ANDHRA LOYOLA COLLEGE

AUTONOMOUS :: VIJAYAWADA - 520 008

Established : 1954

A CHRISTIAN MINORITY COLLEGE WITH CONSTITUTIONALLY PROVIDED RIGHT OF ADMISSION
(AN ISO 14001 : 2015 INSTITUTION)
THE ONLY COLLEGE IN BOTH THE TELUGU STATES TO HAVE BEEN RANKED AMONG
THE TOP 150 COLLEGES BY NIRF SINCE THE INCEPTION OF THE RANKING IN 2017
SELECTED UNDER THE STAR COLLEGE SCHEME OF DBT AND FIST PROGRAMME OF DST, GOVT.OF INDIA
SELECTED FOR ENHANCEMENT OF QUALITY AND EXCELLENCE UNDER RUSA BY MHRD, GOVT.OF INDIA

A College Dedicated to All-Round Development of its Students

Andhra Loyola College
(Autonomous)
VIJAYAWADA-520 008.
Accredited in III Cycle at A+ Grade with a CGPA of 3.66 / 4.00
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Course Outcomes

DEPARTMENT OF ECONOMICS			
Program	**Semester**	**Course Code**	**Course Name**
B.A	I	ECO111 MEA	MICRO ECONOMIC ANALYSIS

On successful completion of the course, students will be able to;
CO 1: Explain evolution and growth of economics, what economics is and why it is important, how economists use economic models, Difference between positive and normative economics, static and dynamic economics.
CO 2: Define the concept of utility and satisfaction, Differentiate between marginal utility and total utility, calculate the concept of marginal utility, how consumers maximize total utility within a given income using the Utility Maximizing Rule, Explain how consumer's utility changes when income or prices change, Describe the behavioral economics approach to understanding decision making.
CO 3: Elucidate the determinants of demand, determinants of supply, concept of elasticity, price elasticity of demand and price elasticity of supply, and compute elasticity using common economic variables.
CO 4: Describe the term "production" and explain what a production function is; define the term "production inputs," and differentiate between labor, land, capital, entrepreneurship, technology, economies of scale, diseconomies of scale, and constant returns to scale.
CO 5: Analyze and differentiate between marginal, average, and total product; compute and graph marginal, average, and total product; diminishing marginal product and diminishing marginal returns, Explicit and Implicit Costs, Accounting and Economic Profit.

Program	**Semester**	**Course Code**	**Course Name**
B.A	II	ECO122 MEA	MACRO ECONOMIC ANALYSIS

On successful completion of the course, students will be able to
CO 1: Define and explain the process of calculating national income, identify its components, demonstrate circular flow of income.
CO 2: Understanding Say's law of market, classical theory of employment and Keynes' objection to classical theory, demonstrate the principle of effective demand and income determination.
CO 3: Explain the meaning of consumption function, relationship between APC and MPC, consumption and income, concept of multiplier and analyze the theories of absolute and relative income hypothesis.
CO 4: Understand the relationship between investment and savings, demonstrate investment multiplier, and understand the meaning of MEC and MEI.
CO 5: Demonstrate the meaning and function of money, high powered money, monetary and paper system, illustrate various versions of quantity theory of money.

Program	Semester	Course Code	Course Name
B.A	III	ECO233DE	DEVELOPMENT ECONOMICS

On successful completion of the course, students will be able to
CO 1: Students will understand the importance of Economic Growth and development, the present chapter creates an awareness on covid-19 immunity aspects.
CO 2: Student's become aware of the growth of different countries and it also help to understand ways to develop with different models.
CO 3: It will develop knowledge among students about the role of developmental theories related to Economic development of a country.
CO 4: Understand Strategies of Economic Development and Role of Infrastructure in Economic Development.
CO 5: India is a developing country so as a student of this country there must know the role of economic development and also must have an idea about market failure and attaining economic development with the help of International Institutions.

Program	Semester	Course Code	Course Name
B.A	IV	ECO244EDIAP	ECONOMIC DEVELOPMENT- INDIA AND ANDHRA PRADESH

On successful completion of the course, students will be able to
CO 1: To understand the basic features of the Indian economy and its development since independence, and also to understand the planning structure and the place of the Indian economy in the Human Development Index.
CO 2: Be able to understand the national income, trends and the problems of unemployment, poverty in the economy along with the measures to correct them.
CO 3: Get to know about Indian agriculture, various policies relating to agriculture and the programmes implemented by the government to improve the industrial sector.
CO 4: Utilize the knowledge of taxation to understand the impact on commerce and industry and also to analyze the state central relations.
CO 5: The key changes in Andhra Pradesh state after bifurcation in 2014 and the problems faced by it after separation.

Program	Semester	Course Code	Course Name
B.A	IV	ECO245SME	STATISTICAL METHODS FOR ECONOMICS

On successful completion of the course, students will be able to
CO 1: Understand about the nature and importance of statistics in economics, types of data and sampling, and its collection methods.
CO 2: To analyze the data collection methods, and tabular and graphical presentation of data.
CO 3: To understand about the measures of central tendency namely mean median, mode and measures of dispersion.
CO 4: Able to know correlation and various types along with regression and its uses in real life.
CO 5: Analyze time series and measurement of time series and also index numbers, types, uses and limitations.

Program	Semester	Course Code	Course Name
B.A	V	ECO356IS	INSURANCE SERVICES

On successful completion of the course, students will be able to
CO 1: Understand the framework of insurance in India.
CO 2: Assimilate different types of insurance products sold in India & how insurance policy satisfy customer requirements.
CO 3: Adapt different types of life insurance products sold in India & how product meets customer needs.
CO 4: Understand documentation & processing of life insurance proposal forms, claim settlement and surrender of life insurance policy.
CO 5: Be provided with the knowledge of risk and rewards of general insurance

Program	Semester	Course Code	Course Name
B.A	V	ECO357BFS	Banking and Financial Services

On successful completion of the course, students will be able to
CO 1: Understanding the Meaning, Function and role of commercial banking. Knowing the procedure of an account opening, operating and closing.
CO 2: Knowing the structure, function and role of RBI in economic Development and Judging the progress of financial inclusion.
CO 3: Evaluating the importance, characteristics and components of the financial market. Along with the role and types of development bank and non-banking financial intermediaries.
CO 4: Realizing the banking reforms and Basel Norms I and II and baking services such as E-banking, Loan clearing, ATMs, Digital Currency, Credit card, Debit Card, Travelers cheque.
CO 5: Analyzing the concept of money laundering and various acts to check laundering

DEPARTMENT OF HINDI

Program	Semester	Course Code	Course Name
B.A, B.Com & B.Sc	I	HIN 111 PNG	Prose, Non-Detailed & Applied Grammar - I

At the end of the course Student will
CO 1: Get the scope for linguistic skills of Hindi.
CO 2: Understand 'Unity in Diversity'.
CO 3: For the better understanding in grammar concepts
CO 4: Adapt noble values of Life.
CO 5: Get the knowledge of different Grammar concepts in Hindi.
CO 6: Help the society by their skills & abilities.

Program	Semester	Course Code	Course Name
B.A, B.Com & B.Sc	II	HIN 122 PNG	Prose, Non-Detailed & Applied Grammar - II

At the end of the course Student will
CO 1: Get the scope for linguistic skills of Hindi.
CO 2: Promote perfect use of Vocabulary
CO 3: For the better understanding in grammar concepts
CO 4: Adapt moral values and ethical values so that students can try to build good character
CO 5: Understands the structure of translation methods
CO 6: Help the society by their skills & abilities.

Program	Semester	Course Code	Course Name
B.A, B.Com & B.Sc	III	HIN 233 HLT	Poetry, History of Hindi Literature & Translation

At the end of the course Student will
CO 1: Get a brief knowledge of history of Hindi literature
CO 2: Get the scope for literary skills of Hindi
CO 3: Gain Hindi translational skills.
CO 4: Emphasize the responsibilities of humans towards nature.
CO 5: Behave as a Virtual Oriented person in society.
CO 6: Attain skills in writing and speaking.

DEPARTMENT OF SANSKRIT

Program	Semester	Course Code	Course Name
B.A, B.Com & B.Sc	I	SAN 111 PPG	Prose, Poetry and Grammar

At the end of the course student will
CO1: Get a brief knowledge of Sanskrit literature
CO2: Understand the Sanskrit syntax through the grammar
CO3: Get the skills of pronunciation, reading, writing and reciting Sanskrit accurately and fluently.
CO4: Can analyze merit sand demerits of the society
CO5: Understand the structure of translation methods
CO6: Can study Sanskrit texts such as Ramayana, Mahabharata and Bhagavadgita which are the source of Indian culture and traditions

Program	Semester	Course Code	Course Name
B.A, B.Com & B.Sc	II	SAN 122 PPG	Prose, Poetry and Grammar

At the end of the course student will
CO1: Get a brief knowledge of Sanskrit literature
CO2: Understand the Sanskrit syntax through the grammar
CO3: Get the skills of pronunciation, reading, writing and reciting Sanskrit accurately and fluently.
CO4: Can analyze merits and demerits of the society
CO5: Understand the structure of translation methods
CO6: Can study Sanskrit texts such as Ramayana, Mahabharata and Bhagavad Gita which are the source of Indian culture and traditions

Program	Semester	Course Code	Course Name
B.A, B.Com & B.Sc	III	SAN 233 DHS	Drama, Alankaras and History of Sanskrit Literature

At the end of the course student will
CO1: Get a brief knowledge of Sanskrit literature
CO2: Understand the Sanskrit syntax through the grammar
CO3: Get the skills of pronunciation, reading, writing and reciting Sanskrit accurately and fluently.
CO4: Can analyze merit and demerits of the society CO5: Understand the structure of translations
CO6: Can study Sanskrit texts such as Ramayana, Mahabharata and Bhagavad Gita which are the source of Indian culture and traditions

DEPARTMENT OF COMPUTER SCIENCE			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(MPCs, MSCs, MECs,	I	CSC111PPP	Problem Solving using Computers & Python Programming

Upon successful completion of the course, a student will be able to:
CO 1: Learn to apply fundamental problem-solving techniques.
CO 2: Describe the core syntax and semantics of Python programming language.
CO 3: Learn and understand python looping, control statements and string manipulations.
CO 4: Define and demonstrate the use of built-in data structures lists, dictionaries, tuples and sets
CO 5: Understand the Python programming language and it's rich set of libraries, applications where Python programming is effective

Program	Semester	Course Code	Course Name
B.Sc.(MPCs, MSCs, MECs,	II	CSC122DS	Data Structures

Upon successful completion of the course, a student will be able to:
CO 1: Understand available Data Structures for data storage and processing.
CO 2: Comprehend Data Structure and their real-time applications - Stack, Queue, Linked List, Trees and Graph
CO 3: Choose a suitable Data Structures for an application
CO 4: Develop ability to implement different Sorting and Search methods
CO 5: Have knowledge on Data Structures basic operations like insert, delete, search, update and traversal
CO 6: Design and develop programs using various data structures
CO 7: Implement the applications of algorithms for sorting, pattern matching etc

Program	Semester	Course Code	Course Name
B.Sc.(MPCs, MSCs, MECs,	III	CS233DBMS	DBMS

On completing the subject, students will be able to:
CO 1: Understand the fundamental concepts of DBMS with special emphasis on relational data model.
CO 2: Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database
CO 3: Model database using ER Diagrams and design database schemas based on the model.
CO 4: Create a small database using SQL.
CO 5: Store, Retrieve data in database.

Program	Semester	Course Code	Course Name
B.Sc.(MPCs, MSCs, MECs,	IV	CSC244OS	Operating Systems

At the end of the course student will
CO 1: Know Computer system resources and the role of operating system in resource management with algorithms
CO 2: Understand Operating System Architectural design and its services.
CO 3: Gain knowledge of various types of operating systems including Unix and Android.
CO 4: Understand various process management concepts including scheduling, synchronization, and deadlocks. 5. Have a basic knowledge about multithreading.
CO 5: Comprehend different approaches for memory management.
CO 6: Understand and identify potential threats to operating systems and the security features design to guard against them.
CO 7: Specify objectives of modern operating systems and describe how operating systems have evolved over time
CO 8: Describe the functions of a contemporary operating system.

Program	Semester	Course Code	Course Name
B.Sc.(MPCs, MSCs, MECs,	IV	CSC 245OPJ	Object Oriented Programming With Java

After successful completion of the course, the students are able to At the end of the course student will
CO 1: Understand the benefits of a well-structured program
CO 2: Understand different computer programming paradigms
CO 3: Understand underlying principles of Object-Oriented Programming in Java
CO 4: Develop problem-solving and programming skills using OOP concepts
CO 5: Develop the ability to solve real-world problems through software development in high-level programming languages like Java.

Program	Semester	Course Code	Course Name
B.Sc.(MPCs, MSCs, MECs,	V	CS356WDT	Web Interface Designing Technologies

Upon successful completion of the course, a student will be able to:
CO 1: Understand and appreciate the web architecture and services.
CO 2: Gain knowledge about various components of a website.
CO 3: Demonstrate skills regarding creation of a static website and an interface to dynamic website.
CO 4: Learn how to install word press and gain the knowledge of installing various plugins to use in their websites.

Program	Semester	Course Code	Course Name
B.Sc.(MPCs, MSCs, MECs,	V	CS356WDT(P)	Web Interface Designing Technologies (LAB)

. On successful completion of this practical course, student shall be able to:
CO 1: Create a basic website with the help of HTML and CSS.
CO 2: Acquire the skill of installing word press and various plugins of Word press.
CO 3: Create a static website with the help of Word press.
CO 4: Create an interface for a dynamic website.
CO 5:Apply various themes for their websites using Word press.

Program	Semester	Course Code	Course Name
B.Sc.(MPCs, MSCs, MECs,	V	CS357WAD(P)	Web Applications Development using PHP & MYSQL LAB

On successful completion of this practical course, student shall be able to:
CO1: Write, debug and implement the Programs by applying concepts and error handling techniques of PHP.
CO2: Create an interactive and dynamic website.
CO3: Create a website with reports generated from a database.
CO4: Write programs to create an interactive website for e-commerce sites like online shopping, etc

DEPARTMENT OF STATISTICS			
Program	**Semester**	**Course Code**	**Course Name**

B. Sc., (MSP, MSCs)	I	STA111DSP	Descriptive Statistics & Theory of Probability

CO 1: Organize, manage and present data and to analyse statistical data graphically using frequency distributions and cumulative frequency distributions.
CO 2: Analyze statistical data using measures of central tendency, dispersion and location and to use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events
CO 3: Translate real-world problems into probability models and to derive the probability density function of transformation of random variables.
CO 4: Calculate probabilities and derive the marginal and conditional distributions of bi-variate random variables and to analyze Statistical data.
CO 5: Expectation of random variable and its properties and various function of random variable.

Program	Semester	Course Code	Course Name
B.A.	I	LSC111ES	Elementary Statistics

CO 1: Understand the concept of Statistics and its merits and demerits. Distinguishing Primary and secondary data. Classification, Tabulation and Pictorial representation of data.
CO 2: Understand the basic nature of data and how a single value describes the entire data set. Measuring the degree of departure of a distribution from symmetry and Reveals the direction of scatteredness of the items.
CO 3: Understand the spread of the data and to draw conclusions from the comparison of averages. To understand the concept of correlation and regression and to learn the degree of Association between two variables and establishing relationship between the variables

Program	Semester	Course Code	Course Name
B. Sc.,(MSP, MSCs)	II	STA112PD	Probability Distributions

CO 1: Develop problem-solving techniques needed to accurately calculate probabilities.
CO 2: Apply problem-solving techniques to solving real-world events.
CO 3: Apply selected probability distributions to solve problems.
CO 4: Equipping students with essential tools for statistical analyses at the graduate level.
CO 5: Fostering understanding through real-world statistical applications.

Program	Semester	Course Code	Course Name
B. Sc.,(MSP, MSCs)	II	SDC112SAR	Survey and Reporting

COURSE OBJECTIVES: On successful completion of the course, students will be able to;
CO1: Understand the basics of survey and reporting needs and methods
CO2: Comprehend designing of a questionnaire
CO3: Conduct a simple and valid survey and Collect data
CO4: Organize and interpret data and Prepare and submit reports.

Program	Semester	Course Code	Course Name
B. Sc.,(MSP, MSCs)	III	STA233SMS	Statistical Methods & Exact Sampling Distributions

CO 1: Analyze the data pertaining to attributes and to interpret the results.
CO 2: To recognize and evaluate the relationship between two quantitative variables through simple linear correlation and regression.
CO 3: To understand the relationship between sample statistics and population parameters.
CO 4: Knowledge of interval estimation and estimation of parameters using the method of moments and MLE.
CO 5: To understand exact sampling distribution

Program	Semester	Course Code	Course Name
B. Sc.,(MSP, MSCs)	IV	STA244SI	Statistical Inference

CO 1: Advances knowledge of statistical modeling via point estimation, hypothesis testing and confidence intervals.
CO 2: Ability to convert various problems of practical interest into statistical models and make inference on it.
CO 3: Students will be able to discern the different aspects of statistical modeling.
CO 4: Able to understand the difference between parametric and non-parametric tests and applications of various non parametric tests
CO 5: Ability to apply statistical concepts and statistical techniques with respect to the point estimation, hypothesis testing and confidence sets.

Program	Semester	Course Code	Course Name
B. Sc.,(MSP, MSCs)	IV	STA245AS	Advanced Statistics

CO 1: Understand census data, Fertility and Mortality rates, standardized death rates, components of complete and abridged life tables, reproduction rates. Notation of population projection.
CO 2: Able to understand the different components of time series, analysis of time series data and measurement of trend and its applications.
CO 3: Analysis of time series data and measurement of seasonal variations – methods and its applications. Use of multiplicative model in measurement of seasonal fluctuations.
CO 4: Understanding the Concept of Index numbers, calculation of unweighted and weighted different index numbers for price and quantity, construction of cost of living index number and whole sale price index numbers.
CO 5: Understanding the Concept of demand and supply, price elasticities of supply and demand, methods of determining demand and supply curves and Pareto law of income distribution curves of concentration

Program	Semester	Course Code	Course Name
B. Sc.,(MSP, MES, MSCs)	V	STA356OR	Operations Research

CO 1: Development of Operations Research(OR), Scope, Features and Management application of OR, Role of OR in decision making, Development of OR in India. Role of computers in OR.
CO 2: Understand the concept of Sequencing Problem, Johnson's algorithm for Processing n Jobs through two machines, processing n jobs through three machines, processing two jobs through m machines.
CO 3: Understand the concept of Assignment problem, Formulation of mathematical model and to solve Assignment problems with Hungarian method.
CO 4: Understand the concept of Transportation problem, Formulation of mathematical model and to find initial basic feasible solution and optimal solution using Modified Distribution method.
CO 5: Understand the concept of Competitive strategies, Principle of Minimax and Maximin rule, definitions of Saddle point, Payoff matrix, Zero Sum game and Value of the game, Dominance and modified dominance property and its applications.

Program	Semester	Course Code	Course Name
B. Sc.,(MSP, MES, MSCs)	VI	STA357BDR	Basic Statistical Data Analysis Using R

CO 1: Get basic knowledge on data types, functions and packages in R.
CO 2: Understand the functioning of the data in R
CO 3: Apply R-functions to data visualization.
CO 4: Generate statistical analysis viz., fitting of curves and probability distribution using R.
CO 5: Importing data and code editing, applying Hypothesis testing and generating statistical analysis.

Statistics - Big data Analytics, Artificial Intelligence

Program	Semester	Course Code	Course Name
B. Sc., (Big data Analytics, Artificial Intelligence)	I	STA111SM	Statistical Methods

CO 1: Organize, manage and present data and to analyze statistical data graphically using frequency distributions and cumulative frequency distributions
CO 2: Concept of Principle of least squares and fitting of curves viz., polynomials, exponential and power curves
CO 3: Bivariate data- graphical representation, frequency distribution, conditional frequency distribution. Karl Pearson’s Correlation coefficient, Spearman’s Rank Correlation Coefficient and its properties.
CO 4: Regression line and its properties, diagnostics of regression line, Multiple correlation, Partial correlation and multiple regression lines for trivariate data
CO 5: Dealing attributive nature of data, classification and its frequencies, consistency, independency and association of attributes and their properties

Program	Semester	Course Code	Course Name
B. Sc., (Big data Analytics, Artificial Intelligence)	II	STA112BPT	Basic Probability Theory

CO 1: Understand the basic concepts of probability, various definitions and axioms and discrete and continuous random variables
CO 2: Calculate probabilities, and derive the mathematical expectation, marginal and conditional distributions of bivariate random variables.
CO 3: Expectation of random variable and its properties and various functions of random variable.
CO 4: Concept of bivariate random variable and its joint and marginal probabilities. Properties of bivariate random variables. Applications of Cauchy Schwarz Inequality .
CO 5: Concept of weak law of large numbers, Bernoulli's Law of Large Numbers. Applications of Chebyshev's Inequality and central limit theorem

Program	Semester	Course Code	Course Name
B. Sc., (Big data Analytics, Artificial Intelligence)	III	STA233PD	Probability Distributions

CO 1: Univariate discrete probability distributions viz., Bernoulli Binomial and Poisson distributions, properties and their applications
CO 2: Univariate discrete probability distributions viz., Negative Binomial, Geometric and Hypergeometic distributions, properties and their applications
CO 3: Univariate continuous probability distribution - Normal distribution properties and its applications, standard normal variate, problems on normal area property
CO 4: Univariate continuous probability distributions viz., Cauchy, Exponential, Gamma and Beta Hypergeometic distributions, properties and their applications
CO 5: Concept of population, sample, parameter and statistic. Sampling distribution of data and basic sampling distribution viz., t, F and Chi square and its properties and their interrelationships

Program	Semester	Course Code	Course Name
B. Sc., (Big data Analytics, Artificial Intelligence)	IV	STA244ETH	Basic Theory of Estimation & Testing of Hypothesis

CO 1: Concept of Estimation –properties of good estimator and method of parametric estimation and confidence intervals
CO 2: Applications of large sample tests for variables and attributes and Fishers Z transformation and its applications
CO 3: Applications of small sample tests viz., t- test for single mean, equality of two means, paired observations and sample correlation coefficients,. F test for equality of two variances
CO 4: Chi-Square test for Goodness of fit and Independence of Attributes
CO 5: Able to understand the difference between parametric and non parametric tests and applications of various non parametric tests

Program	Semester	Course Code	Course Name
B. Sc., (Big data Analytics, Artificial Intelligence)	V	STA355AS	Applied Statistics

CO 1: Concept of population and sample, census and sample survey, sampling errors, probability and non-probability sampling techniques. Simple random sampling, Stratified and Systematic sampling and their properties
CO 2: Select and design an appropriate method of data collection for a research project; Apply basic principles in the design of simple experiments viz., ANOVA, CRD and RBD designs
CO 3: Able to understand the different components of time series, analysis of time series data and measurement of trend and its applications.
CO 4: Understanding the Concept of Index numbers, calculation of unweighted and weighted different index numbers for price and quantity, construction of cost of living index number and whole sale price index numbers.
CO 5: Idea of Statistical Quality Control (SQC), process and product control, 3 sigma limits and control charts for attributes and variables.

DEPARTMENT OF MATHEMATICS			
Program	Semester	**Course Code**	**Course Name**
B. Sc (MPC, MSP, MSCs, MCsP, MECs)	I	MAT 111 DE	Differential Equations

CO1: be able to find the General solution for the LDEs of first order.
CO2: be able to solve a given Differential Equation of first order but not of first degree and identify Clairaut's Equations.
CO3: be able to solve homogeneous LDEs of higher order with constant coefficients.
CO4: be able to solve second order LDEs with Variable coefficients.
CO5: be able to find Orthogonal Trajectories of a family of curves, be able to solve Simultaneous differential equations.

Program	**Semester**	**Course Code**	**Course Name**
B. Sc (MPC, MSP, MSCs, MCsP, MECs)	II	MAT 122 ASG	Analytical Solid Geometry

CO 1: get the knowledge of various forms of planes, straight line, sphere, cone and cylinder.
CO 2: be able to find the angle between the planes, Bisector planes, perpendicular distance from a point to the plane, point of intersection of lines.
CO 3: be able to describe coplanar lines and compute angle between planes and lines.
CO 4: get the knowledge of skew lines and be able to find the shortest distance.
CO 5: be able to define the plane section of the sphere and to find the limiting points.
CO 6: be able to understand the concept of right circular cone and right circular cylinder.

Program	**Semester**	**Course Code**	**Course Name**
B. Sc (MPC, MSP, MSCs, MCsP, MECs)	III	MAT 233AA	Abstract Algebra

At the end of the course students will be able to:
CO 1: acquire the basic knowledge and structure of groups, subgroups and cyclic groups.
CO 2: get the significance of the notation of a normal subgroup.
CO 3: understand permutations in Group Theory and operations on them.
CO 4: study the homomorphisms and isomorphisms with applications.
CO 5: understand the basic concepts in ring theory.
CO 6: understand the applications of ring theory in various fields.

Program	Semester	Course Code	Course Name
B.Sc., (M,BD,S)(M,AI,S)	III	MAT233DM	Discrete Mathematics

At the end of the course students will be
CO 1: able to apply principles and concepts of discrete mathematics in practical situations.
CO 2: able to Identify basic concepts of trees, rooted trees and boolean algebra expressions.
CO 3: able to compute the distance in graphs and weighted graphs.
CO 4: able to find a relation that is reflexive, anti symmetric and transitive.
CO 5: able to apply this knowledge in computer science applications.
CO 6: able to understand the various types of properties of sets and logical gates

Program	Semester	Course Code	Course Name
B. Sc (MPC, MSP, MSCs, MCsP, MECs)	IV	MAT244RA	Real Analysis

At the end of the course students will be able to:
CO 1: identify the behavior of a sequence by employing relevant results
CO 2: analyzethe nature of a series by applying suitable test ofconvergence
CO 3: verify the continuity of a function and type of discontinuity
CO 4: apply the geometrical interpretation of differentiation and mean value theorems
CO 5: prove fundamental theorem and mean value theorems using the concept of Riemann integration
CO 6: solve problems in Real analysis using the inter dependability of continuity and differentiation of the real valued functions and Riemann integration of a bounded function.

Program	Semester	Course Code	Course Name
B. Sc (MPC, MSP, MSCs, MCsP, MECs)	IV	MAT 245 LA	Linear Algebra

At the end of the course student will
CO 1: understand the concepts of vector spaces, subspaces and their properties
CO 2: understand the concepts of basis, dimension and their properties
CO 3: understand the concepts of elementary matrix operations
CO 4: understand the concepts of linear transformations and their properties
CO 5: be able to describe the concepts of eigenvalue, eigenvector andcharacteristic polynomials
CO 6: understand the properties of inner product spaces and determine orthogonality in inner product spaces.

Program	Semester	Course Code	Course Name

B.Sc., (M,BD,S) (M,AI,S)	IV	MAT244NA	Numerical Analysis
At the end of the course students will be able CO CO 1: gain basic knowledge in Numerical methods. CO 2: use several methods of solving algebraic and transcendental equations of one variable. CO 3: recognize the contribution and impacts of Numerical Analysis in real life problems. CO 4: analyzeand interpret information from a variety of sources relevant to Numerical Analysis. CO 5: use information and communication technology to discuss problems relevant to Numerical Analysis.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc., (M,BD,S) (M,AI,S)	V	MAT256NM	Numerical Methods
CO 1: understand the subject of various numerical methods that are used to obtain approximate solutions CO 2: Understand various finite difference concepts and interpolation methods. CO 3: Work out numerical differentiation and integration whenever and wherever routine methods are not applicable. CO 4: Find numerical solutions of ordinary differential equations by using various numerical methods. CO 5: Analyze and evaluate the accuracy of numerical methods.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc., (M,BD,S) (M,AI,S)	V	MAT257MSF	Special Functions
CO 1: Students will gain a comprehensive understanding of special functions, CO 2: Students will develop strong problem-solving skills by applying properties, transformations, and generating functions associated with special functions. CO 3: Students will learn to create mathematical models for real-world phenomena using special functions. CO 4: Students will master various analytical techniques, including orthogonal properties, recurrence relations, and generating functions. CO 5: Students will be introduced to advanced mathematical concepts such as differential equations and integrals.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc / B.A (Mathematics CC)	I	MAT CC QA	Quantitative Aptitude

At the end of the course student will be able to
CO 1: improve the basic Mathematical skills which will be useful in the preparation for any type of Competitive examination.
CO 2: Enhance the problem solving skills by developing a strong foundation in Mathematics.
CO 3: apply the skills and competencies acquired in the related areas.
CO 4: demonstrate number sense, including dimensional analysis and conversions between fractions, decimals, and percentages.
CO 5: determine when approximations are appropriate and when exact calculations are necessary.

DEPARTMENT OF ELECTRONICS

Program	Semester	Course Code	Course Name
B.Sc. (MECS)	I	ELE111NAE	Network Analysis and Analog Electronics

At the end of the course student will
CO 1: Students will be able to know the basic concepts of an electrical circuit and can be able to analyze the networks
CO 2: Ability to solve different electrical circuits and using different solving methods
CO 3: Acquires the basic knowledge of physical and electrical conducting properties of semiconductor devices like diodes and their real time applications
CO 4: Demonstrate the ability to design practical circuits that perform the desired operations and will be able to interpret device applications CO 5: Able to design various amplifier circuits using BJT and FET and observe their frequency of responses and applications.
CO 6: Integrate and apply a wide range of mathematical techniques to derive various differences between theoretical, practical & simulated results in electronic circuits
CO 7: Will be able to analyze, build, and troubleshoot electronic circuits using diodes and transistors
CO 8: Also, able to know a wide range of applications of transistors, feedback concepts and its applications as oscillators.

Program	Semester	Course Code	Course Name
B.Sc. (MECS)	II	ELE123LDC	Linear and Digital Integrated Circuits

At the end of the course student will
CO 1: Understand the concepts needed to explain the basic electronics of logic circuits and be able to use integrated circuit packages.
CO 2: Analyze the fundamentals and areas of applications for the integrated circuits and analyze important types of integrated circuits.
CO 3: Demonstrate the ability to design practical circuits that perform the desired operations and will be
able to interpret logic functions, circuits, truth tables, and Boolean algebra expressions.
CO 4: Integrate and apply a wide range of mathematical techniques to derive various differences between theoretical, practical & simulated results in integrated circuits
CO 5: Will be able to analyze, build, and troubleshoot combinatorial circuits using digital integrated circuits
CO 6: Design, set up, and carry out experiments; analyze data, Select the appropriate integrated circuit modules to build a given application

Program	Semester	Course Code	Course Name
B.Sc. (MECS)	II	ELE124PEP	PCB and Electronic Product Design

At the end of the course student will
CO 1: Understanding the Electrical & Electronic Components: Different Active and passive Components and their Symbolic representations and notations, Electrical & Electronic circuit representations, Surface Mount Technology, Need for SMD, Surface Mount Semiconductor packages
CO 2: Understand the concepts needed to explain IPC standards block diagrams circuit Schematic representations, Circuit Documentation and Editing.
CO 3: Understand the evolution of PCBs, components of PCBs, Characteristics of PCB, Types of PCBs, IPC standards of PCBs, Terminology in PCB's PCB Design Techniques: Layout planning & Design – Block diagram, schematic diagram, General PCB design considerations, Artwork
CO 4: Understanding the Types of laminates, properties of laminates-electric, dielectric strength, dielectric break down properties, selection of copper clad laminate, Useful standards, PCB design check list Image transfer techniques, plating process, etching process. Conformal coating, drilling, solder mask.
CO 5: Analyze Production methods Lead Forming, lead Stand Offs, Lead Clinching styles, soldering, importance of soldering Eutectic Solder, Wetting Actions, Soldering tools- Soldering iron, solder, Cutter, flux, tweezer & Cleaning sponge,
CO 6: Equipment harness and testing Wire Harness and Crimping - Different types of wires and cables, different terminations, different connector styles, Different types of Lugs, Crimping methods, Lacing methods, Wire wrapping method Testing Methods – Module testing, Functional Testing, Routine testing, Environmental testing, Reliability testing.

Program	Semester	Course Code	Course Name
B.Sc. (MECS)	III	ELE235MP	Microprocessors

At the end of the course student will
CO 1: Describe the architecture of 8085 and 8086:
CO 2: Illustrate the organization of registers and memory in microprocessors.
CO 3: Differentiate Minimum and Maximum Mode bus cycle.
CO 4: Identify the addressing mode of an instruction.
CO 5: Develop programming skills in assembly language. CO 6: Explain the need for different interfacing devices. CO 7: Compare the concepts of CISC and RISC processors.
CO 8: Recall and apply a basic concept of digital fundamentals to Microprocessor based personal computer system.
CO 9: Identify a detailed s/w & h/w structure of the Microprocessor.
CO10: Illustrate how the different peripherals (8255, 8253 etc.) are interfaced with Microprocessor
CO11: Train the practical knowledge through laboratory experiments

Program	Semester	Course Code	Course Name
B.Sc. (MECS)	III	ELE236LDF	LED Lighting Design Fundamentals and Testing

At the end of the course student will
CO 1: Understand basics of LED technology and distinguish working principle of LED, incandescent, fluorescence, CFL and HID lamps.
CO 2: Know importance of proper thermal, electrical, mechanical and optical design of LED luminaires and interpretation of LED data sheets.
CO 3: Understand importance of secondary optics in LED luminaries and dependance of viewing angle, illuminance factor of a luminaire on secondary optics.
CO 4: Analyze role of diffuser in elimination of multiple source shadow effect of LED luminaire and minimizing glaring effect.
CO 5: Estimate viewing angle, Illuminance pattern and efficacy of a given luminaire.
CO 6: Design constant voltage, constant current power supplies with required power rating and protections.
CO 7: Estimate heat dissipation at different stages of LED luminaire- at junction, on PCB footprints, bottom of PCB and inside the enclosure. Thermal performance'
CO 8: Access LED luminaire electrically, thermally, optically and mechanically

Program	**Semester**	**Course Code**	**Course Name**
B.Sc. (MECS)	IV	ELE247EI	Electronic Instrumentation

CO 1: Measure various electrical parameters with accuracy, precision, resolution.
CO 2: Use AC and DC bridges for relevant parameter measurement.
CO 3: Select appropriate passive or active transducers for measurement of physical Phenomenon.
CO 4: Use Signal Generator, frequency counter, CRO and digital IC tester for Appropriate measurement.
CO 5: Test and troubleshoot electronic circuits using various measuring instruments. vi. Maintain various types of test and measuring instruments.
CO 6: Ability to identify, apply and distinguish sensor and transducers for measurement of Biological parameters in medical instrumentation systems.
CO 7: Ability to design, assemble, analyze, and evaluate basic circuits in medical Instrumentation.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc. (MECS)	IV	ELE248SLA	Solid State Lighting Applications

At the end of the course student will
CO 1: Understand various photometric quantities, importance of these quantities in lighting applications.
CO 2: Identify different types of solid state luminaires and their applications. Suggested illuminance levels for various applications.
CO 3: Plan and design lighting for residential and retail areas, able to draw lighting design layout and ableto evaluate lighting design.
CO 4: Plan and lighting design for any type of road, able to design lighting poles with arm inclination.
CO 5: Evaluate given light source electrically, optically and thermally. Estimate efficiency of given light source.
CO 6: Understand difference between rail and road signal lighting and evaluation Design smart lighting control system with Wi-Fi, Bluetooth and IR communication.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc. (MECS)	V	ELE359MCI	Micro Controller and Interfacing

At the end of the course student will
CO 1: Give an understanding about the concepts and basic architecture of 8051
CO 2: Provide an overview of difference between microprocessor and microcontroller
CO 3: Provide background knowledge and core expertise in microcontroller
CO 4: Study the architecture and addressing modes of 8051
CO 5: Impart knowledge about assembly language programs of 8051
CO 6: Help understand the importance of different peripheral devices & their interfacing to 8051
CO 7: Impart knowledge of different types of external interfaces including LEDS, LCD, Keypad Matrix, Switches & Seven segment display

Program	**Semester**	**Course Code**	**Course Name**
B.Sc. (MECS)	V	ELE35XCS	Communication Systems

At the end of the course student will
CO 1: Understand different modulation and demodulation techniques used in analog communication Compare and contrast design issues, advantages, disadvantages and limitations of analog communication systems
CO 2: Apply knowledge in
A. Elements of Pulse and Digital Communication systems
B. Various types of pulse modulations
C. Digitization techniques such as PCM & DPCM
D. both the multiplexing techniques
E. Digital carrier modulation techniques ASK, FSK
CO 3: Overview of optical fiber communication system, its importance and applications
CO 4: To make students familiar with various generations of mobile communications 2G, 2: 5G, 3G with their characteristics and limitations.
A. To understand the concept of cellular communication
B. To understand the basics of wireless communication
CO 5: Understand GSM, CDMA concepts and architecture, frame structure, system capacity, services provided.
A. summarize the principles and applications of wireless systems and standards
B. Demonstrate an ability explain multiple access techniques for Wireless Communication

Program	**Semester**	**Course Code**	**Course Name**
B.Sc. (MECS)	VI	ELE36XIAMC	Advanced Microcontrollers

At the end of the course student will
CO 1: Importance of C in embedded systems, ANSI standards, fundamentals of C, data types, constants, formatted IO, loops, function, arrays and pointers.
CO 2: Understanding of PIC microcontroller, features of PIC, register organization, PIC reset actions, oscillator connections, PIC memory organization, PIC instructions, PIC addressing modes, I/O ports & interrupts, PIC timers, PIC ADC.
CO 3: Understand the ARM7TDMI, cortex –m0, m3, m4, multi core processors and feature trends, study of ARM cortex-m3 and core and controllers, introduction to firmware life cycle basics on firmware IDE's and their debugging & simulation technologies.
CO 4: Data communication, Serial communication, communication modes and interrupt programming.
CO 5: Introduction and interfacing controllers of wired & wireless communication UART, SPI, I2C, CAN interfacing Zigbee, wi-fi and Bluetooth.
CO 6: Understanding the basic concepts of sensors and actuators, cloud computing and atmega328 microcontrollers, Arduino platform, open source microcontroller platforms,

Arduino board layout & architecture Arduino programming fundamentals, sensors interfacing with Arduino, temperature sensor, DHT11, Ultrasonic sensor and wi-fi.

Program	Semester	Course Code	Course Name
B.Sc. (MECS)	VI	ELE36XIIC1PE	Power Electronics

At the end of the course student will
CO 1: Will know about the generation of power electronics and family of thyristors
CO 2: Will know about the basic thyristor-SCR and its applications.
CO 3: Will know about other thyristors like diac, triac ,igbt, power MOSFET.
CO 4: Will know about the procedure to convert ac to dc as a chopper concept.
CO 5: Will know about single phase power supply and their types with and without reactive feedback.
CO 6: Will know about the types of motor, their construction, thyristor-based motors

DEPARTMENT OF ELECTRONIC TECHNOLOGY

Program	Semester	Course Code	Course Name
B.Sc.(ELE CS)	I	ELE111NAE	Network Analysis and Analog Electronics

CO 1: Students will be able to know the basic concepts of an electrical circuit and can be able to analyze the networks
CO 2: Ability to solve different electrical circuits and using different solving methods
CO 3: Acquires the basic knowledge of physical and electrical conducting properties of semiconductor devices like diodes and their real time applications
CO 4: Demonstrate the ability to design practical circuits that perform the desired operations and will be able to interpret device applications
CO 5: Able to design various amplifier circuits using BJT and FET and observe their frequency of responses and applications.
CO 6: Integrate and apply a wide range of mathematical techniques to derive various differences between theoretical, practical & simulated results in electronic circuits
CO 7: Will be able to analyze, build, and troubleshoot electronic circuits using diodes and transistors
CO 8: Also, able know wide range of applications of transistors, feedback concepts and its applications as oscillators

Program	Semester	Course Code	Course Name
B.Sc.(ELE CS)	I	ELE112FEC	Fundamentals of Electrical and Electronic Components

At the end of the course student will
CO 1: Understand generation of AC signal, different types of AC wave forms, and terms of AC signal, rectangular to polar and polar to rectangular conversions.
CO 2: Know about basic circuit elements and their behavior in DC circuits. Transient response of RC & RL in DC circuits.
CO 3: Analyses frequency response, Q- factor and bandwidth of series and parallel resonant circuits.
CO 4: Understand construction and working of Transformers & analyzes line and load regulation in transformers.
CO 5: To identify different types of switches and select suitable switches for specific applications.
CO 6: Know the construction and working of DC linear motor, stepper motor, buzzer and loudspeaker.
CO 7: Identify different types of sensors, know their sensing techniques of LDR, Thermistor, LPG, Load cell and LVDT.

Program	Semester	Course Code	Course Name
B.Sc.(ELE CS)	I	ELT111CE	Consumer Electronics

At the end of the course student will

CO 1: Will know about the Microwaves (Range used in Microwave Ovens), Microwave oven block diagram, LCD timer with alarm, Single Chip Controllers, Types of Microwave oven, Wiring and Safety instructions, Care and Cleaning.

CO 2: Will know about the Electronic controller for washing machines , Washing machine hardware and software, Types of washing machines , Fuzzy logic washing machines Features of washing machines.

CO 3: Will know about the Air Conditioning, Components of air conditioning systems, All water air conditioning systems, All air conditioning systems, Unitary and central air conditioning systems, Split air conditioners.

CO 4: Will know about the Facsimile machine, Xerographic copier, Calculators, Structure of a calculator, Internal Organization of a calculator, Servicing electronic calculators, Digital clocks, Block diagram of a digital clock.

CO 5: Will know about the Digital computer, Internet access , Online ticket reservation, Functions and networks, Barcode Scanner and decoder, Electronic Fund Transfer, Automated Teller Machines (ATMs) , Set-Top boxes , Digital cable TV, Video on demand.

Program	Semester	Course Code	Course Name
B.Sc.(ELE CS)	II	ELE123LDC	Linear and Digital Integrated Circuits

At the end of the course student will

CO 1: Understand the concepts needed to explain the basic electronics of logic circuits and be able to use integrated circuit packages.

CO 2: Analyze the fundamentals and areas of applications for the integrated circuits and analyze important types of integrated circuits.

CO 3: Demonstrate the ability to design practical circuits that perform the desired operations and will be able to interpret logic functions, circuits, truth tables, and Boolean algebra expressions.

CO 4: Integrate and apply a wide range of mathematical techniques to derive various differences between theoretical, practical & simulated results in integrated circuits

CO 5: Will be able to analyze, build, and troubleshoot combinatorial circuits using digital integrated circuits

CO 6: Design, set up, and carry out experiments; analyze data, Select the appropriate integrated circuit modules to build a given application.

Program	Semester	Course Code	Course Name
B.Sc.(ELE CS)	II	ELE124PEP	PCB and Electronic Product Design

At the end of the course student will

CO 1: Understanding the Electrical & Electronic Components: Different Active and passive Components and their Symbolic representations and notations, Electrical & Electronic circuit representations, Surface Mount Technology, Need for SMD, Surface Mount Semiconductor packages

CO 2: Understand the concepts needed to explain IPC standards block diagrams circuit Schematic representations, Circuit Documentation and Editing.

CO 3: Understand the evolution of PCBs, components of PCBs, Characteristics of PCB, Types of PCBs, IPC standards of PCBs, Terminology in PCB's PCB Design Techniques: Layout planning & Design – Block diagram, schematic diagram, General PCB design considerations, Artwork

CO 4: Understanding the Types of laminates, properties of laminates-electric, dielectric strength, dielectric break down properties, selection of copper clad laminate, Useful standards, PCB design checklist Image transfer techniques, plating process, etching process. Conformal coating, drilling, solder mask.

CO 5: Analyze Production methods Lead Forming, lead Stand Offs, Lead Clinching styles, soldering, importance of soldering Eutectic Solder, Wetting Actions, Soldering tools- Soldering iron, solder, Cutter, flux, tweezer & Cleaning sponge,

CO 6: Equipment harness and testing Wire Harness and Crimping - Different types of wires and cables, different terminations, different connector styles, Different types of Lugs, Crimping methods, Lacing methods, Wire wrapping method Testing Methods – Module testing, Functional Testing, Routine testing, Environmental testing, Reliability testing.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(ELE CS)	II	ELT122PMT	PC Maintenance and Trouble Shooting

At the end of the course student will

CO 1: Will know about the generations of computers based on technology, what things he/she sees inside the central processing cabin, and different types of input and out devices.

CO 2: Will know about motherboard design, different types of components presented on the motherboard and internal process of motherboard.

CO 3: Will know about different ports and their communication between inputs, output devices with the CPU section.

CO 4: Will know about different power connection sockets and their importance and different ways to apply power to the computers.

CO 5: Will know about different types of memory and storage devices with internal structures.

CO 6: Will know how to assemble a personal computer and installation procedures of operating systems and applications with examples like windows XP, MS office etc

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(ELE CS)	III	ELE235MP	Microprocessors

At the end of the course student will
CO 1: Describe the architecture of 8085 and 8086:
CO 2: Illustrate the organization of registers and memory in microprocessors.
CO 3: Differentiate Minimum and Maximum Mode bus cycle.
CO 4: Identify the addressing mode of an instruction.
CO 5: Develop programming skills in assembly language.
CO 6: Explain the need for different interfacing devices.
CO 7: Compare the concepts of CISC and RISC processors.
CO 8: Recall and apply a basic concept of digital fundamentals to Microprocessor based personal computer systems.
CO 9: Identify a detailed s/w & h/w structure of the Microprocessor.
CO 10: Illustrate how the different peripherals (8255, 8253 etc.) are interfaced with Microprocessor.
CO 11: Train their practical knowledge through laboratory experiments.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(ELE CS)	III	ELE236LDF	LED Lighting Design, Fundamentals and Testing

At the end of the course student will
CO 1: Understand basics of LED technology and distinguish working principle of LED, incandescent, fluorescence, CFL and HID lamps.
CO 2: Know importance of proper thermal, electrical, mechanical and optical design of LED luminaires and interpretation of LED data sheets.
CO 3: Understand importance of secondary optics in LED luminaries and dependence of viewing angle, illuminance factor of a luminaire on secondary optics.
CO 4: Analyze role of diffuser in elimination of multiple source shadow effect of LED luminaire and minimizing glaring effect.
CO 5: Estimate viewing angle, Illuminance pattern and efficacy of a given luminaire.
CO 6: Design constant voltage, constant current power supplies with required power rating and protections.
CO 7: Estimate heat dissipation at different stages of LED luminaire- at junction, on PCB footprints, bottom of PCB and inside the enclosure. Thermal performance'
CO 8: Access LED luminaire electrically, thermally, optically and mechanically.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(ELE CS)	III	ELT233BN	Basics of Networks

At the end of the course student will
CO 1: Know about Computer Network basics and types of Networking, different types of Network Topologies. Definitions and introduction of Internet, Ethernet, Wi-Fi, Bluetooth, Mobile Networking, Wire and wireless Networking.
CO 2: Know about Communication Media & Connectors and different types of cable. Understand color codes of CAT5 cable.
CO 3: Know about Data Communication types of Communication and Serial port Checking Software in both terminal and nonterminal methods.
CO 4: Know about Sessions and presentation aspects of DNS, Telnet, rlogin, FTP, SMTP WWW Basics of Firewalls
CO 5: Packet switching networks, Frame Relay networks, Asynchronous transfer mode ATM in detail.
CO 6: Know about different types of Networking Components like Hubs, Bridges, Gateways.
CO 7: How to address, types of addressing, Subnetting , types of subnetting, Domain, types of domain.
CO 8: Know about networking protocols.

Program	Semester	Course Code	Course Name
B.Sc.(ELE CS)	IV	ELE247EI	Electronic Instrumentation

At the end of the course student will
CO 1: Measure various electrical parameters with accuracy, precision, resolution.
CO 2: Use AC and DC bridges for relevant parameter measurement.
CO 3: Select appropriate passive or active transducers for measurement of physical Phenomenon.
CO 4: Use Signal Generator, frequency counter, CRO and digital IC tester for Appropriate measurement.
CO 5: Test and troubleshoot electronic circuits using various measuring instruments. vi. Maintain various types of test and measuring instruments.
CO 6: Ability to identify, apply and distinguish sensor and transducers for measurement of Biological parameters in medical instrumentation systems.
CO 7: Ability to design, assemble, analyze, and evaluate basic circuits in medical Instrumentation

Program	Semester	Course Code	Course Name
B.Sc.(ELE CS)	IV	ELE248SLA	Solid State Lighting Applications

At the end of the course student will
CO 1: Understand various photometric quantities, importance of these quantities in lighting applications.
CO 2: Identify different types of solid state luminaires and their applications. Suggested illuminance levels for various applications.
CO 3: Plan and design lighting for residential and retail areas, able to draw lighting design layout and able to evaluate lighting design.
CO 4: Plan and lighting design for any type of road, able to design lighting poles with arm inclination.
CO 5: Evaluate given light source electrically, optically and thermally. Estimate efficiency of given light source.
CO 6: Understand difference between rail and road signal lighting and evaluation Design smart lighting control system with Wi-Fi, Bluetooth and IR communication

Program	Semester	Course Code	Course Name
B.Sc.(ELE CS)	IV	ELE249MCI	Micro controller and Interfacing

At the end of the course student will
CO 1: Give an understanding about the concepts and basic architecture of 8051
CO 2: Provide an overview of difference between microprocessor and microcontroller
CO 3: Provide background knowledge and core expertise in microcontroller
CO 4: Study the architecture and addressing modes of 8051
CO 5: Impart knowledge about assembly language programs of 8051
CO 6: Help understand the importance of different peripheral devices & their interfacing to 8051
CO 7: Impart knowledge of different types of external interfaces including LEDS, LCD, Keypad Matrix, Switches & Seven segment display

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(ELE CS)	IV	ELT244CNS	Computer Networks and Network Security

At the end of the course student will
CO 1: Know about implementing a computer network mainly on fundamentals of wireless network, performance, Wireless Network Structure and components, Difference between Wired and Wireless Network
CO 2: Know about Packet switching and circuit switching and different types of data processing methods
CO 3: Know about Hardware upgrade, Software upgrades and Network upgradesCO 4: Know about Backing up network data- different types of Backups, scheduling backups, backing up and restoring data.
CO 5: Know about Network security, Authentication and authorization, user level security and share level security. Auditing and configuring auditing audit policy.
CO 6: Know about Firewall-architecture of firewall, types of firewalls, internet protocol security-enabling Internet Protocol Security (IP Sec) on windows 2000 server.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(ELE CS)	IV	ELT244CNS	Computer Networks and Network Security

At the end of the course student will
CO 1: Know about implementing a computer network mainly on fundamentals of wireless network, performance, Wireless Network Structure and components, Difference between Wired and Wireless Network
CO 2: Know about Packet switching and circuit switching and different types of data processing methods
CO 3: Know about Hardware upgrade, Software upgrades and Network upgradesCO 4: Know about Backing up network data- different types of Backups, scheduling backups, backing up and restoring data.
CO 5: Know about Network security, Authentication and authorization, user level security and share level security. Auditing and configuring auditing audit policy.
CO 6: Know about Firewall-architecture of firewall, types of firewalls, internet protocol security-enabling Internet Protocol Security (IP Sec) on windows 2000 server.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(ELE CS)	V	ELE35XCS	Communication Systems

At the end of the course student will

CO 1: Overview of optical fiber communication system, its importance and applicationsCO 4: To make students familiar with various generations of mobile communications 2G, 2: 5G, 3G with their characteristics and limitations.

CO 2: Understand GSM, CDMA concepts and architecture, frame structure, system capacity, services provided.

A. Summarize the principles and applications of wireless systems and standards
B. Demonstrate an ability explain multiple access techniques for Wireless Communication

CO 3: Solve problems pertaining to modulation schemes, transmitters and receivers.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(ELE CS)	V	ELE35XCS	Communication Systems

At the end of the course student will

CO 1: Overview of optical fiber communication system, its importance and applicationsCO 4: To make students familiar with various generations of mobile communications 2G, 2: 5G, 3G with their characteristics and limitations.

CO 2: Understand GSM, CDMA concepts and architecture, frame structure, system capacity, services provided.

A. Summarize the principles and applications of wireless systems and standards
B. Demonstrate an ability explain multiple access techniques for Wireless Communication

CO 3: Solve problems pertaining to modulation schemes, transmitters and receivers.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(ELE CS)	V	ELE35XIAMC	Advanced Microcontrollers

At the end of the course student will

CO 1: Importance of C in embedded systems, ANSI standards, fundamentals of C, data types, constants, formatted IO, loops, function, arrays and pointers.

CO 2: Understanding of PIC microcontroller, features of PIC, register organization, PIC reset actions, oscillator connections, PIC memory organization, PIC instructions, PIC addressing modes, I/O ports & interrupts, PIC timers, PIC ADC.

CO 3: Understand the ARM7TDMI, cortex –m0, m3: m4, multi core processors and feature trends, study of ARM cortex-m3 and core and controllers, introduction to firmware life cycle basics on firmware IDE's and their debugging & simulation technologies.

CO 4: Data communication, Serial communication, communication modes and interrupt programming.

CO 5: Introduction and interfacing controllers of wired & wireless communication UART, SPI, I2C, CAN interfacing Zigbee, wi-fi and Bluetooth.

CO 6: Understanding the basic concepts of sensors and actuators, cloud computing and atmega328 microcontrollers, Arduino platform, open source microcontroller platforms, Arduino board layout & architecture Arduino programming fundamentals, sensors interfacing with Arduino, temperature sensor, DHT11, Ultrasonic sensor and wi-fi

Program	Semester	Course Code	Course Name
B.Sc.(ELE CS)	V	ELE35XIIPE	Power Electronics

At the end of the course student will
CO 1: Will know about the generation of power electronics and family of thyristors
CO 2: Will know about the basic thyristor-SCR and its applications.
CO 3: Will know about other thyristors like diac, triac ,igbt, power MOSFET.
CO 4: Will know about the procedure to convert ac to dc as a chopper concept.
CO 5: Will know about single phase power supply and their types with and without reactive feedback.
CO 6: Will know about the types of motor, their construction, thyristor-based motor

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.(ELE CS)	V	ELE35XIII RES	Renewable Energy Sources

At the end of the course student will
CO 1: Identify energy demand and relate with available energy resources. Describe the environmental aspects of non-conventional energy resources. In Comparison with various conventional energy systems, their prospects and limitations. Know the need of renewable energy resources, historical and latest developments.
CO 2: Estimate the solar energy, Utilization of it, Principles involved in solar energy collection and conversion of it to electricity generation with respect to applications like - heating, cooling, desalination, power generation, drying, cooking etc.
CO 3: Explore the concepts involved in wind energy conversion system by studying its components used in energy generation and know the classifications, types and performance.
CO 4: Illustrate Ocean energy and explain the operational methods of their utilization.
CO 5: Acquire the knowledge on Geothermal energy.
CO 6: Solve problems pertaining to modulation schemes, transmitters and receivers.
CO 7: Acquire the knowledge of fuel cells, wave power, tidal power and geothermal principles and applications

DEPARTMENT OF PHYSICS

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.	I	PHY111MWO	MECHANICS WAVES AND OSCILLATIONS

At the end of the course student will
CO 1: Understand Newton's laws of motion and motion of variable mass system and its application to rocket motion and the concepts of impact parameter, scattering cross section.
CO 2: Apply the rotational kinematic relations, the principle and working of gyroscope and it applications and the precessional motion of a freely rotating symmetric top.
CO 3: Comprehend the general characteristics of central forces and the application of Kepler's laws to describe the motion of planets and satellite in circular orbit through the study of law of Gravitation.
CO 4: Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence.
CO 5: Examine phenomena of simple harmonic motion and the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator.
CO 6: Evaluation of Fourier constants and the analysis of square wave and Saw-tooth wave using Fourier's theorem.
CO 7: Figure out the formation of harmonics and overtones in a stretched string and acquire the knowledge on Ultrasonic waves, their production and detection and their applications in different fields.

Program	Semester	Course Code	Course Name
B.Sc.	I	PHY111MWO	MECHANICS WAVES AND OSCILLATIONS

At the end of the course student will

CO 1: Understand Newton's laws of motion and motion of variable mass system and its application to rocket motion and the concepts of impact parameter, scattering cross section.

CO 2: Apply the rotational kinematic relations, the principle and working of gyroscope and it applications and the processional motion of a freely rotating symmetric top.

CO 3: Comprehend the general characteristics of central forces and the application of Kepler's laws to describe the motion of planets and satellite in circular orbit through the study of law of Gravitation.

CO 4: Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence.

CO 5: Examine phenomena of simple harmonic motion and the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator.

CO 6: Evaluation of Fourier constants and the analysis of square wave and Saw-tooth wave using Fourier's theorem.

CO 7: Figure out the formation of harmonics and overtones in a stretched string and acquire the knowledge on Ultrasonic waves, their production and detection and their applications in different fields.

Program	Semester	Course Code	Course Name
B.Sc.	II	SDC122SE	ELECTRICAL APPLIANCES

By successful completion of the course, students will be able to:

CO 1: Acquire necessary skills/hand on experience/ working knowledge on multimeters, galvanometers, ammeters, voltmeters, ac/dc generators, motors, transformers, single phase and three phase connections, basics of electrical wiring with electrical protection devices.

CO 2: Understand the working principles of different household domestic appliances.

CO 3: Check the electrical connections at house-hold but will also learn the skill to repair the electrical appliances for the general trouble -hoots and wiring faults.

Program	Semester	Course Code	Course Name
B.Sc.	II	PHY122WO	OPTICS

On successful completion of this course, the student will be able to:
CO 1: Understand the phenomenon of interference of light and its formation in (i) Lloyd's single mirror due to division of wave front and (ii) Thin films, Newton's rings and Michelson interferometer due to division of amplitude.
CO 2: Distinguish between Fresnel's diffraction and Fraunhofer diffraction and observe the diffraction patterns in the case of single slit and the diffraction grating.
CO 3: Describe the construction and working of the zone plate and make the comparison of the zone plate with a convex lens.
CO 4: Explain the various methods of production of plane, circularly and polarized light and their detection and the concept of optical activity.
CO 5: Comprehend the basic principle of laser, the working of He-Ne laser and Ruby lasers and their applications in different fields.
CO 6: Explain about the different aberrations in lenses and discuss the methods of minimizing them.
CO 7: Understand the basic principles of fiber optic communication and explore the field of Holography and Nonlinear optics and their applications

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.	II	PHY121SE	SOLAR ENERGY

After successful completion of the course, students will be able to:
CO 1: Acquire knowledge on solar radiation principles with respect to solar energy estimation.
CO 2: Get familiarized with various collecting techniques of solar energy and its storage
CO 3: Learn the solar photovoltaic technology principles and different types of solar cells for energy conversion and different photovoltaic applications.
CO 4: Understand the working principles of several solar appliances like Solar cookers, Solar hot water systems, Solar dryers, Solar Distillation, Solar greenhouses

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.	III	PHY233TH	THERMODYNAMICS

On successful completion of this course, the student will be able to:
CO 1: Understand the basic aspects of kinetic theory of gasses, Maxwell-Boltzman distribution law, equipartition of energies, mean free path of molecular collisions and the transport phenomenon in ideal gasses
CO 2: Gain knowledge on the basic concepts of thermodynamics, the first and the second law of thermodynamics, the basic principles of refrigeration, the concept of entropy ,the thermodynamic potentials and their physical interpretations.
CO 3: Understand the working of Carnot's ideal heat engine, Carnot cycle and its efficiency
CO 4: Develop critical understanding of the concept of Thermodynamic potentials, the formulation of Maxwell's equations and its applications.
CO 5: Differentiate between principles and methods to produce low temperature and liquefy air and also understand the practical applications of substances at low temperatures.
CO 6: Examine the nature of black body radiations and the basic theories

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.	IV	PHY244EME	ELECTRICITY MAGNETISM & ELECTRONICS

On successful completion of this course, the students will be able to:
CO 1: Apply knowledge of electricity and magnetism to explain natural physical processes and related technological advances.
CO 2: Use an understanding of calculus along with physical principles to effectively solve problems encountered in everyday life, further study in science, and in the professional world.
CO 3: Design experiments and acquire data in order to explore physical principles, effectively communicate results, and critically evaluate related scientific studies.
CO 4: Assess the contributions of physics to our evolving understanding of global change and sustainability while placing the development of physics in its historical and cultural context.
CO 5: Understand electric and magnetic fields in matter
CO 6: Apply Maxwell's equations to various physical problems
CO 7: Calculate EM wave propagation

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.	IV	PHY245MP	MODERN PHYSICS

Successful completion of this course, the students will be able to:
CO 1: Develop an understanding on the concepts of Atomic and Modern Physics, basic elementary quantum mechanics and nuclear physics.
CO 2: Develop critical understanding of concept of Matter waves and Uncertainty principle.
CO 3:Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications.
CO 4: Examine the basic properties of nuclei, characteristics of Nuclear forces, salient features of Nuclear models and different nuclear radiation detectors.
CO 5: Classify Elementary particles based on their mass, charge, spin, half life and interaction.
CO 6: Get familiarized with the nano materials, their unique properties and applications.
CO 7: Increase the awareness and appreciation of superconductors and their practical applications

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.	V	PHY356EE	APPLICATIONS OF ELECTRICITY & ELECTRONICS

On completion of this course, the students will be able to:
CO 1: Define, state and explain various Electronic components, batteries, AC & DC generators, Modulations techniques, Transformers etc
CO 2: Understand the concepts needed to explain charging and discharging of capacitors understand the applications of thermodynamics in other disciplines like materials science and chemistry.
CO 3: Apply the laws of thermodynamics to real physical systems and processes, isothermal and adiabatic processes to heat engines, Maxwell's relations to latent and specific heat calculations and adiabatic demagnetization technique for cooling expressions.
CO 4: Integrate and apply a wide range of mathematical techniques to derive various thermodynamic laws and principles and for analyzing and solving problems in thermal physics.
CO 5: Analyze radiation phenomena in thermodynamic systems, radiation principles in designing pyrometers, Carnot's cycle in designing automobile engines, transport phenomena in process industries with reference to fluids and fluid mixtures.
CO 6: Design, set up, and carry out experiments; analyze data, compare with theoretical predictions and understand the orders of magnitudes of various quantities

Program	**Semester**	**Course Code**	**Course Name**
B.Sc.	V	PHY35EI	ELECTRONIC INSTRUMENTATION

On completion of this course, the students will be able to:
CO 1: Students will be able to understand the fundamental concepts of measurements, differentiate between analog and digital instruments, and analyze sources of errors in measurements. They will also gain proficiency in using analog and digital multimeters, comprehend their specifications, and identify the significance of instrument accuracy and sensitivity in practical applications.
CO 2: Upon completion of this unit, students will acquire a comprehensive understanding of cathode ray oscilloscopes, including their principles, functioning, and various controls. They will be capable of utilizing oscilloscopes to measure DC and AC voltages, frequencies, and time periods. Additionally, students will gain knowledge about different types of oscilloscopes and their specific applications, including digital storage oscilloscopes.
CO 3: After completing this unit, students will be skilled in designing and analyzing A/D and D/A converters, specifically understanding binary ladder and successive approximation types. They will also comprehend the principles of operation for display devices, including LED displays, seven-segment displays
CO 4: Students will have a deep understanding of amplifier classification, including RC-coupled amplifiers and their frequency response characteristics. They will be proficient in analyzing feedback in electronic circuits, understanding positive and negative feedback, gains expressions, and the advantages of negative feedback. Additionally, students will comprehend the basic operating principles and applications of biomedical instruments such as ECG machines, radiography, ultrasound scanning, ventilators, and pulse oximeter

Program	Semester	Course Code	Course Name
B.Sc.	I	CC111PEL	PHYSICS OF EVERYDAY LIFE

Students will understand
CO 1: The importance of applications of Applied Physics in daily life
CO 2: The cause behind the relative change in motion of fluids
CO 3: The relationship between physics & technology
CO 4: To have questions & analyse the world around them
CO 5: to make students think and have abstract thinking

DEPARTMENT OF BOTANY

Program	Semester	Course code	Course title
B. Sc., - BZC	I	BOT111FMN	Fundamentals of Microbes and Non -vascular Plants.

On completion of this course, the students will be able to:
CO 1: Understand the classification of Micro-organisms. Understand the Origin and Evolution of Life. Understand the general characters of special groups of Bacteria and their Importance.
CO 2: Understand the structure, replication Viruses and transmission of Plant viral diseases and their control.
CO 3: Understand and identify the structure and metabolic processes like mode of Nutrition, reproduction and economic importance in Bacteria.
CO 4: Understand and identify morphological characters, reproduction in algae(Oedogonium, Ectocarpus and Polysiphonia), classification and economic importance of Algae.
CO 5: Understand and identify morphological characters, reproduction in Rhizopus, Penicillium, Puccinia, Classification of Fungi and Economic Importance.
Understand and differentiate the structure of Lichens and their Economic Importance.

Program	Semester	Code	Course
B. Sc., - BZC	II	BOT122BVP	Basics of Vascular plants and Phytogeography

On completion of this course, the students will be able to:
CO 1: Understand the general characters and classification of vascular plants and realize the structure of representative examples. Understand the evolutionary process
CO 2: Understand the general characters and classification of and realize the structure of representative examples
CO 3: Understand the general characters and classification of Gymnosperms and realize the structure of representative examples. To gain knowledge about life cycles of Gymnosperm plants.
CO 4: To gain knowledge of phytogeography
CO 5: To gain knowledge of geographical distribution, factors.

Program	Semester	Code	Course
B. Sc., - BZC	III	BOT233AEAP	Anatomy, Embryology of Angiosperms, Ecology and Biodiversity

On completion of this course, the students will be able to:
CO 1: Understand the general characters and classification of Bryophytes and realize the structure of representative examples. Understand the evolutionary process of Sporophyte in Bryophytes..
CO 2: Understand the general characters and classification of Pteridophytes and realize the structure of representative examples.
CO 3: Understand the general characters and classification of Gymnosperms and realize the structure of representative examples.
CO 4: To gain knowledge of Plant cells, tissues and their functions.
CO 5: Understand the Process of Normal secondary growth and Anomalous secondary growth and realize the structure of representative examples. To gain knowledge of locally available timber plants and their economic importance

Program	Semester	Code	Course
B. Sc., - BZC	IV	BOT244PPM	Plant Physiology & Metabolism

On completion of this course, the students will be able to:
CO 1: Understand the importance of water, Understand the physical properties of water Gain knowledge on transpiration, ascent of sap etc.
CO 2: Understand the importance of ions, ionic absorption, Understand the role of nutrients and symptoms, Understand the nitrogen fixation mechanism
CO 3: Understand and explore about the structure and functions of Chloroplast and Understand carbon fixation mechanisms Understand the path of organic solutes
CO 4: Understand the importance of respiration and its types,
Understand the aerobic and anaerobic methods - glycolysis, Krebs cycle and EMP Path ways ,Understand the lipid mechanism
CO 5: Understand the plant growth and its parameters, Understand the types and role of phyto-hormones and physiology of flowering Understand the ageing and senescence mechanism

Program	Semester	Code	Course
B. Sc. - BZC	IV	BOT245CGP	Cell Biology, Genetics & Plant Breeding

On completion of this course, the students will be able to:
CO 1: Gain the knowledge of Cell , type and structure of cells, Ultra structure of cell wall and plasma membrane and Polymorphic cell organelles
CO 2: Understand the structure and morphology of chromosomes,
Understand the Euchromatin and Heterochromatin; Karyotype and ideogram Gain knowledge about chromosomal aberrations and Organization of DNA in a chromosome.
CO 3: Gain the basic knowledge about Mendel's laws of inheritance. Incomplete dominance and codominance; Multiple allelism. Understand the nature of Complementary, supplementary and duplicate gene interactions. Understand the Linkage, crossing over
CO 4: Understand the Watson and Crick model of DNA and Replication Gain knowledge about Transcription, types and functions of RNA. Gene concept and genetic code and Translation. Understand the mechanism Regulation of gene expression in prokaryotes
CO 5: Understand the application of principles and modern techniques in plant breeding. Explain the procedures of selection and hybridization for improvement of crops. Understand the importance and role of molecular breeding in Agriculture Improvement (RAPD, RFLP).

Program	Semester	Code	Course
B. Sc., - BZC	V	BOT356TC	TISSUE CULTURE

On completion of this course, the students will be able to:
CO 1: Comprehend the basic knowledge and applications of plant tissue culture.
CO 2: Identify various facilities required to set up a plant tissue culture laboratory.
CO 3: Acquire critical knowledge on sterilization techniques related to plant tissue culture.
CO 4: Demonstrate skills of callus culture through hands-on experience.
CO 5: Understand the biotransformation technique for production of secondary metabolites.

Program	Semester	Code	Course
B. Sc., - BZC	V	BOT357MC	MUSHROOM CULTIVATION

On completion of this course, the students will be able to:
CO 1: Understand the structure and life of a mushroom and discriminate edible
CO 2: Identify the basic infrastructure to establish a mushroom culture unit.
CO 3: Demonstrate skills in preparation of compost and spawn.
CO 4: Acquire critical knowledge on cultivation of some edible mushrooms.
CO 5: Explain the methods of storage, preparation of value-added products and marketing different types of casing mixtures, commonly used materials.

Program	Semester	Code	Course
B. Sc.-BZC	I	Sdc111PN	Plant nursery

On successful completion of the course, students will be able to
CO 1: Gain the knowledge of different types of Nurseries, Plant Propagation, Management of Nurseries and Economics of Nurseries
CO 2: Understand the importance of a Plant Nursery and Basic Infrastructure to establish a Nursery.
CO 3: Learn to use the tools and techniques required for a Nursery.
CO 4: Obtain skills to get employment or become an entrepreneur in the Plant Nursery sector.
CO 5: Gain expertise related to various practices in a Nursery.

DEPARTMENT OF COMMERCE

Program	Semester	Course code	Course name
B.Com(GENERAL, COMPUTERS)	I	COM111FOA	FUNDAMENTALS OF ACCOUNTING

On completion of this course, the students will be able to:
CO 1 To develop conceptual understanding of fundamentals of financial accounting system & to impart skills in accounting for various kinds of business transactions.
CO 2 To understand knowledge of new trends in corporate accounting, preparation of subsidiary books, bank reconciliation statements, final accounts.
CO 3 To develop the skills of recording financial transactions & preparation of reports using accounting packages tally etc.
CO 4 Enables students to pursue professional courses like CA, CMA & CS.
CO 5 Students will be ready for employment in functional areas of accounting.
CO 6 Each student shall understand economic and industry issues and role of accounting within that environment

Program	**Semester**	**Course code**	**Course name**
B.Com(GENERAL, COMPUTERS)	I	COM111FOA	FUNDAMENTALS OF ACCOUNTING

On completion of this course, the students will be able to:
CO 1 To develop conceptual understanding of fundamentals of the financial accounting system & to impart skills in accounting for various kinds of business transactions.
CO 2 To understand knowledge of new trends in corporate accounting, preparation of subsidiary books, bank reconciliation statements, and final accounts.
CO 3 To develop the skills of recording financial transactions & preparation of reports using accounting packages tally etc.
CO 4 Enables students to pursue professional courses like CA,CMA & CS.
CO 5 Students will be ready for employment in functional areas of accounting.
CO 6 Each student shall understand economic and industry issues and role of accounting within that environment

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL)	I	COM111BOM	BUSINESS ORGANISATION AND MANAGEMENT

At the end of the course student will:
CO 1: At the end of the course, the student will be able to understand different forms of business organizations.
CO 2: Comprehend the nature of Joint Stock Company and formalities to promote a Company. Describe the Social Responsibility of Business towards the society.
CO 3: Critically examine the various organizations of the business firms and judge the best among them.
CO 4: Design and plan to register a business firm.
CO 5: Prepare different documents to register a company at his own. Articulate new models of business organizations

Program	**Semester**	**Course code**	**Course name**
B.com(COMPUTERS)	I	COM111BOM	BUSINESS ORGANISATION AND MANAGEMENT

At the end of the course student will:
CO 1: At the end of the course, the student will be able to understand different forms of business organizations.
CO 2: Comprehend the nature of Joint Stock Company and formalities to promote a Company. Describe the Social Responsibility of Business towards the society.
CO 3: Critically examine the various organizations of the business firms and judge the best among them.
CO 4: Design and plan to register a business firm.
CO 5: Prepare different documents to register a company at his own. Articulate new models of business organizations

Program	Semester	Course code	Course name
B.com(GENERAL)	I	SDC111OS	OFFICE SECRETARYSHIP

By the successful completion of course, the student will be able to;
CO1. Understand the organizational hierarchy and outlines of functioning
CO2. Comprehend the role of office secretary ship in a small and medium organization
CO3. Acquire knowledge on office procedures and interpersonal skills
CO4. Apply the skills in preparing and presenting notes, letters, statements, reports in different situations.

Program	Semester	Course code	Course name
B.Com(COMPUTERS)	I	SDC111OS	OFFICE SECRETARYSHIP

By the successful completion of course, the student will be able to;
CO1. Understand the organizational hierarchy and outlines of functioning
CO2. Comprehend the role of office secretary ship in a small and medium organization
CO3. Acquire knowledge on office procedures and interpersonal skills
CO4. Apply the skills in preparing and presenting notes, letters, statements, reports in different situations.

Program	Semester	Course code	Course name
B.com(GENERAL)	I	COM111BENV	BUSINESS ENVIRONMENT

By the successful completion of course, the student will be able to;
CO1. Understand the organizational hierarchy and outlines of functioning
CO2. Comprehend the role of office secretary ship in a small and medium organization
CO3. Acquire knowledge on office procedures and interpersonal skills
CO4. Apply the skills in preparing and presenting notes, letters, statements, reports in different situations.

Program	Semester	Course code	Course name
B.com(GENERAL)	II	COM121BTP	BANKING

At the end of the course student will:
Co 1: To have basic institutional and practical knowledge supported by text books including up-to-date information in the field of Banking.
CO 2: To carry out financial analysis of banks and insurance companies
CO 3: To express their opinions about banking and insurance in written and oral form, based on the basic knowledge and skills they acquire.
CO 4: Apply their knowledge and skills to demonstrate autonomy, expert judgment, adaptability and responsibility as a practitioner and learner in the field of banking and finance law.
CO 5: Advanced working skills in the use of new technology

Program	**Semester**	**Course code**	**Course name**
B.com (GENERAL, COMPUTERS)	II	COM122FA	FINANCIAL ACCOUNTING

On completion of this course, the students will be able to:
CO 1 To develop conceptual understanding of fundamentals of financial accounting system & to impart skills in accounting for various kinds of business transactions.
CO 2 To understand knowledge of new trends in Consignment business, different methods in depreciation, joint venture business and bills of exchange.
CO 3 To develop the skills of recording consignment accounts, writing of bills of exchange, joint venture business accounts.
CO 4 Enables students to pursue professional courses like CA,CMA & CS.
CO 5 Students will be ready for employment in functional areas of accounting.
CO 6 Each student shall understand economic and industry issues and role of accounting within that environment

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL)	II	SDC121AD	ADVERTISING

On completion of this course, the students will be able to
CO1: provide basic knowledge to the students about various internal & external factors which influence the ADVERTISING
CO 2: know about economic growth and development of advertising
CO3: To provide basic knowledge to the students about types of advertising

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL, COMPUTERS)	II	COM121BPP	Banking procedure and practice

On completion of this course, the students will be able to:
CO 1 Make the students aware of the fundamentals of banking and knowledge of banking operations.
CO 2 Relate the Regulation of Indian Banking Act 1949 and their Progress & performance
CO 3 Apply the impart knowledge about functions, role and monetary policy of Reserve Bank of India
CO 4 Acquaint the students with Bank Nationalization Process and its effects
CO 5 To make them understand about various foreign exchanges across the globe Analysis the Role and organization structure of Indian banking system
CO 6 To identify the risk faced by the Industry and Banks in the International Market.
Demonstrate the techniques of banking and finance in real· time scenarios

Program	Semester	Course code	Course name
B.com(GENERAL)	II	SDC121AD	ADVERTISING
On completion of this course, the students will be able to CO1: provide basic knowledge to the students about various internal & external factors which influence the ADVERTISING CO 2: know about economic growth and development of advertising CO3: To provide basic knowledge to the students about types of advertising			
Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL)	II	SDC122LSC	LOGISTICS AND SUPPLY CHAIN MANAGEMENT
At the end of the course student will: CO 1 Summarize relationship between marketing and Logistic Management CO 2 Understand the concepts of Supply Chain Management in connection with products. CO 3 Understanding various types of seller and suppliers CO 4 Evaluate best logistic method among all means of transport operations CO 5 Analysis of different distribution strategies - online and physical distribution CO 6 Design and develop new methods and models of Logistics in SCM			
Program	**Semester**	**Course code**	**Course name**
B.com(COMPUTERS)	II	SDC122LSC	LOGISTICS AND SUPPLY CHAIN MANAGEMENT
At the end of the course student will: CO 1 Summarize relationship between marketing and Logistic Management CO 2 Understand the concepts of Supply Chain Management in connection with products. CO 3 Understanding various types of seller and suppliers CO 4 Evaluate best logistic method among all means of transport operations CO 5 Analysis of different distribution strategies - online and physical distribution CO 6 Design and develop new methods and models of Logistics in SCM			
Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL)	II	LSC121ED	ENTREPRENEURSHIP DEVELOPMENT
At the end of the course student will: CO 1 Understand the concept of Entrepreneurship, its applications and scope. CO 2 Know various types of financial institutions that help the business at Central, State and Local Level CO 3 Understand Central and State Government policies, Aware of various tax incentives, concessions CO 4 Applies the knowledge for generating a broad idea for a starting an enterprise/startup CO 5 Understand the content for preparing a Project Report for a star up and differentiate between financial, technical analysis and business feasibility.			
Program	**Semester**	**Course code**	**Course name**
B.com(COMPUTERS)	II	LSC121ED	ENTREPRENEURSHIP DEVELOPMENT

At the end of the course student will:
CO 1 Understand the concept of Entrepreneurship, its applications and scope.
CO 2 Know various types of financial institutions that help the business at Central, State and Local Level
CO 3 Understand Central and State Government policies, Aware of various tax incentives, concessions
CO 4 Applies the knowledge for generating a broad idea for a starting an enterprise/startup
CO 5 Understand the content for preparing a Project Report for a star up and differentiate between financial, technical analysis and business feasibility.

Program	**Semester**	**Course code**	**Course name**
B.com(COMPUTERS)	II	COM356EW	E COMMERCE AND WEB DESIGNING

At the end of the course student will:
CO 1: Recognize different concepts related to E-commerce.. Differentiate between E-commerce business models of a firm, and determine the role that the Internet and related technologies can play to support this model
CO 2: Recognize the different applications of E-commerce
CO 3: Recognize issues related to E-commerce technologies, risks and information security.
CO 4: Identify social, ethical and cultural aspects related to E-commerce.
CO 5: Realize the impact of E-commerce on individuals and organizations. And learn to create web pages using html

Program	**Semester**	**Course code**	**Course name**
B.com GENERAL	III	Com231AA	Advanced accounts

At the end of the course student will:
Co 1:understand the concept of non profit organizations and its accounting process
Co 2: comprehend the concept of single entry system and preparation of statement of affairs.
Co 3: familiarize with the legal formalities at the time of dissolution of firm
C0 o 4: prepare financial statements for partnership on dissolution of the firm.
Co 5: employ critical thinking skills to understand the difference between dissolution of the firm and dissolution of partnership.

Program	**Semester**	**Course code**	**Course name**
B.com Computers	III	Com231AA	Advanced accounts

At the end of the course student will:
Co 1:understand the concept of non profit organizations and its accounting process
Co 2: comprehend the concept of single entry system and preparation of statement of affairs.
Co 3: familiarize with the legal formalities at the time of dissolution of firm
C0 o 4: prepare financial statements for partnership on dissolution of the firm.
Co 5: employ critical thinking skills to understand the difference between dissolution of the firm and dissolution of partnership.

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL, COMPUTERS)	**III**	**COM233MAKT**	**MARKETING**

On completion of this course, the students will be able to:

CO 1 To introduce the marketing concept and how we identify, understand and satisfy the needs of customers and markets
CO 2 To describe major bases for segmenting consumer and business markets, define and able to apply the three steps of target marketing, market segmentation and market positioning.
CO 3 Students will demonstrate strong conceptual knowledge in the functional area of marketing management.
CO 4 Enables students to pursue good marketing courses in future
CO 5 Students will be familiar about the product life cycle stages and New product development process, so through this they will be develop entrepreneur skills.
CO 6 Each student shall understand marketing and industry issues and role of marketing activities within that environment

Program	**Semester**	**Course code**	**Course name**
B.Com(COMPUTERS)	III	COM355DBMS	DATABASE MANAGEMENT SYSTEM

On completion of this course, the students will be able to:
CO 1 To understand Data and Information, Database, Database Management System, Objectives of
DBMS, Evolution of Database Management System, Classification of Database Management System.
CO 2 To understand the knowledge of File-Based System. Drawbacks of File-Based System, DBMS Approach, Advantage of
DBMS, Data Models, Components of Database System, Database Architecture, DBMS
Vendors and their products.
CO 3 To develop the skills The Building Blocks of an Entity-Relationship, Classification of Entity Set,
Attribute Classification, Relationship Degree, Relationship Classification, Generalization and Specialization, Aggregation and Composition, CODD's Rules, Relational Data Model, Concept of Relational Integrity.
CO 4 Enables students to pursue History of SQL Standards, Commands in SQL, Data types in SQL, Data Definition Language (DDL),Selection Operation Projection Operation, Aggregate Functions,
Data Manipulation Language, Table Modification, Table Truncation, Imposition of Constraints, Set Operations.
CO 5 Students will be ready to understand Structure of PL/SQL, PL/SQL Language Elements, Data Types, Control Structure, Steps to Create a PL/SQL Program, Iterative Control Cursors, Steps to Create a Cursor, Procedure, Functions, Packages, Exceptions Handling, Database Triggers, Types of triggers.

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL)	III	COM232BST	BUSINESS STATISTICS

On completion of this course, the students will be able to
CO 1: Understand the importance of Statistics in real life,
CO 2: Formulate complete, concise, and correct mathematical proofs,
CO 3: Frame problems using multiple mathematical and statistical tools,
CO 4: measuring relationships by using standard techniques Build and assess data-based models,
CO 5: Learn and apply the statistical tools in day life and Create quantitative models to solve real world problems in appropriate contexts.

Program	**Semester**	**Course code**	**Course name**
B.com(COMPUTERS)	III	COM232BST	BUSINESS STATISTICS

On completion of this course, the students will be able to:
CO 1: Understand the importance of Statistics in real life,
CO 2: Formulate complete, concise, and correct mathematical proofs,
CO 3: Frame problems using multiple mathematical and statistical tools,
CO 4: measuring relationships by using standard techniques Build and assess data-based models,
CO 5: Learn and apply the statistical tools in day life and Create quantitative models to solve real world problems in appropriate contexts.

Program	**Semester**	**Course code**	**Course name**
B.com(COMPUTERS)	III	SDC231IP	INSURANCE PROMOTION

By successful completion of the course, students will be able to;
CO 1: Understand the field level structure and functioning of insurance sector and it's role in protecting the risks
CO 2; Comprehend pertaining skills and their application for promoting insurance coverage
CO 3: Prepare better for the Insurance Agent examination conducted by IRDA
CO 4: Plan 'promoting insurance coverage practice' as one of the career options

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL)	III	SDC231IP	INSURANCE PROMOTION

By successful completion of the course, students will be able to;

CO1: Understand the field level structure and functioning of insurance sector and its role in protecting
the risks
CO2: Comprehend pertaining skills and their application for promoting insurance coverage
CO3: Prepare better for the Insurance Agent examination conducted by IRDA
CO4: Plan 'promoting insurance coverage practice' as one of the career options

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL, COMPUTERS)	IV	COM241AU	AUDITING

On completion of this course, the students will be able to:

CO 1 Apply and demonstrate the accounting knowledge and skills in auditing

CO 2 Have a basic working knowledge of auditing reporting, internal control over financial reporting, auditing for fraud etc…

CO 3 This course is intended to acquaint the student with duties of auditor, rights of auditor, qualifications and disqualifications of auditors according to companies act, 2013.

CO 4 To provide the understanding by the students of general chronology of audit, audit strategy, audit program and documentation and procedure involved in audit.

CO 5 To enable students to assess the audit techniques and the concepts of internal check in detail and also different types of audit.

CO 6 To enable the students in detailed knowledge about vouching of cash and trading transactions in organizations.

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL, COMPUTERS)	IV	COM241CA	CORPORATE ACCOUNTING

At the end of the course student will:

CO 1 Recognizing different types of shares, identifying the steps for formation of a company Aware of the process of valuation of shares

CO 2 Preparation of accounts related to issue of shares and debentures

CO 3 Preparation of accounts related to valuation of goodwill and valuation of shares

CO 4 Preparation of accounts related to company final accounts

CO 5 Identifying the Provisions of the Companies Act, 2013 relating to issues of shares and debentures

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL, COMPUTERS)	IV	COM241ITP	INCOME TAX LAW & PRACTICE

On completion of this course, the students will be able to:

CO 1 Students will apply enhanced analytical skills to resolve complex problems.

CO 2 Students will understand the legal, regulatory, and professional environment of accounting.

CO 3 Students will demonstrate professional skills.

CO 4 Students will understand the ethical expectations of the accounting profession including the ability to recognize and respond appropriately to ethical dilemmas.

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL, COMPUTERS)	IV	COM241CMA	COST AND MANAGEMENT ACCOUNTING

On completion of this course, the students will be able to:

CO 1: Basic concepts and enables the student to understand the basics of Cost accounting, its features and objectives and techniques used to compute the Cost of different areas of business.

CO 2: On materials, deals with the valuation of material purchased by business entities and talks about the best means of purchasing large volumes at cheaper rates.

CO 3: Marginal costing deals with cost volume profit analysis and the activity level at which the company earns neither profit nor loss.

CO 4: Job costing and Batch costing is useful for students to evaluate the job cost per unit and Batch costing is evaluating a lot of units in the same product.

CO 5: Financial statement analysis evaluates the various statements like profit and loss account and balance sheet.

Program	Semester	Course Code	Course Name
B.Com(Computer Applications)	IV	COM-245 OOPJ	Object oriented Programming Using Java

On Completion of this Course , The students will able to:-
CO-1 Develop programming skills and declaration of variables and constant use of operators and expressions.
CO-2 Learn the syntax and semantics of programming language and be familiar with object-oriented concepts.
CO-3 Analyze difference between Procedure– Oriented Programming and Object-Oriented Programming.
CO-4 Packages, Different Types of Packages, Creating Package and Accessing a Package .Streams, Creating a File using File Input- Output Streams
CO-5 Exception Handling, Types of Exceptions, Creating a Thread using Thread class methods.

Program	Semester	Course code	Course Name
B.Com General	IV	COM246GST	Goods and services tax

On completion of this course, the students will able to :-
CO-1 Understand the basic principles underlying the indirect taxation statutes.
CO-2 Examine the method of tax credit, input and output tax credit and cross utilization of input tax credit.
CO-3 Identify and analyze the procedural aspects under different applicable statutes related to GST.
CO-4 Compute the assessable value of transactions related to goods and services for levy and determination of duty liability.
CO-5 Develop various returns and reports for business transactions in tally.
CO-6 Understand tax invoice and bill of supply.

Program	Semester	Course code	Course Name
B.Com General	IV	COM241BL	BUSINESS LAW

On completion of this course, the students will able to :-
CO 1 Essential elements of valid contract, valid, void and voidable contracts, Indian Contract, Act 1872
CO 2 Offer (unilateral contract, Revocation of offer), Acceptance and Consideration.
CO 3 Minor contracts, Different modes of discharge of contracts, Rules relating to remedies to breach of the contract.
CO 4 Contract of sale, Rights of unpaid vendor.
CO 5 Cyber Crimes, Digital signature, Electronic governance.
CO 6 Regulation of certifying authorities, Duties of subscribers, Penalties and adjudication, Appellate tribunal, Offences and Cyber Crimes .

Program	Semester	Course code	Course Name
B.com(GENERAL,) BBA	**V**	COM356ACA	ADVANCED CORPORATE ACCOUNTING

CO 1 Prepare the Consolidated Balance Sheet of Holding and its Subsidiary Company and also able to understand the legal requirements relating to presentation of Accounts of Holding Companies and its Subsidiaries
CO 2 Understand the meaning of Liquidation-Modes of Winding Up-Order of Payment-Preferential Creditors-Statement of Affairs- Deficiency or Surplus Account-Liquidator's Final Statement
CO 3 Understand the meaning of Amalgamation-Types of Amalgamation-Computation of Purchase Consideration-pass the Entries in the books of Transferor and transferee-special Adjustment Entries for Inter-Company Owings and Holdings
CO 4 Understand the meaning of Alteration of Share Capital and Reduction of Share Capital-Pass Accounting Entries-adjust Surrender of Shares-Dissenting Shareholders-Reconstruction Schemes
CO 5 Understand the meaning and terms used in Leasing-Popularity of Leasing-Advantages and Disadvantages-Classification-Operating and Financial Lease-Accounting for Financial Lease-Books of Lessee and Lessor-Operating Lease-Accounting for Operating Lease-Books of the Lessee and lessor

Program	**Semester**	**Course code**	**Course name**
B.com GENERAL	V		STOCK MARKET

At the end of the course student will:
CO 1: The basic trade off between risk and return and how it applies to various types of financial instruments, stocks, bonds, futures, options
CO 2: Market efficiency and arbitrage. Are markets efficient or are they dominated by irrational investors
CO 3: Diversification: how to select a portfolio of securities that maximizes returns, while minimizing risk? How does diversification work in practice?
CO 4: Financial instruments: bonds, stocks, currencies and derivatives (futures options). How are these related to Hedging and speculation.
CO 5: The money management industry and its key players: Mutual funds and pension funds. Do they have any superior investment skills.

Program	**Semester**	**Course code**	**Course name**
B.Com(COMPUTERS)	V	7A	Data Science using Python

On completion of this course, the students will be able to:
CO 1 Understand basic concepts of data science
CO 2 Understand why python is a useful scripting language for developers.
CO 3 Use standard programming constructs like selection and repetition.
CO 4 Use aggregated data (list, tuple, and dictionary).
CO 5 Implement functions and modules.

Program	**Semester**	**Course code**	**Course name**
B.com(General, Computers)	V		General insurance procedure and practice

On completion of this course, the students will be able to:

CO 1 Students apprehend the various products and their significance of General Insurance

CO 2 Students realize the statutory requirements and procedure to be followed while filling the various General Insurance policy forms and documents

CO 3 Students know the prospects of Indian and International General Insurance Market

CO 4 Students will understand the role of underwriters & Actuaries in fixing the premiums by Risk Sharing and Risk Management techniques

CO 5 Students understand the process and documents necessary for different types of claims.

CO 6 Students also learn about the frauds, fraud prevention and different types of reserves of Insurance Companies

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL)	V		ADVERTISING AND MEDIA PLANNING

On completion of this course, the students will be able to:

CO 1 Determine, analyze and respond to clients' advertising and marketing communications objectives by applying principles of marketing and communications

CO 2 Perform a market segmentation analysis, determine the organization's target market/audience and define the consumer behaviour of each segment.

CO 3 Evaluate the effectiveness of integrated advertising and marketing communications initiatives.

CO 4 Evaluate the effectiveness of integrated advertising and marketing communications initiatives.

CO 5 Develop advertising and marketing communications material in compliance with current Canadian legislation, industry standards and business practices

CO 6 Develop creative solutions to address advertising and marketing communications challenges.

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL)	V		GST WITH TALLY

On completion of this course, the students will be able to:

CO 1 To introduce the students to Basic of Accounts and the usage of Tally for accounting purpose and basic concepts of gst

CO 2 Students will learn to create company, enter accounting voucher entries including advance voucher entries, do reconcile bank statement, do accrual adjustments, and also print financial statements, etc. in Tally ERP.9 software.

CO 3 Demonstrate an understanding of various predefined inventory vouchers to suit the various business requirements and flexibility to create unlimited stock items, use simple to complex conversion units and generate invoices with the required information and dimensions.

CO 4 Demonstrate an understanding of how to maintain a payroll register. This helps to understand how to maintain management related information, statutory forms and reports in the prescribed formats such as: Pay Slip, Payroll Statements, Attendance and Overtime Registers et

CO 5 Develop the students use the Tally software, that helps to prepare Accounting, Payroll, Billing, Sales and Profit Analysis, Auditing Banking Inventory, Taxation such as GST

CO 6 Synthesize company accounts into Tally software Evaluate GST in the accounting software .Create a career as Accounting professional.

Program	**Semester**	**Course code**	**Course Name**
B.Com (General & Computers)	V	COM355LIP	Life insurance with Practice.

On completion of this course, the students will able to :-
CO-1 Understand the features of Life insurance, schemes and policies and insurance companies in India
CO-2 Analyze various schemes and policies related to the life insurance sector.
CO-3 Choose a suitable insurance policy for a given situation and respective persons.
CO-4 Acquire insurance agency skills and other administrative skills.
CO-5 Acquire skill of settlement of claims under various circumstances.

Program	**Semester**	**Course code**	**Course Name**
B.Com(General&computers)	V	COM357SMA	Stock Market Analysis

On completion of this course, the students will able to :-
CO-1: Understand overall share market.
CO-2: To identify the trends, support and resistance in the stock market.
CO-3: Understand how to build portfolio and investment decision in appropriate manner
CO-4: Understand fundamental, technical and quantitative analysis of stock.
CO 5: To identify bullish and bearish patterns of securities in stock markets.

Program	**Semester**	**Course code**	**Course Name**
B.Com(General)	V	COM351ITAPP	Income tax procedure and practice

On completion of this course, the students will able to :-
CO 1: Understand the application of taxation knowledge in both theoretical and practical.
CO 2: Determine the procedure and schedule to be followed on preparing financial statements of companies
CO 3: File income tax return and compute tax liability of individuals.
CO 4: Develop critical thinking skills in students
CO 5: Understand E-Filling of tax returns and tax procedures
CO 1: To introduce the students to the basics of Accounts and the usage of Tally for accounting purposes.
CO 2: To help students to work with well- known accounting software i.e., Tally ERP.9. Tally is an accounting package which is used for learning to maintain accounts.
CO 3: Students will learn to create a company, enter accounting voucher entries including advance voucher entries, reconcile bank statements, do accrual adjustments, and also print financial statements, etc. in Tally ERP.9 software.
CO 4: Demonstrate an understanding of various predefined inventory vouchers to suit the various business requirements and flexibility to create unlimited stock items, use simple to complex conversion units and generate invoices with the required information and dimensions.
CO 5: Students will possess required skill and can also be employed as Tally data entry operator.

Program	**Semester**	**Course code**	**Course name**
B.com(GENERAL)	V		SALES PROMOTION AND PRACTICE

On completion of this course, the students will be able to:
CO 1: Understanding of basic concepts of sales promotion and to develop the skills to manage sales operations in a business firm.
CO 2: Discuss and make the student understand complexities of sales promotions involved in various organizations
CO 3: Take effective decisions for launching a new sales promotion technique in organization
CO 4: Understand the implications of the different promotional techniques and personal selling strategies
CO 5: To develop the skills among the students to enable them to design the personal selling strategies and make them aware of the selling strategies in the current era.

Program	Semester	Course Code	Course Name
B.Com(Computer Applications)	V	COM-351 BDAR	Big Data Analytics using 'R'

On Completion of this Course , The students will able to:-
CO 1: Understand data and classification of digital data.
CO 2: Understand Big Data Analytics.
CO 3: What is R? Why R? , advantages of R over other programming languages, Data types in R
CO 4: Data frames in R,Operations performed on data Frames.Load data into R.
CO 5: Reading and getting data into R (External Data), Working with R Charts and Graphs

DEPARTMENT OF VISUAL COMMUNICATIONS

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**I**	ENG111BWS	Basic Writing Skills

On successful completion of the course, students will be able to;
CO 1: To enable the students to heighten their awareness of correct usage of English Grammar in writing and reading
CO 2: To enable the students to improve their speaking ability in global language both in terms of fluency and comprehensibility
CO 3: To help the students to enlarge their vocabulary by keeping a vocabulary journa
CO 4: To enable the students, strengthen their ability to write academic papers, essays and summaries using the process approach
CO 5: To enhance the ability to use the conventions of grammar when creating paragraphs
CO 6: To enable students to review the grammatical forms of English and the use of these forms in specific communicative contexts, which include: class activities and home tasks

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**I**	VIS112ICT	Introduction to Communication Theories

On successful completion of the course, students will be able to;
CO 1: Understand the role of communication in personal & professional success.
CO 2: Develop awareness of appropriate communication strategies.
CO 3: Prepare and present messages with a specific intent.
CO 4: Analyse a variety of communication acts.
CO 5: Ethically use, document and integrate sources.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**I**	VIS113WM	Writing for Media

On successful completion of the course, students will be able to;
CO 1: Understand and be able to apply the principles of news language and news story structure
CO 2: Understand news values and concepts of newsworthiness and be able to apply these
CO 3: Develop an understanding of writing and news story structure that is sufficient to write for news media
CO 4: Apply news writing and news story structure concepts and skills to writing for print, broadcast and online news media
CO 5: Be aware of some common sources of news and how these can be incorporated in news writing.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	I	VIS114VC	Visual Communication

On successful completion of the course, students will be
CO 1: Demonstrate critical and innovative thinking.
CO 2: Display competence in oral, written, and visual communication.
CO 3: Apply communication theories

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	I	VIS115AAC	Art, Architecture and Culture (T)

On successful completion of the course, students will be able to;
CO 1: Recognize functional, structural, and aesthetic qualities in architecture and read visual and experiential elements, major monuments, architectural and cultural styles, and symbols. Demonstrate an understanding of works of art and architecture from diverse genres and from a range of historical periods and geographical locations.
CO 2: Demonstrate mastery of analytical skills such as observation and inductive reasoning in interpreting works of art both as formal structures and in relation to social and cultural contexts. Students will demonstrate an effective knowledge of visual vocabulary appropriate for careers in the visual arts, architecture, visual studies, and the media.
CO 3: Produce an extended work involving visual analysis, reading research, critical thinking, writing, and standard methods of documentation. They will demonstrate skills necessary for effective preparation of artwork for public presentation, using a variety of materials and techniques.
CO 4: Acquire a deeper knowledge of a range of chronological periods, geographical areas and methods of analysis of the built world. Learn oral communication of art historical arguments. Learn to produce cogent written arguments supported by visual and textual research.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	I	SDC111VC	Visual Communication (P)

On successful completion of the course, students will be able to;
CO 1: Students will learn how the light works with a camera. Students will learn how colour theory works.
CO 2: Students will be able to analyse visual messages in six different perspectives like Personal, Historical, Technical, Ethical, Cultural and Critical.
CO 3: Students will be able to create Ideas for Visual ads, TV ads etc.
CO 4: Students will be able to work in industries like Graphic Designing, Television, Film

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	I	SDC112DSP	Digital Still Photography

On successful completion of the course, students will be able to; CO 1: An understanding of the industrial and commercial applications of photographic technique CO 2: Functional knowledge of photographic history and theory, the relationship of photography to the visual disciplines, and its influence on culture. CO 3: The ability to work in experimental and manipulative techniques, candid and contrived imagery, documentary photography, archival processing, and interpretive studies. CO 4: The ability to work and study independently. CO 5: A familiarity with and command of materials, equipment, and library resources related to the study of photography.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**I**	SDC113GD	Graphic Designing – 1
On successful completion of the course, students will be able to; CO 1: They will demonstrate skills necessary for effective preparation of artwork for public presentation, using a variety of materials and techniques. CO 2: Students will demonstrate an effective knowledge of visual vocabulary appropriate for careers in the visual arts, architecture, visual studies, and the media CO 3: The students will employ both analogue media (drawing with pencil and paper, etc.) and digital media -- using up-to-date computer tools (graphics hardware and software - for drawing, painting, layout, typography) CO 4: Apply graphic design principles in the idealization, development, and production of visual messages.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**I**	SDC114SW	Screen Writing
On successful completion of the course, students will be able to; CO 1: To learn the fundamental principles of screenwriting and apply them to your own work in progress. CO 2: To complete the first half of a feature length screenplay (approx20 pages) over the course. CO 3: To learn how to read and analyse your own work and the work of others as a screenwriter. CO 4: To gain an understanding of the business side of screenwriting.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**I**	SDC115TA	Theatre Arts
On successful completion of the course, students will be able to; CO 1: Demonstrate understanding of the social and artistic movements that have shaped theatre and dance as we know it today. CO 2: Apply discipline-specific skills to the creation of performance. CO 3: Analyse, and interpret texts and performances both in writing and orally.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**II**	ENG121JE	Journalist English

On successful completion of the course, students will be able to;
CO 1: Demonstrate how the journalistic approach to problem solving and storytelling can produce locally engaged, globally competent citizens
CO 2: Demonstrate competence in a core set of journalistic crafts in reporting, research and storytelling that show versatility across media
CO 3: Express a critical understanding of the contextual factors that shape the media message in a diverse, globalized media landscape
CO 4: Produce journalistic work that showcases an area of specialization that draws on the creativity and entrepreneurial spirit of the students
CO 5: Produce a portfolio of work that demonstrates work produced in a public media setting

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**II**	VIS122MCT	Mass Communication Theories

On successful completion of the course, students will be able CO 1:
To critical think using mass communication theories
CO 2: To know the historical necessity for mass communication as a subject in the west in the backdrop of propaganda
CO 3: Apply critical thinking and analytical skills in order to create a proposal for a Mass Communication research project grounded in a specific theory.
CO 4: Effectively present and defend ideas/concepts orally and in writing.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**II**	VIS123IJ	Introduction to Journalism

On successful completion of the course, students will be able to; CO 1:
A student will learn the history of journalism in the world.
CO 2: A student will be exposed to the evolving journalism across India.
CO 3: A student will learn news editing and gathering of news stories.
CO 4: A student will learn about hard and soft stories besides feature news writing

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**II**	VIS124EF	Elements of Film

On successful completion of the course, students will be able to;
CO 1: Students will demonstrate that the critical study of cinema informs their filmmaking and that the study and practice of film production enhance their work as film scholars and analysts.
CO 2: Students will demonstrate that they understand the pre-production, production, and post production film making process
CO 3: Students will demonstrate the relationship between film form and aesthetic effect through both film
CO 4: Analysis and the creation of motion pictures.
CO 5: Students will be able to conduct film research and compose cogent, persuasive, and valid essays about film.
CO 6: Students will demonstrate a broad knowledge of film history, national cinemas and modes of production.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**II**	VIS125BC	Broadcast Communication

On successful completion of the course, students will be able to;
CO 1: The course is beneficial to develop the communication skills of students for broadcasting purposes and to prepare them as competent professionals to meet the challenges posed by rapidly changing environments.
CO 2: It makes the student aware of the art and technology used in broadcasting.
CO 3: The program imparts a deeper understanding of journalism and the forms it takes, and the focus is on content as much as on skills.
CO 4: The course is suitable to provide the students with an insight into the broadcast media and its relevance to rural and urban development, to train students in the basic skills required for broadcast media.
CO 5: It helps to expose students to the basic concepts, characteristics of Indian society to enable them to plan suitable programs on current political, economic, environmental and rural problem.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**II**	LSC121PSP	Public Speaking & Presentation

On successful completion of the course, students will be able to;
CO 1: To make the student to present to a group, company and individual, learn to speak to the public.
CO 2: Smart way of presenting materials to the public, to understand the nuances of presentation.
CO 3: To gain confidence in whatever one presents to the other
CO 4: Utilizing a variety of delivery skills such as eye contact, gestures, movement & vocal variety.
CO 5: Critically assess their own speaking, and that of others.

Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**II**	SDC121GD	Graphic Designing – 2

On successful completion of the course, students will be able to;
CO 1: Analyse, synthesize, and utilize design processes and strategy from concept to delivery to creatively solve communication problems. Create communication solutions that address audiences and contexts, by recognizing the human factors that determine design decisions.
CO 2: Utilize relevant applications of tools and technology in the creation, reproduction, and distribution of visual messages. Apply graphic design principles in the ideation, development, and production of visual messages.
CO 3: Identify and utilize design history, theory, and criticism from a variety of perspectives, including: art history, communication/information theory, and the social/cultural use of design objects.
CO 4: Confidently participate in professional design practice and management within a collaborative work environment. Employ best practices and management in the design profession and within a collaborative work environment

Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**II**	SDC122DVE	Digital Video Editing

On successful completion of the course, students will be able CO 1: Learn to combine basic design principles in video editing. CO 2: Learn Adobe Premiere Pro & Final Cut Pro software in basic level. CO 3: Able to learn techniques of handling the different types edit setup. CO 4: Application of video software to edit and produce.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**III**	VIS231MLE	Media Laws & Ethics
On successful completion of the course, students will be able to; CO 1: Students will learn the Indian constitution and the four estates of Indian democracy. CO 2: The students will learn about defamation and its implications. CO 3: Students will learn about the laws relating to the press. CO 4: The students will learn some Media related Acts. CO 5: The students will study the ethical aspects of the Laws.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**III**	VIS232MC	Media & Culture
On successful completion of the course, students will be able to; CO 1: Learn several theories to discuss the relationship between media and culture. CO 2: Understanding how different communities and cultures are represented in the media. CO 3: Examine the ethical implications of media culture. CO 4: Examine and evaluate the relevance of the various ideas studied in today's world. CO 5: Apply different ideas and perspectives in order to critically evaluate their existence and role in society.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**III**	VIS233PJ	Print Journalism (T)
On successful completion of the course, students will be able CO 1: Communicate effectively through film platforms. CO 2: Conceptualize, write, shoot and edit documentary films independently. CO 3: Develop characters and write dialogues for a film. CO 4: Conceptualize, develop and write the screenplay for films. CO 5: Develop and create a programme of different genres for television. CO 6: Conduct independent photo shoots and tell a story through the same			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**III**	VIS234TP	Television Production - 1 (T)
On successful completion of the course, students will be able to; CO 1: Gain overall understanding on history of print media during pre and post-independence era. CO 2: Acquire knowledge on growth of news agencies. CO 3: Gain understanding on emergence of different genres within newspapers. CO 4: Acquire knowledge on the role of print media in developed countries. CO 5: Gain understanding of trends in print media. CO 6: Acquire knowledge on the changing content in print media due influence of technology			
Program	**Semester**	**Course Code**	**Course Name**

B.Sc (Vis Comm & E Media)	**III**	LSC231CINA	Contemporary Issues & News Analysis
On successful completion of the course, students will be able CO 1: Identify an issue and argue from ideological perspective. CO 2: Apply a range of theoretical perspectives to interpret social problems associated with gender, race and ethnicity. CO 3: Identify the major social problems evident in contemporary Indian society at micro and macro level and interpret it using semiotics and hermeneutics. CO 4: Critically evaluate social problems in terms of the organization and structure of contemporary Indian society. CO 5: Evaluate social issues and find solutions for the society			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**III**	SDC231BJ	Broadcast Journalism
On successful completion of the course, students will be able to; CO 1: Understand radio as a medium its role and functions in convergent media epoch. CO 2: Acquire skills in writing scripts for various radio programs & take up various roles in radio. CO 3: Handle production equipment- software and hardware needed for radio production. CO 4: Able to produce indoor and outdoor programs and understand the concept of Community Radio. CO 5: Follow program production and evaluation procedures for radio stations. CO 6: Write proposals for Radio program and independently produce their own program			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**III**	SDC232PJ	Print Journalism (P)
On successful completion of the course, students will be able to; CO 1: Students will acquire a functional knowledge of the underlying principles and recent emerging trends of the media industry. CO 2: Students will develop communication skills, appreciation for creativity, critical thinking, and analytical approach. CO 3: Students will be equipped to conceptualize, create, design, and strategies high-quality media content for print, TV, radio, films and various digital platforms like social media, mobile etc. CO 4: Students will appreciate and demonstrate the ability to produce reliable outcomes firmly founded on a socially responsible framework, backed with decent knowledge of media ethics and law. CO 6: Critically appraise practices and trends in print media.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**III**	SDC233TP	Television Production - 1 (P)

On successful completion of the course, students will be
CO 1: Operate the basic functions of a video camera.
CO 2: Execute basic camera shots using appropriate composition methods.
CO 3: Create clean and usable video footage while applying basic camera techniques.
CO 4: Enterprise story ideas to create video packages and Practice basic audio and lighting techniques.
CO 5: Apply the production planning process of story boards, content outline, storytelling and execution.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**III**	SDC234POD	Principles of Design

On successful completion of the course, students will be able to;
CO 1: To gain a control of representational drawing skills and To understand and manipulate proportional relationships from actual objects.
CO 2: To manipulate the formal elements and principles to achieve better design solutions. To understand the importance and control of good craftsmanship and presentation skills.
CO 3: To gain a basic understanding of the concepts of drawing and a working knowledge of the media and techniques basic to drawing. To develop the vocabulary necessary for critical analysis of drawing as a visual art.
CO 4: Students gain knowledge of the concepts of art and design that includes the visual arts. Students identify principles of design in a range of visual disciplines. Students discuss works of art and design using the vocabulary of the discipline (in terms of aesthetics and the appropriate technology).

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**III**	SDC235EM	Event Management

On successful completion of the course, students will be able to;
CO 1: Communication-Written communications (preparation official & semi-official) orders
CO 2: Concept based Exhibition, Event planning & developing a mission.
CO 3: Image & Branding, Preparing event proposal, Dress codes, Staging & staffing.
CO 4: Event Production & Logistics-Concept & theme, light, sound & handling Venders.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**IV**	VIS241AD	Advertising (T)

On successful completion of the course, students will be able to;
CO 1: Understand the concept of Integrated Marketing Communication.
CO 2: Understand the concept of advertising.
CO 3: Discuss the basic economic impact of advertising.
CO 4: Explain the different job functions and responsibilities of those employed in advertising.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**IV**	VIS241AD	Public Relations & Corporate Communication

On successful completion of the course, students will be able to;
CO 1: The basic concepts and their functions in and public relations & in Communications.
CO 2: Understanding of the process of public relations and different issues influencing communication.
CO 3: It provides the latest skills in communication with a strategic, managerial and analytic approach.
CO 4: The students will be able to understand the different sections of corporate like branding, marketing communication, PR, reputation management.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**IV**	VIS243MEM	Management of Electronic Media

On successful completion of the course, students will be able to;
CO 1: Train the students to meet the requirements of the electronic media organizations and Society.
CO 2: To train the students with special focus on cinema, Radio and Television programme Productions
CO 3: To educate the students in the areas of research, media management, advertising and corporate communication.
CO 4: To enlighten students to be aware of the media impact on culture and society, ethical and legal aspects of the media profession.
CO 5: To train the students in multimedia and emerging communication technologies.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**IV**	VIS244TP	Television Production - 2 (T)

On successful completion of the course, students will be able to;
CO 1: Apply industry standard processes for pre-production, production & post-production.
CO 2: Relate historical and current issues and emerging trends to the evolution of television as an artistic media.
CO 3: Model professional and ethical behavior when solving problems working with colleagues and Clients in the media industry to achieve production project goals.
CO 4: Develop scripts for television productions and web-based projects.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**IV**	VIS245SMOJ	Social Media & Online Journalism

On successful completion of the course, students will be
CO 1: Understand the new media and its characteristics.
CO 2: Understand and explain its roles and functions.
CO 3: Determine the use of social media as tool for effective communication.
CO 4: Identify its role and use it effectively for personal development and social cause.
CO 5: Connect it for effective media work.
CO 6: Understand the concept of metrics and the evolving theories.
CO 7: Understand social media marketing.
CO 8: Create and manage social media content responsibly.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	**IV**	VIS246TP	Television Production - 2 (P)

On successful completion of the course, students will be able to; CO 1: Apply a professional level of preparation and planning for multi-cam production. CO 2: Apply the principles of effective production techniques of a multi-Cam production. CO 3: Apply industry-standard camera preparation tasks, evaluate image formats and articulate production solutions. CO 4: Develop a directorial treatment, and visual design preparation that will assist the production process of the project. CO 5: Evaluate the impact of large-scale production on social and environmental contexts			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**IV**	SDC243AN	Anchoring
On successful completion of the course, students will be able to; CO 1: Present news in front of a teleprompter. CO 2: Be aware of vocal delivery. CO 3: Learn approaches to anchoring in different situations. CO 4: Learn interview techniques. CO 5: Studio & Location Anchoring. CO 6: Write scripts for anchoring			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**IV**	SDC241AD	Advertising (P)
On successful completion of the course, students will be CO 1: Students will approach a company for an internship. CO 2: Students will learn to analyse different ads in different mediums. CO 3: Students will prepare different ads for different mediums. CO 4: Students will do a campaign on a social issue. CO 5: Students will able to meet professional standards in advertising industries			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**V**	VIS351DC	Development Communication
On successful completion of the course, students will be able to; CO 1: Students will know the concepts of development and critical analysis of the underdevelopment and alternative paths to developments. CO 2: Students will know about western paradigms for development. CO 3: Students will know about some folk arts, street theatre in development. CO 4: Students will develop analytical skills to appreciate some feature films on social empowerment and produce the same.			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc (Vis Comm & E Media)	**V**	VIS354MMR	Mass Media Research

On successful completion of the course, students will be
CO 1: Learn the ropes of social science research.
CO 2: Do research on their own and come up with some interesting data and analyse the data too to add to the domain of media research.
CO 3: Learn to employ relevant research methods for the topics of research chosen by them.
CO 4: Employ research methodology in production and technological practices, and relevant social issues.
CO 5: Understand the nature of mediated and non-mediated messages.

Program	Semester	Course Code	Course Name
B.Sc (Vis Comm & E Media)	V	VIS355DFM	Documentary Film Making

On successful completion of the course, students will be able CO
1: Students will be able to learn and produce a documentary.
CO 2: Students will be able to learn, prepare to go into the field to shoot a documentary.
CO 3: Students will understand documentary production in its social and historical context.
CO 4: Students will be able to learn how post-production of a documentary works.

DEPARTMENT OF BUSINESS ADMINISTRATION

Program	Semester	Course Code	Course Name
BBA	I	BBA111POM	Principles of Management

At the end of the course, the student will be able to –
CO 1: To Outline various elements that constitute Management Functions along with their respective impact on business organization.
CO 2: To Understand the relative impact of elements Management Functions- both Planning and Decision making.
CO 3: To Interpret the repercussions of Organizing Function in business organizing.
CO 4: To Illustrate the challenges and the implications of Directing Function in business organization.
CO 5: To make the student well acquainted with the concept of Controlling function

Program	Semester	Course Code	Course Name
BBA	I	BBA111BO	Business Organization

By successfully completion of the course, student will be able to
CO 1: To understand the concepts related to business
CO 2: To familiarize the students about various sources of finance
CO3: To enlighten with nature and importance of business organization
CO 4: To gain knowledge about various types of business organization
CO 5: To understand the functioning of Joint Stock companies and also necessary documents to be needed.

Program	Semester	Course Code	Course Name
BBA	I	BBA111FOA	Fundamentals of Accounting

By successfully completion of the course, student will be able to
CO 1: At the end of the course, the student will be able to identify transactions and events that need to be recorded in the books of accounts.
CO 2: Students can equip themselves with the knowledge of the accounting process and preparation of final accounts of sole traders.
CO 3: Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP.
CO 4: Analyze the difference between cash book and pass book in terms of balance and make reconciliation.
CO 5: Critically examine the balance sheets of a sole trader for different accounting periods. Design new accounting formulas & principles for business organizations.

Program	**Semester**	**Course Code**	**Course Name**
BBA	1	SDC111PR	Public Relations

After successful completion of this course, the student will be able to:
CO 1: Understand the historical background and role Public Relations in various areas
CO 2: Have insight into the use of the technological advancements in Public Relations
CO 3: Comprehend tools of Public Relations in order to develop the required skills.
CO 4: Understand the ethical aspects and future of Public Relations in India
CO 5: Develop writing skills for newspapers and creation of Blogs

Program	**Semester**	**Course Code**	**Course Name**
BBA	2	BBA121BENV	Business Environment

By successfully completion of the course, student will be able to
CO 1:To examine how different factors and trends in the external environment are likely to impact upon a business venture.
CO 2: To Employ business models and tools to evaluate changes in an organization's business environment.
CO 3:To describe what business operations encompass.
CO 4:To Present a business environmental analysis and recommendations to reduce the risk of the identified issues.
CO 5:To Conduct a business analysis of the local, national and International environment**.**

Program	**Semester**	**Course Code**	**Course Name**
BBA	2	BBA121ME	Managerial Economics

The objective of the course is to enable the students to list the different goals and constraints that firms face applies the economic way of thinking to individual decisions and business decisions
CO 1: To Describe the various approaches to National Income and to extract the significance of Trade Cycles
CO 2: To Explain the Conceptual framework of Managerial Economics and its functioning in accordance with the business operations
CO 3: To Illustrate the framework of Concepts Viz., Demand, and Supply & Market Equilibrium and to interpret its implementation in business organization.
CO 4: To Criticize the impact of Costs and evaluate the concept of production in organization Functioning.
CO 5: To Appraise the concept of Market structures and the implementation of pricing as strategy for organization.

Program	**Semester**	**Course Code**	**Course Name**
BBA	2	BBA121FA	Financial Accounting

By successfully completion of the course, student will be able to

CO 1: At the end of the course the student will be able to; understand the concept of consignment and learn the accounting treatment of the various aspects of consignment.

CO 2: Analyze the accounting process and preparation of accounts in consignment and joint venture.

CO 3: Distinguish Joint Venture and Partnership and to learn the methods of maintaining records under Joint Venture.

CO 4: Determine the useful life and value of the depreciable assets and maintenance of Reserves in business entities.

CO 5: Design an accounting system for different models of businesses at his own using the principles of the existing accounting system

Program	**Semester**	**Course Code**	**Course Name**
BBA	2	BBA121ECS	Ethics and Corporate social Responsibility

By successfully completion of the course, student will be able to

CO 1: After completing of the unit student will have to understand about what are the ethics should follow in the organization

CO 2: Students can analyze what are the theories which help to sustain in the business and what are the rights and responsibilities of workers in the organizations

CO 3: At the end of this unit student can have a clear cut vision about corporate governance and accounting standards and insider trading.

CO 4: knowing about board of directors role and duties and responsibilities

CO 5: Got an idea about corporate social responsibility.

Program	**Semester**	**Course Code**	**Course Name**
BBA	2	SDC122BC	Business Communication

By successfully completion of the course, student will be able to

CO 1: Understand the types of business communication and correspondence

CO 2: Comprehend the processes like receiving, filing and replying

CO 3:. Acquire knowledge in preparing good business communications

CO 4: Acquaint with organizational communication requirements and presentations

Program	**Semester**	**Course Code**	**Course Name**
BBA	2	SDC121AD	Advertising

By successfully completion of the course, student will be able to

CO 1: Understand the field of Advertising

CO 2: Comprehend opportunities and challenges in Advertising sector

CO 3: Prepare a primary advertising model

CO 4: Understand applying of related skills

CO 5: Examine the scope for making advertising a future career

Program	**Semester**	**Course Code**	**Course Name**
BBA	3	BBA235BR	Business Research

After successful completion of this course, the students are able to
CO 1: Apply an advanced understanding of business research design options, methodologies and analysis methods (both qualitative and quantitative), including respective terms, definitions and applications to the design, implementation and evaluation of a research project.
CO 2: Distill an identified business problem into a succinct research problem (or problems) and articulate this into a comprehensive research brief for investigation by a research team locally or internationally.
CO 3: This brief will include a statement of the resulting research problem and the objectives that need to be achieved to provide the information necessary to tackle the business problem and the decisions that need to be made respective to it.
CO 4: Complete, from the brief created, a research proposal for implementation at either a local or international level. This will include (but not be restricted to), a literature summary at the necessary level of depth to ensure a thorough understanding of what is already known about the problem to be addressed, the proposed research design, data collection, sampling, analysis methods to be employed along with an indicative time frame for each stage of the research proposed and budget.
CO 5: Apply a broad understanding of issues specific to undertaking business research across international boundaries, including cultural, geographical, language and cost related challenges and respective strategies and approaches that may be employed to solve them to the design, implementation and evaluation of a research project.

Program	**Semester**	**Course Code**	**Course Name**
BBA	3	BBA233FM	Financial Management

By successfully completion of the course, student will be able to
CO 1: To understand the concept of business finance and financial management,
CO 2: To analyse the cost of capital, computation of cost of capital
CO 3: To distinguish factors determining capital structure, various theories
CO 4: To determine usefulness of capital budgeting meaning and importance and kinds of investment proposals, factors affecting capital investment decisions
CO 5: To design working capital meaning and need and factors determining the working capital

Program	**Semester**	**Course Code**	**Course Name**
BBA	3	BBA234FOM	Fundamentals of Marketing

By successfully completion of the course, student will be able to
CO 1: To understand the various core marketing concepts and their importance
CO 2: To understand different marketing trends, markets, products & channels
CO 3: To gain knowledge on buyer behavior and market segmentation
CO 4: To familiarize students about product and its classifications
CO 5: To understand different price strategies & promotion strategies.
CO 6: To understand the importance of regulating marketing

Program	**Semester**	**Course Code**	**Course Name**
BBA	3	BBA231HRM	Human Resource Management

By successfully completion of the course, student will be able to
CO 1: Acquaint the role and importance, various policies and practices of human resources management.
CO 2: To impart knowledge about the concept of human resource planning, its objectives and process of human resource planning and also the job analysis.
CO 3: To understand the concept of recruitment and selection and its process and principles of placement and overview about induction procedure.
CO 4: To impart the knowledge about the performance appraisal, its various methods and the concept of training and executive development and an overview about evaluation of training and development programmes.
CO 5: To make the student well acquainted with the concept of job evaluation process, compensation management, its approaches and an overview of designing a graded salary structure.

Program	**Semester**	**Course Code**	**Course Name**
BBA	3	BBA232OB	Organizational Behaviour

By successfully completion of the course, student will be able to
CO 1: Discuss the development of the field of organizational behavior and explain the micro and macro approaches.
CO 2: Analyze and compare different models used to explain individual behavior related to motivation and rewards.
CO 3: Identify the processes used in developing communication and resolving conflicts.
CO 4: Explain group dynamics and demonstrate skills required for working in groups (team building).
CO 5: Explain organizational culture and describe its dimensions and to examine various organizational designs.
CO 6: Discuss the implementation of organizational change.

Program	**Semester**	**Course Code**	**Course Name**
BBA	3	SDC231RET	Retailing

After successful completion of this course, the students are able to
CO 1: Know the retailing business, its growth in India and social impact
CO 2: Understand the and organization and supply in retailing
CO 3: Comprehend the opportunities and challenges in retailing
CO 4: Learn the functions that support outlet operations, sales and services
CO 5: Create a shopping experience model that builds customer loyalty and business promotion

Program	**Semester**	**Course Code**	**Course Name**
BBA	4	BBA 241TD	Training and development

By successfully completion of the course, student will be able to
CO 1: To develop an understanding of the evolution of training & development from a tactical to a strategic function.
CO 2: To provide an insight into what motivates adults to learn and the most appropriate methodologies to impart training
CO 3: To understand the concept of training audit & training evaluation
CO 4: To learn how design a training module and execute it
CO 5: To understand the need for and concept of Performance Management
CO 6: To understand various strategies used by organizations to measure performance & reward for the same

Program	**Semester**	**Course Code**	**Course Name**

BBA	4	BBA 241MSME	Micro,Small and Medium Enterprises Management
By successfully completion of the course, student will be able to CO 1: To create an awareness on various Entrepreneurship Development Programme CO 2: To enable them to understand project formulation CO 3: To familiarize the students with EDP schemes CO 4: To give an introduction about MSME and Various measures for their development CO 5: To create an awareness on various sources of finance			
Program	**Semester**	**Course Code**	**Course Name**
BBA	4	BB241IB	International Business
CO 1: Basic informational learning by the students regarding Domestic and International/Foreign Trade. Modes of entry- trade theories CO 2: Determining Factors influencing exchange rate fluctuations and Euro market, instruments. CO 3: Analysis of Balance of payment: Contents, disequilibria in BOP, measures to bring back equilibrium in BOP CO 4: Analysis of WTO and Trade blocks – WTO Foundation, advantages and Disadvantages of WTO Procedure and Documents: Export and Import Procedure, Principal and Auxiliary documents			
Program	**Semester**	**Course Code**	**Course Name**
BBA	4	BBA 241CMA	Cost and management accounting
CO 1: Introduction of Cost Accounting and management accounting – Cost Concept and Classification. CO 2: A practical exposer of FIFO, LIFO, Weighted average, (including problems). Labour: Control of labour costs time keeping and time booking Idle time Methods of remuneration labour incentives schemes CO 3: Determining of Financial statement Analysis: Financial Statements Need for analysis of financial statements-comparative statements- common size statements- Trend analysis. CO 4: Practical expose of Ratio Analysis: Meaning - Accounting Ratios - uses - limitations - types of ratios. CO 5: Problematic to the students Marginal Costing -cost classification- differences between marginal costing and absorption costing - marginal cost equation- contribution- p/v ratio- margin of safety			
Program	**Semester**	**Course Code**	**Course Name**
BBA	4	BBA232OB	Business Law
CO 1: Understand the essentials of a valid contract and its kinds. Understand the essentials of offer and acceptance, consideration. Will know how a contract is discharged and when the breach of contract arises followed by its remedies. CO 2: Make understand the impact of companies act and its kinds. This also helps students to know about the documents lie MOA & AOA in relation to incorporation of a company. CO 3: Know the impact of factories act 1948 of how the health safety and welfare measures of the labourers are taken into consideration. CO 4: Ensure about the concept of sale of goods act 1930 of understanding them the differences between sale and agreement to sell, conditions and warranties etc.. Will also know when a seller was unpaid and the various rules of delivery. CO 5: Know about the essential commodity act as well about the consumer protection act 1986 of how the consumers are protected with reference to various consumer councils			

Program	Semester	Course Code	Course Name
BBA	4	BBA241FS	Financial services

After successful completion of this course, the students are able to
CO 1: Understand the various services offered and various risks faced by banks
CO 2: Determine the need of financial system and describe how and why financial system works.
CO 3: Have a practical understanding of various financial institutions and their functioning
CO 4: Understand the dynamic changes of the banking industry and the policy responses because of the recent crisis
CO 5: Have a practical understanding of the various financial services both domestic and international wise.
CO 6: Be able to understand the management of mutual funds. Be provided with the knowledge of risk and rewards of investing in mutual funds
CO 7: Have a practical understanding of RBI, its functioning, provision and operations and also able to understand various financial planning like credit and monetary planning
CO 8: Understand the money market, its different types and its functioning

Program	Semester	Course Code	Course Name
BBA	4	SDC241PEL	Personality Enhancement and Leadership

By successful completion of the course, students will be able to:
CO 1: Develop comprehensive understanding of personality
CO 2: Know how to assess and enhance one's own personality
CO 3: Comprehend leadership qualities and their importance
CO 4: Understand how to develop leadership qualities

Program	Semester	Course Code	Course Name
BBA	5	BBA351TM	Talent Management

By the end of the course the student should be able to:CO 1: To develop a clear understanding of Talents that are inculcated among the Employees in today's Business Environment.
CO 2: To measure the various strengths and weakness of the employees and establishing theories and practices.
CO 3: To Monitor the current trends in utilization of Employees team spirit and also in analyzing their abilities and skills
CO 4: To bring out the learning and conceptual skills aiming the employees in order to reach the target.
CO 5: To analyze the 360 Degree Feedback from the existing staff and to implement the measures needed

Program	Semester	Course Code	Course Name
BBA	5	BBA352GHRM	Global Human Resource Management

By successfully completion of the course, student will be able to
CO 1: To develop the understanding of the concept of human resource management and to understand its relevance in organizations.
CO 2: To develop necessary skill set for application of various HR issues.
CO 3: To analyse the strategic issues and strategies required to select and develop manpower resources.
CO 4: To integrate the knowledge of HR concepts to take correct business decisions.
CO 5: Integrated perspective on role of HRM in modern business. Ability to plan human resources and implement techniques of job design

Program	Semester	Course Code	Course Name
BBA	5	BBA353EI	Export and Import
CO 1: To Demonstrate understanding of export controls, intellectual property rights, and confidentiality in international trade. CO 2: To apply knowledge of export sales, insurance, finance, and licensing to develop competitive export pricing strategies. C0 3: Proficiently prepare export packaging, transportation methods, and documentation, optimizing benefits and duty drawbacks. CO 4: Solve complex shipment issues, negotiate shipping documents, and formulate effective corporate marketing strategies for international trade. CO 5: Exhibit competence in customs formalities, export/import documentation, and regulatory compliance in diverse import/export scenarios			
Program	**Semester**	**Course Code**	**Course Name**
BBA	5	BBA354BM	Brand Management
CO 1: To understand product management, corporate strategy, product life cycle and develop effective marketing strategies for products. CO 2: Apply new product development techniques, include idea generation, concept testing, successful launch and tracking of new product programs. CO 3: Demonstrate knowledge of brand management, crafting brand elements and building consumer brand associations. CO 4: Effectively manage brand architecture and portfolios with insights into corporate branding tools for building brand equity. CO 5: Learn to leverage and measure brand equity for strategic marketing decisions and brand development.			
Program	**Semester**	**Course Code**	**Course Name**
BBA	5	COM355FEM	Foreign Exchange Management
After successful completion of this course, the students are able to CO-1: Assess factors impacting exchange rates, understanding economic indicators and forces, which have impact in foreign markets and global markets. CO-2: Apply financial instruments for hedging, optimizing international transactions with derivatives, like swaps, options futures. CO-3: Navigate regulatory frameworks, ensuring compliance with legal and ethical considerations, which have impact in foreign markets and global markets CO-4: Utilize quantitative techniques for assessing and managing foreign exchange exposure. CO-5: Evaluate macroeconomic policies, formulating effective strategies for global financial environments that are helpful for traders in exchange markets			
Program	**semester**	**Course code**	**Course name**
BBA	**5**	**COM356EP**	**E-Payments**
CO1: Understand E-cash and Virtual Money Electronic Data interchange and about NEFT/RTGS/E Payment modes CO2: Demonstrate knowledge of Automated Clearing and Settlement process and ATM networks, Fed wire etc CO3: Identify and describe terms of Cryptography, Hash functions and Algorithm applications CO4: Understand the different types of Mobile Payments, Wireless payments and different Wallets, Security Challenges in mobile payments CO5: Develop the Electronic invoice and Payment systems its process, EIPP providers and elimination of paper, Scan based payments.			

DEPARTMENT OF CHEMISTRY			
Program	**Semester**	**Course Code**	**Course Name**
B. Sc (MPC, BZC, MBC, MFC)	I	CHE111IPC	General, Physical & Inorganic Chemistry
At the end of the course, the student will be able to; CO 1: Understand the basic concepts of p-block d-block elements CO 2: Explain the difference between solid, liquid and gasses in terms of intermolecular interactions. CO 3: Understand the concept of orbitals & energy levels CO 4: shape of covalent molecules, identify types of intermolecular forces and predict those that are important for a given molecule, CO 5: relate the chemical and physical properties of substances to molecular structure, chemical bonding, and inter molecular interactions			
Program	**Semester**	**Course Code**	**Course Name**
B. Sc (MPC, BZC, MBC, MFC)	II	CHE122OPC	Organic and physical Chemistry
CO 1: Understand and explain the differential behavior of organic compounds based on fundamental concepts learnt. CO 2: Formulate the mechanism of organic reactions by recalling and correlating the fundamental properties of the reactants involved. CO 3: Learn and identify many organic reaction mechanisms including Free Radical Substitution, Electrophilic Addition and Electrophilic Aromatic Substitution. CO 4: Correlate and describe the stereo chemical properties of organic compounds and reactions.			
Program	**Semester**	**Course Code**	**Course Name**
B. Sc (MPC, BZC, MBC, MFC)	III	CHE233POC	Physical and Organic Chemistry
CO 1: Separate the liquid mixtures using distillation process. CO 2: Importance of EMF measurements and its applications CO 3: Study nitrogen containing function groups with respect to their reactivity CO 4: Study synthesis and role of amino acids and Proteins. CO 5: Study of structural elucidation of various mono and disaccharides			
Program	**Semester**	**Course code**	**Course Name**
B.Sc., (MPC, BZC, MBC, MFC)	IV	CHE244IPC	Inorganic and Physical Chemistry
CO 1: Understand the basic concepts of d-block elements CO 2: Apply various theories of complex compounds CO 3: Explain the difference between solid, liquid and gases CO 4: Compute the order of a reaction. CO 5: Interpret the defects in the crystals			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc., (MPC, BZC, MBC, MFC)	**V**	CHE355OSC	Organic and Spectroscopy of Organic compounds

At the end of the course students will be able to: CO 1: Learn basic concepts of bonding and symmetry. CO 2: Correlate the reactivity of various Heterocyclic compounds. CO 3: Acquire knowledge on synthesis of desired alcohols using Grignard reagents CO 4: Interpret IR spectroscopic peaks for identifying functional groups CO 5: Predict the number of proton NMR signals expected from a given compound			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc., (MPC, BZC, MBC, MFC)	**I**	CHE111VA(P)	Volumetric Analysis
At the end of the course student will be able to CO 1: Understand the basic concepts of quantitative analysis CO 2: Perform the techniques involved in volumetric analysis CO 3: Understand the concepts and role of indicators used CO 4: Acquire an idea about the significant figures and accuracy of reporting. CO 5: Estimate the unknown present in the solution by suitable methods			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc., (MPC, BZC, MBC, MFC)	**II**	CHE122MA(P)	Mixture analysis
At the end of the course student will be able to; CO 1: Understand the basic concepts of qualitative analysis of inorganic mixture CO 2: Use glassware, equipment and chemicals and follow experimental procedures in the laboratory CO 3: Apply the concepts of common ion effect, solubility product and concepts related to qualitative analysis			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc., (MPC, BZC, MBC, MFC)	III	CHE233AOC(P)	Analysis of Organic Compound
At the end of the course student will be able to CO 1: Perform systematic qualitative analysis of organic compound CO 2: Detect extra elements using Lassaigne's test CO 3: Identify the functional group of the compound CO 4: Analyze various organic compounds using documented procedures CO 5: Identify organic compound by determination of melting point			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc., (MPC, BZC, MBC, MFC)	IV	244	Analytical Skills
At the end of the course student will be able to CO 1: Understand the basic concepts of qualitative analysis of inorganic mixture CO 2: Use glassware, equipment and chemicals and follow experimental procedures in the laboratory CO 3: Apply the concepts of common ion effect, solubility product and concepts related to qualitative analysis CO 4: Analyze various salt mixtures using documented procedures			
Program	**Semester**	**Course Code**	**Course Name**
B.Sc., (MPC, BZC, MBC, MFC)	V	CHE355PI(P)	Physical and Instrumentation

CO 1: Determine the rate constant of acid catalyzed ester hydrolysis
CO 2: Prove 1 st order kinetics of decomposition of hydrogen peroxide
CO 3 : Determine the partition coefficient of benzoic acid distributed between benzene and water
CO 4 : Find the viscosity of unknown composition of glycerol and water mixture
CO 5 : Study the effect of electrolyte on CST of phenol + water system

Program	Semester	Course Code	Course Name
B.Sc., (MPC, BZC, MBC, MFC)	V	CHE356IA(P)	Inorganic and Analytical

CO 1: Independently use PH meter and Conductivity meter for quantitative determination
CO 2: get hands on training in use of spectrophotometer

Program	Semester	Course Code	Course Name
B.Sc., (MPC, BZC, MBC, MFC)	V	CHE356SOC	synthetic organic chemistry

CO 1: Identify the importance of reagents used in the synthesis of organic compounds.
CO 2: Learn the fundamental ideas behind the many forms of pericyclic reactions.
CO 3: Understand the importance of retro synthesis in organic chemistry.
CO 4: Comprehend the applications of different reactions in synthetic organic chemistry

Program	Semester	Course Code	Course Name
B.Sc., (MPC, BZC, MBC, MFC)	V	CHE357SAO	Separation tech. & Analysis of Org. Compounds

CO 1: Describe the role of mass spectrometry in revealing the structural details of organic molecules.
CO 2: Learn about the structural analysis of organic molecules.
CO 3: Appraise the volumetric and gravimetric methods in analytical chemistry.
CO 4: Understand various chromatography methods in the separation and identification of organic compounds.
CO 5: Use knowledge of solvent extraction to separate organic molecules

DEPARTMENT OF HOTEL MANAGEMENT

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	I	HM111HK	HOUSEKEEPING

By successful completion of the course, students will be able to;
CO 1: The subject aims to establish the importance of Housekeeping and its role in the hospitality Industry.
CO 2: It also prepares the student to acquire basic knowledge and skills necessary for different tasks and aspects of housekeeping.
CO 3: Students to understand various procedures in Housekeeping

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	I	HM111HK (P)	HOUSEKEEPING LAB

CO 1: It is recommended that Demonstrations be conducted in the initial stages to make the students familiar
CO 2: Understand the Rooms layouts and standard Amenities placed in the room
CO 3: Develop skill in Identification of cleaning equipments (manual and Mechanical)
CO 4: Acquire skills to study and perform the procedure of Bed making

Program	Semester	Course code	Course Name
B. Sc., **Hotel Management**	I	HM 111 FP(P)	**FOOD PRODUCTION**
By successful completion of the course, students will be able to; CO 1: It is recommended that Demonstrations be conducted in the initial stages to make the students familiar CO 2: Understanding the usage and identification of equipments CO 3: Develop skill in Cuts of vegetables CO 4: Gain knowledge on different food preparations			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Hotel Management	I	HM111FBS	Food & Beverage service
CO 1: The course will give the students a comprehensive knowledge and develop technical skills in the basic aspects of food & beverage service operations in the Hotel Industry. CO 2: To learn about Food & Beverage Service equipment- uses and sizes. CO 3: Notice the Ancillary Areas of Food and Beverage Service			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Hotel Management	I	HM123FBS	Food and Beverage Service
CO 1: It is recommended that Demonstrations be conducted in the initial stages to make the students familiar CO 2: Develop skill inCarrying Salvers and Holding of equipments. CO 3: Understand the Basic Etiquettes for Restaurant Staff. CO 4: GetKnowledge to operate with other interlink department			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Hotel Management	**I**	HM111FO	Front Office
CO 1: This course aims to establish the importance of Front Office within the hospitality industry. CO 2: It also prepares the student to acquire basic skills. CO 3: Get Knowledge on necessary to identify the required standards			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Hotel Management	I	HR111PR	Public Relations
CO 1: To learn Public Relations Role in Business, Government, Politics, NGOs and Industry. CO 2: Importance Tools of Public Relations. CO 3: A brief Review of the Ethics of Public RelationsSocial Responsibility. CI 4: Finally learn the Present and future of Public Relations in India			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Hotel Management	II	HM122HO	Housekeeping Operations
CO 1: The subject aims to establish the cleaning science and types of cleaning agents CO 2: The student to acquire basic knowledge cleaning of various surfaces and metals and Public Areas CO 3: Adopted to improve skills necessary for different tasks and aspects of housekeeping.			

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	II	HM122MSC	Meat & Sauce Cookery
CO 1: Based on the sound knowledge of commodities and storing CO 2: Principles and methods of cooking it is desired CO 3: To prepare students to evolve good understanding and prepare Classification of mother sauces. CO 4: The course further introduces the students to the concepts of bakery & confectionery			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Hotel Management	II	HM122FSO	Food Service Operations
CO 1: The courses will give the students a comprehensive knowledge on menu CO 2: To develop technical skills in the basic aspects of types of meals CO 3: To acquire food service methods and control methods in the Hotel Industry			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Hotel Management	II	HM122RD	Room Division
CO 1: This course aims to establish the structure of Front Office organization within the hospitality industry. CO 2: It also prepares the student to acquire basic skills Equipments used at front office and CO 3: Get knowledge in necessary to successfully Front desk operations CO 4: Identify the required standards in this area and to consider all aspects of this department.			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Hotel Management	II	HM122HH	Health & Hygiene
CO 1: What is a healthy diet CO 2: How can we use available information to optimize our diet? CO 3: Can nutrition be used for a healthy life? CO 4: Is there a one-size-fits-all “good” diet or should we individualize our dietary goals? CO 5: Disaster management and responsiveness of public in pandemic and epidemic diseases CO 6: Assess the impact of policies on health and hygiene Health measures to consider while traveling CO 7: Awareness in public through digital media viz., mobile apps			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Hotel Management	II	HM122FVP	Fruit & Vegetable Preservation
CO 1:Identify various types of fruits and vegetables and explain their nutritive value. CO 2: Understand the fragile nature of fruits and vegetables and causes for their damage. CO 3: Explain various methods of preservation for fresh fruits and vegetables. CO 4: Get to know the value-added products made from fruits and vegetables			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Hotel Management	III	HM233LLO	Linen & Laundry Operations

CO 1: To learn about the Housekeeping Supervision.
CO 2: Understand the importance of linen in housekeeping
CO 3: To know the types of Linen, cleaning and guest supplies.
CO 4: Student will get knowledge on laundry operation.

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	III	HM233IC	Indian cooking & menu planning

CO 1: Based on the sound knowledge of commodities and principles and methods of cooking.
CO 2: It is desired to prepare students to evolve good understanding and prepare Indian regional menus in large quantities to suit the occasion.
CO 3: After doing this course, students should be able to plan and execute quantity menus.
CO 4: The course further introduces the students to the concepts of Rechauffe cookery

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	III	HM233HK(P)	HOUSE KEEPING PRACTICALS

CO 1: Idealize and perform the Layout of Linen and Uniform Room
CO 2: Gets knowledge on operation of Laundry Machinery
CO 3: Develop skill in Flower Arrangement

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	III	HM233BSO	Beverage service operations

CO 1: Based on the sound knowledge of commodities and principles and methods of cooking.
CO 2: It is desired to prepare students to evolve good understanding and prepare Indian regional menus in large quantities to suit the occasion.
CO 3: After doing this course, students should be able to plan and execute quantity menus.
CO 4: The course further introduces the students to the concepts of Rechauffe cookery

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	III	HM233FP	Food production Practical

CO 1: It is recommended that Demonstrations be conducted in the initial stages to make the students familiar with practicals.
CO 2: Develop cooking skill in Indian cuisine.
CO 3: Gain knowledge on cooking meat preparations

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	III	HM233SFO	Specialized Front office

CO 1: This course aims to establish the Registration and reservations within the Front office department.
CO 2: It also prepares the student to acquire basic skills.
CO 3: Knowledge necessary to successfully identify the required standards in this area.
CO 4: Knowing and considering all aspects of Accounting fundamentals.
CO 5: Learn how to control cash and guest safety and security.

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	III	HM233OB	Online Business

CO 1: Understand the online business and its advantages and disadvantages
CO 2: Recognize new channels of marketing, their scope and steps involved
CO 3: Analyze the procurement, payment process, security and shipping in online business
CO 4: Create new marketing tools for online business
CO 5: Define search engine, payment gateways and SEO techniques

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	III	HM233EE	Environmental Education

CO 1: Understand the nature, components of an ecosystem and that humans are an integral part of nature.
CO 2: Realize the importance of the environment, the goods and services of a healthy biodiversity, and the dependence of humans on the environment.
CO 3: Evaluate the ways and ill effects of destruction of the environment, population explosion on ecosystems and global problems consequent to anthropogenic activities.
CO 4: Discuss the laws/ acts made by the government to prevent pollution, to protect biodiversity and the environment as a whole.
CO 5: Acquaint with international agreements and national movements, and realize citizen's role in protecting the environment and nature.

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	III	HM233ICS	Indian Culture and Science

CO 1: Understand the evolution of India's culture
CO 2: Analyze the process of modernization of Indian society and culture from past to future
CO 3: Comprehend objective education and evaluate scientific development of India in various spheres
CO 4: Inculcate nationalist and moral fervor and scientific temper

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	V	HM351ACP	ADVANCED CULINARY PREPARATION

CO 1: This course develops the knowledge and understanding of international cuisine amongst students.
CO 2: To impart knowledge on the function of Larder and Gardemanger.
CO 3: Finally the course further introduces the students to the concepts of bakery & confectionery.

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	V	HM351FP	Food Production – Lab IV

CO 1: It is recommended that Demonstrations be conducted in the initial stages to make the students familiar with practicals.
CO 2: Develop cooking skill in international cuisine
CO 3: Gain knowledge on different famous dishes in international cuisine

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	V	HM354FBM	Food & Beverage Management

CO 1: To impart knowledge of cost controls aspect of the F & B department and related functions**.**
CO 2: This course enables the student to gain a better understanding of the roll of Food and Beverage Management
CO 3: It also helps them to acquire finer skills and thorough understanding of the managerial principles for overall development

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	V	HM352AM	Accommodation Management

CO 1: The subject tends to establish the importance of accommodation management within the hospitality industry.
CO 2: It equips the student to acquire knowledge & skills.
CO 3: To planning & designing aspects of the front office as Sales Department

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	V	HM353BM	BAR MANAGEMENT

CO 1: This course enables the student to gain a better understanding of the role of Bar and Beverage Operation in the context.
CO 2: Overall bar operations.
CO 3: To familiarize the student with the current trends.
CO 4: The Art of Mixology like cocktails mixing methods, equipment, Accessories used

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	V	HM355CAM	AND AIR TICKETING MANAGEMENT

CO 1: To understand meaning of Role of AAI and DGCA in air transportation
CO 2: Learn about methods of Cargo transportation.
CO 3: To understand the Airline Terminology and knowing types of journeys.
CO 4: Finally learn the types of fares according to the Passengers

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	V	HM356SM	Sales and Marketing

CO 1: The subject aims to make the students understand the importance of Sales and marketing in the Hospitality Industry.
CO 2: Concepts of the marketing, buying behaviors, market segmentation and marketing mix strategies for effective marketing of the hotel industry.
CO 3: The student will understand the concept of product, price, promotion, sales and consumers behavior

Program	Semester	Course code	Course Name
B. Sc., Hotel Management	V	HM357TM	Tourism Management

CO 1: To inculcate a sense of importance and establish a link between the tourism industry and the hotel industry.
CO 2: To highlight the tourism industry as an alternative career path.
CO 3: Acquire knowledge on the role & functions of tourism organizations.
CO 4: Able to learn the procedure and operations of the Travel Agent and Tour operator

DEPARTMENT OF POLITICAL SCIENCE			
Program	**Semester**	**Course code**	**Course Name**
BA	**I**	**POL111IPS**	**INTRODUCTION TO POLITICAL SCIENCE**
CO 1: Recall the previous knowledge about Political Science and understand the nature and scope, traditional and modern approaches of Political Science. **CO 2:** Understand concepts intrinsic to the study of Political Science. **CO 3:** Have solid theoretical understanding of Rights and its theories along with the basic aspects of certain political ideologies. **CO 4:** Apply the knowledge to observe the field level phenomena			
Program	**Semester**	**Course code**	**Course Name**
BA	II	POL122BOG	BASIC ORGANS OF THE GOVERNMENT
CO 1: Understand the Origin and Evolution of the concept of Constitutionalism and classification of Constitutions. CO 2: Acquaint themselves with different theories of Origin of State. CO 3: Understand and analyze organs and forms of Government along with a deep insight into the various agents involved in the political process. CO 4: Apply the knowledge to analyze and evaluate the existing systems			
Program	**Semester**	**Course code**	**Course Name**
BA	III	POL233IGP	INDIAN GOVERNMENT AND POLITICS
CO 1: Acquire knowledge about the historical background of Constitutional development in India, appreciate philosophical foundations and salient features of the Indian Constitution. CO 2: Analyze the relationship between State and individual in terms of Fundamental Rights and Directive Principles of State Policy. CO 3: Understand the composition of and functioning of Union Government as well as State Government and finally CO 4: Acquaint themselves with the judicial system of the country and its emerging trends such as judicial reforms			
Program	**Semester**	**Course code**	**Course Name**
BA	IV	POL244IPP	INDIAN POLITICAL PROCESS
CO 1: Know and understand the federal system of the country and some of the vital contemporary emerging issues. **CO 2:** Evaluate the electoral system of the country and to identify the areas of Electoral Reforms. **CO 3:** Know the constitutional base and functioning of local governments with special emphasis on 73rd and 74th Constitutional Amendment Acts. **CO 4:** Understand the Dynamics of Indian politics , challenges faced and gain a sensitive comprehension of the Contributive Factors.			
Program	**Semester**	**Course code**	**Course Name**
BA	IV	POL245WPT	WESTERN POLITICAL THOUGHT

CO 1: Understand the fundamental contours of classical, western political philosophy, basic features of medieval political thought and shift from medieval to modern era.
CO 2: Understand the Social Contract Theory and appreciate its implications on the perception of state in terms of its purposes and role. Acquaint yourself with the Liberal and Marxist philosophy and analyze some trends in western political thought.
CO 3: Critically analyze the Evolution of Western Political Thought

Program	Semester	Course code	Course Name
BA	V	POL355IPT	INDIAN POLITICAL THOUGHT

CO 1: Helping the students in acquiring knowledge in the field of Indian Political thought in the initial stage of their study.
CO 2: Apprising the students about India' contribution towards the enrichment of the field of political thought.
CO 3: Gathering knowledge regarding India's orientation towards politics and apprising the students about the growth of modern democratic political consciousness in India.
CO 4: Helping the students in their future course of study in India's political thought

Program	Semester	Course code	Course Name
BA	V	POL356OM	OFFICE MANAGEMENT

CO 1: Understand fundamental knowledge of Office Management that can be applied to a career.
CO 2: Have knowledge on office administration and identify job competencies.
CO 3: Understand the importance of record management , allied sections and to identify the challenges in the background of ICT
CO 4: Enhance skills, strategies and techniques to compete with the global competencies in office management

Program	Semester	Course code	Course Name
BA	V	POL367PPAA	PRINCIPLES OF PUBLIC ADMINISTRATION

CO 1: This course aims to familiarize students with the need to recognise Public Administration as a Discipline
CO 2: The course encourages students on the importance of development administration and its elements
CO 3: It enhances the students the Role of Governance in 21st Century

DEPARTMENT OF LOGISTICS MANAGEMENT

Program	Semester	Course code	Course Name
BBA	I	BBA111FL	Fundamental of Logistics

CO 1: Students will be able to apply the Basic knowledge of Logistics in the real-life situation
CO 2: This subject will enable them to enhance their ability and professional skills in Logistics

Program	Semester	Course code	Course Name
BBA	I	BBA111MM	Materials Management

CO 1: Students will be able to apply the knowledge about material management in the real-life business situation
CO 2: This subject will enable them to enhance their managerial ability and professional skills

Program	Semester	Course code	Course Name
BBA	I	BBA111WD	Warehouse and Distribution Operations

CO 1: Students will be able to apply the Basic knowledge of Warehousing and distribution centre operations in the real-life situation
CO 2: This subject will enable them to enhance their ability and professional skills

Program	Semester	Course code	Course Name
B. Sc	II	SDC122NPD	New Product Development

CO 1: Under the scope of R & D
CO 2: Develop new, Innovative products through knowledge galned

Program	Semester	Course code	Course Name
B. Sc	I	SDC111FIC	Food Infestation Control

CO 1: To understand the principles of food infestation
CO 2: To study the types of infestation during food storage
CO 3: To study the methods for protection food from infest-ants

Program	Semester	Course code	Course Name
B. Sc Food Tech	III	SDC233NUT	Nutraceuticals

CO 1: To understand the principles of food infestation
CO 2: To study the types of infestation during food storage
CO 3: To study the methods for protection food from infest-ants

DEPARTMENTA OF ENGLISH

Program	Semester	Course code	Course Name
BA, B.Sc., B.Com., BBA &B.Voc.	I	ENG111ACS	ENGLISH PRAXIS COURSE-1-A COURSE IN COMMUNICATION AND SOFT SKILLS

CO 1: Use listening and communication skills effectively
CO 2: Develop awareness of appropriate communication strategies
CO 3: Identify the needs communication help us meet
CO 4: Identify common misconceptions about communication and reasons for committing perceptual errors
CO 5: Explain communication competence
CO 6: Understand the role of soft skills and communication skills in personal life
CO 7: Focus on the International Pronunciation, Word Stress and Intonation Patterns and improve their accent

Program	Semester	Course code	Course Name
B. A [AGH, AEH]	I	SDC111OS	SKILL DEVELOPMENT COURSE- OFFICE SECRETARYSHIP

CO 1: Understand the organizational hierarchy and outlines of functioning
CO 2: Comprehend the role of office secretaryship in a small and medium organization
CO 3: Acquire knowledge on office procedures and interpersonal skills
CO 4: Apply the skills in preparing and presenting notes, letters, statements, reports in different situations

Program	Semester	Course code	Course Name
B. A [AGH]	I	CC111ECD	CERTIFICATE COURSE – ENGLISH ENRICHMENT AND CAREER DEVELOPMENT SKILLS [EECDS]

CO 1: Speak intelligibly using appropriate word stress, sentence stress and intonation patterns
CO 2: Narrate events and incidents, real or imaginary in a logical sense
CO 3: Acquire knowledge on office procedures and interpersonal skills
CO 4: Adopt different strategies to convey ideas effectively according to purpose, topic and audience
CO 5: Present oral reports or summaries, make announcements clearly and confidently
CO 6: Express and argue a point of view clearly and effectively
CO 7: Concentrate on problem solving skills and building healthy relations
CO 8: Take active part in group discussions, debates, seminars

Program	Semester	Course code	Course Name
B. A [AGH]	I	ENG111HEL	HISTORY OF ENGLISH LANGUAGE AND LITERATURE

On successful completion of the course, students will be able to:
CO 1: Know the beauty of the coherence of Language and Literature
CO 2: Demonstrate the awareness of evolution theory of languages by varied culture
CO 3: Study the formation of new words
CO 4: Apply literary terminology for Narrative, Poetic and Dramatic Genres
CO 5: Present oral reports or summaries, make announcements clearly and confidently
CO 6: Explore literary elements
CO 7: Identify and use Figures of Speech
CO 8: Appreciate literary form and structure in shaping a text's meaning

Program	Semester	Course code	Course Name
B. A, B.SC, B.COM, BBA, B.VOC.	II	ENG122CWR	ENGLISH PRAXIS COURSE-II- A COURSE IN READING AND WRITING SKILLS

CO 1: Heighten their awareness of correct usage of English Grammar in writing and reading
CO 2: Improve their reading both in terms of fluency and comprehensibility
CO 3: Increase their vocabulary count by learning new words
CO 4: Strengthen their ability to use the conventions of grammar when creating paragraphs, essays and formal letters
CO 5: Review the grammatical forms of English and the use of these forms in specific communicative contexts, which include: class activities and home tasks
CO 6: Improve writing skills independently for future needs
CO 7: Build up a repository of active vocabulary

Program	Semester	Course code	Course Name
B. A [AGH]	II	SDC121JR	SKILL DEVELOPMENT COURSE- JOURNALISTIC REPORTING

On Successful completion of the course, the students will be able to:
CO 1: Understand the evolution of journalism with a focus on its development in India CO 2: Comprehend the role of Press in Indian Democracy and various reporting methods CO 3: Realize the ethical aspects of Journalism in India
CO 4: Develop basic writing skills for Newspapers, Radio and Television

Program	Semester	Course code	Course Name
B. A [AGH]	II	CC122EPC	CERTIFICATE COURSE-ENGLISH PROFICIENCY FOR COMMUNICATION SKILLS [EPCS]

CO 1: Present oral reports or summaries, make announcements clearly and confidently
CO 2: Express and present with ease and clarity
CO 3: Take active part in discussions, talks and debates showing ability to express agreement and disagreement
CO 4: Frame questions to elicit the desired response and respond appropriately to questions
CO 5: Participate in spontaneous spoken discourse in familiar social situations
CO 6: Translate simple texts from a native language to a global language

Program	Semester	Course code	Course Name
B. A [AGH]	II	ENG122ILC	AN INTRODUCTION TO LITERARY CRITICISM AND LITERARY THEORY

CO 1: Articulate the broader ways in which literary theory applies to their own culture, global culture and their own values
CO 2: Demonstrate through written work and in-class comments their ability to apply various theories to works of literature and aspects of contemporary literature
CO 3: Demonstrate their ability to compare and synthesize the theories presented in a group discussion
CO 4: Articulate theoretical concepts orally by their class participation and formal presentations
CO 5: Locate, cite and intelligently incorporate several sources into their presentations and writings

Program	Semester	Course code	Course Name
B. A, B.SC, B.COM, BBA, B.VOC.	III	ENG233EE	ENGLISH FOR EMPOWERMENT-III

CO 1: Form an idea about the various stages in the development of English language
CO 2: Distinguish between the different varieties of English used all over the world
CO 3: Understand the total content and underlying meaning in the context
CO 4: Write analytically in a variety of formats, including essays, reflective writing and critical reviews of secondary sources
CO 5: Understand the process of communicating and interpreting human experiences through literary representation using historical contexts and disciplinary methodologies
CO 6: Identify and understand phrase or sentence groups to make inferences
CO 7: Learn and apply the techniques of persuasion and negotiation

Program	Semester	Course code	Course Name
B. A, B.SC, B.COM, BBA, B.VOC.	IV	ENG244EE	ENGLISH FOR EMPOWERMENT-IV [CSS-III]

On Successful completion of the course, the students will be able to:
CO 1: Think and analyse situations using critical and creative skills
CO 2: Display competence in oral and written communication
CO 3: Understand the importance and realize the opportunities available in learning communication and soft skills
CO 4: Develop awareness of appropriate communication strategies
CO 5: Understand the concepts related to high communicative approach
CO 6: Participate in discussions, ted talks, talk shows and live shows
CO 7: Reduces the phobia of speaking in a foreign language by 'learning by doing' technique through reading newspapers, drafting news articles and listening to various accents on YouTube
CO 8: Familiarize with varieties of spoken language and interact in various situations like Group Discussions, Interviews and making Presentations
CO 9: Upgrade their personality and presentation skills through open discussions

Program	Semester	Course code	Course Name
B. A [NGH]	IV	ENG244LCC	LITERARY CROSS CURRENTS

CO 1: Familiarize the students with varieties of English and enable them to critically interact with literary writings from different contexts – cultural, social, political, historical, national and philosophical
CO 2: Write and appreciate different types of prose and literature
CO 3: Critically engage with different cultures and history
CO 4: Establish connections across frontiers of disciplines
CO 5: Understand the different trends of English Prose style and theme in the course of the evolution of English Prose from the 16th century to the late 20th century
CO 6: Familiar with important aspects of different genres of prose
CO 7: Acquire a wide-range vocabulary and a good understanding of the idiom of the language
CO 8: Understand the critical, theoretical and technical traditions to the production of original literary works
CO 9: Effectively communicate as writers do and present literary works of others as well as their own
CO 10: Accomplish as active readers who appreciate ambiguity, complexity and articulate their own interpretations with an awareness and curiosity for other perspectives

Program	Semester	Course code	Course Name
B. A [DGH]	V	ENG355CD	CULTURAL DIVERSITY, GENDER & HUMAN RIGHTS

CO 1: Develop and expand imagination and expression and reduce self-consciousness and inhibition
CO 2: Write and appreciate different types of prose and literature
CO 3: Discover and break down blocks and barriers while exploring facets of their personality that were previously subdued
CO 4: Ability to speak in the actor's vocabulary of behaviour and action
CO 5: Build strong supple bodies that are capable of playing a variety of characters with various physical demands
CO 6: Ability to distinguish the difference between the story of the script and what the story is about

Program	Semester	Course code	Course Name
B. A [DGH]	VI	ENG367EL	ENGLISH FOR LANGUAGE AND LINGUISTICS

On Successful completion of the course, the students will be able to:
CO 1: Practice in phonemic transcription as an aid to develop facility in the use of a pronouncing dictionary
CO 2: Familiarize with important literary theories
CO 3: Apply principles of criticism to literary texts and undertake further reading of literary texts
CO 4: Understand the basic methods of comparative literary terms and categories relating to literary history, theory and criticism including figurative language and prosody
CO 5: Recognize and appreciate the importance of major literary genres, subgenres and periods in different traditions
CO 6: Explicate texts written in a wide variety of forms, styles, structures and modes
CO 7: Learn and appreciate cultural differences as they are mirrored in social, artistic and literary artifacts originating in different national and geographical traditions

Program	Semester	Course code	Course Name
B. A [DGH]	VI	ENG368ELT	CLUSTER PAPER: ENGLISH LANGUAGE TEACHING

CO 1: Develop their knowledge in relation to a selected ELT specialism
CO 2: Develop knowledge of ELT curriculum and syllabus design principles and apply this knowledge to a context and an actual learner or group of learners to whom they have access
CO 3: Develop critical awareness of syllabuses and courses and implications for the selected specialism
CO 4: Develop skills in the design and implementation of syllabuses and courses in relation to the selected specialism
CO 5: Develop critical awareness of types and methods of assessment in relation to the selected specialism CO 6: Apply knowledge and understanding of assessment to the production of a form of assessment for the selected specialism
CO 7: Synthesize all of the and present a coherent account of the project to a third-party readership
CO 8: Start their planning processes with a clear conception of an ultimate aim
CO 9: Arouse interest and activate relevant background knowledge

Program	Semester	Course code	Course Name
B. A [DGH]	VI	ENG368SLA	CLUSTER PAPER: SECOND LANGUAGE ACQUISITION

CO1: Familiarize with key concepts, theories and empirical research on child and adult Second Language Acquisition
CO2: Acquire the ability to intelligently discuss aspects of the theory and practice of language Learning based on knowledge of the scholarly research in the field
CO3: Discuss problems and challenges in current research theory
CO4: Summarize important studies and idea of research studies
CO5: Analyse second language learner data from multiple perspectives
CO6: Write coherent papers on the above topics using the conventions of Applied Linguistics

Program	Semester	Course code	Course Name
B. A [DGH]	VI	ENG368ISL	CLUSTER PAPER: INTRODUCTION TO SOCIO LINGUISTICS

On Successful completion of the course, the students will be able to:
CO1: Maintain group identity and social relationships among the speakers
CO2: Learn about a variety of topics dealing with the general theme of language in its social context
CO3: Relate between language and society
CO4: Principals' concepts of Sociolinguistics
CO5: Draw on variationist sociolinguistics, ethnography of communication, conversation analysis and critical discourse analysis
CO6: Address the educational, political and social repercussions of language use from a sociolinguistic.
CO7: Introduce the various sociolinguistic approaches and methods used for collecting and presenting data for the study of language in society
CO8: Think critically over the nature and function of language in our society and to work collaboratively on the projects for Sociolinguistics study

DEPARTMENT OF ARTIFICIAL INTELLIGENCE

Program	Semester	Course Code	Course Name
B.Sc(AAI)	I	CSC111PC	PROGRAMMING USING 'C'

On successful completion of the course, students will be able to
CO1: Understand the evolution and functionality of a Digital Computer.
CO2: Apply logical skills to analyze a given problem
CO3: Develop an algorithm for solving a given problem.
CO4: Understand 'C' language constructs like Iterative statements, Array processing, Pointers, etc.
CO5: Apply 'C' language constructs to the algorithms to write a 'C' language program

Program	Semester	Course Code	Course Name
B.Sc(AAI)	II	CSC112DMS	Database Management System

On successful completion of the course, students will be able to
CO1: Describe the fundamental elements of relational database management systems.
CO2: Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.
CO3: Design ER-models to represent simple database application scenarios.
CO4: Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
CO5: Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data into RDBMS and formulate SQL queries on the data

Program	Semester	Course Code	Course Name
B.Sc(AAI)	II	CSC123CN	COMPUTER NETWORKS

On successful completion of this practical course, the student will be able to:
CO1: Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission
CO2: Apply channel allocation, framing, error and flow control techniques.
CO3: Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism.
CO4: Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.
CO5: Explain the functions offered by session and presentation layer and their Implementation.
CO6: Explain the different protocols used at application layer i.e. HTTP, SNMP, SMTP, FTP, TELNET and VPN

Program	Semester	Course Code	Course Name
B.Sc(NAI)	III	CSC231AML	APPLIED MACHINE LEARNING

On successful completion of this practical course, the student will be able to:
CO1: Gain knowledge about basic concepts of Machine Learning
CO2: Identify machine learning techniques suitable for a given problem
CO3: Solve the problems using various machine learning techniques
CO4: Apply Dimensionality reduction techniques.
CO5: Design application using machine learning techniques.

Program	Semester	Course Code	Course Name
B.Sc(NAI)	III	CSC232OOPJ	OBJECT ORIENTED PROGRAMMING USING JAVA

On successful completion of the course, students will be able to;
CO1: Understand object oriented programming concepts to solve real world problems.
CO2: Write programs using Java collection API as well as the java standard class library
CO3: Understand underlying principles of Object-Oriented Programming in Java.
CO4: Demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords.
CO4: Use dynamic and static polymorphism to process objects depending on their class.
CO5: Demonstrate the user defined exceptions by exception handling keywords (try, catch, throw, throws and finally).
CO6: Use multithreading concepts to develop inter process communication.
CO7: Describe the backend connectivity process in java program by using JDBC drivers

Program	Semester	Course Code	Course Name
B.Sc(NAI)	IV	CSC243SML	Statistical Machine Learning

CO 1 : Structure and divide statistical learning problems into tractable sub-problems, formulate a mathematical solution to the problems and implement this solution using statistical software.
CO 2 : Use and develop linear and nonlinear models for classification and regression.
CO 3 : Describe the limitations of linear models and understand how these limitations can be handled using nonlinear models.
CO 4 : Explain the basic ideas of Bayesian modeling and be able to use them for classification and regression.

Program	Semester	Course Code	Course Name
B.Sc(NAI)	IV	CSC244TF	Tensor flow

CO1: To learn how to create, train and deploy machine learning models using the Tensorflow framework.
CO2: Ability to implement best practices for data automation and model tracking.
CO3: Using production level tools to perform monitoring and model retrainging.
CO4: Understand the deep learning concepts such as activation functions and gradient decent

Program	Semester	Course Code	Course Name
B.Sc(NAI)	IV	CSC245DS	DATA STRUCTURES

CO 1: Understand available Data Structures for data storage and processing.
CO 2: Comprehend Data Structure and their real-time applications-Stack, Queue, Linked List, Trees and Graph
CO 3: Choose a suitable Data Structures for an application
CO 4: Develop ability to implement different Sorting and Search methods
CO 5: Have knowledge on Data Structures basic operations like insert, delete, search, update and traversal
CO 6: Design and develop programs using various data structures
CO 7: Implement the applications of algorithms for sorting, pattern matching etc

Program	Semester	Course Code	Course Name
B.Sc(NAI)	IV	CSC246SE	SOFTWARE ENGINEERING

CO 1: Students will be able to decompose the given project in various phases of a lifecycle.
CO 2: Ability to apply software engineering principles and techniques.
CO 3: Ability to develop, maintain and evaluate large-scale software systems.
CO 4: To produce efficient, reliable, robust and cost-effective software solutions.
CO 5: Students will be able to choose appropriate process model depending on the user requirements.
CO 6: To communicate and coordinate competently by listening, speaking, reading and writing english for technical and general purposes.
CO 7: Ability to work as an effective member or leader of software engineering teams.
CO 8: To manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals Identify and analyses the common threats in each domain.
CO 9: Students will be able perform various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance.

Program	Semester	Course Code	Course Name
B.Sc(DAI)	V	CSC3511INN	INTRO. TO NEURAL NETWORKS & DEEP LEARNING

CO1: Describe the feed-forward and deep networks.
CO2: Design single and multi-layer feed-forward deep networks and tune various hyper-parameters.
CO3: Implement deep neural networks to solve a problem.
CO4: Understand the characteristics and types of artificial neural network and remember working of biological Neuron and Artificial Neural Network.
CO5: Apply different types of auto encoders with dimensionality reduction and regularization.
CO6: Design Convolutional Neural Network and classification using Convolutional Neural Network.

Program	Semester	Course Code	Course Name
B.Sc(DAI)	V	CSC3512OS	OPERATING SYSTEMS

CO1: Know Computer system resources and the role of operating system in resource Management with algorithms
CO2: Understand Operating System Architectural design and its services.
CO3: Gain knowledge of various types of operating systems including Unix and Android.
CO4: Understand various process management concepts including scheduling, synchronization, and deadlocks.
CO5: Have a basic knowledge about multithreading.
CO6: Comprehend different approaches for memory management.
CO7: Understand and identify potential threats to operating systems and the security features design to guard against them.
CO8: Specify objectives of modern operating systems and describe how operating systems have evolved over time.
CO9: Describe the functions of a contemporary operating system

Program	Semester	Course Code	Course Name
B.Sc(DAI)	V	CSC3513NLP	NATURAL LANGUAGE PROCESSING

CO1: Show sensitivity to linguistic phenomena and an ability to model them with formal grammars
CO2: Understand and carry out proper experimental methodology for training and evaluating empirical NLP systems
CO3: Able to manipulate probabilities, construct statistical models over strings and trees, and estimate parameters using supervised and unsupervised training methods.
CO4: Able to design, implement, and analyze NLP algorithms
CO5: Able to design different language modeling Techniques.

Program	Semester	Course Code	Course Name
B.Sc(DAI)	V	CSC3514NLP	Theoretical Machine Learning

CO1: Machine learning studies automatic methods for learning to make accurate predictions or useful decisions based on past observations.
CO2: This course introduces theoretical machine learning, including mathematical models of machine learning, and the design and rigorous analysis of learning algorithms.
CO3: Likely topics include: bounds on the number of random examples needed to learn;
CO4: learning from non-random examples in the on-line learning model;
CO5: how to boost the accuracy of a weak learning algorithm; support-vector machines; maximum-entropy modeling; portfolio selection; game theory

Program	Semester	Course Code	Course Name
B.Sc(DAI)	V	CSC3515DOC	Digital Computer Organization And Introdoction To Computer System Architecture

CO1: Students will learn about what the main physical components of a computer are, why 0 and 1 are such important numbers within computer.
CO2: Ability to understand the internal components and basic structure of computer.
CO3: To know the background of internal communication of the computer.
CO4: Demonstrate a comprehensive understanding of basic logic gates, data representation and Boolean algebra.
CO5: To comprehend how the circuits are designed to process ALU and Memory operations.
CO6: The ability to know about how physical internal and external components communicate through busy

DEPARTMENT OF BIG DATA ANALYTICS

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	**I**	**CS111PC**	**PROGRAMMING USING 'C'**

By successful completion of the course, students will be able to:
CO 1: Understand the evolution and functionality of a Digital Computer.
CO 2: Apply logical skills to analyse a given problem
CO 3: Develop an algorithm for solving a given problem.
CO 4: Understand 'C' language constructs like Iterative statements, Array processing, Pointers, etc.
CO 5: Apply 'C' language constructs to the algorithms to write a 'C' language program

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	I	CS111PC (P)	C PROGRAMMING LAB

On successful completion of this practical course, the student will be able to:
CO 1: Read, understand and trace the execution of programs written in C language.
CO 2: Write the C code for a given algorithm.
CO 3: Implement Programs with pointers and arrays, perform pointer arithmetic, and
CO 4: use the pre-processor.
CO 5: Write programs that perform operations using derived data types

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	I	CS112DBMS	DATABASE MANAGEMENT SYSTEM

On successful completion of the course, students will be able to;
CO 1: Understand the database approach and acquire knowledge in Database Management Systems.
CO 2: Demonstrate an understanding of the relational data model.
CO 3: Perceive the essential elements in constructing ER, EER models
CO 4: Intuit the procedure in mapping the ER to relational schema
CO 5: Epitomize an understanding of normalization theory and apply such knowledge to the normalization of a database
CO 6: Able to use an SQL interface to create tables and views, insert/update/delete data and query a database

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	I	CS112DBMS(P)	MySQL LAB

On successful completion of this practical course, the student will be able to:
CO1: Understand how to create and maintain database using SQL Commands
CO 2: Using DDL Commands (Create, Alter, Drop, Truncate and Rename)
CO 3: Using DML Commands (Select, Insert, Update and Delete)
CO 4: Working with SQL Queries using where clause and Operators in, between, like etc

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	II	CSC123DV	Data Visualization

On successful completion of this practical course, the student will be able to:
CO 1: Design and create data visualizations.
CO 2: Conduct exploratory data analysis using visualization.
CO 3: Craft visual presentations of data for effective communication.
CO 4: Use knowledge of perception and cognition to evaluate visualization design alternatives.
CO 5: Design and evaluate color palettes for visualization based on principles of perception

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	II	CSC124BDA	BIG DATA ANALYTICS

At the end of the course student will
CO 1: Learn tips and tricks for Big Data use cases and solutions.
CO 2: Learn to build and maintain reliable, scalable, distributed systems with Apache Hadoop.
CO 3: Able to apply Hadoop Ecosystem components

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	III	CSC235DWM	DATA WAREHOUSING & DATA MINING

On successful completion of the course, students will be able to:
CO 1: Understand Data Warehouse fundamentals, Data Mining Principles.
CO 2: Design appropriate classification techniques.
CO 3: Understand various tools of Data Mining and their techniques to solve the real time problems.
CO 4: Learn Multidimensional schemas suitable for data warehousing.
CO 5: Develop and apply critical thinking, problem solving, and decision making skills

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	III	CSC235DWM(P)	WEKA LAB

On successful completion of this practical course, the student will be able to:
CO 1: Identify source tables and populate sample data
CO 2: Build Data Warehouse
CO 3: Design multi-dimensional data models
CO 4: Work with DMLQ(Data Mining Query Language)
CO 5: Write ETL(Extract-Transform-Load.) scripts and implement using data warehouse tools

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	III	CSC236DST	DATA STORAGE TECHNOLOGIES AND NETWORKS

On successful completion of the course, students will be able to:
CO 1: Understand Data storage Technologies and Networks.
CO 2: Learn about different types of storage systems, storage networking technologies
CO 3: Learn concepts related to SAN, NAS and Cloud Storage.
CO 4: This course will also cover key concepts related to cloud computing, and some of the new Trends in the storage industry.
CO 5: To explain the design of a data centre and storage requirements
CO 6: To discuss the various types of storage and their properties
CO 7: Understand concepts related to storage Architecture

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	III	CS237JAVA	OBJECT ORIENTED PROGRAMMING USING JAVA

On successful completion of the course, students will be able to;
CO 1: Understand object oriented programming concepts to solve real world problems. CO 2: Write programs using Java collection API as well as the java standard class library CO 3: Understand underlying principles of Object-Oriented Programming in Java.
CO 4: Demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords.
CO 5: Use dynamic and static polymorphism to process objects depending on their class.
CO 6: Demonstrate the user defined exceptions by exception handling keywords (try, catch, throw, throws and finally).
CO 7: Use multithreading concepts to develop inter process communication.
CO 8: Describe the backend connectivity process in java program by using JDBC drivers

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	IV	CS24VIIIHDA	Hadoop & Data Analysis

At the end of the course student will
CO 1: Preparing for data summarization, query, and analysis.
CO 2: Applying data modelling techniques to large data sets
CO 3: Creating applications for Big Data analytics
CO 4: Building a complete business data analytic solution

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	IV	CS24IXPOS	Principles of Operating Systems

At the end of the course student will
CO 1: Know Computer system resources & the role of operating systems in resource management with algorithms CO2: Understand Operating System Architectural design and its services.
CO 3: Gain knowledge of various types of operating systems including Unix and Android.
CO 4: Understand various process management concepts including scheduling, synchronization, and deadlocks.
CO 5: Have a basic knowledge about multithreading.
CO 6: Comprehend different approaches for memory management.
CO 7: Understand and identify potential threats to operating systems and the security features design to guard
against them.
CO 8: Specify objectives of modern operating systems & describe how operating systems have evolved over time.
CO 9: Describe the functions of a contemporary operating system

Program	Semester	Course Code	Course Name
B.Sc., (CS with Big Data)	IV	CS2XDCO	DIGITAL COMPUTER ORGANIZATION AND INTROD. TO COMPUTER SYSTEM ARCHITECTURE

At the end of the course student will
CO 1: To make the students to understand different types of Digital logic circuits
CO 2 : To design procedures

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	V	CS35XIDS	DISTRIBUTED SYSTEMS

By successful completion of the course, students will be able to:
CO 1: To understand the architectures of distributed systems.
CO 2: To understand and compare the technologies associated with presentation and interaction services.
CO 3: To acquire the knowledge in component models of Session and Entity Beans.
CO 4: To provide the better understanding of ASP.NET programming with web server controls.
C O 5: To be familiar with rich web controls and data access technology in ADO.NET

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	V	CSC35X1DS(P)	DISTRIBUTEDSYSTEMS LAB

On successful completion of this practical course, the student will be able to:
CO 1: Define terms related to the Internet, demonstrate the ability to use the World Wide Web,
CO 2: Understand and use common types of files found on the internet.
CO 3: Design web pages
CO 4: Create basic Web pages with HTML and CSS

Program	Semester	Course Code	Course Name

B. Sc., Big Data Analytics	V	CSC3512	Cyber Security

By successful completion of the course, students will be able to: CO 1: Understand Basics of cyber security concepts
CO 2: Understand Different types of security attacks
CO 3: Study Roles of International law
CO 4: Get information about National cyber security policy ➢ Know what is a cyber crime
CO 5: How to provide security

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	V	CSC3513	ADVANCED JAVA

By successful completion of the course, students will be able to:
CO 1: To understand the meaning and basic components of servlets and JSP
CO 2: To know the required software to run PHP programs
CO 3: Understanding the use of servers

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	V	CSC3514	DATA STRUCTURES

On successful completion of this practical course, the student will be able to
CO 1: Understand available Data Structures for data storage and processing.
CO 2: Comprehend Data Structure and their real-time applications-Stack, Queue, Linked List, Trees and Graph
CO 3: Choose a suitable Data Structures for an application
CO 4: Develop ability to implement different Sorting and Search methods
CO 5: Have knowledge on Data Structures basic operations like insert, delete, search, update and traversal
CO 6: Design and develop programs using various data structures
CO 7: Implement the applications of algorithms for sorting, pattern matching etc

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	V	CS35XIVDS(P)	DATA STRUCTURES USING C

Upon successful completion of the course, a student will be able to:
CO 1: Students will be able to decompose the given project in various phases of a lifecycle.
CO 2: Ability to apply software engineering principles and techniques.
CO 3: Ability to develop, maintain and evaluate large-scale software systems.
CO 4: To produce efficient, reliable, robust and cost-effective software solutions.
CO 5: Students will be able to choose appropriate process model depending on the user
CO 6: To communicate and coordinate competently by listening, speaking, reading and writing English for technical and general purposes.
CO 7: Ability to work as an effective member or leader of software engineering teams.
CO 8: To manage time, processes and resources effectively by prioritizing competing demands to achieve personal and team goals Identify and analyze the common threats in each domain.
CO 9: Students will be able perform various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance.

Program	Semester	Course Code	Course Name
B. Sc., Big Data Analytics	I	FOU111ICT	INFORMATION COMMUNICATION TECHNOLOGY (ICT)

On successful completion of this practical course, the student will be able to;
CO 1: Discovering the milestones of ICT history;
CO 2: Acknowledging the role of technologies in modern society and the potential of social web
CO 3: Identifying IT uses in digital citizenship contexts.
CO 4: Briefly exploring different tools and communication environments on the Internet;
CO 5:Choosing the appropriate IT tool for the relevant context

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	I	AECO 141	Fundamentals of Agriculture economics

At the end of the course student will
CO1: Identify elements of business success in agriculture and food-processing as well as elements that determine the economic role of agriculture in the national economy.
CO2: Propose methods of micro- and macroeconomic decision making in agriculture in different agro- ecological and Agro-economic circumstances.
CO3: Describe and explain models of production, supply and demand of agricultural and food products on national and international markets
CO4: Understand the concepts of consumer choice and how it affect the farm / ranch level agriculture firm.
CO5: Understand the macroeconomics aspects of the economy as they affect the agricultural sector.
CO6: Apply economics principles to understand the conduct and performance of the agricultural industry.

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	I	AEXT 191	Rural sociology, educational psychology and human values

At the end of the course student will
CO 1: Understand concept of rural sociology, its importance in agricultural extension, characteristics of Indian rural society.
CO 2: Understand social groups, social stratification, culture, social values, social control and attitudes, leadership and training.
CO 3: Understand concept of educational psychology, intelligence, personality, perceptions, emotions, frustration, motivation, teaching and learning
CO 4: Acquaint with characteristics of rural society, village institutions and social organizations. Select lay leaders and train them.

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	I	AGRO101	Fundamentals of Agronomy

At the end of the course student will
CO 1: Understand the Crop production techniques and crop growth in relation to environment
CO 2: Understand the Zero and minimum tillage: their basics and application
CO 3: Learn Precision agriculture and Precision farming, their concepts and application
CO 4: Understand the Biotic and abiotic stresses; concept of ideal plant type
CO 5: Learn Types of tillage and types sowing methods
CO 6: Basics and application crop production under protective agriculture
CO 7: Learn Irrigation methods
CO 8: Understand the Herbicides, bio-herbicides- their classification and biological control of weeds
CO 9: Learn control of weed in non-cropped situations using different methods

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	I	HORT181	Fundamentals of Horticulture
At the end of the course student will CO 1: Students will be able to identify plant vegetative structure CO 2: Students will understand basic principles, processes and plant propagation methods. CO 3: Students will understand how to propagate plants, manage and harvest a variety of plant. CO 4: Students will understand how to propagate plant, manage and harvest a variety of plant. CO 5: Students will understand recognize various crop harvesting, transportation, and processing CO 6: Students will Understand the Kitchen gardening, Lawn making CO 7: Understand transplantation Medicinal, Aromatic plants Spices and Condiments CO 8: Learn Irrigation and fertilizer application techniques for horticulture crops			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Agriculture and rural development	I	BICM101	Fundamentals of Plant Biochemistry and Soil Science
At the end of the course student will CO 1: Understanding of Biochemistry as a discipline and milestone discoveries in life sciences that led to establishment of Biochemistry as a separate discipline. CO 2: Fundamental properties of elements, their role in formation of biomolecules and in chemical reactions within living organisms. CO 3: Understand plant cell structure, organization, and apply specific biochemical functions to all compartments of the plant cell. CO 4: Learn amino acid structures and relate their chemical properties to the synthesis and function of proteins and enzymes. CO 5: Understand protein structural hierarchy and relate structure to function. CO 6: understand central metabolism, its plant-specific components, and their functional significance at multiple levels and explore principles of metabolic modeling. CO 7: To aware the students about causes, effects and remedies to prevention and mitigation of soil pollution. CO 8: Knowledge about soil forming rocks and minerals, their weathering and soil forming processes and climatic factors affect them CO 9: To be able about physical and chemical properties of soil and their effect on plant's health			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Agriculture and rural development	I	CC111 MSP	Minimum supporting Price for Agriculture Crops In AP
CO 1: Understanding of MSP in Agricultural Crops CO 2: Understanding of MSP in Horticultural Crops CO 3: Understanding of MSP in Indian Economy CO 4: Understanding of MSP in AP Economy			
Program	**Semester**	**Course code**	**Course Name**
B. Sc., Agriculture and rural development	II	AGRO103	Introductory Agrometeorology And Climate Change

CO 1: Earth atmosphere, composition, extent and structure; Atmospheric weather variables; Atmospheric pressure, its variation with height
CO 2: Nature and properties of solar radiation, solar constant, depletion of solar radiation, short wave, long wave and thermal radiation, net radiation.
CO 3: Atmospheric humidity, concept of saturation, vapor pressure, process of condensation, formation of dew, fog, mist, frost, clouds
CO 4: Artificial rainmaking; Monsoon, mechanism and importance in Indian agriculture.
CO 5: Weather forecasting, types of weather forecast and their uses.
CO 6: Climate change, climatic variability, global warming, causes of climate change
CO 7: Atmospheric temperature, temperature inversion
CO 8: Precipitation, process of precipitation

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	II	PATH171	Fundamentals Of Plant Pathology

CO 1: Importance of plant diseases, scope and objectives of Plant Pathology.
CO 2: Diseases and symptoms due to abiotic causes. Fungi: General characters, definition of fungus, somatic structures.
CO 3: Nomenclature, Binomial system of nomenclature, rules of nomenclature.
CO 4: Basic methods of classification and reproduction.
CO 5: Nematodes: General morphology and reproduction
CO 6: classification, symptoms and nature of damage caused by plant nematodes (Heterodera, Meloidogyne, Anguina etc.)
CO 7: viruses: nature, architecture, multiplication and transmission. Study of phanerogamic plant parasites

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	II	ENTO131	Fundamentals Of Entomology

CO 1: History of Entomology in India
CO 2: Structure and modifications of insect antennae, mouth parts, legs, wing venation, modifications and wing coupling apparatus.
CO 3: Types of reproduction in insects
CO 4: Insect Taxonomy
CO 5: Classification of class Insecta Upto orders.
CO 6: Relationship of class Insecta with other classes of Arthropoda.

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	II	GPBR111	Genetics & Plant Breeding

CO 1: Pre Mendelian concepts of heredity
CO 2: Chromosome - Structure of chromosome, types of chromosomes
CO 3: Linkage
CO 4: Sex determination in plants
CO 5: Cell division , Cell cycle , Mitosis
CO 6: Mutation - Classification - Gene mutations

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	II	AENG151	Soil And Water Conservation Engineering

CO 1: Pre Mendelian concepts of heredity
CO 2: Chromosome - Structure of chromosome, types of chromosomes
CO 3: Linkage
CO 4: Sex determination in plants
CO 5: Cell division , Cell cycle , Mitosis
CO 6: Mutation - Classification - Gene mutations

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	II	SDC121SBP	Seed Bed Preparation

CO 1: Introduction to seed bed
CO 2: preparation of beds
CO 3: Design criteria and constructional details of seed bed
CO 4: Uses of seed bed

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	II	CC121 ZBNF	Zero Budget Natural Farming

CO 1: For the capacity building of resources persons and farmer experts
CO 2: On farm farmer trainings
CO 3: Organic certification
CO 4: ZBNF input shops

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	III	**AGRO 201**	**Crop Production Technology – I (Cereals, Millets and Pulses)**

CO 1: Importance of plant diseases, scope and objectives of Plant Pathology.
CO 2: Diseases and symptoms due to abiotic causes. Fungi: General characters, definition of fungus, somatic structures.
CO 3: Nomenclature, Binomial system of nomenclature, rules of nomenclature.
CO 4: Basic methods of classification and reproduction.
CO 5: Nematodes: General morphology and reproduction
CO 6: classification, symptoms and nature of damage caused by plant nematodes (Heterodera, Meloidogyne, Anguina etc.)
CO 7: viruses: nature, architecture, multiplication and transmission. Study of phanerogamic plant parasites

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	III	AGRO 202	CROP PRODUCTION TECHNOLOGY–II (OIL SEEDS, FIBER, SUGAR, TOBACCO AND FODDER CROPS

CO1: Importance of oilseed crops- edible and non – edible oils – nutritional value importance in Indian economy
CO2: Soil and climatic requirements - types - growth stages - land Preparation -seeds and sowing- seed treatment-seed rate-spacing-season-time and method of sowing varieties
CO3: Nutrient management- water management- weed management yield attributes – yield- Harvesting – post harvest operations- quality considerations – cropping systems
CO4: Nursery management-seeds and sowing for different types- seed treatment-seed rate-spacing-season-time and method of sowing
CO5: Ratoon cane management – factors affecting quality of sugarcane – arrowing– jaggery making – clarification
CO6: Origin - geographical distribution and productivity in India and Andhra Pradesh of ground nut, soyabean, sunflower, sesame, safflower, castor, Rapeseed and mustard.
CO7: Forage crops- Importance- terminology in forage production-classification of fodders

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	III	AENG-351	Protected cultivation and post harvest technologies

CO1: Understanding the concepts in greenhouse technology.
CO2: Acquaintance with the types of greenhouses.
CO3: Acquaintance with different materials for construction of greenhouses.
CO4: Understanding the concepts of Irrigation systems used in greenhouses.
CO5: Understanding the concepts of drying of agriculture produced in greenhouses.
CO6: Understanding the handling equipment that used in greenhouses

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	V	AGR303	RAINFED AGRICULTURE AND WATERSHED MANAGEMENT

CO1: Definition – dimensions of the problem – area and production from dry lands in India and Andhra Pradesh
CO2: Problems and prospects of rainfed agriculture in India- climate – rainfall pattern – distribution
CO3: Problems and prospects of rainfed agriculture in India - soil characteristics – soil fertility status
CO4: Effect of water deficits on physio-morphological characteristics of the plants
CO5: Tillage for rainfed crops – off-season tillage – primary tillage –secondary tillage – year round tillage
CO6: Soil erosion – definition – losses due to erosion- factors affecting erosion – universal soil loss equation.
CO7: Management of crops in rainfed areas - Agronomic measures of soil and water conservation.
CO8- Watershed – definition – concept— objectives and principles of water shed management

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	V	**SMCA301**	**AGRICULTURE INFORMATICS**

CO1: Explain Windows explorer- Creating folder - Copy and paste functions - Control panel Notepad -WordPad etc.
CO2: Summarize MS word - Creating a document, saving and editing
CO3: Discuss Use of options from tool bars – Format - Insert and tools (Spelling and Grammar) - Alignment of paragraphs and text.
CO4: Explain to Creating a table - Merging of cells - columns and row width - Formats etc.

Program	Semester	Course code	Course Name

B. Sc., Agriculture and rural development	V	**GPBR312**	Crop improvement- II (Fibres, Sugars, Starches, Narcotics

CO1: Idea on Centers of origin, distribution of species, wild relatives
CO2: Knowledge on Plant genetic resources, its utilization and conservation.
CO3: Clear idea on plant morphology and floral biology of the crops under study.
CO4. Knowledge on major breeding objectives and procedures including conventional and modern innovative approaches for development of hybrids and varieties for yield and adaptability.
CO5. To know emasculation and hybridization techniques in different crop species; fibers, sugars, starches, narcotics, vegetables, fruits and flowers

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	V	**ENTO 332**	**PESTS OF HORTICULTURAL CROPS AND THEIR MANAGEMENT & BENEFICIAL INSECTS**

CO1: General account on nature and type of damage by pest of various various vegetable crops, fruit crops, plantation crops, ornamental crops, narcotics, spices and condiments.
CO2: Study of Bhendi- Shoot and fruit borer
CO3: insect pest of Mango- Leafhoppers, stem borer, nut weevil
CO4: insect pest of Crucifers- Diamond back moth, cabbage head borer, leaf webber, aphid, painted bug, tobacco caterpillar and cabbage butterfly.
CO5: Silk worm diseases- Pebrine- Symptoms, mode of transmission.
CO6: Beekeeping- Importance and multiple source of income
CO7: Insect orders bearing predators and parasitoids used in pest control and their key identification characters

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	V	**AECO341**	**FARM MANAGEMENT AND PRODUCTION RESOURCE ECONONMICS**

CO1: Definitions and Concepts Farm management and production Economics
CO2: To understand the Determination of optimum input and optimum output and decision rules.
CO3: To understand the types of production Function
CO4: To understand the Meaning and concept of cost, cost function /cost-output relationship - Types of production costs and their interrelationship - Importance of costs in managing farm business
CO5: Farm inventory - Meaning and importance of taking inventory on farm business - Different methods of appraisal and valuation of farm resources and products
CO6: Computation of depreciation cost of farm assets
CO7: Types of farming and types of Farm business Organization

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	V	**PATH-372**	**DISEASES OF FIELD AND HORTICULTURAL CROPS AND THEIR MANAGEMENT-II**

CO1: Etiology, symptoms, host-parasite relationship and specific management practices of diseases in fruit crops.
CO2: Etiology, symptoms, host-parasite relationship and specific management practices of diseases in vegetable crops.
CO3: Etiology, symptoms, host-parasite relationship and specific management practices of diseases in flower crops.

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	V	**HORT 381**	**POST-HARVEST MANAGEMENT AND VALUE ADDITION OF FRUITS AND VEGETABLES**

CO1: Idea on fruits and vegetables that needs post harvest management
CO2: Clear idea on causes for post harvest loses
CO3: Knowledge on different preservation methods to avoid post harvest loses.
CO4. Idea on packaging methods to avoid post harvest loses

Program	Semester	Course code	Course Name
B. Sc., Agriculture and rural development	V	**AEXT 391**	**COMMUNICATION SKILLS AND PERSONALITY DEVELOPMENT**

CO1: Improvement in communication and grammar
CO2: Improved writing skill which is required for teaching and research purpose.
CO3: Holistic personality development
CO4: Coordinated functioning and time management

DEPARTMENT OF BUSINESS ADMINISTRATION-RETAIL OPERATIONS

Program	Semester	Course code	Course Name
BBA., RETAIL OPERATIONS	I	BBA111IRO	INTRODUCTION TO RETAIL OPERATIONS

CO1: The learners will be able to comprehend the process, procedures of Retail Sector.
CO2: The learners will be able to relate the systems & protocols of retail stores operations.
CO3: The learners will be able to deconstruct the procedures of retail store practices

Program	Semester	Course code	Course Name
BBA., RETAIL OPERATIONS	I	**BBA111IC**	**IN STORE CASHIERING AND MERCHANDISING OPERATIONS**

CO1: The Learners will be able to demonstrate prompt practices at retail stores.
CO2: The learners will be able to assimilate the knowledge into practice of maintaining inventory, warehousing, etc
CO3: The Learners will be able to demonstrate practical knowledge associated with Visual Merchandising

Program	Semester	Course code	Course Name
BBA., RETAIL OPERATIONS	I	**BBA111BCS**	**BUSINESS COMMUNICATION SKILL**

CO1: The learner will be able to apply communication skills with proficiency.
CO2: The learners will be well equipping with effective communication skills within professional skill.
CO3: The learners will be able to understand various nuances of communication to a greater extent

Program	Semester	Course code	Course Name
BBA., RETAIL OPERATIONS	II	**BBA121BBM**	**BASICS OF BUSINESS MANAGEMENT**
CO1: The learners will be able to comprehend know how of the business environment. CO2: The learners will be able to operate the framework for effective retailing. CO3: The learners will be able to predict various sales & marketing strategy for retail			
Program	**Semester**	**Course code**	**Course Name**
BBA., RETAIL OPERATIONS	II	**BBA121IC**	**IN STORECASHIERING&MERCHANDISINGOPERATIONS**
CO1: The learners will be able to understand the basics of POS. **CO2**: The learners will be able to distinguish the mechanism of defining products in a retail store. **CO3**: The learners will be able to analyze & interpret various activities linked to sales management			
Program	**Semester**	**Course code**	**Course Name**
BBA., RETAIL OPERATIONS	II	**BBA121BE**	**BUSINESS ECONOMICS**
CO1: The learners will be able to understand the role of managerial economist in a firm. **CO2**: The learners will be able to apply the knowledge of costing in decision making. **CO3**: The learners will be able to identify and analyse market practices and process in real life			
Program	**Semester**	**Course code**	**Course Name**
BBA., RETAIL OPERATIONS	II	**BBA121AP**	**RETAILASSOCIATECUM CASHIER**
The learners will be able to perform retail cashiers &; retail trainee associate role within the organization			
Program	**Semester**	**Course code**	**Course Name**
BBA., RETAIL OPERATIONS	III	**BBA231CRM**	**CUSTOMER RELATIONSHIP MANAGEMENT**
CO1: The equip learners with the foundational knowledge of CRM **CO2**: The learners will be able to identify the importance of customer value management **CO3**: The learners will be able to know the best practices for long term profitability			
Program	**Semester**	**Course code**	**Course Name**
BBA., RETAIL OPERATIONS	III	**BBA231ECS**	**ERP & COMPUTER SKILLS**
CO1: The learners will be able to identify the impact of using ERP CO2: The learners will be able to know the working knowledge of how data is integrated in ER			
Program	**Semester**	**Course code**	**Course Name**
BBA., RETAIL OPERATIONS	III	**BBA231SM**	**SALES MANAGEMENT**
CO1: The learners will be able to understand the process of sales management CO2: The learners will be able to identify the role and responsibilities of the sales manager CO3: The learners will be able to know the concept of sales force and its responsibilities			
Program	**Semester**	**Course code**	**Course Name**
BBA., RETAIL OPERATIONS	III	**BBA231CRM**	**CUSTOMER REDRESSAL MECHANISM**

CO1: Learners able to know the key concepts in grievance redress mechanisms
CO2: The learner will be able to investigate the key personal skills required and main roles and responsibilities of the grievance redress committee.
CO3: Learner will be able to know what are the key elements of effective complaint handling and the steps undertaken in handling complaints

Program	Semester	Course code	Course Name
BBA., RETAIL OPERATIONS	IV	**BBA241FCA**	**FUNDAMENTALS OF FINANCIAL & COST ACCOUNTING**

CO1: The student will be able to understand the importance of management accounting as a key input for managerial/ financial decision making.
The students will be able to take financial decisions using tools of management accounting.
CO2: Students will be able to apply the Basic knowledge of Management and cost accounting in the real-life situation
CO3: This subject will enable them to enhance their ability and professional skills

Program	Semester	Course code	Course Name
BBA., RETAIL OPERATIONS	IV	**BBA241FMD**	**FMCG DISTRIBUTION**

CO1: To know the roles & responsibilities of FMCG Distribution professionals
CO2: Helps to understand the distribution management process

Program	Semester	Course code	Course Name
BBA., RETAIL OPERATIONS	IV	**BBA241NSR**	**NON-STORE RETAILING**

CO1: To develop knowledge of contemporary E- retail management issues at the strategic level.
CO2: To describe and analyse the way E-retailing works, specifically the key activities and relationships.
CO3: To provide an academic underpinning to the above through the application of E retailing theory and research

DEPARTMENT OF ORIENTAL LANGUAGES

Program	Semester	Course code	Course Name
B.A	II	SDC 121 PA	Performing Arts

CO 1: Acquire the basic knowledge in Performing Arts
CO 2: Understand the modern stage and performance on the stage
CO 3: Comprehend and improve the skills related to performing arts on the stage
CO 4: Understand various Telugu folk arts and their significance
CO 5: Know the modes of presentation and skills pertaining to folk arts.

DEPARTMENT OF ZOOLOGY

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (BZC)	I	ZOOADBNC111	Animal Diversity-Biology of Non Chordates

CO 1: Describe general taxonomic rules on animal classification
CO 2: Knowledge about important life processes and unique systems of non chordates.
CO 3: Describing the parasitic adaptations and pathogenecity in Helminthes, Vermicompost in annelida
CO 4: Describe higher invertebrate phyla using examples and importance of insects and Molluscans
CO 5: Describe Echinodermata to Hemichordata with suitable examples and larval stages in relation to the phylogen

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME

B.Sc (BZC)	II	**ZOOADBC122(T)**	Animal Diversity- Biology of Chordates
CO 1:Describe salient features of Protochordates and unique mode of metamorphosis in Herdmania. CO 2:Describe the general characters of Cyclostomes and . CO 3:Aquantained with the knowledge of important general accounts like migration in fishes and aves, parental care in amphibia, flight adaptations in aves and dentition in mammals. CO 4:Understand the significance of dentition and evolutionary significance CO 5:Understand the evolution of important organ systems in different classes of chordates			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (BZC)	III	**ZOOCGME233(T)**	Cell Biology, Genetics, Molecular Biology and Evolution
CO 1: Describe structure and functions of cell and cell organelles and to differentiate the organisms by their cell structure. CO 2: Understand what life is and how it functions at cellular level. CO 3:Have knowledge of history of origin of genetics, heredity, interaction of genes, inheritance patterns existing. CO 4: be aquaintained with various aspects of genetics involved in sex determination, human karyotyping and chromosomal aberrations CO 5: gain knowledge about the central dogma of molecular biology and flow of genetic information from DNA to proteins. CO 6: Understand the principles, forces and process of evolution of life and new species on the planet earth			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (BZC)	IV	**ZOOPME244**	Animal Physiology, Cellular Metabolism and Embryology
CO 1: Describe the functions of important animal physiological systems including digestion, cardio-respiratory and renal systems. **CO 2:** Understand the muscle contraction and nerve impulse transmission in vertebrates and knowledge of various hormones and their affects. **CO 3:** Describe the structure, classification and chemistry of biomolecules and enzymes responsible for sustenance of life in living organisms **CO 4:** Understand the basic metabolic activities in animals related to the catabolism and anabolism of various biomolecules **CO 5:** Understands various in early embryonic development of vertebrates from gametogenesis to gastrulation and formation of primary germ layers			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (BZC)	V	**ZOO**	**Immunology and Animal Biotechnology**
1: Have knowledge of the organs of Immune system, types of immunity,cells and organs of immunity. **2:** Describe immunological response as to how it is triggered (antigens) and regulated (antibodies) **3:** Understand the applications of Biotechnology in the fields of industry and agriculture including animal cell/tissue culture, stem cell technology and genetic engineering. **CO 4:** Get familiarity with the tools and techniques of animal biotechnology			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (BZC)	VI B	**ZOOLSMBDA356B(T)**	Live Stock Management-I (Biology of diary animals)

CO 1: Students at the successful completion of the course will be able to **CO** 2: Select the suitable breeds of livestock for rearing **CO** 3: Relate the anatomy of udder with let down of milk **CO** 4: Identify and manipulate the reproductive behavior of cattle **CO** 5: Inspect the economics of dairy farming			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (BZC)	VII B	**ZOOLSMDPM357B(T)**	Live Stock Management-II (Dairy Production And Management)
CO 1: Identify and suggest the suitable housing system for the dairy farming **CO 2:** Understand management practices for the dairy farming **CO 3:** Learn the process of milk pasteurization • Prepare cream from milk **CO 4:** Apprise the various breeding techniques employed in livestock			
DEPARTMENT OF FOOD TECHNOLOGY			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (Food Technology)	I	FTE111FC	Food Chemistry
CO 1 – To know about various biochemical components of foods and their properties and application in food processing **CO 2** To study about Classification structure and functions of Carbohydrates **CO-3 To** know about the importance of Biochemistry of proteins, amino acids and Enzymes **CO- 4**To know about the importance and application of enzymes in Food processing **CO- 5-** To study about classification, structure and functions of important fatty acids			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (Food Technology)	II	FTE121FBN	**Food Biochemistry and Nutrition**
CO 1 – To know about the emulsions, gels and foams and their application in food processing **CO 2** To Study the Importance of carbohydrate metabolism. **CO-3** To know about Fats and their Metabolism biologically important fatty acids **CO-4** To know about the Fundamental prosperities of water classification of vitamins and minerals			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (Food Technology)	II	FTE122IPE	Industrial processing equipment
CO 1 – Students will be able to acquire the knowledge about different terms and measurements used in a food industry and the other operations involved in processing. **CO 2** – The students will acquire knowledge about the different drying techniques involved and extraction procedures involved during processing of different foods. **CO-3-** The students will be able to acquire the knowledge about filtration techniques involved in the processing industry and their limitations **CO- 4-** The students will be able to acquire the knowledge about working of equipment and how to maintain the equipment hygiene and sanitizing. **CO- 5-** The students will be able to acquire the knowledge about refrigeration procedures involved in a food industry			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (Food Technology)	II	FTE123FAT	Food Additives and Toxicology

CO-1 - Students will be able to acquire the knowledge about substances added to food to maintain or improve its safety
CO-2 - Students will be able to acquire the knowledge about food additives need to be checked for potential harmful effects on human health before they can be used.
C0- 3 - Students will be able to acquire the knowledge about assessing the presence of toxic compounds in food and their relation to adverse effects.
CO-4 - Students will be able to acquire the knowledge about harmful actions of chemical substances, to study their mechanisms of action.
CO- 5- Students will be able to acquire the knowledge about the harmful toxicants which are naturally added and artificially added in different foods

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (Food Technology)	III	FTE234PHT	Post Harvest Technology of field crops

CO-1 Knowledge about food spoilage agents and prevention
CO-2 Understand the safety control measures in handling foods from harvest to consumption agencies of control.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (BZC)	III	FTE235TP	Technology of milk and milk products

CO-1 To know the need for and importance of dairy industry
CO-2 To know the compositional and technological aspects of milk and Processed milk products
CO-3 To develop young entrepreneurs for self-employment through dairy technology and associated activities
CO-4 to know the utilization of by-products of dairy industry

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (Food Technolgy)	IV	FTE245TF	Technology of oils and fats

CO-1- Students will be able to acquire the knowledge about oils, fats, and their derivatives as fundamental ingredients of many food products.
CO- 2- To provide students with the knowledge necessary for a conscious use of oils and fats in food formulations
CO-3 - Students will be able to acquire the knowledge about optimization of production processes of the foods containing fats and oils.
CO- 4- Students will be able to acquire the knowledge about the best oils and fats for food formulations, taking into account their chemical and physical characteristics, technological properties.
CO- 5 – Students will be able to acquire the knowledge about the byproducts that are derived from the oil refining.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (Food Technology)	IV	FTE246TC	Technology of Confectionery

CO-1- Students will be able to acquire the knowledge about the role of ingredients in confectionaries.
CO-2- Students will be able to acquire the knowledge about the sugar processing and treatment.
CO-3 -Students will be able to acquire the knowledge about the technology involved in chocolate preparation.
CO-4 - Students will be able to acquire the knowledge about the technology involved in confectionary and miscellaneous production.
CO-5 - Students will be able to acquire the knowledge about the manufacturing of miscellaneous products

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME

B.Sc (Food Technology)	V	SKILL DEVELOPMENT COURSE	Technology of Meat, Fish, poultry and its products
CO I- students will be able to acquire the knowledge about the structure and nutritive value of the met. **CO-2 –** students will be able to acquire the knowledge about slaughtering techniques of poultry and meat. **CO-3** – Students will be Able to acquire the knowledge about the processing of meat **CO-4-** Students will be able to acquire the knowledge about different processing techniques of poultry and fish			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (Food Technolgy)	IV	FTE245TF	Technology of oils and fats
CO I- students will be able to acquire the knowledge about the structure and nutritive value of the met. **CO-2 –** students will be able to acquire the knowledge about slaughtering techniques of poultry and meat. **CO-3** – Students will be Able to acquire the knowledge about the processing of meat **CO-4-** Students will be able to acquire the knowledge about different processing techniques of poultry and fish			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (Food Technology)	IV	FTE246TC	Technology of Confectionery
CO-1- Students will be able to acquire the knowledge about the role of ingredients in confectionaries. **CO-2-** Students will be able to acquire the knowledge about the sugar processing and treatment. **CO-3** -Students will be able to acquire the knowledge about the technology involved in chocolate preparation. **CO-4** - Students will be able to acquire the knowledge about the technology involved in confectionary and miscellaneous production. **CO-5** - Students will be able to acquire the knowledge about the manufacturing of miscellaneous products.			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (Food Technology)	V	FTE358BST	Baking science and Technology
CO-1 To understand the science and technology of baking **CO-2** To the role of different ingredients in baking **CO-3** To develop skills in planning and maintenance of a baking institution **CO-4** To gain knowledge about the bread, formulation & ingredients **CO-5** To learn the preparation of frozen dough products & application of starches in bakery			
DEPARTMENT OF BIOTECHNOLOGY			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.Sc (Biotechnology)	I	**BTY111CBG**	Cell Biology and Genetics

CO 1: Students will be able to acquire, articulate, retain, and apply knowledge relevant to cell and various cell organelles.
CO 2: The students will gain thorough knowledge about the structure of gene, chromosome organization, and gene transfer methods.
CO 3: The students will be able to know the basic and classical genetics concepts, thereby enhancing their knowledge about how genes segregate and patterns followed by them during inheritance.
CO 4: This teaches about various phases in the cell cycle and division. It also gives insights into how chromosome number varies in each phase and by the end of the cell division.
CO 5: Students shall be equipped with basic knowledge of microbiology, sterilization techniques regularly followed in the laboratory.
CO 6: Learn skills applicable to research or clinical methods, including accurately reporting observation and analysis.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (Biotechnology)	II	**BTY122PMB**	Bio Analytical Techniques

CO 1: The course delves into the principles and working methods of various centrifuges, empowering students to acquire the knowledge necessary for the effective separation of diverse biological samples.
CO 2: This unit's primary strength lies in imparting knowledge on the fundamental principles of instrumentation and the applications of chromatography for evaluating and measuring biological systems.
CO 3: Detailed discussions on electrophoretic techniques, which have revolutionized the fields of medicine, genetics, and drug delivery strategies, are a key focus of this course.
CO 4: The course elucidates the applications of radioactivity in evaluating various biological systems and covers the principles and laws of spectroscopy.
CO 5: Students gain basic knowledge of widely used terminology in Biostatistics, along with an understanding of common research tools, including their scope, advantages, and disadvantages.
CO 6: The course emphasizes skill and application-based research or clinical methods, including the accurate reporting of observations and the thorough analysis of results.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (Biotechnology)	III	**BTY233MOB**	Molecular Biology

CO 1: Students will be able to acquire and articulate knowledge relevant to genome structure, and they will study the evidences regarding DNA proving as genetic material.
CO 2: The students will gain thorough knowledge about the enzymes involved in DNA replication and its mechanism.
CO 3: The students will be able to know the role of enzymes involved in Transcription process, general characteristics, and its mechanism.
CO 4: Acquire the features and properties of genetic code and how the translation process begins.
CO 5: Understand the concepts needed to explain gene regulation and expression. With this explanation, they will gain knowledge regarding the operon concepts.
CO 6: Learn molecular biology skills applicable to molecular biology research or clinical methods, including accurately reporting observation and analysis

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (Biotechnology)	IV	BTY234IMT	Immuno Technology

CO 1: Understanding the overview of the immune system and how it acts in the body.
CO 2: Understanding the concepts and structure, types, and functions of antigens and antibodies. Factors affecting these structures will also be learned.
CO 3: The student will be able to gain knowledge of all the mechanisms involved in antigen-antibody interactions.
CO 4: To make them understand the MHC concept, reactions, and antigen presentation concept, immune responses to infectious organisms and tumors, allergies, and immunodeficiencies.
CO 5: To make them communicate efficiently all the basic concepts regarding immunological responses, mechanisms of this response, its regulation, and the genetic basis.
CO 6: The techniques involved in diagnosis, treatment, and their applications are taught

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (Biotechnology)	IV	**BTY245rDT**	rDNA technology

CO 1: This course aims to facilitate students in acquiring knowledge about various types of enzymes involved in genetic engineering and their applications in recombinant technology.
CO 2: Students will develop a thorough understanding of various cloning vehicles, their unique features, and the necessity for additional gene elements in them. The course covers topics such as genomic library construction, maintenance, and a discussion of their advantages and disadvantages.
CO 3: The focus of this course is on Polymerase Chain Reaction (PCR), including its main principles, amplification strategies, and applications, with a special emphasis on its relevance during situations like the COVID-19 pandemic. Additionally, the course explores the application of PCR in sequencing amplified products and gene transfer techniques for permanent use.
CO 4: Students will gain extensive knowledge of various gene transfer mechanisms based on different cell sources, along with a comprehensive understanding of their unique mechanisms, advantages, and disadvantages.
CO 5: The course delves into advanced application techniques such as Restriction Fragment Length Polymorphism (RFLP), Random Amplified Polymorphic DNA (RAPD), and various other important applications of recombinant DNA technology.
CO 6: Emphasis is placed on skill-based applications in research or clinical methods, ensuring students are equipped for accurate analysis and reporting of study observations

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (Biotechnology)	VI	**BTY366PABT**	Plant & Animal Biotechnology

CO 1: The course is designed to impart fundamental knowledge to students in plant biotechnology, including proficiency in sterile techniques, media preparation, and plant tissue culture techniques.
CO 2: Students will gain knowledge in micropropagation, understanding various steps involved, production of haploid plants, and exploring their applications. The curriculum covers plant regeneration, methods of organogenesis, cryopreservation, and secondary metabolites.
CO 3: This section focuses on various types of animal cell culture media, emphasizing the importance of serum, and delves into the physicochemical properties of media. Key concepts include the establishment and maintenance of cell lines, along with an exploration of commonly used cell lines.
CO 4: The unit emphasizes gene therapy applications and explores various animal models used in biological research. Gene recombination methods involved in the production of insulin and somatostatin are taught.
CO 5: The course places a spotlight on Intellectual Property Rights (IPR) and patents, addressing the right of protection for inventions.
CO 6: Students will acquire proficiency in handling basic aseptic techniques essential in the fields of plant and animal biotechnology

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.Sc (Biotechnology)	VI	**BTY367EIBT**	Environmental And Industrial Biotechnology
CO 1: Acquiring and articulating knowledge relevant to various types of pollution, key compounds causing pollution, their measurement techniques, and control measures using biotechnological processes. CO 2: Gaining knowledge on various bio processes in the degradation and remediation of pollutants, wastes, and understanding the role of biotechnology in these processes. CO 3: Emphasizing concepts of biofuels, their importance in addressing current challenges, the significance of biogas, and the concepts of phytoremediation. CO 4: Understanding the basic design of a bioreactor, knowledge on downstream processing, and discussing various processes involved. Highlighting the industrial production of vaccines and insulin based on current technological developments. CO 5: Recognizing the need for bioinformatics and its applications. Developing knowledge in searching for DNA/protein sequences, retrieving them, and aligning them for better analysis. CO 6: Exploring various measurement techniques of pollutants, including dry lab techniques such as searching, retrieving, and aligning them.			
DEPARTMENT OF PUBLIC POLICY			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.A. Public policy	I	NBAPPA 104	Introduction to public Policy
CO 1: Understand the meaning, scope, need, and importance of public policy, demonstrating a comprehensive knowledge of the fundamental concepts in the field. CO 2: Evaluate the contributions and perspectives of prominent scholars in the field of policy sciences, such as David Easton, Harold Lasswell, and Yehezkel Dror, and critically analyze their theories to comprehend the evolution of policy science over time. CO 3: Analyze the distinct roles played by the legislature, executive, bureaucracy, and judiciary in policy formulation, implementation, and evaluation processes within the Indian context. CO 4: Develop the ability to critically evaluate public policies, considering their effectiveness, efficiency, and impact on society, and apply appropriate evaluation methods. CO 5: Apply theoretical knowledge and analytical skills to real-world policy issues, demonstrating the ability to formulate, implement, and evaluate policies in diverse contexts. CO 6: Understand the significance of political parties in shaping public policy and analyze their impact on the decision-making process. CO 7: Understand the fundamental concepts and theories related to public policy, including the various models and approaches used in policy analysis. CO 8: Analyze the impact of industrial policy on administrative structures in India, evaluating its implications on economic growth, employment generation, and administrative efficiency.			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
B.A. Public policy	II	INBAPPA204	Public policy–organs of state

CO 1: Understand Indian Parliament's structure, including Lok Sabha, Rajya Sabha, Budget, and Parliamentary Committees, enhancing knowledge of legislative processes.
CO 2: Gain insights into the Indian Judiciary system, including court hierarchy, Supreme Court jurisdiction, and landmark judgments, and analyze differences between Union and State Judiciary, along with the Uniform Civil Code concept.
CO 3: Acquire knowledge about State Government, roles of Governor, Chief Minister, legislative bodies like Vidhan Sabha, Vidhan Parishad, legislative procedures, and administration of Scheduled Areas, enhancing understanding of state-level governance.
CO 4: Explore Local Self-Government history, focusing on Panchayati Raj, 73rd Amendment Act, PESA Act, and rights of Scheduled Tribes. Analyze Urban Local Government, 74th Amendment Act, and cooperatives, understanding grassroots democracy and community participation.
CO 5: Compare Union, State, and Local Governments, analyzing their powers, functions, and interrelationships. Develop a comprehensive understanding of India's political system, enabling critical evaluation of policies and governance mechanism

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.A. Public policy	III	INBAPPA 104	Introduction to political system

CO 1: Understand the executive branch of government, roles, and powers of key officials at union and state levels.
CO 2: Analyze Indian legislative framework, including Lok Sabha, Rajya Sabha functions, parliamentary proceedings, and budgetary process.
CO 3: Examine State Legislature organization, roles of presiding officers, legislative processes, and state-level legislation dynamics.
CO 4: Gain knowledge of India's judicial system, focusing on Supreme Court, High Courts, judicial review, and importance of an independent judiciary.
CO 5: Develop critical understanding of Indian legal system, roles of subordinate courts, judge appointment, powers, and hierarchical structure.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
B.A. Public policy	IV	INBAPPA401	Public policy and Good Governance

CO 1: Understand the various types of public policies and analyze their significance in governance.
CO 2: Examine the nature of public policy in India and critically evaluate the achievements and shortcomings of planned policymaking, along with the challenges in policy implementation.
CO 3: Analyze and evaluate specific government schemes such as Beti Bachao Beti Padhao, Mahatma Gandhi National Rural Employment Guarantee Act, and Pradhan Mantri Awas Yojana, understanding their objectives, implementation, and impact
CO 4: Comprehend the dimensions of development and identify the challenges associated with the development process in the context of India
CO 5: Recognize the role of social capital organizations in society, classify them according to their functions, and assess the implications of national policies related to the voluntary sector and non-governmental organizations

DEPARTMENT OF AGRI STORAGE & SUPPLY CHAIN MANAGEMENT			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	I	BMS111AE	Agricultural Economics

CO 1: Understand fundamental economic concepts, including micro and macroeconomics, agricultural economics, and factors influencing agricultural development.
CO 2: Analyze demand and supply principles, including elasticity, utility theory, and consumer equilibrium.
CO 3: Examine the evolution, functions of money, inflation, deflation, and banking roles in the economy.
CO 4: Explore agricultural and public finance, taxation, revenue, expenditure, and economic systems.
CO 5: Evaluate emerging trends in production, processing, marketing, exports, and policy controls in agro-business enterprises

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	I	BMS111IAL	Introduction to Agri Logistics

CO 1: Grasp the core concepts of agri logistics and supply chain management, recognizing their importance in diverse agricultural settings.
CO 2: Apply logistics principles to address challenges in procurement, processing, packaging, storage, transportation, and distribution of agricultural products.
CO 3: Analyze handling and transport systems, including air, sea, road, and rail logistics, along with related terminology and regulations .
CO 4: Explore the role of IT in agri logistics, especially in processing, marketing, and exports, while understanding relevant policies and regulations.
CO 5: Evaluate outsourcing in supply chain management, including the roles of 3PLs and 4PLs, reverse logistics, and market-driven activities, and suggest strategies for effective agri logistics management

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	I	BMS11IPHM	Post – Harvest Management

CO 1: Grasp fundamental post-harvest management concepts, including horticulture geography and pre-harvest operations.
CO 2: Apply effective post-harvest handling practices, maturity indices, and postharvest treatments.
CO 3: Understand post-harvest physiological changes, ethylene's role, and packaging methods.
CO 4: Adhere to pack house hygiene, safety standards, and quality protocols for various fruits and vegetables.
CO 5: Implement best practices for flowers, tubular crops, and grain crops post-harvest management

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	I	**BMS111POM**	Principles of management

CO 1: Understand foundational management concepts, contemporary challenges, and managerial roles.
CO 2: Master planning, decision-making processes, creativity, and strategic planning.
CO 3: Gain insights into directing, motivation theories, leadership styles, and staffing processes.
CO 4: Grasp organizational design, structure, departmentation, and principles of delegation.
CO 5: Analyze ethics, corporate social responsibility, and environmental factors affecting businesses

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	I	BMS11IWAP	Warehousing for Agricultural Produce

CO 1: Understand warehousing concepts, challenges, and the role of technology in post-harvest management of agricultural produce.
CO 2: Develop and implement effective Standard Operating Procedures for warehouse operations, covering goods receipt, storage, quality control, risk mitigation, and delivery processes.
CO 3: Proficiently manage warehouse information, including capturing key data, maintaining records, and integrating IT for efficient Warehouse Management Systems.
CO 4: Comprehend the conceptual framework of Warehouse Receipt Management, including negotiability, components, and legal aspects, especially related to Electronic Negotiable Warehouse Receipts.
CO 5: Identify opportunities and challenges in the warehousing sector, recognizing required skill sets, exploring business options, and understanding employment prospects while addressing key sector challenges in India.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	II	BMS121OB	Organisational Behaviour

CO 1: Understand Organizational Behaviour fundamentals, including nature, structure, and behaviorist frameworks, and grasp individual behaviors and personality development concepts.
CO 2: Gain insights into Perception, Attitudes, and Job Satisfaction, understanding their nature, sources, and consequences, as well as job stress causes and effects.
CO 3: Develop knowledge of Organizational Conflicts, Group Dynamics, Committee Organizations, and Informal Communication Systems within groups.
CO 4: Acquire expertise in Organizational Change and Development, including strategies to overcome resistance, change processes, and various Organizational Development interventions.
CO 5: Explore Leadership Theories, Types, and Styles, understanding Trait theory, Michigan studies, Fiedler's contingency model, and modern leadership approaches

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	II	BMS121TAC	Trading in Agri Commodities

CO 1: Understand agricultural marketing concepts, market structure, and demand-supply dynamics. Calculate producer's surplus of agri-commodities.
CO 2: Evaluate pricing strategies, market promotion techniques, and assess advantages/disadvantages.
CO 3: Analyze market functionaries, channels, integration, costs, and propose methods to reduce marketing expenses.
CO 4: Study agricultural prices, policies, marketable surplus, and historical price trends of commodities.
CO 5: Grasp international trade theories, GATT, WTO implications, and analyze IPR and GST impact on agricultural trade

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	II	BMS121CA	Cost accounting

CO 1: Student will be able to apply costing techniques in different types of industries.
CO 2: Student will be able to apply costing techniques in business decisions.
CO 3: Understand and use the basic concepts of costing and costing systems in their professional life.
CO 4: Integrate cost accounting with financial accounting for management decision making.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	II	BMS121QAA	Quality Control, Assurance & Audit

CO 1: To understand basic concept of quality and systems of quality management.
CO 2: To be able to get ready for implementing a quality management system in the organization.
CO 3: To enable the students in getting ready for a quality audit of the supply chain system.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME

BMS	II	BMS121DCF	Derivatives with Commodity Futures
CO 1: Understand fundamental concepts of commodity derivatives, including products, participants, and market functions. CO 2: Apply various commodity futures instruments for trading, analyzing payoff structures and comparing futures and options use. CO 3: Demonstrate knowledge of futures trading systems, including trading cycles, order types, margins, charges, and risk management. CO 4: Analyze the regulatory framework governing commodity derivatives, including rules, participants, and dispute resolution procedures. CO 5: Evaluate trading patterns, market efficiency, and compile information on recognized stock exchanges, commodities traded, and market governing bodies in India			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	III	BMS231CHT	Cold Chain Technology
CO 1: Understand the fundamental concepts of Cold Chain and its importance in the preservation of agricultural produce. CO 2: Demonstrate knowledge of Cold Chain infrastructure components, including refrigeration systems, insulation techniques, and distribution centers. CO 3: Implement effective monitoring systems for temperature and humidity in Cold Chain logistics, utilizing automated and remote monitoring technologies. CO 4: Apply principles of Reefer Logistics in transporting agricultural produce, including reefer container operations, handling chilled and frozen cargos, and ensuring good transportation practices. CO 5: Practice good Cold Chain management, including SOPs for specific fruits and vegetables commodities, traceability, and adherence to quality standards for domestic and export markets			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	III	BMS231ES	ENVIRONMENTAL STUDIES
CO 1: Understand the components of ecosystems, ecological structures, energy flow, and biogeochemical cycles (Unit I: Ecology). CO 2: Analyze different types of pollution, their sources, standards, and adverse effects (Unit II: Pollution). CO 3: Demonstrate knowledge of solid waste management, including classification, collection, disposal, and resource recovery methods (Unit III: Solid Waste Management). CO 4: Explore non-conventional energy sources and assess their potential, especially in the context of India (Unit IV: Non-Conventional Energy Sources). CO 5: Comprehend social issues related to environmental conservation, sustainable development, public awareness, and key environmental legislations in India (Unit V: Social Issues and EIA).			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	III	BMS231HFP	Handling of Fresh Produces
CO 1: Understand fresh produce market preparation and categorization. CO 2: Apply value addition techniques such as sanitation, canning, and dehydration. CO 3: Implement tropical fruits ripening and grading techniques. CO 4: Proficiently execute fresh cut packing methods, including retail and special techniques. CO 5: Analyze challenges and opportunities in E-commerce delivery for fresh produce			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	III	BMS231HFP	Mechanization In Agri Logistics

CO 1: Understand agricultural mechanisation principles, transportation methods, and benchmarking processes.
CO 2: Apply knowledge of product handling methods, automated systems, and traceability options in agri-logistics.
CO 3: Demonstrate proficiency in automated storage management techniques, including palletisation, conveyors, silos, and AS&RS.
CO 4: Utilize automation technologies for tracking and traceability, such as GPS, RFID, AGVS, RTWCS, CIW, and RFDT.
CO 5: Grasp the basics of block chain technology and its applications in sustainable agriculture, transparency, and trust in agri-food systems

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	III	BMS231PM	Pest Management

CO 1: Understand pest categorization, significance in agriculture, and relevant laws and regulations.
CO 2: Identify and assess major storage pests, recognize signs of infestation, and detect hidden infestation sources.
CO 3: Learn insect pest control methods, including prophylactic treatments, insecticide application, and fumigation techniques.
CO 4: Grasp methodologies for non-insect pest management, including fungi, bacteria, rodents, and birds, utilizing various control measures.
CO 5: Comprehend Integrated Pest Management (IPM) principles, including sanitation, pest monitoring, preventive methods, and judicious curative measures, applying strategies in supply chain management

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	III	BMS231RAM	Risk Assessment and Management

CO 1: Understand fundamental concepts of risk in supply chain management, including peril & hazard, risk categories, and risk prioritization.
CO 2: Develop a risk management framework with strategies for identifying, mitigating, and auditing potential risks, and ensuring health and safety in warehousing.
CO 3: Recognize insurable risks, understand insurance functions, and effectively manage insurance policies for agricultural produce.
CO 4: Learn techniques for preventing and managing major perils like fire, flood, and ensuring security in agricultural storage and transport.
CO 5: Comprehend regulatory compliance processes, identify non-insurable risks, and understand indemnification for risk mitigation in agricultural supply chains

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	IV	BMS24IMM	Marketing Management

CO 1: Discuss the importance of macro and micro environment in the company's marketing function.
CO 2: Differentiate the consumer and institutional buyer behaviour.
CO 3: Define the target segments for the product
CO 4: Justify the importance of products, branding, and new product development.
CO 5: Understand the importance of Channel of distribution

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	IV	BMS241AP	Agri-Preneurship

CO 1: To get an understanding of the conceptual framework of entrepreneurship development in India.
CO 2: To learn about various processes involved in the development of an agri preneurship venture.
CO 3: To know about various potential options available towards setting up an agri-business venture.
CO 4: To learn about various challenges in the way of agri preneurship and strategies to overcome them.
CO 5: To know as to how to avail various benefits available under governmental support programmes for agri-business development

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	IV	BMS241AEI	Agricultural Exports & Imports

CO 1: Understand the legal framework in agriculture, focusing on post-harvest management challenges and strategies for higher returns to farmers.
CO 2: Analyze the importance of quality standards in agricultural produce, including relevant acts and enforcement mechanisms.
CO 3: Evaluate legal aspects related to transportation logistics during post-harvest, including relevant acts governing transportation of agricultural produce.
CO 4: Assess the legal framework for storage, preservation, and warehousing of agricultural produce, including acts governing these aspects.
CO 5: Understand the legal aspects of marketing agricultural produce, including relevant acts, taxation, and trade regulations.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	IV	BMS241PT	Packaging Technology

CO 1: Understand the history, importance, and functions of food and agri-products packaging, including material properties, design, and testing.
CO 2: Analyze wood, paper, glass, and metal packaging materials, including their structure, types, and uses, and compare wooden containers with CFB boxes.
CO 3: Apply packaging rules, labeling techniques, and technology usage for packaging fruits, vegetables, and their products.
CO 4: Comprehend aseptic packaging, active food packaging, edible films, coatings, and intelligent/smart/active packaging systems, and their food applications.
CO 5: Implement various packaging techniques, including knowledge of containers, primary and secondary packaging, and packaging machines, for effective food and agri-products packaging

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	IV	BMS241DVCM	Dairy Value Chain & Marketing

CO 1: Understand the historical development and current trends in dairy production globally and in India.
CO 2: Apply techniques for ensuring clean milk production and procurement, and comprehend milk contamination sources.
CO 3: Demonstrate knowledge of dairy operations, milk processing, quality assurance, and various milk products.
CO 4: Analyze milk marketing structures, distribution channels, and pricing factors, considering market segmentation.
CO 5: Evaluate the milk value chain, government policies, international regulations, and technology impact on dairy marketing

DEPARTMENT OF e-COMMERCE OPERATIONS

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME

BMS	I	BMS111POM	Principles of Management
CO 1: Understand the nature, definition, characteristics, and scope of management. CO 2: Apply the principles of planning, including objectives, policy, procedures, forecasting, and decision making. CO 3: Demonstrate knowledge of directing principles, motivation theories, leadership styles, and staffing techniques. CO 4: Understand organization design, structure, departmentalization, span of control, authority, responsibility, and delegation. CO 5: Analyze contemporary issues, challenges in management, and the impact of ethics and social responsibility.			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	I	BMS111IM	Principles of Management
CO 1: Understand the basics of inventory management, its importance, and its role in e-commerce supply chains. CO 2: Compare various inventory management techniques, including economic order quantity, safety stock, and demand forecasting. CO 3: Explain key inventory management metrics, such as inventory turnover, safety stock, and carrying cost. CO 4: Evaluate inventory management software, its features, and the selection process for warehousing management systems. CO 5: Analyze the latest trends in inventory management, including predictive picking, omni channel solutions, and advanced sales forecasting			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	I	BMS111AFS	Analysing Financial Statements
CO 1: Apply fundamental accounting concepts and prepare financial statements for a sole proprietorship business. CO 2: Record accounting transactions related to dissolution, amalgamation, and sale of partnership firms. CO 3: Understand business income concepts, revenue recognition, expenses, and methods of computing depreciation. CO 4: Prepare trading account, profit & loss account, and balance sheet for a sole proprietor. CO 5: Explain the concepts of operating and financial lease, and understand the relationship between metrics and customer service			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	I	BMS111BO	Business Organization
CO 1: Understand fundamental concepts of business trade, industry, commerce, and trade classifications. CO 2: Describe the characteristics, advantages, and disadvantages of sole proprietorship and joint Hindu family businesses. CO 3: Explain the meaning, characteristics, kinds of partners, registration of partnership, and rights and obligations of partners in a partnership business. CO 4: Analyze the meaning, characteristics, advantages, and differences between private and public companies. CO 5: Design corporate organizational structures and understand the distribution of powers and responsibilities within a company.			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	I	BMS111IEO	Introduction to E-Commerce Operations

CO 1: Understand the basics of e-commerce logistics and its changing dynamics.
CO 2: Analyze different types of e-commerce logistics models, including B2C, B2B, C2C, G2C, G2B, and G2G.
CO 3: Examine the impact of technology on e-commerce logistics, including AI, GPS tracking, and drone delivery.
CO 4: Explore the future prospects of e-commerce logistics in India, including upcoming regulations and technologies.
CO 5: Understand the growth projections for e-commerce in India and analyze the technologies under development for e-commerce logistics

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	II	BMS121MM	Marketing Management

CO 1: Discuss the importance of macro and microenvironment in the company's marketing function.
CO 2: Define the target segments for the product and understand factors influencing consumer buying behavior.
CO 3: Justify the importance of products, branding, and new product development.
CO 4: Understand the importance of Channel of distribution and analyze elements of promotion mix. (
CO 5: Discuss social responsibility, ethical issues in marketing, global marketing, and marketing in the 21st Century

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	II	BMS121WM	Warehouse Management

CO 1: Explain the types of warehouses, functions, and layout-related functions.
CO 2: Understand various stages involved in receiving and dispatching goods, including quality parameters and quality checks.
CO 3: Describe various warehouse activities such as sorting, loading, unloading, picking, packing, and dispatch.
CO 4: Manage warehouse utilization, handling of hazardous cargo, and use of Material Handling Equipment.
CO 5: Implement safety rules and procedures in a warehouse and understand the principles of Materials Handling system

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	II	BMS121MH	Material Handling

CO 1: Understand the concepts of Materials Management, Logistics, and Supply Chain Management.
CO 2: Describe various types of Material Handling Equipment and their applications.
CO 3: Explain Material Requirement Planning (MRP), forecasting, and material flow in MRP.
CO 4: Implement quality control measures, inventory control techniques, and value engineering concepts.
CO 5: Apply health and safety measures in Materials Handling systems and understand the principles of Physical distribution logistics.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	II	BMS121FMO	First Mile Operations

CO 1: Understand the importance and flow of First Mile operations in e-commerce logistics.
CO 2: Describe the shipment pickup process, including coordination, documentation, and safety measures.
CO 3: Explain various shipment processing operations, layout of Processing Centres, and roles of Processing Centre staff.
CO 4: Analyze First Mile analytics, metrics, and tools for monitoring and improving operations.
CO 5: Address key challenges in First Mile operations and apply communication techniques to resolve exceptions

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	II	BMS121BE	Business Environment
CO 1: Understand the framework of the business environment, including its internal and external elements. CO 2: Analyze the economic, political, legal, socio-cultural, technological, and international aspects of the business environment. CO 3: Examine how different factors and trends in the external environment impact a proposed business venture. CO 4: Conduct a business analysis of the local and national environment considering various environmental elements			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	II	BMS121ME	Managerial Economics
CO 1: Distinguish between micro and macroeconomics and understand the concepts of utility and substitution. CO 2: Explain demand, supply, market equilibrium, production concepts, and cost functions. CO 3: Understand market structures, pricing strategies, and national income measurement. CO 4: Analyze trade cycles, causes, and methods to control trade cycles			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	III	BMS231ELO	E-Commerce Logistics Operations
CO 1: Understand the basics of logistics in E-Commerce and its role in the supply chain. CO 2: Comprehend the process of capacity management and its application in inbound and outbound logistics. CO 3: Explain the strategies used in logistics planning and execution, and understand the systems used in E-Commerce logistics. CO 4: Understand the concepts of logistics and systems integration, and the interlink between logistics and operations. CO 5: Evaluate the integration of logistics into operations, assess logistics operations, and understand partner termination processes			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	III	BMS231LMO	Last Mile Operations
CO 1: Understand the basics of last mile logistics in E-Commerce and its challenges. CO 2: Describe the last mile processes, including forward and reverse logistics stages. CO 3: Analyze various metrics and customer service processes involved in last mile logistics. CO 4: Explain the prospects and innovations in last mile logistics, including technology trends. CO 5: Understand the value creation aspects through network design, process improvement, and strategic decisions in reverse logistics			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	III	BMS231MIS	MIS for E-Commerce
CO 1: Understand the concepts of Management Information Systems and their historical context. CO 2: Explore global E-business processes and comprehend electronic commerce concepts. CO 3: Understand the relationship between decision making and information systems, and analyze systems for planned organizational change. CO 4: Grasp the concepts of business intelligence, strategic, tactical, and operational decisions in MIS. CO 5: Evaluate the role of MIS in managing global systems and understand system analysis and design.			
PROGRAM	**SEMESTER**	**COURSE CODE**	**COURSE NAME**
BMS	III	BMS231RLE	Reverse Logistics for E-Commerce

CO 1: Understand the importance and challenges of reverse logistics in E-Commerce.
CO 2: Describe the stages and tools in reverse logistics processes.
CO 3: Analyze the shipping and information systems in reverse logistics, and assess the innovations and market prospects.
CO 4: Understand the creation of value through network design, strategic decisions, and maintaining partnerships in reverse logistics.
CO 5: Explore the impact of new technology trends and digital transformation on reverse logistics

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	III	BMS231TFE	Transportation for E-Commerce

CO 1: Understand the importance and functions of transportation in the supply chain
CO 2: Comprehend various transportation management techniques and modalities.
CO 3: Understand transportation management systems and their integration with supply chain functions.
CO 4: Analyze the socio-economic factors affecting transportation and explore the future trends in transportation.
CO 5: Evaluate the benefits and risks of different transportation equipment and comprehend the upcoming tools and techniques in transportation.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	IV	BMS241HLO	Hub and Line Operations

CO 1: Understand the concepts of Hub & Line Operations in E-commerce and the importance of Line Haul logistics.
CO 2: Analyze inbound and outbound logistics in the context of E-commerce and comprehend the layout of Processing Centers.
CO 3: Explain the various machines and equipment used in hub operations and assess prospects in Line Haul Logistics.
CO 4: Evaluate the relationship between logistics and fulfillment services and explore innovations and technology trends in Line Haul Logistics.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	IV	BMS241OIE	Outsourcing in Ecommerce

CO 1: Understand the fundamentals of Outsourcing and its implementation in E-commerce businesses.
CO 2: Analyze E-commerce outsourcing, assess strategic assessments, and understand risk management in outsourcing.
CO 3: Explore the future trends and innovations in E-commerce outsourcing.
CO 4: Evaluate the best practices in outsourcing assessments and techniques to assess and manage risks associated with outsourcing

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	IV	BMS241PFE	Packaging for Ecommerce

CO 1: Understand the concept of packaging in E-commerce, including types, functions, and materials.
CO 2: Analyze the concept of brand equity and its relation to packaging in E-commerce.
CO 3: Explain the packaging journey in E-commerce, from consumer research to order delivery and receipt.
CO 4: Evaluate packaging techniques, technologies, and future prospects in the E-commerce industry

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	IV	BMS241ECS	Ecommerce Customer Service

CO 1: Create customer-centric organizations and develop active listening and communication skills.
CO 2: Implement effective customer service strategies, handle customer encounters, and manage customer hand-offs.
CO 3: Understand customer behavior, analyze customer service tools, and implement customer service surveys and analysis.
CO 4: Evaluate various communication styles and strategies used in E-commerce customer service.

PROGRAM	SEMESTER	COURSE CODE	COURSE NAME
BMS	IV	BMS241FO	Fulfillment Operations

CO 1: Understand the basics of Fulfillment operations in E-commerce, including operational models and key drivers.
CO 2: Analyze the relationship between logistics and Fulfillment services, including warehousing aspects and packaging.
CO 3: Explore the role of technology in Fulfillment processes and platforms.
CO 4: Evaluate prospects in Fulfillment, including bundled orders, mini Fulfillment via technology, and market trends

DEPARTMENT OF HISTORY

Program	Semester	Course Code	Course Name
B.A,	I	HIS111IHC	ANCIENT INDIAN HISTORY & CULTURE

CO 1: Identify and define various kinds of sources and understand how history books are shaped
CO 2: Compare and contrast various stages of progress from IVC to Vedic age and analyze the Jain, Buddhist and Vedic faiths
CO 3: Increase the awareness and appreciation of Transition from Territorial States to Emergence of Empires
CO 4: Analyze the emergence of the Mauryan and Gupta empires during the "classical age" in India
CO 5: Evaluate the key facets of ancient society, polity and culture in South India—the feudalism, and the rise of technology and commerce.
CO 6: Critically examine the nature of monarchic rule and develop an comprehensive understanding of cultural evolution during ancient period Visualize where places are in relation to one another through map pointing

Program	Semester	Course Code	Course Name
B.A,	II	HIS122IHC	MEDIEVAL INDIAN HISTORY &CULTURE (1206 A.D to 1764 A.D)

CO 1: Understand the socio, economic and cultural conditions of medieval India
CO 2: Describe the advent of Islam in India and study the traces of political and cultural expansion of Turks & Afghans
CO 3: Explain the Administration and art and architecture ofVijayanagar Rulers, Mughal and also analyse the rise of the Marathas and the contribution of Shivaji
CO 4: Evaluate the establishment of the British rule in India and understand the dangerous consequences disunity at all levels
CO 5: Analyze the emergence of composite culture in Indian
CO 6: Visualize where places are in relation to one another through map pointing

Program	Semester	Course Code	Course Name
B.A,	III	HIS233MHC	MODERN INDIAN HISTORY & CULTURE (1764-1947 A. D)

CO 1: Unearth the true nature of the British rule and its disastrous impact on Indian economy and society
CO 2: Gauge the disillusionment of people against the Company's rule even during the early 19th century
CO 3: Assess the causes and effects of Reformation movements and also inspire the public to overthrow inequalities of the present day society
CO 4: Rise above petty parochial issues after understanding the sacrificial saga of freedom struggle
CO 5: Evaluate the undercurrent of communal politics that led to India's partition and identify the enemies of India's integrity and sovereignty. visualize where places are in relation to one another through map pointing

Program	Semester	Course Code	Course Name
B.A,	IV	HIS244HCA	HISTORY & CULTURE OF ANDHRA (FROM 1512 TO 1956 AD)

CO 1: Interpret social and political and cultural transformation from medieval modern Andhra
CO 2: Relate key historical developments during medieval period occurring in coastal Andhra and Telangana regions and analyze socio - political and economic changes under Qutb Shahi rulers
CO 3: Understand gradual change, or change in certain aspects of society in Andhra, rather than rapid or fundamental changes
CO 4: Explain how the English East India Company became the most dominant power and outline the impact of colonial policies on different aspects in Andhra
CO 5: Outline the issues related to caste, women, widow remarriage, child marriage, social reforms and the laws and policies of colonial administration towards these issues
CO 6: Take pride in the non-violence struggle for Indian Independence and rel the importance of peace in everyday life
CO 7: Apply the knowledge of the regional history to understand the regional, linguistic and other cultural aspirations of the present day society Visualize where places are in relation to one another through map pointing

Program	Semester	Course Code	Course Name
B.A,	V	HIS356THS	Tourism and Hospitality Services

CO 1: Understand hospitality as a career
CO 2: Inculcate interpersonal skills
CO 3: Develop the ability for multitasking and crisis management
CO 4: Understands the spirit of teamwork
CO 5: Acknowledge the importance of guest service and satisfaction

Program	Semester	Course Code	Course Name
B.A,	V	HIS357TGO	Tourism Guidance and Operating Skills

CO 1: Acquire tour guiding, operating and soft skills
CO 2: Understand different situations under which one has to work
CO 3: Cultivate cultural awareness and flexibility
CO 4: Understand and apply team spirit
CO 5: Plan and organize tour operations efficiently

DEPARTMENT OF MICROBIOLOGY

Program	Semester	Course Code	Course Name

B.Sc.,	I	MIB111IMD	INTRODUCTION TO MICROBIOLOGYAND MICROBIAL DIVERSITY

CO 1: Students will be able to differentiate between the three major microbial classification systems. Haeckel's three kingdoms, Whittaker's five kingdoms, and Carl Woese's three domains.
CO 2: Students will classify archaebacteria, rickettsias, mycoplasmas, cyanobacteria, and actinomycetes based on their general characteristics
CO 3: Students will acquire skills in pure culture techniques, including enrichment culturing, dilution-plating, streak-plate, spread-plate, and micromanipulator usage.
CO 4: Students will exhibit proficiency in staining techniques, encompassing principles and types of stains (simple, differential, negative), as well as structural stains (spore, capsule, flagella), and hanging-drop methods
CO 5: Students will gain insight into the general characteristics of prokaryotes and eukaryotes, specifically micro-algae and micro-fungi, and appreciate the economic importance of algae and fungi, including the production of single-cell protein (SCP)

Program	Semester	Course Code	Course Name
B.Sc.,	II	MIB122MPB	MICROBIAL PHYSIOLOGY&BIOCHEMISTRY

CO 1 The ensure students to gain knowledge about structure ,properties and functions of bio molecules
CO 2 To ensure students to gain knowledge about amino acids necessary for daily life and structure and its properties
CO 3 To gain knowledge about the genetic materials and its functions and its overview
CO 4 Understand the physiological aspects of microbes and its role as biochemical reactions through different pathways
CO 5 To understand the role of enzymes in metabolism of microbes

Program	Semester	Course Code	Course Name
B.Sc.,	III	MIB233MHMD	MANAGEMENT OF HUMAN MICROBIAL DISEASES AND DIAGNOSIS

CO 1 To study about the pathogenic of diseases and diagnostic methods
CO 2 Able to explain the collection of clinical specimens and their transport methods
CO 3 Understand the principles and applications of all microorganisms by cultural methods
CO 4 Perform the immunological tests for the identification of microorganisms
CO 5 Perform the antibiotic sentivity methods for bacteria

Program	Semester	Course Code	Course Name
B.Sc.,	IV	MIB244MAM	MOLECULAR BIOLOGY AND MICROBIAL GENETICS

CO 1 Understand the terms and technologies related to Microbial genetics and Molecular biology
CO 2 know the concept of horizontal gene transfer mechanisms among the bacteria
CO 3 Understand the basic levels of gene concepts and features of genetic code
CO 4 Know the basic concepts of regulation of gene expressions in bacteria
CO 5 Understand the basic concepts of transcription and translation

Program	Semester	Course Code	Course Name
B.Sc.,	V	MIB356EAM	FOOD, AGRICULTURE AND ENVIRONMENTAL MICROBIOLOGY

CO 1: understand the role and significance of microbial inactivation, adaptation and environmental factors (i.e., Aw, pH, temperature) on growth and response of microorganisms in various environments
CO 2: Able to identify the important pathogens and spoilage microorganisms in foods and the conditions under which they will grow.
CO 3 Identify techniques applicable for Improvement of microorganisms based on known biochemical pathways and regulatory mechanisms.
CO 4 Understand the rationale in medium formulation & design for microbial fermentation, sterilization of medium and different types of fermentation processes.
CO 5 Acquire experimental knowledge of microbial production of various industrial products such as alcohol

Program	Semester	Course Code	Course Name
B.Sc.,	V	MIB357FIB	INDUSTRIAL & FOOD MICROBIOLOGY

CO 1 · Understand the role and significance of microbes adaptation in industry
CO 2 · Know about the product recovery and purification process
CO 3 · Role of enzymes in industry and its usage
CO4· Understand the rationale in medium formulation & design for microbial fermentation, sterilization of medium and different types of fermentation processes
CO 5 · Acquire experimental knowledge of microbial production of various industrial products such as alcohol

DEPARTMENT OF ANTHROPOLOGY

Program	Semester	Course Code	Course Name
B.A,	I	ANT111FA	Foundations of Anthropology-I

CO 1: Familiarity with anthropological literature and data sources, and a knowledge of how to critically access such information.
CO 2: Knowledge of the methodologies used to collect and assess critically anthropological data.
CO 3: The ability to present and communicate appropriately in at least one of the sub disciplines of anthropology.
CO 4: Knowledge of the history of anthropology (theoretical approaches) and the major current issues in the sub disciplines.
CO 5: An understanding and appreciation for the role of anthropology in the workplace and the real world.

Program	Semester	Course Code	Course Name
B.A,	II	ANT122FA	Foundations of Anthropology-II

CO 1: To have a measurable understanding of the fundamentals of Biological and Cultural evolutionary aspects of Human Evolution with insights into multiple theories regarding the same.
CO 2: To comprehend various parameters, terms, and concepts in Evolutionary Biology.
CO 3 To have a comprehensive understanding of the origin of Primates along with their characteristic Features and behavioral traits including but not limited to their taxonomy.
CO 4 To have a deep grasp on the differences between man and apes with respect to their anatomy and Skeletal changes that arose due to erect posture in the process of evolution.
CO 5 To have an overview on varied aspects of different primates including but not limited to their

Program	Semester	Course Code	Course Name
B.A,	III	ANT233SCA	Socio-Cultural Anthropology

CO 1: By the time of completion of the subject the students should get a broader picture of society culture and its economic organization political operations regions believes in customs in different societies

CO2: An understanding and appreciation of human biological, linguistic, and cultural diversity, especially those features that separates humans from other species.

CO 3: An appreciation and awareness of the origin of both cultural and human biological diversity through time.

CO 4: A positive appreciation of the diversity in contemporary and past societies and cultures

Program	Semester	Course Code	Course Name
B.A,	IV	ANT244AT	Anthropological Theories

CO 1: develop familiarity with historical works of theory by Anthropologists of diverse backgrounds.

CO 2: learnaboutvariousculturalandpersonalityschoolofthoughtsalongwithstructu ralism.

CO 3: Learn about classical and neo evolutionism theories by studying contributions of the important Anthropologists in that subject matter.

CO 4: Learn about symbolic, interpretative, and cognitive theories and post modernism in Anthropology.

CO 5: StudyandunderstandlanguageandcommunicationthroughthelensofAnthropology.

CO 6: Develop a familiarity with the multiple ways that anthropologists apply their knowledge and skills as professionals in out side the academy.

DEPARTMENT OF PSYCHOLOGY

Program	Semester	Course Code	CourseName
B.A,	I	PSY111GP	GENERAL PSYCHOLOGY-I

CO1: Acquire a foundational understanding of core concepts in psychology, including cognition, learning, memory, perception, and motivation.

CO2: Develop an introductory understanding of the scientific method and basic research techniques used in psychology, with the ability to critically assess and interpret psychological research.

CO3: Explore key theoretical perspectives in psychology, such as behaviorism, psychoanalysis, and cognitive psychology, to grasp different approaches to explaining behavior and mental processes.

CO4: Demonstrate an awareness of ethical considerations in psychological research and behavior, and apply basic ethical principles to psychological scenarios.

CO5: Apply psychological concepts to practical situations, demonstrating an understanding of how psychological principles can be relevant in everyday life.

Program	Semester	Course Code	CourseName
B.A,	II	PSY122GP	GENERAL PSYCHOLOGY-II

CO 1: Develop a nuanced and advanced understanding of major psychological theories and perspectives, including their historical context and contemporary relevance.

CO 2: Acquire advanced research skills, including the ability to design complex experiments, analyze sophisticated data sets, and critically evaluate advanced research literature.

CO 3: Integrate knowledge from various subfields within psychology, demonstrating an understanding of the interconnectedness of topics such as cognitive psychology, social psychology, and neuroscience.

CO 4: Develop advanced critical thinking skills by critically evaluating and synthesizing information from diverse sources, theories, and research studies within the field of psychology.

CO 5: Apply advanced psychological concepts to complex real-world scenarios, demonstrating an ability to address intricate issues and provide sophisticated insights based on psychological principles

Program	Semester	Course Code	CourseName

B.A,	III	PSY233DP	DEVELOPMENTAL PSYCHOLOGY

CO 1: To equip the learner with an understanding of the concept and process of human development across the life span
CO2: To impart an understanding of the various domains of human development
CO3: To inculcate sensitivity to socio-cultural context of human development

Program	Semester	Course Code	CourseName
B.A,	IV	PSY244AP	Abnormal Psychology

CO1: Acquiring knowledge and skills for distinguishing normal and abnormal behaviour and learning the criteria for determining abnormality.
CO2: Developing familiarity with the current diagnostic systems (current edition of the Diagnostic and Statistical Manual of Mental Disorders and International Classification of Diseases- Mental Disorder section).
CO3: Acquiring knowledge about anxiety disorders and Trauma & Stressor-related, Dissociative, and Personality Disorders.
CO4: Developing sensitivity towards individual and cultural diversity. Counseling

Program	Semester	Course Code	Course Name
B.A,	IV	PSY245SP	SOCIAL PSYCHOLOGY

CO 1: The paper aims at providing an overview about the concept of abnormality and the clinical picture and dynamics of various psychological disorders.
CO2: This will sensitize the students to information on psychopathology and dispel myths regarding it.
CO3: Acquiring knowledge and skills for distinguishing normal and abnormal behaviour

DEPARTMENT OF MBA

Program	Semester	Course Code	Course Name
MBA	**I**	**MBA101**	**Managing People and Organisations**

CO1: Comprehend and apply the principal concepts of the field of management at the individual, group, and organizational levels of analysis and identify how these concepts affect organizational and individual performance.
CO2: Recognize the relationship of the basic human resource functions to managerial roles and responsibilities.
CO3: Manage organizational culture and conflict in organizations, and how to manage sustainability and effectiveness of organizations

Program	Semester	Course Code	Course Name
MBA	**I**	**MBA102**	**Managerial Economics**

CO1: To introduce the fundamentals, tools and theories of managerial economics
CO2: To orient on micro economic techniques as a decision making process
CO3: To understand macro-economic analysis essential for business managers

Program	Semester	Course Code	Course Name
MBA	**I**	**MBA103**	**Quantitative Analysis for Business Decisions**

COURSE OUTCOMES::On successful completion of the course, students will be able to:
CO1: Understand a Problem(s) in Business. Explore and analyze the problem(s)

CO2:To improve policy making to develop strategy and improve day to day performance of organizations.
CO3: Explore data to find new patterns and relationships (Data Mining)
CO4: Predict the relationship between different variables (Predictive Analytics and Predictive Modeling)
CO5: Estimate the value created using business analytics to address an opportunity/Problem. Understand and use statistical techniques for analysis of research data.

Program	Semester	Course Code	Course Name
MBA	**I**	**MBA104**	**Business, Government & Society**

COURSE OUTCOMES::On successful completion of the course, students will be able to:
CO1: Understand the challenges and complexities faced by businesses and their leaders as they endeavor to maximize returns while responsibly managing their duties to all stake holders of business.
CO2: Understand the rationale for government interventions in market systems
CO3: Understand and appreciate the social aspects of business
CO4: Develop Social Responsibility and make their own judgments as to the proper balance of attention to multiple bottom lines.
CO5:Develop the skills needed to work through ethical dilemmas in a globalized economic era.

Program	Semester	Course Code	Course Name
MBA	**I**	**MBA105**	**Managerial Communication**

COURSE OUTCOMES::On successful completion of the course, students will be able to:
CO1: Understand communication skills and sensitize them to their potential to become successful managers
CO2: Explain the various types of communication in Business Organizations
CO3: Identify the role of communication conflict in intercultural relationships

Program	Semester	Course Code	Course Name
MBA	**I**	**MBA106**	**Accounting for Managers**

COURSE OUTCOMES::On successful completion of the course, students will be able to:
CO1: Explain fundamental accounting concepts, the elements of financial statements, and basic accounting vocabulary.
CO2: Explain and use the accounting equation in basic financial analysis and explain how the equation is related to the financial statements.
CO3: Explain and Use the financial reporting and auditing procedures.
CO3: Explain and use various cost management techniques.

Program	Semester	Course Code	Course Name

MBA	I	MBA107	Legal Framework for Business

COURSE OUTCOMES::On successful completion of the course, students will be able to:

CO1: enable students understand the legal framework of business

Program	Semester	Course Code	Course Name
MBA	I	MBA108	Foundation Course

COURSE OUTCOMES::On successful completion of the course, students will be able to:

CO1: To acquaint students with fundamentals of accounting, mathematics, computers, economics and business and help them to transform their communication abilities.

CO2: To help students to acquire some of the necessary skills to handle day-to-day managerial responsibilities, such as making speeches, controlling one to one communication, enriching group activities and processes, giving effective presentations, writing letters, memos, reports, advertising, and maintaining one's poise in public and in private.

CO3: To build the students' confidence and to enhance competitiveness by project in a positive Image of themselves and of their future

Program	Semester	Course Code	Course Name
MBA	I	MBA109	Emotional Intelligence And Managerial Effectiveness

COURSE OUTCOMES::On successful completion of the course, students will be able to:

CO1: To enlighten students to the ideation, concept and application of emotional intelligence.

CO2: To examine how our soul prevail over our minds for innovative establishment.

CO3: It will however deal with how fundamentals of test anxiety handbook us through diverse situations of social lives.

CO4: Get to recognize about the many unknowable of existence, will further certainly assist them to boost their appreciation to still be beneficial on their responsibilities.

CO5: Learn and offer insight into self-regulation and revelation of one's maximum prospects for higher performance.

CO6: To encourage emotional maturity in entity for obtaining health, pleasure and optimum efficiency at employment.

Program	Semester	Course Code	Course Name
MBA	II	MBA201	Marketing Management

CO1: Understand the role of Marketing in underpinning the Success of the Organization

CO2: Understand the various types of marketing environments

CO3: Understand the role of Marketing mix elements in the success of marketing strategies

CO4: Know new product development and consumer adoption of the same

CO5: Various pricing methods and techniques followed in marketing of products and Services

CO6: Know the effective and Efficient Channel management

Program	Semester	Course Code	Course Name
MBA	II	MBA202	Human Resource Management

CO1: To develop a meaningful understanding of HRM theory, functions and practices;
CO2: To apply HRM concepts and skills across various types of organizations

Program	Semester	Course Code	Course Name
MBA	II	MBA203	Financial Management

CO1: explain the basic functions and responsibilities of a financial department in a business/ firm;
CO2: elaborate the key decision areas in financial management-investment, financing, dividend and working capital management;
CO3: explain the various techniques of evaluation of investment proposals;
CO4: Discuss the various factors to be considered in designing the target capital structure.

Program	Semester	Course Code	Course Name
MBA	II	MBA204	Operations Research

CO1: Gain knowledge of formulating mathematical models for quantitative analysis of managerial problems in industry so that they are able to use resources (capitals, materials, staffing, and machines) more effectively.

CO2: Improve skills in the use of various mathematical models with Operations Research approach in solving real problems in industry and thereby facilitates the managerial decision making process.
CO3: understand operations research concepts that yield a competitive advantage through operational excellence

Program	Semester	Course Code	Course Name
MBA	II	MBA205	Enterpreneurship Theory and Practice

CO1: Recognize and understand the concept of entrepreneurship and the types and characteristics of small businesses
CO2: Recognize and recall the psychological theories of entrepreneurship and analyze how entrepreneurs acquire resources and persuade others to invest in their novel venture.
CO3: Identify the various environmental factors, external to the individual, which can influence the extent of entrepreneurship in society
CO4: Outline how entrepreneurship connects to innovation in small firms and new ventures

Program	Semester	Course Code	Course Name
MBA	II	MBA206	Business Research Methods

CO1: learn the basic concepts of research and formulate research problems and process.
CO2: develop an awareness of research design and data collection methods.
CO3: generate and understand of sampling design and techniques.
CO4: know how to analyse and interpret the data.

CO5: give knowledge about to write a research report and thesis			
Program	**Semester**	**Course Code**	**Course Name**
MBA	**II**	**MBA207**	**Project Management**
CO1: Understand the basic concepts of project management CO2: gain knowledge about Network analysis and techniques			
Program	**Semester**	**Course Code**	**Course Name**
MBA	**II**	**MBA208**	**Critical thinking and Problem Solving**
CO1: Understand the dynamics of the external world **CO2:** understand various issues in general to the outside world and Develop empathy			
Program	**Semester**	**Course Code**	**Course Name**
MBA	**III**	**MBA301**	**Strategic Management**
CO1: Understand the core concepts of Strategic Management **CO2:** provide an understanding of how strategic decisions are to be taken and implemented in the changing environment scenario.			
Program	**Semester**	**Course Code**	**Course Name**
MBA	**III**	**MBA302HRMOB**	**Human Resource Planning**
CO1: create a critical appreciation and knowledge for understanding the determinants of human resource requirements in the organization **CO2:** develop conceptual as well as practical understanding of human resource planning, deployment, maintaining HR information, preparing report on HR performance			
Program	**Semester**	**Course Code**	**Course Name**
MBA	**III**	**MBA304HRMOB**	**Training and development**
CO1: learn the concept and practice of training and development in the modern organizational setting through the pedagogy of case discussions and recent experiences. **CO2:** To gain an experimental skill-based exposure to the process of planning, organizing, and implementing of training program in a globalised organization. **CO3:** understand the role of training in the development process of an employee and also to educate the employee about career objectives and career planning			
Program	**Semester**	**Course Code**	**Course Name**
MBA	**III**	**MBA306HRMOB**	**Industrial Relations and Employment Laws**
CO1: to grasp and apply the principles of IR and develop an awareness of the significance of industrial peace **CO2:** to give an understanding of the components and meaning of sustaining Industrial peace anchored on harmonious Employee-Management relations.			

Program	Semester	Course Code	Course Name
MBA	**III**	**MBA302FIN**	**Financial Institutions &Markets**
CO1: familiarize with the financial institutions, markets and its regulations. **CO2:** acquire analytical skills in the market analysis in the context of raising medium and long term funds. **CO3:** understand the behavior of banks and other financial firms.			
Program	**Semester**	**Course Code**	**Course Name**
MBA	**III**	**MBA304FIN**	**Security Analysis and Portfolio Management**
CO1: Understand an overview of investment management, focusing on the application of finance theory to the issue faced by portfolio managers and investors in general			
Program	**Semester**	**Course Code**	**Course Name**
MBA	**III**	**MBA305FIN**	**Investment Management and Commercial Banking**
CO1: identify and describe terms and concepts associated with investments Describe and discuss various investment opportunities Differentiate between short-term and long-term investments CO2: Demonstrate knowledge of corporate rational for the issuance of corporate stocks and bonds Describe and discuss the basic concepts of the stock, bond, and mutual fund markets CO3: Describe and discuss the real estate market and the advantages and disadvantages of real estate in an investment portfolio CO4: Understand the different types of banking, different banking products/activities to understand the main components of commercial and investment banking business			
Program	**Semester**	**Course Code**	**Course Name**
MBA	**III**	**MBA302MKT**	**Consumer Behaviour and Marketing Research**
CO1: To understand the concept of consumer behavior, decision making by consumers, behavior variables and influences on consumer behavior. **CO2:** To comprehend the social and cultural dimensions of consumer behavior, factors impacting attitudes and behavior. **CO3:** To arm the budding marketers with an insight of the psychological and behavioral concepts of consumers thus enabling them to achieve their objectives and excel.			
Program	**Semester**	**Course Code**	**Course Name**
MBA	**IV**	**MBA401**	**International Business**

CO1: Understand how political, economic, and legal systems collectively influence a country's ability to achieve meaningful economic progress.
CO2: Discuss how culture is different because of differences in social structure, religion, language, education, economic philosophy, and political philosophy.
CO3: Explain the important implications that international trade theory holds for business practice.
CO4: Reason why some governments intervene in international trade to restrict imports and promote exports.
CO5: Describe the need and prospects of the world's most important regional economic agreements.
CO6: Demonstrate how currency exchange rates are determined.
CO7: Assess the role played by the International Monetary Fund and the World Bank in the global monetary system.
CO8: Interpret the three basic decisions that a firm contemplating in international business expansion must make: which markets to enter, when to enter, and on what scale.
CO9: Describe the different approaches to business ethics that can be derived from moral philosophy, and show how these approaches can help managers to make international business decisions that do not violate ethical norms

Program	Semester	Course Code	Course Name
MBA	**IV**	**MBA402HRMOB**	**Human Resource Development**

CO1: get awareness of the concepts, techniques and practices of human resource development.
CO2: apply the principles and techniques as professionals for developing human resources in an organization

Program	Semester	Course Code	Course Name
MBA	**IV**	**MBA404HRMOB**	**Strategic Human Resource Management**

CO1: understand Strategic HRM
CO2: align HR systems with business strategy, Strategy formulation, Strategies for performance and development with knowledge of global economy factors.

Program	Semester	Course Code	Course Name
MBA	**IV**	**MBA405HRMOB**	**International Human Resource Management**

CO1: gain an understanding on International HRM, Basics of IHRM
CO2: understand functional Aspects of IHRM, IHRM Practices in Selected Countries, and Special Issues in IHRM.

Program	Semester	Course Code	Course Name
MBA	**IV**	**MBA403MKT**	**Sales and Distribution Management**

CO1: Understand the concept of sales and distribution management and their

interrelationship
CO2: Explain role and responsibility of sales personal, and essential selling skills
CO3: Understand the concept and effect of sales organization and sales effort
CO4: Explain the skills and methods required for sales force management
CO5: Understand the Management of Marketing Channels
CO6: Explore the concept and theories of rural distribution
CO7: Explain the concept of retailing
CO8: Understand the process of marketing logistics

Program	Semester	Course Code	Course Name
MBA	IV	MBA404MKT	Retail Management

CO1: develop an understanding of the contemporary retail management, issues, strategies and trends in Retailing
CO2: highlight the significance of retailing and its role in the success of modern business houses
CO3: acclimatize with the insights of retailing, key activities and relationships

Program	Semester	Course Code	Course Name
MBA	IV	MBA406MKT	E-Marketing

CO1: understand the important concepts related to e-marketing
CO2: learn the use of different electronic media for constructing marketing activities
CO3: know the current tools in e-marketing space

Program	Semester	Course Code	Course Name
MBA	IV	MBA403FIN	Financial Derivatives

CO1: get awareness about the importance of commodities market, meaning, scope and types of derivatives
CO2: understand the operational mechanism and the various hedging options to avoid/minimize the risks involved in investment

Program	Semester	Course Code	Course Name
MBA	IV	MBA404FIN	Global Finance

CO1: Get awareness among the students about the importance of internationalfinancial management, international financial markets
CO2: Understand about management of exposure, international capital budgeting, international portfolio management and international working capital management.
CO3: understand financial management at international scenario and also about various hedging options to manage the exposure.

Program	Semester	Course Code	Course Name
MBA	IV	MBA409	Employability Skills

CO1: develop non-technical skills and competencies that has always been an important part of effective and successful participation in the workplace.
CO2: Get employment by honing their skills to meet the demands of today's world.
enhance performance

DEPARTMENT OF MCA

Program	Semester	Course code	Course name
MCA	I	20MCA101	Discrete mathematics structures

CO1: use logical notation and mathematical induction for solving problems.
CO2: apply permutations and combinations for solving combinatorial problems
CO3: apply the concepts of linear homogeneous and non-homogeneous recurrence relations
CO4: know the properties of relations. Use different types of graphs to solve problems

Program	Semester	Course code	Course name
MCA	I	20MCA102	Database management system

CO1: describe the concepts of data storage and indexing, transaction
CO2 : management, query evaluations and optimization techniques.
CO3: list the importance of dbms and differentiate how dbms is better than traditional file processing systems.
CO4: analyze the basic structure of database and recognize the different views of the data base.
CO5: formulate data retrieval queries in sql for real time scenario.
CO6: construct and normalize conceptual data models
CO7: handle the dead locks that occurs in the system

Program	Semester	Course code	Course name
MCA	I	20MCA103	Programming and problem solving using python

CO1: define and demonstrate the use of built-in data structures "lists" and "dictionary".
CO2 : design and implement a program to solve a real world problem.
CO3 : design and implement gui application and how to handle exceptions and files.
CO4:make database connectivity in python programming language

Program	Semester	Course code	Course name
MCA	I	20MCA104	Java

CO1: the model of object oriented programming and fundamental features of an object oriented language.
CO2: how to test, document and prepare a professional looking package for each business project.
CO3: student have the ability to write a computer program to solve specified problems and to use the java sdk environment to create, debug and run simple java programs.
CO4: student will be able to explain and develop programs for inheritance, multithreading, applets, exception handling and file handling

Program	Semester	Course code	Course name
MCA	I	20MCA105	Operating systems

At the end of the course student will
CO 1: Know Computer system resources and the role of operating system in resource management with algorithms

CO 2: Understand Operating System Architectural design and its services.
CO 3: Gain knowledge of various types of operating systems including Unix and Android.
CO 4: Understand various process management concepts including scheduling, synchronization, and deadlocks. 5. Have a basic knowledge about multithreading.
CO 5: Comprehend different approaches for memory management.
CO 6: Understand and identify potential threats to operating systems and the security features design to guard against them.
CO 7: Specify objectives of modern operating systems and describe how operating systems have evolved over time
CO 8: Describe the functions of a contemporary operating system.

Program	Semester	Course code	Course name
MCA	I	20MCA106	Computer organization

CO1: ability to understand basic structure of computer
CO2: ability to perform computer arithmetic operations
CO3:ability to understand control unit operations.
CO4: ability to design memory organization that uses banks for different word size operations.
CO5: ability to understand the concept of cache mapping techniques.
CO6:ability to understand the concept of i/o organization
CO7: ability to conceptualize instruction level parallelism

Program	Semester	Course code	Course name
MCA	I	20MCA107	Programming and problem solving using python

Upon successful completion of the course, a student will be able to:
CO 1: Understand and appreciate the web architecture and services.
CO 2: Gain knowledge about various components of a website.
CO 3: Demonstrate skills regarding creation of a static website and an interface to dynamic website.
CO 4: Learn how to install word press and gain the knowledge of installing various plugins to use in their websites.

Program	Semester	Course code	Course name
MCA	I	20MCA108	DBMS lab

CO1: understand and comprehend the basics of python programming.
CO2: demonstrate the principles of structured programming and be able to describe, design, implement, and test structured programs using currently accepted methodology.
CO3: explain the use of the built-in data structure list, sets, tuples and diction nary.
CO4: make use of functions and its applications.
CO5: identify real-world applications using oops, files and exception handling provided by python

Program	Semester	Course code	Course name
MCA	II	20MCA201	Design and analysis of algorithms

CO1: analyze the asymptotic performance of algorithms.
CO2: write rigorous correctness proofs for algorithms.
CO3 : demonstrate a familiarity with major algorithms and data structures.

CO4 :apply important algorithmic design paradigms and methods of analysis.
CO5: synthesize efficient algorithms in common engineering design situations.
CO6: salgorithm design and analysis provide the theoretical backbone of computer science and are a must in the daily work of the successful programmer. The goal of this course is to provide a solid background in the design and analysis of the major classes of algorithms

Program	Semester	Course code	Course name
MCA	II	20MCA204	Computer networks

CO1: ability to set up install and configure networks
CO2: ability to do network programming
CO3: ability to use network protocols efficiently
CO4: it facilitates communications from one computer to another computer.
CO5: it allows the exchange of data and information among users through a network

Program	Semester	Course code	Course name
MCA	II	20MCA205	Web technologies

CO1: explain different components and technologies of world wide web as a platform.
CO2: design and develop websites using fundamental web languages, technologies, and tools.
CO3: distinguish between server-side and client-side web technologies.
CO4: describe various web technology and application development issues and trends.
CO5: conduct independent research on a subject related to the course material

Program	Semester	Course code	Course name
MCA	II	20MCA206	Research methodology -i

On completing the subject, students will be able to:
CO 1: Understand the fundamental concepts of DBMS with special emphasis on relational data model.
CO 2: Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database
CO 3: Model database using ER Diagrams and design database schemas based on the model.
CO 4: Create a small database using SQL.
CO 5: Store, Retrieve data in database.

Program	Semester	Course code	Course name
MCA	III	20MCA301	Big data analytics

At the end of the course student will
CO 1: Know Computer system resources and the role of operating system in resource management with algorithms
CO 2: Understand Operating System Architectural design and its services.
CO 3: Gain knowledge of various types of operating systems including Unix and Android.
CO 4: Understand various process management concepts including scheduling, synchronization, and deadlocks. 5. Have a basic knowledge about multithreading.
CO 5: Comprehend different approaches for memory management.
CO 6: Understand and identify potential threats to operating systems and the security features design to guard against them.
CO 7: Specify objectives of modern operating systems and describe how operating systems have evolved over time
CO 8: Describe the functions of a contemporary operating system.

Program	Semester	Course code	Course name
MCA	III	20MCA302	Mobile computing

After successful completion of the course, the students are able to At the end of the course student will

CO 1: Understand the benefits of a well-structured program

CO 2: Understand different computer programming paradigms

CO 3: Understand underlying principles of Object-Oriented Programming in Java

CO 4: Develop problem-solving and programming skills using OOP concepts

CO 5: Develop the ability to solve real-world problems through software development in high-level programming languages like Java.

Program	Semester	Course code	Course name
MCA	III	20MCA303	Artificial intelligence

CO1: understanding of the major areas and challenges of ai.

CO2: ability to apply basic ai algorithms to solve problems.

CO3: understanding of ethical issues in ai.

CO4: understand the various searching techniques, constraint satisfaction problem and example problems- game playing techniques.

CO5: apply these techniques in applications which involve perception, reasoning and learning.

CO6: explain the role of agents and how it is related to environment and the way of evaluating it and how agents can act by establishing goals.

CO7: acquire the knowledge of real world knowledge representation

Program	Semester	Course code	Course name
MCA	III	2oMCA304	Internet of things

CO1: understand the application areas of iot

CO2: realize the revolution of internet in mobile devices, cloud & sensor networks

CO3: understand building blocks of internet of things and characteristics

CO4: identify the components that forms part of iot architecture

CO5: determine the most appropriate iot devices and sensors based on case studies. CO6: setup the connections between the devices and sensors evaluate the appropriate protocol for communication between iot.

CO7: analyze the communication protocols for iot

Program	Semester	Course code	Course name
MCA	III	20MCA305	Software testing and fault analysis

CO1: after the successful completion of the course the students will be able to:

CO2: various test processes and continuous quality improvement

CO3: types of errors and fault models

CO4: methods of test generation from requirements

CO5: behaviors modeling using uml: finite state machines (fsm)

CO6: test adequacy assessment using: control flow, data flow, and program mutations

CO7: the use of various test tools

CO8: application of software testing techniques in commercial environments

Program	Semester	Course code	Course name
MCA	III	20MCA306	Research methodology –ii

Upon successful completion of the course, a student will be able to:
CO 1: Learn to apply fundamental problem-solving techniques.
CO 2: Describe the core syntax and semantics of Python programming language.
CO 3: Learn and understand python looping, control statements and string manipulations.
CO 4: Define and demonstrate the use of built-in data structures lists, dictionaries, tuples and sets
CO 5: Understand the Python programming language and it's rich set of libraries, applications where Python programming is effective

Program	Semester	Course code	Course name
MCA	III	20MCA307	Bigdata analytics using r programming lab

Upon successful completion of the course, a student will be able to:
CO 1: Understand available Data Structures for data storage and processing.
CO 2: Comprehend Data Structure and their real-time applications - Stack, Queue, Linked List, Trees and Graph
CO 3: Choose a suitable Data Structures for an application
CO 4: Develop ability to implement different Sorting and Search methods
CO 5: Have knowledge on Data Structures basic operations like insert, delete, search, update and traversal
CO 6: Design and develop programs using various data structures
CO 7: Implement the applications of algorithms for sorting, pattern matching etc

Program	Semester	Course code	Course name
MCA	III	20MCA308	Technical report writing lab and mini project

On completing the subject, students will be able to:
CO 1: Understand the fundamental concepts of DBMS with special emphasis on relational data model.
CO 2: Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database
CO 3: Model database using ER Diagrams and design database schemas based on the model.
CO 4: Create a small database using SQL.
CO 5: Store, Retrieve data in database.

Program	Semester	Course code	Course name
MCA	IV	20MCA403	Android apllication developemnt

CO1: understand the requirements of mobile programming environment
CO2: learn about basic methods, tools and techniques for developing apps
CO3: explore and practice app development on android platform
CO4: develop working prototypes of working systems for various uses in daily lives

Program	Semester	Course code	Course name

MCA	IV	20MCA404	Distributed computing
CO1: in distributed systems this course, you will learn a range of fundamental and applied techniques in distributed systems. The learning objectives for distributed systems are: **CO2**: apply knowledge of distributed systems techniques and methodologies. **CO3**: explain the design and development of distributed systems and distributed systems applications. **CO4**: use the application of fundamental computer science methods and algorithms in the development of distributed systems and distributed systems applications. **CO5**: discuss the design and testing of a large software system, and to be able to communicate that design to others			
Program	Semester	Course code	Course name
MCA	IV	20MCA405	Software project management
CO1: develop the model from the conventional software product to the modern. **CO2**: analyze and design the software architecture. **CO3**: have an exposure for organizing and managing a software project. **CO4**: apply, analyze, design and develop the software project. **CO5**: design various estimation levels of cost and effort. **CO6**: acquire the knowledge of managing, economics for conventional, modern and future software projects. **CO7**: categorize various peer instruction levels. **CO8**: sketch various artifacts sets for better understanding of software development			
Program	Semester	Course code	Course name
MCA	V	20MCA501	Data science
CO1: after successful completion of this course, student will be able to **CO2:** apply mathematical principles to the analysis of data **CO3:** analyse very large data sets in the context of real world problems **CO4:** develop and implement data analysis strategies base on theoretical principles, ethical considerations, and detailed knowledge of the underlying data . **CO5:** demonstrate an ability to articulate, assess and apply appropriate theories and principles of information management **CO6:** demonstrate presentation proficiency for written, oral and visual communications in the contest of traditional and digital forms of communication			
Program	Semester	Course code	Course name
MCA	V	20MCA502	Design and analysis of algorithms
CO1: argue the correctness of algorithms using inductive proofs and invariants. **CO2:**Analyse worst-case running times of algorithms using asymptotic analysis. **CO3:** describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. CO4:synthesize dynamic programming algorithms and analyze them			
Program	Semester	Coursec code	Course name
MCA	V	20MCA503	Dot net programming
CO1: understand the Microsoft .NET Framework and ASP.NET page structure. **CO2:** design web applications with variety of controls. **CO3:** access the data using inbuilt data access control. **CO4:** develop secured web applications.			

CO5: configure and deploy web applications.

Program	Semester	Course code	Course name
MCA	V	20MCA506	Data Science Lab

CO1: Ability to understand installation of hadoop.
CO2: understanding hadoop frame work.
CO3: ability to work on map reduce.
CO4: analyze large amount of data sets using apache pig.
CO5.ability to write commands using pig latin

Program	Semester	Course Code	Course Name
MCA	V	20MCA507	Dot Net Programming Lab

CO1: Create user interactive web pages using ASP.NET.
CO2: Create simple data binding application using ADO.NET connectivity.
CO3: performing database operations for windows form and web applications

Program	Semester	Course code	Course name
MCA	VI	2OMCA	Project

CO1: students will apply software engineering principles by working on a real software projects.
CO2: students will learn to develop software product using agile methodology

DEPARTMENT OF BOTANY (M.SC)

Program	**Semester**	**Course code**	**Course Name**
MSc (Botany)	I	BOT111VB	Biology and diversity of viruses, bacteria, algae & fungi

CO 1: Illustrate diversity among the viruses and prokaryotic organisms and can categorize them.
CO 2: Classify fungi, lichens, algae and bryophytes based on their structure, reproduction and life cycles.
CO 3: Analyze and ascertain the plant disease symptoms due to viruses, bacteria and fungi.
CO 4: By the end of the course the people should be able to apply the knowledge gained here to identify each of these groups at taxonomic levels
CO 5: The course helps application of Bacteria, Algae and Fungi in the field of Agriculture, Industry and Pharmacy

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	I	BOT111(P)	Biology and diversity of viruses, bacteria, algae & fungi (Lab 1)

On successful completion of this practical course, student shall be able to;
CO 1: Demonstrate the techniques of use of lab equipment, preparing slides and identify the material and draw diagrams exactly as it appears
CO 2: Observe and identification of fungal cultures
CO 3: Observe and identify microbes and lower groups of plants on their own
CO 4: Demonstrate the techniques of inoculation, preparation of media etc

Program	Semester	Course Code	Course name
M.Sc. (Botany)	I	BOT11IIBG	Bryophytes, Pteridophytes, gymnosperms and plant fossils

On successful completion of the course, students will be able to;
CO 1: Explore and understand the great deal of variations exhibited in external and internal morphology, and reproduction (life cycle) by Bryophytes, Pteridophytes, Gymnosperms.
CO 2: Understand the mechanism of progressive evolution of various groups of plants
CO3: Appreciate socio-economic significance of Bryophytes, Pteridophytes and Gymnosperms.
CO 4: Gain the deep knowledge of geological time scale, fossilization process and their types and utilization of fossils in evolution

Program	Semester	Course Code	Course name
M.Sc. (Botany)	I	BOT112(P)	Bryophytes, Pteridophytes, gymnosperms and plant fossils (Lab II)

On successful completion of the practical course, students will be able to;
CO 1: Experience the morphological and anatomical presented in the wide groups of plants.
CO 2:Understand the reproductive strategies exhibited in Bryophytes, Pteridophytes and Gymnosperms.
CO 3: Gain the hand on training on taking the section cuttings in different planes and preparing microscopic slides.
CO 4: Demonstrate the knowledge in taxonomic and evolutionary studies

Program	Semester	Course Code	Course name
M.Sc. (Botany)	I	BOT113TA	Taxonomy of angiosperms

On successful completion of the course, students will be able to;
CO 1: To gain the knowledge with taxonomic principles and rules for naming of plants.
CO 2: Identify the plants based on their morphology.
CO 3: The course helps the students to get place in many organizations as taxonomist.
CO 4: Inculcate the nature of scientific research

Program	Semester	Course Code	Course name
M.Sc. (Botany)	I	BOT113(P)	Taxonomy of angiosperms(Lab III)

CO 1: Can identify the family of the specimen based on its morphological characters.
CO 2: Gain the knowledge to write a field note.
CO 3: Gain the knowledge to prepare herbaria sheets.

Program	Semester	Course Code	Course name

M.Sc. (Botany)	I	BOT114UC	Plant resource utilization and conservation

CO 1: To gain knowledge synthesis about the role of plants in our day-to-day life.
CO 2: Learn how to appreciate the wide range of biodiversity and its importance.
CO 3: To evaluate significance threats to the threats and measures to protects biodiversity.
CO 4: Implement the concept of 'think globally and act locally' in conservation of biodiversity

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	I	BOT114UC	Plant resource utilization and conservation

CO 1:To gain knowledge synthesis about the role of plants in our day-to-day life.
CO 2: Learn how to appreciate the wide range of biodiversity and its importance.
CO 3: To evaluate significance threats to the threats and measures to protects biodiversity.
CO4: Implement the concept of 'think globally and act locally' in conservation of biodiversity

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	I	BOT114(P)	Plant resource utilization and conservation (Lab 4)

CO 1: Can identify diversified plants and their edible parts.
CO 2: Gain the knowledge about medicinal plants and their uses.
CO 3: Develops aesthetic sense towards the Conservation of plants.
CO 4: Learns to utilize the plants in a proper way by knowing their economic importance

Program	Semester	Course Code	Course name
M.Sc. (Botany)	I	BOT111FC	Research Methodology

CO 1: Explore and understand the basic concept of research
CO 2: Understand the structure and components of the research
CO 3: Gain the deep knowledge in reviewing the literature for explore the gaps in the research and

Program	Semester	Course Code	Course name
M.Sc. (Botany)	I	BOT111MC	Bio fertilizers/ Mushroom cultivation

CO 1: To gain the knowledge about the nutritional value of Mushrooms.
CO 2: To gain the knowledge about the medicinal value of Mushrooms.
CO 3: Learn to Cultivate, preparation of food items and storage of Mushrooms.
CO 4: To apply the knowledge gained to start a small-scale industry

Program	Semester	Course Code	Course name

M.Sc. (Botany)	1	BOT111MC	Bio fertilizers/ Mushroom cultivation

CO 1: Can identify diversified Mushroom species.
CO 2: Learn to produce Mushroom spawn.
CO 3: Learn the technique to preserve Mushrooms.
CO 4: Can present a project on Mushroom Cultivation.
CO 5: Can start a small-scale industry to produce Mushrooms

Program	Semester	Course Code	Course name
M.Sc. (Botany)	II	BOT1II1CC	Cytology and cell biology of plants

CO 1: Student will be able to understand membrane chemistry and regulation which are essential in cell communication.
CO 2: The students will gain knowledge about the structure of gene, chromosome organization and gene transfer methods.
CO 3: This teaches about various phases in cell cycle and division. It also gives insights into how chromosome number varies in each phase and by the end of the cell division.
CO 4: Students can understand various gene mutations and their nature of mechanism.
CO 5: Gain knowledge regarding induction of haploids, polyploidsandaneuploids.
CO 6: Concepts of oncogenes; tumor suppressor genes which will be helpful for them for their further research.

Program	Semester	Course Code	Course name
M.Sc. (Botany)	II	BOT121(P)	Cytology and cell biology (Lab1)

CO1: Acquire skill to useglassware, equipmentandchemicalsandfollowexperimentalprocedure in thelaboratory to carry out step wise study of mitosis &meosis in Allium &Zea mays
CO 2: Learn and identify the Sex-chromatin throughbuccal smear.
CO 3: Learn and be able to handle the instruments individually to performmeiosis of translocation heterozygotes
CO 4: Concepts of Salivary gland chromosome and B-chromosome which will be helpful for them for their further research

Program	Semester	Course Code	Course name
M.Sc. (Botany)	II	BOT122PD	Plant structure and development

CO 1: The aim of this course is to ensure that one can achieve an up-to-date level of understanding the plant structure and both internal and external structures and development.
CO 2: One can compare contrast the structures by which vascular and non-vascular plants obtained and retain water, allow for gas exchange for photosynthesis and allow for long-distance internal transport of water.
CO 3: At the end of the course one should get capacity to think critically and one can able to design and execute knowledge over the plant structure and development and one can gain confidence and ability to communicate ideas about plant structure and development.
CO 4: The knowledge can be used in the field of agriculture for crop improvement.

Program	Semester	Course Code	Course name
M.Sc. (Botany)	II	BOT122(P)	Plant structure and development (Lab II)

On successful completion of this practical course, the student will be able to;
CO 1: Gain knowledge on the effect of unilateral light.
CO 2: Knows about the effect of red, far red light on cotyledon expansion.
CO 3: Anatomy of shoot apices.
CO 4: Permanent slides of SAM.
CO 5: Variations of Phyllotaxy.
CO 6: Effect of ABA on stomatal closure.
CO 7:.Anatomy of root, seed dormancy and break down of seed dormancy

Program	Semester	Course Code	Course name
M.Sc. (Botany)	II	BOT1IIIIIPE	Plant Ecology

CO 1: To provide students with an understanding of the basics of plant environment and plant – plant /plant-microbe/plant-animal interactions and what influences plant abundance and diversity.
CO 2: The local and geographical distribution and abundance of organisms, temporal changes in the occurrence, abundance, and activity of organisms (seasonal, annual, successional, geological). The inter relationship between organisms in population and communities (population ecology), the structural adaptation and functional adjustment of organisms to their physical environment can be understood.
CO 3: Understanding the behaviour of organism under natural and artificial ecological conditions.
CO 4: The objective of ecology is to understand the dynamics of our surroundings and to take proper measures to conserve the diversity and to understand the biological productivity of nature and its relations with mankind.
CO 5: Gives the basics knowledge of plant environment and plant – plant /plant-microbe/plant-animal interactions and what influences plant abundance and diversity.
CO 6: This course will help to appreciate ecological adaptations of various organisms.
CO 7: The knowledge gained can be applied to solve local and global ecological problems like extinction, pollution etc...

Program	Semester	Course Code	Course name
M.Sc. (Botany)	II	BOT1IIIII(P)	Plant Ecology (Lab III)

CO 1: Determine the size of the quadrate of the grass land ecosystem.
CO 2: Estimation of quadrates required for grass land.
CO 3: Estimation of frequency, density and cover.
CO 4: Determine the Important Value Index and leaf area index.
CO 5: Analyse soil texture, moisture content and water holding capacity

Program	Semester	Course Code	Course name
M.Sc. (Botany)	II	BOT1II4PP	Plant physiology

Student will be able to understand about plant growth and development and role external and internal factors in growth and development.

The students will gain knowledge about the role & their deficiency of essential nutrients in plants.
This teaches about various photochemical and biochemical properties of phytochrome&phytochrome induced plant responses,It also gives insights on molecular mechanism of action of phytochrome in gene expression.
Students can understand photoperiod &vernalisation process and their nature of mechanism.
Gain knowledge regarding different plant hormones & their mode of action.
Concepts of signal transduction which will be helpful for them for their further research

Program	Semester	Course Code	Course name
M.Sc. (Botany)	II	BOT1II4(P)	Plant Physiology (Lab 4)

CO 1: Acquire skill to use glassware, equipment and chemicals and follow experimental procedure in the laboratory to carry out step wise study of Estimation of chloride content
CO 2: Learn and identify the osmotic potential of cell sap by plasmolytic method.
CO 3: Learn and be able to handle the instruments individually to perform effects of chemicals and temperature on the permeability of protoplasmic membrane
CO 4: Concepts of Estimation of seed germination as effected by red and far-red radiation which will be helpful for them for their further research

Program	Semester	Course Code	Course name
M.Sc. (Botany)	II	BOT1II1SC	Research Methodology

CO 1: Conduct data collection on a given topic.
CO 2: Gain knowledge to arrange the data obtained from different sources in a sequential Manner.
CO 3: Write a seminar report based on the available data related to the given topic.
CO 4: Present his report on the given topic

Program	Semester	Course Code	Course name
M.Sc. (Botany)	III	BOT2III1(P)	Genetics and Cytogenetics - Lab 1

CO 1: Learn to induce polyploidy by using Colchicine.
CO 2: Gain knowledge about the meiotic divisions in polyploids.
CO 3: Learn statistical genetics through gene mapping technique.
CO 4: Understands about laws of inheritance and gene interaction

Program	Semester	Course Code	Course name
M.Sc. (Botany)	III	BOT2IIIMB	Molecular biology of plants

CO 1: Comprehend the importance of DNA damage & DNA repair mechanisms in cells
CO 2: Evaluate the role of DNA as genetic material in cells and their mechanism of replication.
CO 3: Interpret the role of transcription in Prokaryotic & Eukaryotic organisms.
CO 4: Critically understand the Mechanism of Translation in prokaryotes & Eukaryotes and processes responsible for synthesis of proteins in cells.
CO 5: Analyze the biochemical reactions in relation to targeting of proteins to organelles.
CO 6: Evaluate the mechanism involved in gene regulation in prokaryotes & eukaryotes.

CO 7: Examine the role of Micro array technology & its applications			
Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	III	BOT2IIIII(P)	Molecular Biology of plants - Lab II
CO 1: Demonstrate the techniques of protein profiles through SDS PAGE. CO 2: Show the understanding of techniques of demonstrating estimation of DNA by DPA method. CO 3:Identify and explain Blotting techniques with help of diagrams. CO 4: Solve the numerical calculations related to DNA structure. CO 5: Demonstrate Molecular biology experiments such as DNA extraction and isolatio			
Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	III	BOT2IIIPR	Plant Reproduction
CO 1: Understand the sexual parts of the flower and their developmental biology. **CO 2**: Explore various methods of pollination and pollinators **CO 3**: Appreciate the process of parthenocarpy and apomixes and their role in horticulture **CO 4**: Apply the knowledge in the field of plant breeding for hybrid production			
Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	III	BOT2 IIIIII(P)	Plant Reprodution - Lab III
CO 1: Get hand on experience in paraffin wax method for preparation of serial sections from fixation to mounting of permanent slides **CO 2**: Explore the various staining methods to study microscopic slides. **CO** 3: Gain the hand on training on taking the embryological section cuttings in different planes and preparing microscopic slides. **CO 4**: Demonstrate the knowledge in embryological features and their significance agriculture studies			
Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	III	BOT2III4CC	Cytogenetics of Crop plants &Plant Breeding
CO 1:The knowledge can be used to identify clinically relevant chromosome abnormalities. CO 2:Understand the application of principles and modern techniques in plant breeding. CO 3: Explain the procedures of selection and hybridization for improvement of crops. CO 4: Increased yield has been the ultimate aim of most plant breeders. This can be achieve by developing more efficient genotypes having greater physiological efficiency. CO 5: Student will able to apply the knowledge gained here to crop improvement			
Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	III	BOT2III4(P)	Cytogenetics of Crop plants &Plant Breeding - Lab 4
CO 1: Identify and explain applications of RFLP & RAPD with help of diagrams.			

CO 2: Solve the problems related to Heterosis.
CO 3: Solve the numerical calculations related to gene frequencies by Hardy-Weinberg Law.
CO 4: Get familiarized with Measurement of variability through standard deviation and coefficient of variation.
CO 5: Estimate the T-Test of significance calculations

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	III	BOT2III5PP	Plant pathology

CO 1: The fundamental outcome of the course is that students will get the synthetic knowledge about the concept of diseases and causes and control methods.
CO 2: It helps to student apply the knowledge in disease control in farming to increase the productivity

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	III	BOT2III5(P)	Plant pathology- Lab 5

CO 1: Identify the common crop diseases of their locality.
CO 2: Gain knowledge about the fungicidal effects on host plant as well as on pathogen.
CO 3: Understands the plant pathogen interactions

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Botany)	III	BOT2III1ROC	Research Oriented Course

CO 1:Conduct independent research on different topics.
CO 2: Handle different techniques available for identification, separation, purification, Crystallization and analysis
CO 3: Gain knowledge regarding interpretation of data obtained from different analytical and Spectroscopic tools and techniques.
CO 4: Write a research report based on the interpretation of available research data
CO 5: Publish his findings in a research journal of good repute related to his research topic

Program	Semester	Course Code	Course name
M.Sc. (Botany)	IV	BOT2 IV 1PM	Plant Metabolism

CO 1: The students will gain thorough knowledge about the role of enzymes involved in different metabolic reactions.
CO 2: Understand the concepts needed to explain Michaelis-Menton equation and its significance.
CO 3: The students will be able to know the role of photosynthetic electron transport, proton transport and ATP synthesis.
CO 4: Students will be able to acquire and articulate knowledge relevant toNitrogen metabolism & Lipid metabolism.
CO 5: This teaches about advanced application techniques like Alcohol and Lactic acid fermentations.

Program	Semester	Course Code	Course name

MSc (Botany)	IV	BOT2IV PTO	Plant Cell, Tissue and Organ Culture

CO 1: To understand a procedure that is often used to propagate many plants of the same genetic background.
CO 2: To understand the importance of sterile techniques.
CO 3: The primary objective of tissue culture could be propagation of large quantity of good quality plant material from elite mother plants within short time, space with minimum cost per plant.

Program	Semester	Course Code	Course name
M.Sc (Botany)	IV	BOT2IV5MT	Microbial Technology

CO 1: The course will cover the concept of microbial growth metabolism and application of microbial technology in varied fields
CO 2: The theory course structure will be complimented by practical sessions
CO 3: The course will provide a strong understanding of applied microbiology and will help the students to explore work opportunities in Biotechnology companies and industries as well

Program	Semester	Course Code	Course name
M.Sc (Botany)	IV	BOT2IVROC (P6)	Research Oriented Course

CO 1: Conduct independent research on different topics.
CO 2: Handle different techniques available for identification, separation, purification, Crystallization and analysis
CO 3: Gain knowledge regarding interpretation of data obtained from different analytical and
Spectroscopic tools and techniques.
CO 4: Write a research report based on the interpretation of available research data
CO 5: Publish his findings in a research journal of good repute related to his research topic

DEPARTMENT OF PHYSICS

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY111FC	Concepts For Physicists

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO1:learn mathematical concepts needed for advanced physics
CO2: understand the basics of semiconductors devices
CO3:learn ICT tools and acquire skills needed for publication and presentation

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY111MP	Mathematical Methods For

COURSE OUTCOMES:
By successful completion of the course, students will be able to

CO1:describe special functions and their recurrence relations.
CO 2:solve physically relevant partial differential equations using standard methods like series expansion and integral transforms.
CO 3:learn the fundamentals and applications of Fourier series, Fourier and Laplace transforms, their inverse transforms etc.
CO 4: use complex numbers and variables.
CO 5:explain tensors and its basic operations.

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY112CM	Classical Mechanics

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1: understand concepts related to discrete and continuous mechanical systems which are useful for research.
CO 2:describe the motion of a mechanical system using Lagrange-Hamilton formalism.
CO 3:describe and understand planar and spatial motion of a rigid body.
CO 4: how to impose constraints on a system in order to simplify the methods to be used in solving physics problems.
CO 5: understand mathematically the conservative theorems of energy, linear momentum and angular momentum.
CO 6: find the linear approximation to any dynamical system near equilibrium and also know how to derive and solve the wave equation for small oscillations

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY113QM	Quantum Mechanics

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1:understand the idea of wave function and apply the principles of quantum mechanics tocalculate observable on known wave function.
CO 2: solve time independent & time dependent Schrodinger wave equation for simple potentials.
CO 3:use commutation relations to explain the outcome of measurements.
CO 4: gain knowledge about approximate methods for solving the Schrodinger equation.
CO 5: carry out research in this field

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY114EL	Electronics

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1: to analyze the linear and non-linear applications of an op-amp and special application ICs
CO 2: explain and compare the working of multi-vibrators
CO 3: represent the data in codes and interpret those codes
CO 4: analyze and design various combinationaland sequential circuits.
CO 5: learn about counters and shift registers

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY111GE	Physics of Everyday Life

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1:understand the importance of applications of Applied Physics in daily life
CO 2: understand the cause behind the relative change in motion of fluids
CO 3: understand the relationship between physics & technology

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY111GE	Medical Imaging Techniques

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: Identify the major medical imaging methods for clinical and biomedical research.

CO 2: The student can able to discuss the principle and working of State of the Art imaging techniques Viz., MRI, PET , SPECT and describe methods for generating2D and 3D medical Images.

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY111(P)	General Physics-I

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: acquire necessary skills to make accurate measurements and proper tabulation.

CO 2:practice the methodology by performing laboratory experiments.

CO 3: use graphical models to analyze laboratory data.

CO 4: describe the methodology of science and the relationship between observation and theory.

CO 5: learn problem solving skills related to physics principles and interpretation of laboratory data.

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY112(P)	General Physics-II

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: acquire necessary skills to make accurate measurements and proper tabulation.

CO 2: practice the methodology by performing laboratory experiments.

CO 3: use graphical models to analyze laboratory data.

CO 4: describe the methodology of science and the relationship between observation and theory.

CO 5: learn problem solving skills related to physics principles and interpretation of laboratory data.

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY113 (P)	General Electronics

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: Recognize a variety of exciting high-tech products and systems enabled by electronics

CO 2: Manipulate voltages,currents and resistances in electronic circuits

CO 3: Demonstrate familiaritywith basic electronic components.

CO 4: Use them to design simple electronic circuits.

CO 5: Observing how the signals can be represented in the time and frequency domains.

CO 6: Record, analyses and filter audio signals to improve their fidelity.

Program	Semester	Course code	Course name
M.Sc. (Physics)	I	PHY114 (P)	Digital Electronics

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: identify the various digital ICs and understand their operation.

CO 2: understand the basic digital circuits and to verify their operation.

CO 3: apply Boolean laws to simplify the digital circuits.

CO 4: analyze and design various combinationaland sequential circuits.

CO 5:learn about counters and shift registers.

CO 6:design a digital circuit using the knowledge acquired from the laboratory

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY121SM	Statistical Mechanics

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: Learn different statistical ensembles, their distribution functions, range of applicability and the corresponding thermodynamic potentials.

CO 2: Understand the relationship between equilibrium distributions and kinetic processes leading to equilibrium

CO 3: Be able to do research in the respective fields

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY122AQ	Advanced Quantum Mechanics

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: Students will grasp the concept of spin and angular momentum as well as their quantization and addition rules.

CO 2: The students will develop problem solving methods that will include mathematical as well as numerical computations and solutions.

CO 3: Students can peruse Quantum mechanics as a research oriented program

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY123SP	Solid State Physics

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: Students will be able to outline the physical origins which govern the properties of the matter in the solid state.

CO 2: Students will gain and apply discipline-specific knowledge including self-directed research in the scientific literature.

CO 3: Students will be able to describe different types of crystal structures in terms of crystal lattice and the basis of constituent atoms.

CO 4: Students will be able to get placed in various fields of solid state physics like glass manufacturing, thin film preparation etc.

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY124EM	Electro Magnetic Theory, Lasers & Optics

CO 1: Be able to define and derive expressions for the energy both for the electrostatic and magneto static fields.

CO 2: Be able to formulate potential problems

CO 3: Be able to understand nature of light, the light spectrum and laser wavelengths.

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY121RM/SC	Research Methodology

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: At the end of the course student will be able to

CO 2: Explain the basic aspects of research and methodology

CO 3: summarize research problems, their types and objectives

CO 4: prepare good research designs and carry out statistically relevant sampling

CO 5: gather, collate, analyze and interpret data systematically

CO 5: Make use of literature and other search engines with care for research purposes

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY121GE	Energy Management

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: Explain the principles of energy management, describe the history and Environmental impacts of energy usage, and explore job opportunities in the field.

CO 2: Learn about the history of energy production and costs, the dynamics of worldwide energy consumption and growth, the principle methods by which energies conserved

CO 3: Explore jobs available in the energy management and energy service industry.

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY121GE	Radiation Hazards Evaluation & Control

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: Students will be able to effectively act as medical radiation safety officer in diagnostic and therapy departments

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY121 (P)	Advanced Physics And Optics

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: acquire necessary skills to make accurate measurements and proper tabulation.

CO 2:practice the methodology by performing laboratory experiments.

CO 3: use graphical models to analyze laboratory data

CO 4: describe the methodology of science and the relationship between observation and theory

CO 5:learn problem solving skills related to physics principles and interpretation of laboratory data

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY122 (P)	Lasers & Fiber Optics

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1:acquire necessary skills to make accurate measurements and proper tabulation.

CO 2:practice the methodology by performing laboratory experiments.

CO 3: use graphical models to analyze laboratory data

CO 4:describe the methodology of science and the relationship between observation and theory

CO 5: learn problem solving skills related to physics principles and interpretation of laboratory data.

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY123 (P)	Analogue Electronics

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1:infer the characteristics of operational amplifiers and its effect on output and their compensation techniques

CO 2: elucide and design the linear and non-linear applications of an op-amp

CO 3: explain and compare the working of multivibrators usingspecial application IC 555 and general purpose op-amp

Program	Semester	Course code	Course name
M.Sc. (Physics)	II	PHY123 (P)	Operational Amplifiers

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1:infer the characteristics of operational amplifiers and its effect on output and their compensation techniques

CO 2: elucidate and design the linear and non-linear applications of an op-amp

CO 3: explain and compare the working of multi vibrators using special application IC 555 and general purpose op-amp.

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY231AP	Atomic Physics

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: U nderstandthe structure and dynamics of atoms.

CO 2: Recognize the interaction between atoms and electromagnetic fields.

CO 3: Understand the structure of the periodic system, many electron and relativistic effects.

CO 4: Explain applications of quantum theory.

CO 5: Describe types and applications of atomic spectra

CO 6: Pursue atomic physics as aresearch oriented course.

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY232NP	Nuclear and Particle Physics -I

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: identify basic nuclear properties and outline their theoretical descriptions

CO 2: understand the structure of nuclei and simple nuclear models

CO 3:understand the differences between various decay modes, state selection rules, and determine whether a given decay can take place

CO 4: account for the fission and fusion processes

CO 5: account for how forces arise from virtual particle exchange

CO 6: pursue nuclear physics as research oriented course

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY233PS	Properties of Solids

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: learn various defects in crystals and their properties

CO 2: have knowledge on optical, thermal and magnetic propertiesof solids

CO 3: understand about luminescence

CO 4: learn about lattice vibration

CO 5: learn about crystal field splitting

CO 6: pursue Solid State Physics as a research oriented program

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY234GT	Glass Science and Technology

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1:know manufacturing processes, the raw feed materials for batch preparation, their availability, their properties, their beneficiation processes

CO 2: understand the mechanics of glass melting and forming into products

CO 3: choose batch composition for different glasses and ceramic products
CO 4: build a bridge between theoretical and practical concept used in industry
CO 5: express their technical knowledge over fundamentals of the subject
CO 6: apply this knowledge in their higher study, research work with related technical subjects

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY234TF	Thin Film Technology

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1: To understand the fundamental topics in ThinFilm technology including formation, crystallization and phase separationof Thin Films
CO 2: To understand the mechanism of growth of Thin Films
CO 3: To know the properties and applications of Thin Films
CO 4: get exposure in Thin Films for Research
CO 5: This Course will become a resource to the technical side of the thin film industry

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY235DF	Dielectrics, Ferroelectrics & High Temperature Superconductors

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1:know about dielectrics, dielectric constant and its measurement
CO 2: understand ferroelectric domains and its applications
CO 3: gain knowledge about superconductors and various theories related to superconductivity
CO 4: learn about Dielectrics, Ferroelectrics & High Temperature Superconductors
CO 5: peruse their research in dielectrics or ferroelectrics or superconductors

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY235RP	Radiation Physics

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1: describe the various types of ionising radiation
CO 2: understand the interactions of radiation particles with radiations
CO 3: understand how to minimise the health effects due to radiation
CO 4: know about radioactivity and instrumentation for radiation detection and dosimetry
CO 5: have the physical basis, philosophy and practice of radition protection and radition health

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY231ROC	Materials Science (Research Oriented)

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1: will be having hands on experience on Research based learning
CO 2: able to carry out research work on glass science
CO 3: able to present papers in National and Seminars and to publish in different research journals
CO 4: will get exposure in glass science for Research
CO 5: This Course will become a resource to the technical side of the glass industry

Program	Semester	Course code	Course name

M.Sc. (Physics)	III	PHY231 (P)	Material Science Lab-I

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1:develop written and oral communication skills in communicating materials science and physics related topics.

CO 2: acquire knowledge about composite materials, types, manufacturing methods & its applications.

CO 3: understand concept of mechanical behavior of materials and calculations of same using appropriate equations.

CO 4: understand various crystal structures and their properties

CO 5: improve material properties by different heat treatment processes

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY232(P2)	Materials Science-II

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: discuss the properties and applications of non-ferrous metals and non-metallic materials.

CO 2: conduct,analyze and present the experiment data.

CO 3: analyze deformations behavior and strengthening mechanisms relying toits structure and

Properties if materials clearly.

CO 4: understand the concept of energy gap.

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY233 (P)	Preparation And Characterization Of Binary Glass

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: understand the fundamental topics in glass science and technology including glass formation, crystallization and phase separation.

CO 2:understand the mechanics of glass melting and forming into products

CO 3: know the properties and applications of different glasses

CO 4: have a detailed knowledge on the mechanics of glass melting and forming into products

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY234 (P)	Microprocessor-I

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: describe the Architecture and organization of microprocessor along with instruction format

CO 2: understand the memory and addressing modes

CO 3: apply different types of directives and interrupts

CO 4: recognize the operation of typical microprocessor trainer kit.

CO 5: write programs by using opcodes

Program	Semester	Course code	Course name
M.Sc. (Physics)	III	PHY235 (P)	Microprocessor-II

COURSE OUTCOMES:

By successful completion of the course, students will be able to

CO 1: describe the Architecture and organization of microprocessor along with instruction format

CO 2:learn the memory and addressing modes

CO 3:apply different types of directives and interrupts
CO 4: recognize the operation of typical microprocessor trainer kit.
CO 5: write programs by using opcodes

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY241MP	Molecular Physics

COURSE OUTCOMES:
By successful completion of the course, students will be able to;
CO 1: Understand about the origin of molecular states, different molecular vibrational modes and the activity in different linear and non linear molecules.
CO 2: understand the structure of molecules and the origin of the observedmolecular spectra.
CO 3: gain knowledge to explain various molecular states and molecular spectra of various organic and inorganic molecules.
CO4: apply the gained mathematical and experimental knowledge to molecular modeling and simulation.
CO5: Carry out research in this field.

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY242PP	Particle Physics

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1: know about high energy particles and their applications which prepares them for further study and research in particlephysics
CO 2: know about the production and acceleration of these elementary particles
CO 3: know about the origin of differentelementary particles by variousnuclear reactions using different conservation laws and methods.
CO 4: understand about generation and detectionof high energy particles and their applications
CO 5: pursue particle physics as research oriented course

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY243AMS	Advances In Material Science

COURSE OUTCOMES**:**
By successful completion of the course, students will be able to
CO 1: know about different types of advanced and functionalmaterials.
CO 2: understand the structure, properties and applications of these materials.
CO 3: understand the characterization, properties and processing and design ofthese materials.
CO 4: understand the utility of these materilas in daily life.
CO 5: select materials for design and constructionin further related studies .
CO 6: pursue this course as a research oriented program.

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY244AT	Analytical Techniques

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1: develop an understanding of the range and uses of analytical methods based on spectroscopic techniques.
CO 2: establish an appreciation of the role of Physics in quantitative analysis.
CO 3: prepare standard solution, samples and analysis of the samples using accurate techniques.

CO 4: learn how to prepare solutions quantitatively and analysis with high accuracy using various techniques.

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY244SP	Solar Energy & Photovoltaic Aspects

COURSE OUTCOMES**:**
By successful completion of the course, students will be able to
CO 1: harness the environment friendly solar energy sources and to enhance their contribution to the socio economic development
CO 2: meet and supplement rural energy needs
CO 3: expand the concept of solar energy in to electricity generation
CO 4: explain the principles that underline the ability of various natural phenomena
CO 5: learn about the technologies which are used to harness the power of solar energy.

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY245CMC	Computational Methods & C-Programming

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1: understand various numerical methods used in computation and programming using C language
CO 2: solve simple problems pertaining to Physics using thesemethods .
CO 3: develop problem solving methods that will include mathematical as well as numerical computations and solutions.

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY245RE	Renewable Energy

COURSE OUTCOMES**:**
By successful completion of the course, students will be able to
CO 1: harness the environment friendly renewable energy sources and to enhance their contribution to the socio economic development
CO 2: meet and supplement rural energy needs
CO 3: create public awareness
CO 4: explain the principles that underline the ability of various natural phenomena
CO 5: learn about the technologies which are used to harness the power of renewable energy.

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY246ROC	Material Science

COURSE OUTCOMES:
By successful completion of the course, students will be able to
CO 1: provide advanced scientific understanding of the subject matter at high standards
CO 2: carry out scientific work independently
CO 3: present papers in National and Seminars and to publish in different research journals
CO 4: get exposure in glass science for Research
CO 5: become a resource to the technical side of the glass industry

Program	Semester	Course code	Course name

M.Sc. (Physics)	IV	PHY241(P)	C-Programming

COURSE OUTCOMES:
By successful completion of this practical course, students will be able to;
CO 1: acquire necessary skills to make a programme.
CO 2: practice the methodology to execute programme.
CO 3: analyze data.
CO 4: develop problem solving methods that will include mathematical as well as numerical computations and solutions

CO 5: learn problem solving skills related to physics principles and interpretation of laboratory data.

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY242(P)	Numerical Methods & Programming

COURSE OUTCOMES:
By successful completion of this practical course, students will be able to;
CO 1: acquire necessary skills to make a programme.
CO 2: practice the methodology to execute programme.
CO 3: analyze data.
CO 4: describe the methodology of science and the relationship between observation and theory.
CO 5: develop problem solving methods that will include mathematical as well as numerical computations and solutions

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY243(P)	Condensed Matter Physics

COURSE OUTCOMES:
By successful completion of this practical course, students will be able to;
CO 1: acquire necessary skills to make accurate measurements and proper tabulation for monoatomic and diatomic lattice.
CO 2: practice the methodology by performing laboratory experiment of ESR spectrometer.
CO 3: use graphical models to analyze laboratory data.
CO 4: Gain knowledge for B-H curve.
CO 5: Learn the concept of viscosity of a liquid.

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY244(P)	Nuclear & Particle Physics

COURSE OUTCOMES:
By successful completion of this practical course, students will be able to;
CO 1: acquire necessary skills to make accurate measurements for time period and dead time.
CO 2: practice the methodology by performing laboratory experiments related to particle physics.
CO 3: know about the radioactive substances.
CO 4: Gain knowledge about the efficiency of gamma or beta sources.
CO 5: Understand practically GM counter and its applications

Program	Semester	Course code	Course name
M.Sc. (Physics)	IV	PHY245(P)	Thermodynamics &Thermo acoustic Properties of Materials

COURSE OUTCOMES:
By successful completion of this practical course, students will be able to;
CO 1: acquire necessary skills to prepare mixtures.
CO 2: practice the methodology by performing laboratory experiments.
CO 3: use graphical models to analyze laboratory data.
CO 4: describe the methodology of science and the relationship between observation and theory.
CO 5: learn problem solving skills related to physics principles and interpretation of laboratory data.

DEPARTMENT OF CHEMISTRY(M.Sc)

Program	Semester	Course Code	Course name
M.Sc. (Chemistry)	I	CHE111GC	General Chemistry

CO 1:To teach the proper use and importance of measurement statistics.
CO 2: To help students understand the theoretical aspects of various techniques used in chemical analysis like chromatographic separation and estimation etc
CO3:The knowledge of various kinds of titrations and its applications helps for the determination of concentrations of various compounds
CO 4: To stimulate the interest needed to approach research projects in new environments and to become familiar with the tools available

Program	Semester	Course Code	Course name
M.Sc. (Chemistry)	I	CHE112IC	Inorganic Chemistry

Course OutComes: At the end of the course, students will

CO 1: Gain knowledge of quantum mechanical concepts to analyze the properties ofmodel systems
CO 2: Understand the basic concepts of acids, bases and macrocylic complexes andtheir application in qualitative analysis
CO 3: Interpret spectral and magnetic properties of lanthanides and actinides andtheir use in analysis
CO 4:Explain the properties of transition metal complexes through understanding ofconcepts related to metal –ligand bonding
CO 5: Analyze and determine stability of various transition metal complexes
CO 6:Acquire knowledge of preparation, structure, bonding aspects and properties of metal pi complexes

Program	Semester	Course Code	Course name

MSc (Chemistry)	I	CHE113OC	Organic Chemistry

Course outcomes: At the end of the course, students will

At the end of the course student will able to:

CO 1: Understand the concepts of aromaticity and will be able to distinguish between different aromatic, homoaromatic and anti-aromatic compounds.

CO 2: Gain a comprehensive knowledge on reactive intermediates and reactive species

CO3: Develop awareness on importance of green chemistry and different green

chemical reagents and methods

CO 4: Acquire knowledge on aliphatic and aromatic nucleophilic substitution reactions.

CO 5: Gain knowledge on addition and elimination reaction mechanisms and their stereochemistry

Program	**Semester**	**Course Code**	**Course name**
MSc (Chemistry)	I	CHE114PC	Physical Chemistry

At the end of the course student will able to:

CO 1: Thermodynamics helps the student to understand the balanced functioning of the nature.

CO 2: Electrochemistry, Surface chemistry and chemical kinetics play a major role in this course to get the information about the physical and chemical nature of various compounds respectively

CO 3: Photochemistry and its applications helps to understand the quantum yield concept.

CO 4: Chemical kinetics is concerned with the study of the dynamics of chemical reactions.

CO 5:The raw data of chemical kinetics are the measurement of rates of reaction; the desired final product is the explanation of these rates in terms of complete reaction mechanisms.

CO 6:To understand the synthesis, structure, properties and application of solid inorganic materials

Program	Semester	Course Code	Course name
MSc (Chemistry)	I	CHE111FC	Foundation Course (Concepts in Chemistry)

At the end of the course student will able to:

CO 1: Electrochemistry and chemical kinetics play a major role in this course to get the information about the physical and chemical nature of various compounds respectively

CO 2: Chemical kinetics is concerned with the study of the dynamics of chemical reactions

CO 3: The raw data of chemical kinetics are the measurement of rates of reaction; the desired final product is the explanation of these rates in terms of complete reaction mechanisms.

CO4: Acquire knowledge on aliphatic and aromatic nucleophilic substitution reactions.

CO 5: Gain knowledge on addition and elimination reaction mechanisms and theirstereochemistry

CO 6: Explain the properties of transition metal complexes through understanding of concepts related to metal –ligand bonding

Program	Semester	Course Code	Course name
MSc (Chemistry)	I	CHE111EC(GE)	Environmental Chemistry (GE)

At the end of the course student will able to:

CO 1: Gain knowledge on concepts of environment and soil formation and its analysis

CO 2: Gain knowledge in air pollution and its effects.

CO 3: Understand water pollution and various steps involved in waste water treatment

CO 4: Know various water purification and disinfection techniques

CO 5: Recognise toxic chemicals and their effects and also importance of chelation.

Program	Semester	Course Code	Course name
MSc (Chemistry)	I	CHEP111GC(P1)	General Chemistry-1(P)

At the end of the course student will able to:

CO 1: Paper chromatographic techniques usage and application on various organic compounds

CO 2: Thin layer chromatography technique usage and application on various organic compounds.

CO 3: Preparation of various organic compounds at various temperatures by using various equipment.

CO 4: Separation of various organic compounds using various techniques

Program	Semester	Course Code	Course name
MSc (Chemistry)	I	CHEP112OC(P2)	Organic Chemistry-1(P)

Course Outcomes: At the end of the course, students will

At the end of the course student will able to:

CO 1: Use glassware, equipment and chemicals and follow experimental procedures in the

laboratory to carry out step wise synthesis of organic compounds.

CO 2: Calculate limiting reagent, theoretical yield, and percent yield

CO 3: Engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately

CO 4: Dispose of chemicals in a safe and responsible manner

CO5: Perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration.

CO 6: Create and carry out work up and separation procedures

Program	**Semester**	**Course Code**	**Course name**
MSc (Chemistry)	I	CHE113IC(P3)	Inorganic Chemistry

Course Outcomes: At the end of the course, students will

CO 1: Analyse the given Inorganic mixture for the common anions, interfering anionsby adopting a systematic procedure

CO 2: Confirm the presence of both common anions and interfering anions using therelated tests prescribed in the systematic procedure..

CO 3: Eliminate the presence of interfering anion present in the given Inorganic mixture

CO 4: Apply the concepts of common ion effect, solubility product and conceptsrelated to qualitative analysis in identifying the groups to which the commoncations and rare cations present in the given Inorganic mixture belongs

CO 5: Report the presence of common cations and rare cations present in the given Inorganic mixture.

CO 6: Synthesize Inorganic complexes

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Chemistry)	I	CHE114PC(P4)	Physical Chemistry

Course Outcomes: At the end of the course, students will

CO 1: Determine the rate constant of the oxidation of iodide ion with persulphate ion

CO 2: Find the relative strength of any two acids and also able to study the esterhydrolysis reaction.

CO 3: Understand the relation between partition coefficient and equilibrium constant.

CO 4: Report the distribution coefficient of any two immiscible solvents.

CO 5: Comprehend the CST of phenol-water solution and analyse the effect ofelectrolyte on CST

Program	Semester	Course Code	Course name
M.Sc. (Chemistry)	II	CHE121GC	General Chemistry-II

Course Outcomes: At the end of the course, students will

CO 1: Student will be able to understand the theory of various spectroscopic techniques like Microwave, Raman, IR, NMR, and ESR.

CO 2: Provides the students with the capability of interpreting the spectral data obtained for the structural elucidation of organic compounds

CO 3: Student will be able to understand the instrumentation of different spectroscopic teqniques.

CO 4: Provides knowledge for the determination of bond length, bond strength, identification of functional groups, structure, bonding, transitions, spin states, etc., can be done by using the Spectroscopic techniques.

CO 5: Provides knowledge about the solute interactions with different non aqueous solvents and also to estimate the strengths of a given solvent

Program	Semester	Course Code	Course name
M. Sc. (Chemistry)	II	CHE122IC	Inorganic Chemistry-II

Course Outcomes: At the end of the course, students will

CO 1: Gain knowledge of various electron counting rules and reactions of organometallic compounds

CO 2: Understand the basic concepts of preparation methods, structure, bonding and applications of metal clusters, boranes, Carboranes, metalloboranes, organometallic complexes andmetallocarboranes

CO 3: Gain knowledge about the mechanisms of the substitution reactions and electron transfer reactions in octahedral complexes

CO 4: Explain the properties of transition metal complexes through understanding of concepts related to metal –ligand bonding

CO 5: Analyze and interpret the electronic spectra of transitional metal complexes by the proper understanding of the term symbols, selection rules and energy level diagrams

CO 6: Acquire knowledge of structure, bonding and functional aspects of hemoglobin, Myoglobin and vitaminB12

CO 7: Provides understanding about the factors influencing paramagnetism

Program	Semester	Course Code	Course name
M.Sc. (Chemistry)	II	CHE123OC	Organic Chemistry-II

Course Outcomes: At the end of the course, students will

At the end of the course student will able to:

CO 1: Understand the stereochemistry of organic compounds, isomers and chiral concept.

CO 2: Synthetically useful named reactions and its applications for the synthesis of different natural products, dyes, and drugs.
CO 3: Protecting groups of different functional groups makes students to propose mechanism for the synthesis of the desired product.
CO 4: Understand the concept of regio, stereo and chemo selectivity and specificity in synthesis by using protecting groups

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Chemistry)	II	CHE124PC	Physical Chemistry-II

Course Outcomes: At the end of the course, students will

CO 1: Thermodynamics helps the student to understand the balanced functioning of the nature.
CO 2: Electrochemistry, Surface chemistry and chemical kinetics play a major role in this course to get the information about the physical and chemical nature of various compounds respectively.
CO 3: Provides knowledge about the techniques of polymerization and methods to determine the molecular weight of the polymers
CO 4: Chemical kinetics is concerned with the study of the dynamics of chemical reactions.
CO 5: The raw data of chemical kinetics are the measurement of rates of reaction; the desired final product is the explanation of these rates in terms of complete reaction mechanisms
CO 6: Provides an understanding about the importance of symmetry elements, operations in assessing physical, chemical and spectral properties of molecules

Program	Semester	Course Code	Course name
M.Sc. (Chemistry)	II	CHE121SC	Seminar Course

Course Outcomes: At the end of the course, students will
CO 1: Conduct data collection on a given topic
CO 2: Gain knowledge to arrange the data obtained from different sources in a sequential manner.
CO 3: Write a seminar report based on the available data related to the given topic.
CO 4: Present his report on the given topic

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Chemistry)	II	CHE121GE(ES)	General Elective

Course Outcomes: At the end of the course, students will
CO 1: Gain knowledge about the water resources, forest resources, land resources and mineral resources, their utilization and ill effect of overexploitation of these resources on environment.
CO 2: Gain knowledge about food resources and factors responsible for world food problems.
CO 3: Understand about the different types of ecosystems and its operational behaviour.
CO 4: Provides information about the biodiversity and threats to biodiversity
CO 5: Awareness about various social and environment related issues and way to address them

Program	**Semester**	**Course Code**	**Course name**

M.Sc. (Chemistry)	II	CHE121OC(P1)	Organic Chemistry-2A(P1)

Course Outcomes: At the end of the course, students will

CO 1: Use glassware, equipment and chemicals and follow experimental procedures in the laboratory to carry out step wise synthesis of organic compounds.

CO 2: Calculate limiting reagent, theoretical yield, and percent yield

CO 3: Engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately

CO 4: Dispose of chemicals in a safe and responsible manner

CO 5: Perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration.

CO 6: Create and carry out work up and separation procedures

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Chemistry)	II	CHE122OC(P2)	Organic Chemistry-2B(P2)

Course Outcomes: At the end of the course, students will

CO 1: Use glassware, equipment and chemicals and follow experimental procedures by using solubility test.

CO 2: Engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately

CO 3: Dispose of chemicals in a safe and responsible manner and to identify the different functional groups present in the compound

CO 4: To confirm the compound by preparing the derivatives and its melting points**.**

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Chemistry)	II	CHE123IC(P3)	Inorganic Chemistry-2(P3)

Course Outcomes: At the end of the course, students will

CO 1: Use glassware, equipment and chemicals and follow experimental procedures in the laboratory.

CO 2: Understand and explain the volumetric analysis based on fundamental concepts learnt in ionic equilibria.

CO 3: Learn and identify the concepts of a standard solution, primary and secondary standards

CO 4: Facilitate the learner to make solutions of various molar concentrations. This may include: The concept of the mole; Converting moles to grams; Converting grams to moles; Defining concentration; Dilution of Solutions; Making different molar concentrations.

CO 5: Understand the nature and functioning of different kinds of indicators used in volumetric analysis

CO 6: Provide knowledge about the principle and utilization of gravimetric methods for quantitative estimation of metals.

Program	**Semester**	**Course Code**	**Course name**
M.Sc. (Chemistry)	II	CHE124PC(P4)	Physical Chemistry-2(P4)

CO 1: Use glassware, equipment and chemicals and follow experimental procedures in the laboratory

CO 2: Apply concepts of electrochemistry in experiments

CO 3: Engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately.

CO 4: Be familiar with electro analytical methods and techniques in analytical

chemistry used to analyze a given analyte by measuring the potential (volts), pH and/or current (amperes) in an electrochemical cell containing the analyte.

Program	Semester	Course code	Course Name
MSc (Chemistry)	III	**CHE231OS**	**Organic Synthesis-I**

At the end of the course student will able to:

CO 1: Illustrate how organic compounds can be used in synthesis, with a focus on C—C bond formation and functional group interconversions.

CO 2: Understand the reactions and unactivated C-H bonds, how to activate them to form new c-c bonds**.**

CO 3: This course focuses on the formation of carbon-carbon single and double bonds along with the reactions at unactivated C-H bonds which are very useful for the synthesis of commercially required compounds.

CO 4: This course focuses on the formation of double bonds along with the reactions which are very useful for the synthesis of commercially required compounds

CO 5: Helps to understand the formation of new intermediates formed in the course of reaction to form C-C single, double bonds and also at unactivated C-H groups**.**

CO 6: The emphasis will be on developing a mechanistic understanding of selectivity and synthetic strategy

Program	Semester	Course code	Course Name
M.Sc. (Chemistry)	III	CHE232OR	Oxidation, Reductions and Heterocyclic chemistry

At the end of the course student will able to:

CO 1: Transformation of functional groups or compounds by oxidation and reduction using specific reagents

CO 2: Three to five membered Heterocyclic compounds provide the details about their stability and reactivity towards various compounds and applications in various fields.

CO 3: Chemo-, regio- and stereoselective functional groups interconversions.

CO4: Corresponding named reactions; functional group transposition; conjunctive reagents; construction of cyclic frameworks; fused and spirocyclic systems.

CO5: Metal catalyzed/promoted and metal-free cross-coupling and annulation reactions: Pd-, Cu-, Ni-, Fe-, Co-, Ru-catalyzed reactions; concept of C–H bond activation/functionalization.

CO6: To learn various organic reactions and reagents used in them as tools applied in the art of organic synthesis. To learn retro synthetic approach towards organic synthesis

Program	Semester	Course code	Course Name
M.Sc. (Chemistry)	III	CHE232OR	Oxidation, Reductions and Heterocyclic chemistry

At the end of the course student will able to:

CO 1: Transformation of functional groups or compounds by oxidation and reduction using specific reagents

CO 2: Three to five membered Heterocyclic compounds provide the details about their stability and reactivity towards various compounds and applications in various fields.
CO 3: Chemo-, regio- and stereoselective functional groups interconversions.
CO4: Corresponding named reactions; functional group transposition; conjunctive reagents; construction of cyclic frameworks; fused and spirocyclic systems.
CO5: Metal catalyzed/promoted and metal-free cross-coupling and annulation reactions: Pd, Cu-, Ni-, Fe-, Co-, Ru-catalyzed reactions; concept of C–H bond activation/functionalization.
CO6: To learn various organic reactions and reagents used in them as tools applied in the art of organic synthesis. To learn retro synthetic approach towards organic synthesis

Program	Semester	Course code	Course Name
M.Sc. (Chemistry)	III	CHE233MR	Molecular Rearrangements, Pericyclic Reactions & Photo Chemistry

At the end of the course student will able to:
CO 1: Apply the different types of Rearrangement, Pericyclic and Photochemical reactions on different substrates, target molecules can be synthesized very easily
CO 2: How to change the connectivity of an existing organic backbone by using reactions that result in skeletal rearrangements.
CO 3: Types of rearrangement reactions and the mechanism of rearrangements**.**
CO 4: Ring expansion and contraction by rearrangement and controlling rearrangements
CO 5: Insertion of Oxygen, Nitrogen or carbon next to Ketone

Program	**Semester**	**Course code**	**Course Name**
MSc (Chemistry)	III	**CHE234OS**	**Organic Spectroscopy-1**

At the end of the course student will able to:
CO 1: Gain elaborate knowledge on UV-Visible Spectroscopy and UV absorptions of different groups.
CO 2: Understand the principle involved in UV-Visible spectroscopy and find the absorption maximum of different compounds
CO 3: Gain vibrant information on Infrared spectroscopy and values of vibrational frequency of different functional groups
CO 4: Acquire knowledge on NMR spectrum simplification,spin systems, NOE and will be able to interpret the structure of the compound using NMR spectral data.
CO 5: Gain sound data on Mass spectroscopy and its techniques.

Program	Semester	**Course code**	**Course Name**
MSc (Chemistry)	III	**CHE235PA**	**Pharmaceutical Analysis**

At the end of the course student will able to:
CO 1: Gain knowledge of various kinds of reactions, titrations, principles involved in these titrations and its applications in drug analysis

CO 2: Analyse the extent of influence of different types of errors on the experimental data and devise statistical methods to minimize the errors in the data**.**
CO 3: Understand the principles, instrumentation concept of electrodes and its application in drug analysis
CO 4: Acquire knowledge of gravimetric analysis and apply it in pharmaceutical analysis

Program	**Semester**	**Course code**	**Course Name**
MSc (Chemistry)	III	**CHE231(P1)**	**Three Step Synthesis-I**

At the end of the course student will able to:
CO 1: Use glassware, equipment and chemicals and follow experimental procedures in the laboratory to carry out step wise synthesis of organic compounds.
CO 2: Calculate limiting reagent, theoretical yield, and percent yield
CO 3: Engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately
CO 4: Dispose of chemicals in a safe and responsible manner
CO 5: Perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration.
CO 6: Create and carry out work up and separation procedures

Program	**Semester**	**Course code**	**Course Name**
MSc (Chemistry)	III	**CHE232(P2)**	**Analysis of Organic Binary Mixtures (P)**

At the end of the course student will able to:
CO 1: Separate the different organic compounds present in the given binary mixture.
CO 2: Purification of the separated individual organic compound by adopting purification techniques.
CO 3: Identify the functional group and its nature present in the separated and purified organic compound
CO 4: Prepare the derivatives related to the identified functional groups and determine their melting / boiling points

Program	**Semester**	**Course code**	**Course Name**
MSc (Chemistry)	III	CHE233(P3)	Spectral Characterization of Organic Compounds (P)

At the end of the course student will able to:
CO 1: Interpret the structure of the compound
CO 2: Identify the functional groups in the compound
CO 3: Analyse the spectral data of compounds.
CO 4: Calculate the molecular formula and weight of the compound

Program	**Semester**	**Course code**	**Course Name**
MSc (Chemistry)	III	**CHE234(P4)**	**Estimation of Organic Compounds(P4)**

At the end of the course student will able to:
CO 1: Design and carry out scientific experiments
CO 2: Accurately record and analyse the results of such experiments.
CO 3: Estimate the compounds quantitatively

CO 4: Explain the mechanism and what kind of reaction is occurring in the course of the reaction

Program	Semester	Course code	Course Name
MSc (Chemistry)	III	**CHE235(P5)**	**Pharmaceutical Analysis (P)**

At the end of the course student will able to:
CO 1: Evaluate experimental data using instruments like Sphectrophometer, colorimeter
CO 2: Analyze the given samples by using instrumentation
CO 3: Get accurate results using graphs.
CO 4: Assay a given tablet formulation

Program	Semester	Course code	Course Name
MSc (Chemistry)	III	**CHE231 ROC**	**Research Oriented Course**

At the end of the course student will able to:
CO 1: Conduct independent research on different topics
CO 2: Handle different techniques available for identification, separation, purification, crystallization and analysis
CO 3: Gain knowledge regarding interpretation of data obtained from different analytical and spectroscopic tools and techniques
CO 4: Write a research report based on the interpretation of available research data
CO 5: Publish his finindings in a research journal of good repute related to his research topic

Program	Semester	Course code	Course Name
MSc (Chemistry)	IV	**CHE241OS**	**Organic Synthesis-II**

At the end of the course student will able to:
CO 1: Understand about concepts, principles and theories relating to retro synthetic analysis and important organic reactions in synthesis.
CO 2: Apply of retro synthetic analysis in regio, stereo, chemo selectivity and convergent and divergent synthesis
CO 3: Solveproblems related to the synthesis of organic target molecules and in communicating synthetic organic chemistry
CO 4: Apply of named reactions in the synthesis of various dyes natural products and antibiotics.

Program	Semester	Course code	Course Name
MSc (Chemistry)	IV	**CHE242OR**	**Organic reagents & Heterocyclic Chemistry**

At the end of the course student will able to:
CO 1: Acquire knowledge about the different methods of Organoboranes preparation.
CO 2: Understand the synthetic applications of different Organosilanes and their application in organic synthesis.
CO 3: Understand the preparation, reactivity of six membered and fused heterocyclic compounds
CO 4: Apply reactions of Organoboranes in organic synthesis.

Program	Semester	Course code	Course Name
MSc (Chemistry)	IV	**CHE243OC**	**Organo metallic chemistry, Natural products and antibiotics**

CO 1: Provide an overview of the field of natural product
CO 2: Identify different types of natural products, antibiotics, their occurrence, structure, biosynthesis and properties.
CO 3: Discuss the use of natural products as starting materials for medicines
CO 4: Provide a brief introduction of classification, nomenclature, structure, biosynthesis, occurrence, analysis and pharmaceutical applications of compounds in and from nature**.**
CO 5: Provide information about the common organometallic reactions
CO 6: Draw reasonable reaction mechanisms and understand the applications of organometallic chemistry, including catalytic reactions for organic synthesis

Program	Semester	Course code	Course Name
MSc (Chemistry)	IV	CHE244OS	Advanced Organic Spectroscopy

CO 1: Analyze and interpret 1D and 2D NMR spectra
CO 2: Understand various NMR recording methods.
CO 3: Determine the compound structure based on information generated from mass Spectrometry, IR, NMR and UV-Visible spectral data.
CO 4: Identify the compound structure based on information generated from mass Spectrometry, IR, NMR and UV-Visible spectral data.

Program	Semester	Course code	Course Name
MSc (Chemistry)	IV	**CHE245IM**	**Instrumental Method of Analysis**

CO 1: Understand the Principle of Column chromatography, Gel filtration, Capillary electrophoresis, AAS, AES, Polarography, Voltammetry, Coulometry, Amperometry, Thermogravimetry and Differential scanning calorimetry
CO 2: Gain knowledge about the instrumentation and working of Column chromatography, Gel filtration, Capillary electrophoresis, AAS, AES, Polarography, Voltammetry, Coulometry, Amperometry, Thermogravimetry and Differential scanning calorimetry
CO 3: Apply the above techniques for separation and to finding out the concentrations of unknown samples.
CO 4: Acquire knowledge about the applications of Column chromatography, Gel filtration, Capillary electrophoresis, AAS, AES, Polarography, Voltammetry, Coulometry, Amperometry, Thermogravimetry and Differential scanning calorimetry

Program	Semester	Course code	Course Name
MSc (Chemistry)	IV	**CHE241FS (P1)**	**Four Step Synthesis (P)**

CO 1: Use glassware, equipment and chemicals and follow experimental procedures in the laboratory to carry out step wise synthesis of organic compounds.

CO 2: Calculate limiting reagent, theoretical yield, and percent yield
CO 3: Engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately
CO 4: Dispose of chemicals in a safe and responsible manner
CO 5: Perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration.
CO 6: Create and carry out work up and separation procedures

Program	**Semester**	**Course code**	**Course Name**
MSc (Chemistry)	IV	**CHE242PB (P2)**	**Preparations based on named reactions (P)**

CO 1: Use glassware, equipment and chemicals and follow experimental procedures in the laboratory to carry out step wise synthesis of organic compounds.
CO 2: Calculate limiting reagent, theoretical yield, and percent yield
CO 3: Engage in safe laboratory practices by handling laboratory glassware, equipment, and chemical reagents appropriately
CO 4: Dispose of chemicals in a safe and responsible manner
CO 5: Perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration.
CO 6: Create and carry out work up and separation procedures

Program	**Semester**	**Course code**	**Course Name**
MSc (Chemistry)	IV	**CHE243EO (P3)**	**Estimation of Organic Compounds (P)**

CO 1: Design and carry out scientific experiments
CO 2: Accurately record and analyse the results of such experiments.
CO 3: Estimate the compounds quantitatively
CO 4: Explain the mechanism and what kind of reaction is occurring in the course of the reaction

Program	**Semester**	**Course code**	**Course Name**
MSc (Chemistry)	IV	CHE244SC (P4)	Spectral Characterization of Organic Compounds (P)

CO 1: Interpret the structure of the compound
CO 2: Identify the functional groups in the compound
CO 3: Analyse the spectral data of compounds.
CO 4: Calculate the molecular formula and weight of the compound.

Program	**Semester**	**Course code**	**Course Name**
MSc (Chemistry)	IV	CHE245IM (P5)	Instrumental method of analysis (P)

CO 1: Use glassware, equipment and chemicals and follow experimental procedures in the laboratory.

CO 2: Apply concepts of electrochemistry and Spectrophotometry in experiments

CO 3: Gain knowledge about the electro analytical methods and techniques used in analytical chemistry

CO 4: Analyze a given analyte by measuring the potential (volts),pH and/or current (amperes) and absorbance in an electrochemical cell containing the analyte

Program	Semester	Course code	Course Name
MSc (Chemistry)	IV	**CHE241ROC**	**Research Oriented Course**

CO 1: Conduct independent research on different topics
CO 2: Handle different techniques available for identification, separation, purification, crystallization and analysis
CO 3: Gain knowledge regarding interpretation of data obtained from different analytical and spectroscopic tools and techniques
CO 4: Write a research report based on the interpretation of available research data
CO 5: Publish his finindings in a research journal of good repute related to his research topic
CO 4:Write a research report based on the interpretation of available research data
CO 5: Publish his findings in a research journal of good repute related to his research topic

DEPARTMENT OF MATHEMATICS(M.Sc)

Program	Semester	Course code	Course Name
M.Sc. ((Maths))	I	20 MAT101	Real Analysis-I

CO 1: Describe the fundamental properties of the real number that underpin the formal development of real analysis.
CO 2: Demonstrate an understanding of the theory of sequences and series, continuity, differentiation and integration.
CO 3: Demonstrate skills in constructing rigorous mathematical arguments.
CO 4: Apply the theory in the course to solve a variety of problems at an appropriate level of difficulty
CO 5: Demonstrate skills in communicating mathematics

Program	Semester	Course code	Course Name
M.Sc. (Maths)	I	20 MAT102	Ordinary Differential Equation

CO 1: Will be able to explain the concept of differential equation.

CO 2: Will be able to solve first-order differential equations.

CO 3: Will be able to find the solution for higher order differential equation.

CO 4: Will be able to solve the system of linear differential equation.

CO 5: Will be able to use the Laplace transform in finding the solution for linear differential equation.

Program	Semester	Course code	Course Name
M.Sc. (Maths)	I	20MAT103	C-Programming

CO 1: Use the fundamentals of C programming in trivial problem solving.
CO 2: Enhance skill on problem solving by constructing algorithm.

CO 3: Identify the solution to a problem and apply control structures and user defined functions for solving the problem.
CO 4: Demonstrate the use of string and string handling functions.
CO 5: Apply skill of identifying appropriate programming constructs for problem Solving.

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	I	20MAT104	Algebra

CO 1: Concept of group action and theorems about group actions, structure of permutation groups, polynomial rings, and their relations extensions.
CO 2: Solving problems using the powerful concept ofgroup action.
CO 3: Ability to understand the large class of commutative rings by regarding them as quotient of polynomial rings.
CO 4: Applying the concept of group action in real life problem such as counting.
CO 5: Facility in solving real life problems by thinking logically and outside of BOX

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	II	20MAT201	Complex Analysis

CO 1: Demonstrate understanding of the basic concepts underlying complex analysis.
CO 2: Prove basic results in complex analysis.
CO 3: Apply the methods of complex analysis to evaluate definite integrals and infinite series.
CO 4: Demonstrate skills in communicating mathematics orally and in writing.
CO 5: Viewing analytic functions as conformal mapping

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	II	20MAT202	Numerical Methods

CO 1: Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions.
CO 2: Analyse and evaluate the accuracy of common numerical methods.
CO 3: Implement numerical methods in Math lab.
CO 4: Write efficient, well-documented Math Lab code and present numerical results in an informative way

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	II	20MAT203	Partial Differential equations

CO 1: Will be able to explain the concept of differential equation.
CO 2: Will be able to solve first-order differential equations.
CO 3: Will be able to find the solution for higher order partial differential equation.
CO 4: Will be able to solve the system of linear differential equation partially

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	III	20MAT301	Topology

CO 1: Demonstrate an understanding of concepts of metric spaces and topological spaces and their role in mathematics.

CO 2: Prove basic results about completeness, compactness, connectedness and uniqueness of solutions to differential equations.

CO 3: Use the branch fixed point theorem to demonstrate the existence and uniqueness of the solutions to differential equations.

CO 4: Demonstrate an understanding the concept of Hilbert spaces and Banach spaces and their role in mathematics

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	II	20MAT302	Probability and statistics

CO 1: Define the principal concepts of probability, and their features.
CO 2: Explain the concept of random variable and the probability distribution.
CO 3: Calculate the expected value and the moments.
CO 4: Explain the major distributions of the random variable

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	III	20MAT303	Galois Theory

CO 1: Solving polynomial equation using formula for roots.
CO 2: Applying the concept of a field extension to various mathematical problems including geometric constructions and perfect division of a circle.
CO 3: How to test if a polynomial is a Galois field.
CO 4: Applying mathematical methods to real life problems including cryptography

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	III	20MAT304	Mathematical Methods

CO 1: Demonstrate familiarity with emerging mathematical techniques appropriate in banks and other financial institutions.
CO 2: Demonstrate an ability to select and apply numerical methods appropriate for the solution of financial problems.
CO 3: The principles of mathematical reasoning and their use in understanding analyzing and developing formal arguments.
CO 4: The connections between the mathematical series and other scientific and humoristic disciplines.
CO 5: Undertake a piece of directed in mathematical finance

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	III	20MAT305	NUMBER THEORY

CO 1: Prove results involving divisibility and greatest common divisors
CO 2: Solve systems of linear congruence.
CO 3: Find integral solutions to specified linear Diophantine Equations.
CO 4: Apply Euler-Fermat's Theorem to prove relations involving prime numbers.
CO 5: Apply the Wilson's theorem

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	III	20MAT306	Rings & Modules

CO 1: Manipulate modules over rings...
CO 2: Distinguish between properties of modules and rings.
CO 3: Characterize finitely generated modules over a PID.
CO 4: Analyze rings and modules

Program	Semester	Course code	Course Name
M.Sc. (Maths)	IV	20MAT402	ELECTIVE-I (Measure & Integration)

CO 1: Students will understand the fundamentals of measure theory and be acquainted with the proofs of the fundamental theorems underlying the theory of integration.
CO 2: They will also have an understanding of how these underpin the use of mathematical concepts such as volume, area, and integration.
CO 3: They will develop a perspective on the broader impact of measure theory in ergodic theory and have the ability to pursue further studies in this and related area.
CO 4: Explain the concept of length, area, volume using lebesgue's theory.
CO 5: Apply the general principles of measure theory and integration in such concrete subjects as the theory of probability or financial mathematics

Program	Semester	Course code	Course Name
M.Sc. (Maths)	IV	20MAT403	Elective-II (Algebraic Coding Theory)

CO 1: The student has knowledge of properties of and algorithms for coding and decoding of linear block codes, cyclic codes and convolution codes.
CO 2: The student has an overview of arithmetic in finite fields, linear algebra over finite fields, and rings of power series.
CO 3: The student masters arithmetic in finite fields and linear algebra over finite fields.
CO 4: The student is able to apply various algorithms and techniques for coding and decoding

Program	Semester	Course code	Course Name
M.Sc. (Maths)	IV	20MAT404	Functional Analysis

CO 1: The student has knowledge of central concepts from functional analysis, including the Hahn-Banach theorem.
CO 2: the open mapping and closed graph theorems, the Banach-Steinhaus theorem, dual spaces, weak convergence
CO 3: the Banach-Alaoglu theorem, and the spectral theorem for compact self-adjoint operators.
CO 4: The student is able to apply his or her knowledge of functional analysis to solve mathematical problems.

Program	Semester	Course code	Course Name
M.Sc. (Maths)	IV	20MAT405	Mathematical Modelling

CO 1: Demonstrate familiarity with emerging mathematical techniques appropriate in banks and other financial institutions.

CO 2: Demonstrate an ability to select and apply numerical methods appropriate for the solution of financial problems.

CO 3: The principles of mathematical reasoning and their use in understanding analyzing and developing formal arguments.

CO 4: The connections between the mathematical series and other scientific and humoristic disciplines.

CO 5: Undertake a piece of directed in mathematical finance

Program	**Semester**	**Course code**	**Course Name**
M.Sc. (Maths)	IV	20MAT406	Open Elective-II (Fuzzy Sets)

CO 1: Difference between crips set and fuzzy set theory
CO 2: Recognize fuzzy logic membership function and inference system.
CO 3: Analyse statistical data by using fuzzy methods.
CO 4: Evaluate fuzzy statistics applications