PERSPECTIVES OF PHYSICS

- CO1:** Construct the insight of the Development of physics in the last century and list out the contributions of great scientists.
- CO2:** Compare and contrast the Contributions of Indian physicists.
- CO3:** Identify basic concepts, theories and principles and its applications of physics in everyday life.
- CO4:** Use the operations with basic number systems and identify its applications in digital electronics.

SEMESTER-II

PH2CRT02- MECHANICS AND PROPERTIES OF MATTER

- CO1:** Describe the concept of wave motion and able to construct different models describing wave motion.
- CO2:** Analyze different phenomena associated with wave motion.
- CO3:** Explain oscillatory motion and design and classify different oscillators.
- CO4:** Explain different terms associated with rotational mechanics and obtain solutions to physical problems of rotational mechanics and error analysis.

SEMESTER-III

PH3CRT03- OPTICS, LASER AND FIBER OPTICS

- CO1:** Discuss the interference phenomenon and explain the significance of it by illustrating examples.

CO2: Resolving numerical examples of interference in different context.

CO3: List out different types of diffraction and categorize various physical problems of diffraction.

CO4: Explain the concept of polarization and describe various theorems of it.

SEMESTER-IV

PH4CRT04- SEMICONDUCTOR PHYSICS

CO1: Describe the properties of materials and application of semiconductor electronics.

CO2: Apply the knowledge of semiconductors to illustrate the functioning of basic electronic devices.

CO3: Demonstrate the switching and amplification application of the semiconductor devices.

CO4: Demonstrate the control applications using semiconductor devices.

SEMESTER V

PH5CRT05- ELECTRICITY AND ELECTRODYNAMICS

CO1: Discuss the theory of moving coil ballistic galvanometer.

CO2: Discuss variation of alternating current with time and define basic parameters and determine mean value and rms values of ac.

CO3: Analyze LCR series circuits and LCR parallel resonant circuit.

CO4: Illustrate Superposition, Reciprocity, Thevenin's, Norton's & Maximum power transfer theorems.

PH5CRT06- CLASSICAL AND QUANTUM MECHANICS

CO1: Describe principle of virtual work and D'Alembert's principle.

CO2: Solve Linear Harmonic oscillator, Planetary motion and Simple Pendulum problems

using Lagrange's equation of motion.

CO3: Illustrate Calculus of variations to find out Euler Lagrange's equations for shortest distance between two points, Brachistochrone problem.

CO4: Identify the limitations of classical mechanics and find the need of quantum mechanics.

PH5CRT07- DIGITAL ELECTRONICS AND PROGRAMMING

CO1: Compare Digital and analog systems.

CO2: Compare operators, logic symbols and truth tables of different logic gates.

CO3: Summarizing combinational and sequential logic systems.

CO4: Use Sum of product method, product of sum method for reducing Boolean expressions.

PH5CRT08- ENVIRONMENTAL PHYSICS AND HUMAN RIGHTS

CO1: Explain the Causes, effects and control measures of environmental pollution.

CO2: Discuss environmental ethics and various environment protection acts such as air act, water act, wildlife protection act and forest conservation act.

CO3: Categorize renewable and non-renewable energy sources.

CO4: Classify solar heat energy convertors such as solar cooker, solar still, solar dryer, solar pond.

SEMESTER-VI

PH6CRT09- THERMAL AND STATISTICAL PHYSICS

CO1: Apply first law to isochoric process, isobaric process, adiabatic process.

CO2: Describe the parts of heat engines.

CO3: Apply second law to explain the working of Carnot Refrigerator.

CO4: Understand the concept of entropy and change in entropy.

PH6CRT10- RELATIVITY AND SPECTROSCOPY

- CO1:** Extend the Lorentz transformation to concepts of Length contraction, time dilation and relativistic Mass.
- CO2:** Outline the introductory concepts of general theory of relativity.
- CO3:** Describe Vector Atom model.
- CO4:** Discuss Zeeman Effect.

PH6CRT11- NUCLEAR, PARTICLE PHYSICS AND ASTROPHYSICS

- CO1:** Illustrate General properties of nucleus.
- CO2:** Classify Models of Nuclear structure.
- CO3:** Compare and explain Nuclear Radiation Detectors, Counters and Particle Accelerators.
- CO4:** Describe Gamow's theory of α decay.

PH6CRT12- SOLID STATE PHYSICS

- CO1:** Define the fundamental terms needed to study the structure of a crystal.
- CO2:** Distinguish the different crystal structures with examples.
- CO3:** Discuss the classical and quantum theories of free electron model.
- CO4:** Discuss band theory qualitatively using Kronig – Penney model.

CHOICE BASED COURSE:

PH6CBT03- COMPUTATIONAL PHYSICS

- CO1:** Solve Nonlinear Equations by Bisection, Newton Raphson, Regula-Falsi, Secant and Fixed-point iteration methods.
- CO2:** Solve system of linear algebraic equations by Gauss elimination method, Gauss-Jordan method Factorization and Iterative methods.

CO3: Apply Regression and interpolation methods in Curve fitting.

CO4: Explain trapezoidal rule and Simpson's 1/3 and 1/8 rule for numerical integration also state algorithm.

PRACTICAL- PHYSICS:

SEMESTER 1&2 (FIRST YEAR)

PH2CRP01 – MECHANICS AND PROPERTIES OF MATTER (CORE PRACTICAL- 1)

CO1: Gain practical knowledge by applying the experimental methods to correlate with the Physics theory.

CO2: Apply the analytical techniques and graphical analysis to the experimental data.

CO3: Apply the mathematical concepts/equations to obtain quantitative results.

CO4: To understand the dynamics of different types of pendulums.

CO5: Study of bending behaviour beams and analyze the expression for young's modulus.

SEMESTER 3&4 (SECOND YEAR):

PH4CRP02- OPTICS AND SEMICONDUCTOR PHYSICS (CORE PRACTICAL 02)

CO1: Gain practical knowledge by applying the experimental methods to correlate with the Physics theory.

CO2: Apply the analytical techniques and graphical analysis to the experimental data.

CO3: Apply the mathematical concepts/equations to obtain quantitative results.

CO4: To learn focal length of lens and optical constants of different media.

CO5: Distinguish between P-N diode and Zener diode.

SEMESTER 5 & 6 (THIRD YEAR)

PH6CRP03- ELECTRICITY, MAGNETISM AND LASER (CORE PRACTICAL-03)

- CO1:** Measure resistance of wire Using Potentiometer.
- CO2:** Calibrate low range and high range voltmeter using Potentiometer and ammeter using Potentiometer and Tangent galvanometer.
- CO3:** Convert galvanometer into voltmeter and ammeter.
- CO4:** Find magnetic moment of a bar magnet using Searle's vibration magnetometer.
- CO5:** Measure resistivity of wire using Carey Foster's bridge and Verify Thevenin's and Norton's theorems.
- CO6:** Determine wavelength of Laser using Grating.

PH6CRP04 – DIGITAL ELECTRONICS (CORE PRACTICAL- 04)

- CO1:** Realize logic gates – AND, OR and NOT – Using diodes, transistors etc. and Realize logic gates – AND, OR and NOT – Using universal gates.
- CO2:** Verification of truth table of NAND, NOR, XOR and XNOR gates.
- CO3:** Verify De Morgan's theorems – Using IC 7400.
- CO4:** Construct Astable Multivibrator using Transistor and IC 555 & Monostable Multivibrator using Transistor and IC 555.
- CO5:** Construct and verify A/D converter using IC 741.
- CO6:** Construct SR Flip Flops using IC 7400 and Verify truth table.

PH6CRP05 – THERMAL PHYSICS, SPECTROSCOPY AND C++ PROGRAMMING (CORE PRACTICAL- 05)

- CO1:** Use Thermistor to find Temperature coefficient of resistance.
- CO2:** Using Carey Foster's bridge find the Temperature co-efficient of resistance.

- CO3:** Write and execute Computer programming in C++ to Generate Fibonacci series and to Convert a decimal number into binary number.
- CO4:** Use Spectrometer find Cauchy's constants and Use Spectrometer find Resolving power of prism and grating.
- CO5:** Write and execute Computer programming in C++ to Solve a quadratic equation.
- CO6:** Calculate 'g' from experimental data of Simple Pendulum using Computer programming in C++.

PH6CRP06– ACOUSTICS, PHOTONICS AND ADVANCED SEMICONDUCTOR PHYSICS (CORE PRACTICAL- 06)

- CO1:** Determine frequency of given tuning fork using Melde's string and Use Sonometer to Determine frequency of AC.
- CO2:** Determine frequency of given tuning fork, unknown mass and verification of laws of strings using sonometer.
- CO3:** Measure and draw V- I characteristics of solar cell CP-PSO Matrix Correlation levels.
- CO4:** Construct Voltage regulator using Zener diode and transistor and study line and load regulations and Construct and study Voltage multipliers – Doubler & Tripler.
- CO5:** Realize adder and subtractor using OPAMP.
- CO6:** Construct Pulse Width Modulator using IC 555.

PH6PRO01 – PROJECT AND INDUSTRIAL VISIT

- CO1:** Identify the need of lifelong learning and adapt to changing needs of profession and society and get updated with current state-of-art.
- CO2:** Express ideas clearly and effectively, both verbally and in written form.
- CO3:** Find links across different areas of knowledge and generate, develop and evaluate ideas and information related to the project.

CO4: Develop ability to work with peers, building teamwork and group skills.

CORE COURSE 2 – ELECTRONICS:

PH1CRT21-PRINCIPLES OF ELECTRONICS

CO1: Understand the current voltage characteristics of semiconductor devices.

CO2: Design simple analogue circuits.

CO3: Evaluate frequency response to understand behaviour of Electronics circuits.

CO4: Analyze dc circuits and relate ac models of semiconductor devices with their physical Operation.

PH1CRT22- COMMUNICATION ENGINEERING

CO1: Understand fundamental principles of radio communication.

CO2: Use of different modulation and demodulation techniques used in analog communication.

CO3: Identify and solve basic communication problems.

CO4: Analyze transmitter and receiver circuits.

PH2CRT23- POWER ELECTRONICS

CO1: Understand the basics of Power Electronics.

CO2: Learn the details of power semiconductor switches (Construction, Characteristics and operation).

CO3: Understand the working of various types of converters.

CO4: Learn how to analyze the converters and design the components of them, under various load types.

PH2CRT24 - ANALOGUE INTEGRATED CIRCUIT

CO1: Understand the fundamentals and areas of applications for the integrated circuits.

- CO2:** Analyze important types of integrated circuits.
- CO3:** Demonstrate the ability to design practical circuits that perform the desired operations.
- CO4:** Understand the differences between theoretical, practical & simulated results in integrated circuits.

PH3CRT25 - MICROPROCESSOR AND ITS APPLICATION

- CO1:** Understand the basic programming in 8085.
- CO2:** To write application-level programmes.
- CO3:** Design microprocessor applications like traffic light, motor speed control, washing machine.
- CO4:** Designing of interfacing.

PH3CRT26 - NETWORK THEORY

- CO1:** Synthesize the network using passive elements.
- CO2:** Apply concepts of electric network topology nodes, branches, loops to solve circuit problems including the use of computer simulation.
- CO3:** Apply time and frequency concepts of analysis.
- CO4:** Understand various functions of network and also the stability of network.

PH4CRT27 - TROUBLESHOOTING OF AUDIO EQUIPMENT

- CO1:** Understand the concept of different loudspeakers, microphones etc
- CO2:** Understand different types of recording methods.
- CO3:** Understand the working of MP3player, Hometheatre etc
- CO4:** Understand the working of DVD player.

PH4CRT28 - TROUBLESHOOTING OF VIDEO EQUIPMENT

- CO1:** Understand the fundamental concepts of television transmitter and receiver systems,

the transmission of video signals and importance of television standards to effectively work with broadcasting applications and to trouble shoot television systems.

CO2: Understand different colour television systems used worldwide and its compatibility.

CO3: Understand principles of digital video and component video signal.

CO4: Understand advanced TV technology, MAC signals and DTH technology.

PH5OPT03 - COMPUTER HARDWARE AND NETWORKING (OPEN COURSE)

CO1: Perform all the functions with Electrical and Electronic Components related to Computer and Networking system following safety precautions.

CO2: Assemble and repair of Desktop Computer with all its hardware components.

CO3: Perform the operations of office package (word, excel, power point).

CO4: Assemble and repair Laptop and its hardware components.

COMPLIMENTARY COURSES 1- MATHEMATICS

SEMESTER I

MM2CMT01-NUMERICAL ANALYSIS, MATRICES, TRIGNOMETRY AND PARTIAL DIFFERENTIATION

CO1: Derive appropriate numerical methods to solve algebraic and transcendental equations.

CO2: Understand how Numerical Methods can be used to find approximate solutions and study of error by approximation.

CO3: Understand the use of numerical methods for finding approximate root of algebraic equations.

CO4: Determine approximate numerical solutions to mathematical problems.

SEMESTER II

MM2CMT02 INTEGRAL CALCULUS AND DIFFERENTIAL EQUATION

- CO1:** Evaluate double and triple integrals and their use for finding areas and volumes.
- CO2:** Solve the first-order linear differential equations.
- CO3:** Learn how the differential equations are used to study various physical problems such as mass attached to spring and electric circuit problem etc.
- CO4:** Understand various types of differential equation.

SEMESTER III

MM2CMT03 VECTOR CALCULUS, ANALYTIC GEOMETRY AND ABSTRACT ALGEBRA

- CO1:** Understand the abstract structure ‘Groups’, its Subgroups, cyclic Groups and Permutation Groups, homomorphism and isomorphism.
- CO2:** Enhance problem solving skills.
- CO3:** Understand vector valued functions and their use for finding tangents, normal, and arc length of space curves.
- CO4:** Understand the applications of Green’s, Stokes’ and Divergence Theorem.

SEMESTER IV

MM2CMT04- FOURIER SERIES, LAPLACE TRANSFORMS AND COMPLEX ANALYSIS

- CO1:** Understand properties of Complex Numbers and functions of a complex variable.
- CO2:** Understand the concept of limit, continuity, differentiability and analyticity of functions of complex variable.

CO3: Understand elementary functions of a complex variable.

CO4: Understand the concept of Integration of functions of complex variable along a contour.

COMPLIMENTARY COURSES 2 - COMPUTER SCIENCE

SEMESTER 1

CA1CMT01- COMPUTER FUNDAMENTALS

CO1: Familiarize operating systems, programming languages, peripheral devices, networking, multimedia and internet.

CO2: Understand how logic circuits and Boolean algebra forms as the basics of digital computer.

CO3: Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.

CO4: Apply computer science theory and software development fundamentals to produce computing-based solutions.

SEMESTER 2

CA2CMT02-PROGRAMING IN C LANGUAGE

CO1: Able to implement the algorithms and draw flowcharts for solving Mathematical and Engineering problems.

CO2: Demonstrate an understanding of computer programming language concepts.

CO3: Develop C programs on Linux platform.

CO4: Design and develop computer programs and also analyze, and interpret the concept of pointers.

SEMESTER 3

CA3CMT03- WEB TECHNOLOGY AND PROGRAMMING

- CO1:** Design and development of web-pages and web-applications.
- CO2:** Retrieve information, and use of documentation and standards.
- CO3:** Learn good design, universal design, multi-platform web applications.
- CO4:** Understand formats and languages used in modern web-pages: HTML, XHTML, CSS, XML, XSLT, JavaScript, DOM.

SEMESTER 4

CA4CMT04- VISUAL PROGRAMMING TECHNIQUE

- CO1:** Create a project. (WC, CCT).
- CO2:** Use the IDE. (WC, CCT).
- CO3:** Create a VB application. (WC, CCT).
- CO4:** Apply Picture Box controls, Text Box controls, and Command Button.

B.Com. FINANCE & TAXATION

(CBCS-Under Graduate Degree Programme, 2017 admission onwards, M.G. University)

PROGRAM SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Become worthy global citizens who will emerge as future leaders, entrepreneurs and efficient administrators.
PSO2	Facilitate an insight on accounting skills and acquainting the students with latest development in the field.
PSO3	Recognize the fundamental concepts in finance, taxation, marketing, management and e-commerce.
PSO4	Development of quantitative aptitude of students and imparting basic knowledge on research methods.
PSO5	Acquire managerial skills and knowledge focusing on different functional areas of management, thereby enabling them to make managerial decisions.
PSO6	Enable learners to pursue post- graduation and career in taxation, financial services, management, e-commerce etc.

COURSE OUTCOMES (COs)

SEMESTER 1

CO1CRT01- DIMENSIONS AND METHODOLOGY OF BUSINESS STUDIES

- CO1:** Create an awareness on various components of business environment.
- CO2:** Evaluate various stages and developments of business in Indian economy.
- CO3:** Analyze the concepts of E Commerce and its technological integration with business.
- CO4:** Discuss the significance of ethics and fair governance in modern business.
- CO5:** Recognize the various types of business research and the techniques to apply it in the real situation.

CO1CRT02- FINANCIAL ACCOUNTING – 1

- CO1:** Develop awareness on the basic concepts of Accounting and be able to prepare Financial Statements.
- CO2:** Evaluate Single entry and Double entry and equip with the knowledge to do Accounting of Incomplete Records.
- CO3:** Apply accounting treatments regarding Royalty, Consignment and to prepare accounts accordingly.
- CO4:** Discuss the concepts of various accounts related with farming activities.
- CO5:** Discuss the concepts of Accounting and be able to prepare Financial Statements.

CO1CRT03- CORPORATE REGULATIONS AND ADMINISTRATION

- CO1:** Investigate development of Companies Act and Legal framework.
- CO2:** Appraise the procedure of registration and liquidation procedure as per Companies Act, 2013.

- CO3:** Describe the concepts internal and external authority of a company.
- CO4:** Recognize the role and functions of different stakeholders of the company.
- CO5:** Discuss relevance of management and administration of joint stock companies in India.

CO1CMT01- BANKING AND INSURANCE

- CO1:** Construct a basic idea about banking functions.
- CO2:** Experiment various innovations and reforms in the banking sector.
- CO3:** Describe different dimensions of relationship between banker and customer.
- CO4:** Describe insurance sector and various functions.
- CO5:** State various reforms in this sector.
- CO6:** Discuss various types of insurance and its principles and practices.

SEMESTER 2

CO2CRT04- FINANCIAL ACCOUNTING –II

- CO1:** Develop awareness on the concepts of Hire Purchase and learn its accounting treatment.
- CO2:** Analyze the concept of branch account and its system.
- CO3:** Analyze the scope of departmental accounting.
- CO4:** Prepare the accounts of dissolution of a partnership firm.
- CO5:** Describe the major Accounting Standards and its Applicability.

CO2CRT05- BUSINESS REGULATORY FRAMEWORK

- CO1:** Create an awareness on the Indian Contract ACT 1872 and investigate the concept of contracts and its legal formalities.

CO2: Differentiate the special contracts- Bailment and pledge.

CO3: Discuss the contract of indemnity and contract of guarantee.

CO4: Recognize the law of agency.

CO5: Define the sale of goods ACT 1930.

CO2CRT06- BUSINESS MANAGEMENT

CO1: Develop the basic managerial functions in a common business and non- business environment.

CO2: Appraise the managerial principles-contributions of F.W. Taylor and Henry Fayol.

CO3: Analyze various modern tools in management

CO4: Recognize the significant leadership and motivational theories.

CO5: Recognize the ability to take effective managerial decisions in various situations.

CO1CMT02- PRINCIPLES OF BUSINESS DECISION

CO1: Create an insight into the relevance and importance of business decisions.

CO2: Evaluate the application of economic theories in decision making.

CO3: Analyze the demand theory and demand forecasting methods for new products production theory.

CO4: Analyze the production theory and evaluation of cost output relationship.

CO5: Recognize cost theory and pricing theory and report how price is fixed under various market conditions.

SEMESTER 3

CO3CRT07: CORPORATE ACCOUNTS-I

CO1: Create awareness on the features of Shares and Debentures and accounting treatment of redemption of preference shares, ESOP, Right shares, bonus issue and buyback of

shares.

- CO2:** Evaluate the practice of underwriting of Shares and Debenture.
- CO3:** Execute an exposure to the company final accounts and providing knowledge to prepare final accounts of companies as per the provisions of Companies Act 2013.
- CO4:** Describe the construction of Investment accounts and its accounting treatments.
- CO5:** Discuss the ascertainment of the value of insurance policy and calculation of insurance claims under different situations.

CO3CRT08- QUANTITATIVE TECHNIQUES FOR BUSINESS- I

- CO1:** Create an insight into the basic concepts of Statistics.
- CO2:** Equip with the skills to apply the appropriate sampling survey method and collect data.
- CO3:** Execute the methods to calculate an appropriate measure of central tendency.
- CO4:** Recognize the method to calculate an appropriate measure of dispersion.
- CO5:** Recognize the method to extrapolate a value from a series and use it for forecasting.

CO3CRT09- FINANCIAL MARKETS AND OPERATIONS

- CO1:** Develop an insight into various financial markets and its operations.
- CO2:** Evaluate the regulatory authorities in financial markets.
- CO3:** Relate and distinguish the working of both primary and secondary market
- CO4:** Discuss capital market performance and online trading of stocks.
- CO5:** Recognize concept financial engineering.

CO3CRT10- MARKETING MANAGEMENT

- CO1:** Create an insight on broader concepts of marketing and elements in marketing mix.

- CO2:** Discuss various principles and practices of marketing management.
- CO3:** Create an insight on the role of marketing in business as also to its various stakeholders including consumers and society.
- CO4:** To acquire the ability to develop marketing strategies based on product, price and physical distribution.
- CO5:** To acquire the ability to analyze marketing problems and provide solutions based on critical examination of marketing information.

CO3OCT01- GOODS AND SERVICES TAX

- CO1:** Develop an insight on the basic concept of goods and services tax and related terms.
- CO2:** Appraise concept related to levy and collection of GST.
- CO3:** Experiment the concept of time and place of goods in GST.
- CO4:** Experiment the concept of input tax credit and GST payment procedures.
- CO5:** Discuss the registration and returns and assessment related to GST.

SEMESTER 4

CO4CRT11- CORPORATE ACCOUNTS-II

- CO1:** Investigate about insurance companies and the preparation of final accounts of insurance companies as per IRDA Regulation Act.
- CO2:** Evaluate the accounts of banking companies and the preparation of final accounts of Banking Companies as per Banking Companies Act 1949.
- CO3:** Execute various models of internal reconstruction and its accounting treatment.
- CO4:** Create an awareness about amalgamation, absorption and external reconstruction.
- CO5:** Enable the students to gain an idea of liquidation of companies and its accounting treatment.

CO4CRT12- QUANTITATIVE TECHNIQUES FOR BUSINESS-2

- CO1:** Execute the relationship between variables using correlation.
- CO2:** Design a model comprising the variables and using regression.
- CO3:** Design and construct appropriate index numbers.
- CO4:** Compute a time series analysis of data.
- CO5:** Apply the knowledge on determine the probability of simple events.

CO4CRT13- ENTREPRENEURSHIP DEVELOPMENT AND PROJECT MANAGEMENT

- CO1:** Create an entrepreneurial spirit among students.
- CO2:** Equip students for individual freedom, initiative and enterprise by pursuing self-employment and small business entrepreneurship.
- CO3:** Create awareness on the opportunities and support for entrepreneurship in India.
- CO4:** Apply the knowledge on the preparation of a project report.
- CO5:** Recognize the registration, functions of start-ups.

CO4OCT01- FINANCIAL SERVICES

- CO1:** Create an insight on the nature and importance of financial services.
- CO2:** Distinguish various fund based and non-fund based financial services.
- CO3:** Analyze the importance and functions of merchant bankers.
- CO4:** Discuss with venture capital and its various stages of financing.
- CO5:** Describe securitization of debt and its process.
- CO6:** Recognize the concept of credit rating and various credit rating agencies.

SEMESTER 5

CO5CRT14- COST ACCOUNTING – I

- CO1:** Create insight on basic cost concepts and the major classification of costs.
- CO2:** Appraise the relevance of material costing and methods of pricing the issue of materials in a firm.
- CO3:** Relate the costs on account of labour and measures to control such costs in a firm.
- CO4:** Apply the knowledge of allocation and apportionment of all overhead costs in an organization.
- CO5:** Apply the knowledge on preparation of cost sheet and reconciliation account for tenders and quotation pricing.

CO5CRT15- ENVIRONMENT MANAGEMENT AND HUMAN RIGHTS

- CO1:** Create an awareness on the various environmental management aspects.
- CO2:** Evaluate the importance of biodiversity and its conservation.
- CO3:** Describe various human rights aspects.
- CO4:** Discuss the impacts of RTI Act and its application.
- CO5:** Discuss the relevance of ecosystem and its structure.

CO5CRT16- FINANCIAL MANAGEMENT

- CO1:** Create awareness on functional areas of financial management and familiarize its principles.
- CO2:** Appraise the concept of financing decisions.
- CO3:** Experiment various capital budgeting methods.
- CO4:** Experiment the concept of working capital and its estimation.

CO5: Discuss the concept of capital structure and cost of capital.

CO6: Recognize the relevance of dividend calculations and various practice of dividend policies.

CO5OCT01- INCOME TAX – I

CO1: Appraise the method of computing taxable income under the head Income from salary.

CO2: Appraise the method of computing taxable income under the head Income from salary.

CO3: Apply the method on computing taxable income under the head Profits and gains of business or profession.

CO4: Discuss on Income Tax Act,1961.

CO5: Apply knowledge to compute taxable income under the three heads of income.

SEMESTER 6

CO6CRT17- COST ACCOUNTING –II

CO1: Calculate specific order costing and contract costing.

CO2: Discuss the relevance of service costing and classification of costs of various operating costing industries.

CO3: Discuss on the different costs incurred in various levels of processing and the wastage or losses.

CO4: Discuss the relevance of marginal costing and the breakeven point analysis.

CO5: Preparation of different types of budgets and to ensure proper control of budget.

CO6CRT18- ADVERTISEMENT AND SALES PROMOTION

CO1: Create awareness on various advertisements and key players in the industry and also understand the ethics in advertisement.

CO2: Analyze and make decisions regarding the most feasible advertisement appeal and

media.

CO3: Execute pre-testing, post testing and concurrent testing of ads to determine their effectiveness.

CO4: Identify the dealer, customer and salesmen-oriented promotion techniques.

CO5: Recognize various types of sales persons and also understand the steps involved in sales force management.

CO6CRT19- AUDITING AND ASSURANCE

CO1: Create an awareness on the principles and procedure of auditing.

CO2: Evaluate the duties and responsibilities of auditors.

CO3: Equip students to find out various frauds and malpractices done by companies.

CO4: Apply the knowledge on preparation of an audit report.

CO5: Recognize the electronic environment of auditing.

CO6CRT20- MANAGEMENT ACCOUNTING

CO1: Develop an awareness on management accounting practices.

CO2: Describe the method of interpretation of financial statements.

CO3: Computation and interpretation of various ratios based on financial statements.

CO4: Preparation and analysis of fund flow and cash flow statements.

CO5: Preparation and presentation of general management accounting practices.

CO6OCT01- INCOME TAX – II

CO1: Apply the method on computing taxable income under the head capital gains.

CO2: Apply the method on computing taxable income under the head Income from other sources.

- CO3:** Analyze various deductions under chapter VI A-80C to 80U of Income Tax Act,1961.
- CO4:** Discuss the income assessment procedure.
- CO5:** Discuss on clubbing provisions and carry forward and set off of losses.
- CO6:** Recognize the concepts of TDS, TCS, Advance payment of tax, tax planning, tax avoidance and tax evasion.

B.Com. (MODEL-II, COMPUTER APPLICATIONS)

(CBCS-Under Graduate Degree Programme, 2017 admission onwards, M.G. University)

PROGRAM SPECIFIC OUTCOMES (PSOs)

Sl. No.	PSOs
PSO1	Become worthy global citizens who will emerge as future leaders, entrepreneurs and efficient administrators.
PSO2	Facilitate an insight on accounting skills and acquainting the students with latest development in the field.
PSO3	Recognize the fundamental concepts in finance, marketing, information technology and applications of computer to business and office.
PSO4	Develop quantitative aptitude and basic knowledge on research methods. Acquire practical knowledge of SPSS for doing social science research.
PSO5	Acquire practical knowledge in Computerized Accounting and Programming in C Language. Understand the relevance of Data Base Management system in Business.
PSO6	Develop presentation and analytical skills and able to work in teams by strengthening group dynamics.

COURSE OUTCOMES (COs)

SEMESTER 1

CO1CRT01- DIMENSIONS AND METHODOLOGY OF BUSINESS STUDIES

- CO1:** Create an awareness on various components of business environment.
- CO2:** Evaluate various stages and developments of business in Indian economy.
- CO3:** Analyze the concepts of E Commerce and its technological integration with business.
- CO4:** Discuss the significance of ethics and fair governance in modern business.
- CO5:** Recognize the various types of business research and the techniques to apply it in the real situation.

CO1CRT02- FINANCIAL ACCOUNTING – 1

- CO1:** Develop awareness on the basic concepts of Accounting and be able to prepare Financial Statements.
- CO2:** Evaluate Single entry and Double entry and equip with the knowledge to do Accounting of Incomplete Records.
- CO3:** Apply accounting treatments regarding Royalty, Consignment and to prepare accounts accordingly.
- CO4:** Discuss the concepts of various accounts related with farming activities
- CO5:** Discuss the concepts of Accounting and be able to prepare Financial Statements.

CO1CRT03- CORPORATE REGULATIONS AND ADMINISTRATION

- CO1:** Investigate development of Companies Act and Legal framework.
- CO2:** Appraise the procedure of registration and liquidation procedure as per Companies Act, 2013.
- CO3:** Describe the concepts internal and external authority of a company.

- CO4:** Recognize the role and functions of different stakeholders of the company.
- CO5:** Discuss relevance of management and administration of joint stock companies in India.

CO1CMT01- BANKING AND INSURANCE

- CO1:** Construct a basic idea about banking functions.
- CO2:** Experiment various innovations and reforms in the banking sector.
- CO3:** Describe different dimensions of relationship between banker and customer.
- CO4:** Describe insurance sector and various functions.
- CO5:** State various reforms in this sector. Discuss various types of insurance and its principles and practices.

SEMESTER 2

CO2CRT04- FINANCIAL ACCOUNTING –II

- CO1:** Develop awareness on the concepts of Hire Purchase and learn its accounting treatment.
- CO2:** Analyze the concept of branch account and its system.
- CO3:** Analyze the scope of departmental accounting.
- CO4:** Prepare the accounts of dissolution of a partnership firm.
- CO5:** Describe the major Accounting Standards and its Applicability.

CO2CRT05- BUSINESS REGULATORY FRAMEWORK

- CO1:** Create an awareness on the Indian Contract ACT 1872 and investigate the concept of contracts and its legal formalities.
- CO2:** Differentiate the special contracts- Bailment and pedge.
- CO3:** Discuss the contract of indemnity and contract of guarantee.

CO4: Recognize the law of agency.

CO5: Define the sale of goods ACT 1930.

CO2CRT06- BUSINESS MANAGEMENT

CO1: Develop the basic managerial functions in a common business and non- business environment.

CO2: Appraise the managerial principles-contributions of F.W. Taylor and Henry Fayol.

CO3: Analyze various modern tools in management.

CO4: Recognize the significant leadership and motivational theories.

CO5: Recognize the ability to take effective managerial decisions in various situations.

CO1CMT02- PRINCIPLES OF BUSINESS DECISION

CO1: Create an insight into the relevance and importance of business decisions.

CO2: Evaluate the application of economic theories in decision making.

CO3: Analyze the demand theory and demand forecasting methods for new products production theory.

CO4: Analyze the production theory and evaluation of cost output relationship.

CO5: Recognize cost theory and pricing theory and report how price is fixed under various market conditions.

SEMESTER 3

CO3CRT07- CORPORATE ACCOUNTS-I

CO1: Create awareness on the features of Shares and Debentures and accounting treatment of redemption of preference shares, ESOP, Right shares, bonus issue and buyback of shares.

CO2: Evaluate the practice of underwriting of Shares and Debenture.

- CO3:** Execute an exposure to the company final accounts and providing knowledge to prepare final accounts of companies as per the provisions of Companies Act 2013.
- CO4:** Describe the construction of Investment accounts and its accounting treatments.
- CO5:** Discuss the ascertainment of the value of insurance policy and calculation of insurance claims under different situations.

CO3CRT08- QUANTITATIVE TECHNIQUES FOR BUSINESS- I

- CO1:** Create an insight into the basic concepts of Statistics.
- CO2:** Equip with the skills to apply the appropriate sampling survey method and collect data.
- CO3:** Execute the methods to calculate an appropriate measure of central tendency.
- CO4:** Recognize the method to calculate an appropriate measure of dispersion.
- CO5:** Recognize the method to extrapolate a value from a series and use it for forecasting.

CO3CRT09- FINANCIAL MARKETS AND OPERATIONS

- CO1:** Develop an insight into various financial markets and its operations.
- CO2:** Evaluate the regulatory authorities in financial markets.
- CO3:** Relate and distinguish the working of both primary and secondary market.
- CO4:** Discuss capital market performance and online trading of stocks.
- CO5:** Recognize concept financial engineering.

CO3CRT10- MARKETING MANAGEMENT

- CO1:** Create an insight on broader concepts of marketing and elements in marketing mix.
- CO2:** Discuss various principles and practices of marketing management.
- CO3:** Create an insight on the role of marketing in business as also to its various stakeholders including consumers and society.

CO4: To acquire the ability to develop marketing strategies based on product, price and physical distribution.

CO5: To acquire the ability to analyze marketing problems and provide solutions based on critical examination of marketing information.

CO30CT02- INFORMATION TECHNOLOGY FOR BUSINESS

CO1: Expand the basic concept of Information Technology and social informatics.

CO2: Create the concepts of network and communication.

CO3: Able to develop web pages for business by applying information technology.

CO4: Evaluate the concept of computer fundamentals and computer hardware's.

CO5: Demonstrate the concept of operating system windows, Linux.

SEMESTER 4

CO4CRT11- CORPORATE ACCOUNTS-II

CO1: Investigate about insurance companies and the preparation of final accounts of insurance companies as per IRDA Regulation Act.

CO2: Evaluate the accounts of banking companies and the preparation of final accounts of Banking Companies as per Banking Companies Act 1949.

CO3: Execute various models of internal reconstruction and its accounting treatment.

CO4: Create an awareness about amalgamation, absorption and external reconstruction.

CO5: Enable the students to gain an idea of liquidation of companies and its accounting treatment.

CO4CRT12: QUANTITATIVE TECHNIQUES FOR BUSINESS-2

CO1: Execute the relationship between variables using correlation.

CO2: Design a model comprising the variables and using regression.

- CO3:** Design and construct appropriate index numbers.
- CO4:** Compute a time series analysis of data.
- CO5:** Apply the knowledge on determine the probability of simple events.

CO4CRT13- ENTREPRENEURSHIP DEVELOPMENT AND PROJECT MANAGEMENT

- CO1:** Create an entrepreneurial spirit among students.
- CO2:** Equip students for individual freedom, initiative and enterprise by pursuing self-employment and small business entrepreneurship.
- CO3:** Create awareness on the opportunities and support for entrepreneurship in India.
- CO4:** Apply the knowledge on the preparation of a project report.
- CO5:** Recognize the registration, functions of start-ups

CO4OCT02- INFORMATION TECHNOLOGY FOR OFFICE

- CO1:** Able to draft letters, Curriculum Vitae and mail merge using MSWord.
- CO2:** Develop skills to analyze data and presentation using MS Excel.
- CO3:** Develop skills to create and presenting slides through MS PowerPoint.
- CO4:** Develop skills to create simple poster using page maker.
- CO5:** Enable the students to manage the office activities with the help of information technology.

SEMESTER 5

CO5CRT14- COST ACCOUNTING – I

- CO1:** Create insight on basic cost concepts and the major classification of costs.
- CO2:** Appraise the relevance of material costing and methods of pricing the issue of materials in a firm.

- CO3:** Relate the costs on account of labour and measures to control such costs in a firm.
- CO4:** Apply the knowledge of allocation and apportionment of all overhead costs in an organization.
- CO5:** Apply the knowledge on preparation of cost sheet and reconciliation account for tenders and quotation pricing.

CO5CRT15- ENVIRONMENT MANAGEMENT AND HUMAN RIGHTS

- CO1:** Create an awareness on the various environmental management aspects.
- CO2:** Evaluate the importance of biodiversity and its conservation.
- CO3:** Describe various human rights aspects.
- CO4:** Discuss the impacts of RTI Act and its application.
- CO5:** Discuss the relevance of ecosystem and its structure.

CO5CMT08- PROGRAMMING IN C

- CO1:** Create the basic programming concept algorithms and flowcharts.
- CO2:** Provide complete knowledge of C language.
- CO3:** Able to develop logics which will help them to create programs, applications in C.
- CO4:** Apply array, function, structure, union, pointer, file in C Language for problem solving.
- CO5:** Able to switch over to any other language in the future by learning the basic programming constructs.

CO5OCT02- COMPUTERISED ACCUONTING

- CO1:** Discuss the concept of manual accounting and computerized accounting.
- CO2:** Provide a practical and theoretical knowledge about the best accounting software Tally

ERP 9.

CO3: Equip the students to understand various usages of the Tally software and its application in business processes for accounting purposes.

CO4: Develop skills to do various accounting through the Tally ERP software.

CO5: Recognize the concepts of TDS, TCS, and GST through Tally ERP 9.

SEMESTER 6

CO6CRT17-COST ACCOUNTING –II

CO1: Calculate specific order costing and contract costing.

CO2: Discuss the relevance of service costing and classification of costs of various operating costing industries.

CO3: Discuss on the different costs incurred in various levels of processing and the wastage or losses.

CO4: Discuss the relevance of marginal costing and the breakeven point analysis.

CO5: Preparation of different types of budgets and to ensure proper control of budget.

CO6CRT18- ADVERTISEMENT AND SALES PROMOTION

CO1: Create awareness on various advertisements and key players in the industry and also understand the ethics in advertisement.

CO2: Analyze and make decisions regarding the most feasible advertisement appeal and media.

CO3: Execute pre-testing, post testing and concurrent testing of ads to determine their effectiveness.

CO4: Identify the dealer, customer and salesmen-oriented promotion techniques.

CO5: Recognize various types of sales persons and also understand the steps involved in sales force management.

CO6CRT20- MANAGEMENT ACCOUNTING

- CO1:** Develop an awareness on management accounting practices.
- CO2:** Describe the method of interpretation of financial statements.
- CO3:** Computation and interpretation of various ratios based on financial statements.
- CO4:** Preparation and analysis of fund flow and cash flow statements.
- CO5:** Preparation and presentation of general management accounting practices.

CO6CMT10- DATABASE MANGMENT SYSTEM (DBMS)

- CO1:** Develop students with the concepts of DBMS.
- CO2:** Make students capable to handle database for business firms.
- CO3:** Prepare students with the use of MS Access to create databases.
- CO4:** Mold the students to crate table in MS Access.
- CO5:** Prepare the students to crate Query, Forms and Reports in Ms Access.

CO6OCT02- SOFTWARE FOR BUSINESS AND RESEARCH

- CO1:** Enhance students for research-oriented activities.
- CO2:** Familiarize students with software developments and working in data analysis.
- CO3:** Making students focused on research tools and aspects.
- CO4:** Equip the student in analyzing the data for their project.
- CO5:** Familiarize with Libre Office Writer and Calc.

COMMON COURSES FOR B.A./ B.Sc./ B.Com.

1. ENGLISH

COURSE OUTCOMES (COs)

SEMESTER 1

EN1CCO1- FINE TUNE YOUR ENGLISH (B. A./ B. Sc./ B. Com)

- CO1:** Become competent in the use of English Grammar and vocabulary.
- CO2:** Become capable of effective communication skills.
- CO3:** Use English language as a tool for career advancement.
- CO4:** Identify common errors in English to better academic writing skills.

EN1CCO2- PEARLS FROM THE DEEP (B. A. / B. Sc.)

- CO1:** Discuss various genres in English literature.
- CO2:** Examine literary works by looking at its aesthetic and didactic elements.
- CO3:** Design approaches to learn English language through literary works.
- CO4:** Evaluate literary works with a newer perspective looking at its intricacies in terms of language use and literary devices.

SEMESTER 2

EN2CCO3- ISSUES THAT MATTER (B. A./ B. Sc./ B. Com)

- CO1:** Become aware of issues of concern that are of contemporary relevance.
- CO2:** Develop a rational and empathetic outlook on such matters.
- CO3:** Become active participants in promoting sustainable measures for protecting our

environment.

CO4: Examine colonialism through the lens of issues faced by the colonized natives.

EN2CCO4- FAVOURING THE CLASSICS (B. A. / B. Sc.)

CO1: Identify the canons in world literature.

CO2: Relate the works as models to emulate for writing the best literature.

CO3: Evaluate what makes certain works classics by making an in-depth analysis of the anthology.

CO4: Design various approaches to the study of English Literature

SEMESTER 3

EN2CCO5- LITERATURE AND/AS IDENTITY (B. A. / B. Sc.)

CO1: Evaluate the issues concerning diasporic identity through literature.

CO2: Analyze the conflict-ridden experiences of people belonging to crisis affected regions of South Asia.

CO3: Examine the literary creations by authors of their life experiences to understand the question of identity representation and its relevance.

CO4: Investigate the distinctiveness of native communities to decipher their history, tradition and culture.

EN2CCO6- GEMS OF IMAGINATION (B. Com)

CO1: Examine some of the major works in literature and familiarize various genres in literature.

CO2: Analyze literature as a means for improving creative aptitude through various writing exercises.

CO3: Discuss world literature to expand the possibilities of texts for reading.

CO4: Use English for formal communication effectively.

SEMESTER 4

EN2CCO7- ILLUMINATIONS (B.A./ B.Sc.)

CO1: Discuss motivating stories in literature.

CO2: Engage with examples of those people who have overcome various hardships in life and emerged successful in their respective fields.

CO3: Develop an optimistic attitude in life.

CO4: Locate various works in specific categories of writing, taking into notice the expansiveness of the literary output.

EN2CCO8- REVISITING THE CLASSICS (B. Com)

CO1: Identify the canons in world literature.

CO2: Relate the works as models to emulate for writing the best literature.

CO3: Evaluate what makes certain works classics by making an in-depth analysis of the anthology.

CO4: Design various approaches to the study of English Literature.

2. MALAYALAM

COURSE OUTCOMES (COs)

MODEL 1- B.A./B.Sc.

SEMESTER 1

ML1CCT01- KADHA SAHITHYAM

- CO1:** To discuss about famous short stories & writers in mother tongue.
- CO2:** To explain the history of Malayalam short stories.
- CO3:** To relate short stories of different eras.
- CO4:** To analyze real life situations through different short stories in Malayalam.

SEMESTER 2

ML2CCT02- KAVITHA

- CO1:** To explain the history of modernism in Malayalam poetry.
- CO2:** Analyze & inspect living pictures of Keralanadu depicted in Malayalam poetry.
- CO3:** To identify poetic images in kavitha.
- CO4:** To outline the cultural heritage of our motherland.

SEMESTER 3

ML3CCTO3- DRYSYAKALASAHITHYAM

- CO1:** To analyse Kadhakali & it's literature.
- CO2:** To compare & contrast ancient, medieval & modern Drisyakalrasahithyam.
- CO3:** To examine the role of criticism in Thullal sahithyam.
- CO4:** Classify the society through its art & literature.

CO5: To rate Kerala society through its cinemas

SEMESTER 4

ML4CCT04- MALAYALA GADHYARACHANAKAL

CO1: To compare linguistic peculiarities of dravidian languages.

CO2: To identify the legends in music, painting & printing related to Keralanadu.

CO3: To analyze the biographical literature.

CO4: To analyze the role of SPCS in the growth of Malayalam book printing & distribution

CO5: To identify scientific essays in Malayalam language.

MODEL-I B.Com.

SEMESTER 1

ML1CCT05- KADHAYUM KAVITHAYUM

CO1: To explain famous short stories & writers in Malayalam language & literature.

CO2: To assess poems & poetic images in Malayalam.

CO3: To discuss the history of modernism & post modernism in Malayalam.

CO4: To evaluate feminism in Malayalam short stories & poems.

SEMESTER 2

ML2CCT06- AATHMAKADHA, LEKHANAM

CO1: To identify the autobiographical literature.

CO2: Analyze the living memories of the autobiographers.

CO3: To evaluate the personality development of autobiographers.

CO4: To outline Malayalam prose.

CO5: To categorize & rate different personalities related to Malayalam autobiographical literature.

MODEL-II B.A.

SEMESTER 1

ML1CCT07- KADHA, NOVEL

CO1: To discuss the history of Malayalam novels.

CO2: Analyze the living pictures depicted in Malayalam novels.

CO3: To justify modernism & post modernism in Malayalam short stories.

CO4: Relate Malayalam short stories of different era's

SEMESTER 2

ML2CCT08- KAVITHAYUM NATAKAVUM

CO1: To inspect poetic images in Malayalam kavitha.

CO2: To evaluate modernism & post modernism in Malayalam poetry.

CO3: Analyze living pictures in Malayalam dramas

CO4: To outline feminism in Malayalam language & literature.

MODEL- II B.Sc.

SEMESTER 1

ML1CCT09- KADHA, KAVITHA

CO1: To explain the history of Malayalam poetry.

CO2: To assess poetic images.

CO3: To analyze post modernism in Malayalam short stories.

CO4: Relate short stories of different eras.

SEMESTER 2

ML2CCT10- GADHYAPARICHAYAM

- CO1:** To identify & rate feminism.
- CO2:** To analyze music in Kerala related voice & noise.
- CO3:** To explain autobiographical literature in Malayalam
- CO4:** To outline Malayalam prose.
- CO5:** To identify the milestones in the development of our motherland through its literature.

MODEL-II B.Com.

SEMESTER 1

ML1CCT11- KADHA, KAVITHA, NATAKAM

- CO1:** To illustrate famous short stories & writers in Malayalam.
- CO2:** To analyze modernism & post modernism in Malayalam.
- CO3:** To assess poetic images in Malayalam.
- CO4:** To compare & contrast life situations through Malayalam drama.

SEMESTER 2

ML2CCT12- GADHYAM, YATHRAVIVARANAM

- CO1:** To outline Malayalam prose.
- CO2:** To analyze music in Kerala related to voice & noise.
- CO3:** To investigate on feminism.
- CO4:** To identify the milestones in the development of our motherland through its literature.
- CO5:** To identify & categorize Malayalam travelogues.
- CO6:** To outline geographical peculiarities of distant places through Malayalam travelogues.

3. HINDI

COURSE OUTCOMES (COs)

MODEL-I B.A/B.Sc.

SEMESTER 1

HN1CCT01- PROSE & ONE-ACT PLAYS

- CO1:** Discuss the contemporary and ancient Hindi literature.
- CO2:** Explain human rights and gender issues from environment studies.
- CO3:** Assess important features of various fictions, Hindi drama, one-act plays and its authors.
- CO4:** Describe the importance of moral life and values in human life.

SEMESTER 2

HN2CCT02- SHORT STORIES & NOVEL

- CO1:** Discuss the literature in its aesthetic sense to make apt appreciations.
- CO2:** Outline culture and social responsibility.
- CO3:** Classify different types of short stories, famous novels and its authors.

SEMESTER 3

HN3CCT03- POETRY, GRAMMAR AND TRANSLATION

- CO1:** Translate from Hindi to English and vice versa.
- CO2:** Able to communicate in Hindi and carry out language teaching.
- CO3:** Recommend the right use of Hindi words following the Grammar.
- CO4:** Examine the aesthetic expression of poetry and its relation to the culture.

SEMESTER 4

HN4CCT04- DRAMA AND LONG POEM

- CO1:** Communicate effectively in Hindi.
- CO2:** Develop awareness of culture and social responsibility.
- CO3:** Analyze various modes of fiction together with postmodernism and modern poetry.

MODEL-I B.Com.

SEMESTER 1

HN1CCT01- PROSE & MASS MEDIA

- CO1:** Explain the role of communication in development media.
- CO2:** Discuss the relevance of communication in media and society.
- CO3:** Examine the link between literature and film.
- CO4:** Develop a sense of awareness on the environment and its various problems.

SEMESTER 2

HN2CCT02- POETRY, COMMERCIAL CORRESPONDENCE & TRANSLATION

- CO1:** Secure basic skill in translation through various exercises.
- CO2:** Describe the emerging trends in aesthetic poetry.
- CO3:** Translate from Hindi to English and vice versa.
- CO4:** Able to communicate in Hindi and carry out language teaching.

MODEL-II B. Com

SEMESTER 1

HN1CCT01- PROSE, COMMERCIAL CORRESPONDENCE AND TRANSLATION

- CO1:** Secure basic skill in translation through various exercises.
- CO2:** Describe the emerging trends in aesthetic poetry.

CO3: Translate from Hindi to English and vice versa.

CO4: Able to communicate in Hindi and carry out language teaching.

SEMESTER 2

HN2CCT02- POETRY AND MASS MEDIA

CO1: Implement functional Hindi in the fields of administration, science and technology.

CO2: Describe the role of communication in development media.

CO3: Explain the relevance of communication in media and society.

CO4: Examine links between literature and film.

MODEL-II B. A.

SEMESTER 1

HN1CCT01- DRAMA AND LONG POEM

CO1: Use Hindi proficiently.

CO2: Synthesize drama as an art form.

CO3: Identify the positive values literature brings in.

CO4: Explain about modernism and modern poetry.

SEMESTER 2

HN2CCT02- PROSE AND POETRY

CO1: Understand how their decisions and actions affect the environment through environmental education.

CO2: Explain the inter-relationship between man and environment and attains the spirit to protect nature and natural resources.

CO3: Identify the link between poetry and the culture of the region.

CO4: Describe about ancient and modern poetry.

MODEL-II B.Sc.

SEMESTER 1

HN1CCT01- POETRY & ONE-ACT PLAY

CO1: Relate postmodernism and modern poetry.

CO2: Describe various types of fictions, Hindi one-act play writers, important features about drama and one-act plays.

CO3: Discuss the contemporary and ancient Hindi literature.

CO4: Describe the importance of moral life and values in human life.

SEMESTER 2

HN1CCT02- PROSE AND SHORT STORIES

CO1: Develop a positive attitude about the environment.

CO2: Explain the various types of fictions.

CO3: Write about the famous Hindi writers.

CO4: Analyze the different types of short stories.

