

KAKARAPARTI BHAVANARAYANA COLLEGE (AUTONOMOUS)

KOTHAPETA, VIJAYAWADA – 520001



COURSE OUTCOMES

(ACADEMIC YEAR - 2023-2024)

COURSE OUTCOMES

Title of the Course	Course Code	Year of Introduction	Course Outcomes
Semester-I			
Principles of Psychology	R23MDP101	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to define psychology and trace its origins, comprehending its evolution into a scientific study of behaviour. ✓ Students will understand the structure and function of visual and auditory senses. ✓ Students will grasp the nature and components of emotions, studying major theories such as the James-Lange, Cannon-Bard, and Schachter-Singer theories. ✓ Students will learn about the processes of learning and memory. ✓ Students will gain insights into the trait and type approaches to personality, including methods of assessing personality.
Analytical Skills	R23SDP101	2023-24	<ul style="list-style-type: none"> ✓ Understand the basic concepts of arithmetic ability, quantitative ability, logical reasoning, businesscomputations and data interpretation and obtain the associated skills. ✓ Acquire competency in the use of verbal reasoning. ✓ Apply the skills and competencies acquired in the related areas ✓ Solve problems pertaining to quantitative ability, logical reasoning and verbal ability inside and outsidethe campus.
Communication Skills	R23SDP102	2023-24	<ul style="list-style-type: none"> ✓ Understand the nature importance of communication. ✓ Learn the process involved in communication. ✓ Develop interview skills. ✓ Acquire presentation skills. ✓ Effectively play their roles in group discussions. ✓ Enhance the skills of public speaking..
A Course in Communication	R23ENG101	2023-24	<ul style="list-style-type: none"> ✓ Understand the importance of listening and practice effective listening. ✓ Use grammar effectively for accuracy in writing and speaking.

and Soft Skills			<ul style="list-style-type: none"> ✓ Use relevant vocabulary in everyday communication. ✓ Acquire ability to use Soft Skills in professional and daily life. ✓ Confidently use the skills of communication.
General Telugu	R23TEL101	2023-24	<ul style="list-style-type: none"> ✓ Students will learn about the significant contributions of classical Telugu literature, particularly during the era of Adikavi Nannaya, and gain an introduction to the language and Sanskrit influences of that period. ✓ Students will become familiar with prominent figures and religious movements of the medieval period and learn about the significance of notable works like Gabbilam Kavya. This will enhance their understanding of societal values and thoughts prevalent during that time. ✓ Students will gain awareness of the conditions and values within affluent families, understanding the impact of tradition and religion on individuals. They will learn how these factors shape human behavior and perspectives. ✓ Students will study how traditional practices and societal structures can lead to social evils. They will explore the impact of these practices on communities and learn about the evolution of human relationships and the emergence of socio-economic disparities. ✓ Students will understand the principles of life narratives and recognize the importance of distinct values and virtues portrayed in these narratives. ✓ Students will delve into the grammatical aspects of classical Telugu language, enhancing their linguistic proficiency and appreciation for the intricacies of the language through the study of grammar.
General Hindi	R23HIN101	2023-24	<ul style="list-style-type: none"> ✓ Students will be introduced to different genres of prose to broaden their understanding and appreciation of the diversity within prose literature. ✓ Students will gain knowledge of significant literary works in Hindi, focusing on understanding their unique characteristics and contributions to literature. ✓ Students will learn about the concise history of Hindi literature, providing them with a foundational understanding of its development and evolution over time. ✓ Students will engage in a detailed study of all aspects of Hindi grammar, as

			<p>grammar is considered the backbone of any language, ensuring their linguistic proficiency.</p> <ul style="list-style-type: none"> ✓ Students will be made aware of the necessary rules and etiquette of letter writing, and will be taught to use polite language and effective writing techniques to enhance their communication skills.
Essential & Application of Mathematical, Physical & Chemical Sciences	R23BSC101	2023-24	<ul style="list-style-type: none"> ✓ Apply critical thinking skills to solve complex problems involving complex numbers, trigonometric ratios, vectors, and statistical measures. ✓ To Explain the basic principles and concepts underlying a broad range of fundamental areas of physics and to Connect their knowledge of physics to everyday situations ✓ To Explain the basic principles and concepts underlying a broad range of fundamental areas of chemistry and to Connect their knowledge of chemistry to daily life. ✓ Understand the interplay and connections between mathematics, physics, and chemistry in various applications. Recognize how mathematical models and physical and chemical principles can be used to explain and predict phenomena in different contexts. ✓ To explore the history and evolution of the Internet and to gain an understanding of network security concepts, including threats, vulnerabilities, and countermeasures.
Advances in Mathematical, Physical & Chemical Sciences	R23BSC102	2023-24	<ul style="list-style-type: none"> ✓ Explore the applications of mathematics in various fields of physics and chemistry, to understand how mathematical concepts are used to model and solve real-world problems. ✓ To Explain the basic principles and concepts underlying a broad range of fundamental areas of physics and to Connect their knowledge of physics to everyday situations. ✓ Understand the different sources of renewable energy and their generation processes and advances in nanomaterials and their properties, with a focus on quantum dots. To study the emerging field of quantum communication and its potential applications. To gain an understanding of the principles of biophysics in studying biological systems. Explore the properties and

			<p>applications of shape memory materials.</p> <ul style="list-style-type: none"> ✓ Understand the principles and techniques used in computer-aided drug design and drug delivery systems, to understand the fabrication techniques and working principles of nanosensors. Explore the effects of chemical pollutants on ecosystems and human health. ✓ Understand the interplay and connections between mathematics, physics, and chemistry in various advanced applications. Recognize how mathematical models and physical and chemical principles can be used to explain and predict phenomena in different contexts. ✓ Understand and convert between different number systems, such as binary, octal, decimal, and hexadecimal. Differentiate between analog and digital signals and understand their characteristics. Gain knowledge of different types of transmission media, such as wired (e.g., copper cables, fiber optics) and wireless (e.g., radio waves, microwave, satellite).
Principles of Chemical Sciences	R23MDP102	2023-24	<ul style="list-style-type: none"> ✓ Understand the structure of atom. ✓ Identify the isotopes and isobars. ✓ Define acids and bases and predict the nature of salts. ✓ Explain ionic and covalent bonding. ✓ Describe the importance of Chemistry in daily life.
Entrepreneurship	R23SDP101	2023-24	<ul style="list-style-type: none"> ✓ Understand the concept of Entrepreneurship, its applications and scope. ✓ Know various types of financial institutions that help the business at Central, State and Local Level. ✓ Understand Central and State Government policies, Aware of various tax incentives, concessions. ✓ Applies the knowledge for generating a broad idea for a starting an enterprise/start up. ✓ Understand the content for preparing a Project Report for a start up and differentiate between financial, technical analysis and business feasibility.
Fundamentals of Commerce	R23COM10 1	2023-24	<ul style="list-style-type: none"> ✓ Identify the role commerce in Economic Development and Societal Development.

			<ul style="list-style-type: none"> ✓ Equip with the knowledge of imports and exports and Balance of Payments. ✓ Develop the skill of accounting and accounting principles. ✓ They acquire knowledge on micro and macro economics and factors determine demand and supply. ✓ An idea of Indian Tax system and various taxes levied on in India. ✓ They will acquire skills on web design and digital marketing.
Business Organisation	R23COM10 2	2023-24	<ul style="list-style-type: none"> ✓ Ability to understand the concept of Business Organization along with the basic laws and norms of Business Organization. ✓ The ability to understand the terminologies associated with the field of Business Organization along with their relevance and to identify the appropriate types and functioning of Business Organization for solving different problems. ✓ The application of Business Organization principles to solve business and industry related problems and to understand the concept of Sole Proprietorship, Partnership and Joint Stock Company etc.
Fundamentals of Social Sciences	R23PS101	2023-24	<ul style="list-style-type: none"> ✓ Learn about the nature and importance of social science. ✓ Understand the Emergence of Culture and History. ✓ Know the psychological aspects of social behaviour. ✓ Comprehend the nature of Polity and Economy. ✓ Knowledge on application of computer technology.
Perspectives on Indian Society	R23PS102	2023-24	<ul style="list-style-type: none"> ✓ Learn about the significance of human behavior and social dynamics. ✓ Remembers the Indian Heritage and freedom struggle. ✓ Comprehend the philosophical foundations of Indian Constitution. ✓ Knowledge on Indian Economy.
Introduction to C Programming	R23BV101	2023-24	<ul style="list-style-type: none"> ✓ To learn about data types and operators. ✓ To learn about decision making statements and functions ✓ To learn how to work with arrays and strings and structures. ✓ To understand character arrays and concept of pointers. ✓ To understand the concept of files.
Fundamentals of Computer	R23BV102	2023-24	<ul style="list-style-type: none"> ✓ To understand the fundamentals of computers.

Science			<ul style="list-style-type: none"> ✓ To learn about memory and its types. ✓ To learn different number systems and their conversions. ✓ To learn about operating system, its functions and its types. ✓ To understand the concepts of MS Word, Excel, PowerPoint concepts.
Introduction to Classical Biology	R23BM101	2023-24	<ul style="list-style-type: none"> ✓ Learn the principles of classification and preservation of biodiversity. ✓ Understand the plant anatomical, physiological and reproductive processes. ✓ Knowledge on animal classification, physiology, embryonic development and their economic importance. ✓ Outline the cell components, cell processes like cell division, heredity and molecular processes. ✓ Comprehend the chemical principles in shaping and driving the macromolecules and life processes.
Introduction to applied biology	R23BM102	2023-24	<ul style="list-style-type: none"> ✓ Learn the history, ultrastructure, diversity and importance of microorganisms. ✓ Understand the structure and functions of macromolecules. ✓ Knowledge on biotechnology principles and its applications in food and medicine. ✓ Outline the techniques, tools and their uses in diagnosis and therapy. ✓ Demonstrate the bioinformatics and statistical tools in comprehending the complex biological data.
PG Programmes			
Management Process & Organizational	R22MBA101	2022-23	<ul style="list-style-type: none"> ✓ Analyse the importance & role of management in the business organizations ✓ Evaluate the different aspects related to decision making ✓ Identify various leadership styles and their suitability to the situation ✓ Understand how various elements help in shape organisational culture ✓ To Give analysis of different organizational Dynamics
Managerial Economics	R22MBA102	2022-23	<ul style="list-style-type: none"> ✓ Develop an understanding of the applications of managerial economics. ✓ Develop an understanding of theories and principles in microeconomics. including price Theory, firm theory, and market structure.

			<ul style="list-style-type: none"> ✓ Describe how changes in demand and supply affect markets. ✓ Give brief discussion about National Income & per capita income. ✓ Develop analytical skills related to economic theories in business contexts.
BUSINESS ENVIROMENT & BUSINESS LAW	R22MBA103	2022-23	<ul style="list-style-type: none"> ✓ Identify and evaluate the complexities of business environment and their impact on the business. ✓ Give brief Description about Govt. policies & other economic policies in the country ✓ Analyzing the different economic opportunities and consumer rights available in the country ✓ Acquire the knowledge of business laws related to incorporating a company ✓ Understand different business laws in India
FINANCIAL REPORTING& ANALYSIS	R22MBA104	2022-23	<ul style="list-style-type: none"> ✓ Demonstrate various concepts & steps that organizations follow in financial accounting so that the organization can deliver the fair position of business to the interested parties and the measures that can be taken for economic development too. ✓ Break down the accounting process and system through accounting equations so as to analyze the classifications of revenues and expenses. ✓ 3.Understand the financial statement analysis, and use tools and techniques to analyse and interpret the key parameters of financial performance ✓ 4.Discover how balance sheets, income statements, and cash flow statements are developed and how each one is interpreted ✓ 5.Prepare and evaluate financial forecasts to make strategic decisions
BUSINESS ANALYTICS FOR DECISION MAKING	R22MBA105	2022-23	<ul style="list-style-type: none"> ✓ Define statistics, become aware of wide range of applications in statistics, types of data, tabulation of data and construct a histogram, frequency polygon, an ogive, pie chart. ✓ Apply various measures of central tendency –mean, median, mode, GM and H.M for grouped and ungrouped data. Apply various measures of variability- range, MD, QD and standard deviation. ✓ Understand the concepts of probability and its applications in business ✓ 4.Understand the various discrete and continuous probability distributions

			<ul style="list-style-type: none"> ✓ Apply the concepts of various decisions making environments and its uses in solving business decision making process.
MANAGERIAL COMMUNICATIONS	R22MBA106	2022-23	<ul style="list-style-type: none"> ✓ Understand communication skills and sensitize them to their potential to become successful managers ✓ Explain the various types of communication in Business Organizations. ✓ Help them 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, minutes, reports and advertising, and maintaining one's poise in private and in public ✓ Identify the role of communication conflict in intercultural relationships. ✓ Analyzing the communication styles of successful managers in India
PERSONALITY DEVELOPMENT THROUGH LIFE ENHANCEMENT SKILLS	R22MBA107	2022-23	<ul style="list-style-type: none"> ✓ Develop their personality and achieve their highest goals of life. ✓ Lead the nation and mankind to peace and prosperity ✓ Practice emotional self-regulation. ✓ Develop a positive approach to work and duties ✓ Develop a versatile personality
MS EXCEL & ACCOUNTING TALLY	R22MBA108	2022-23	<ul style="list-style-type: none"> ✓ Use different options in MS- Excel ✓ Acquire Hands on experience on Ms – Excel Utilities ✓ Create Solutions for data management & reporting ✓ Enter financial data in Tally, and interpret the financial results obtained from Tally ✓ Know how to use Tally & GST Applications for various business purposes.
General Chemistry	R22OCH/AC H101	2022-23	<ul style="list-style-type: none"> ✓ Could able to process the analytical ✓ Data and could learn how to minimise errors in chemical experiments. ✓ Acquire skill on different titrations for quantitative determinations and on choice of indicators in titrations. ✓ Could aware on the Batch extraction, ✓ continuous extraction and counter current extraction and their applications.

			<ul style="list-style-type: none"> ✓ Understand the process of natural product isolation. ✓ Understand the concept of chromatography and develops the separation techniques for a mixture of organic molecules and drug materials through chromatographic technique.
Organic Chemistry	R22OCH/AC H102	2022-23	<ul style="list-style-type: none"> ✓ Apply the concepts of bonding, resonance, aromaticity, hyperconjugation and tautomerism to higher organic compounds. ✓ Predict the products, identify reaction intermediates and propose suitable mechanism for organic reactions. ✓ Identify stereogenic centres, recognize enantiomers, diastereomers, meso compounds, draw stereochemical structures, and provide R/S designations of stereocenters. ✓ Apply the concepts of substitution, addition and elimination reactions to some synthetic organic reactions. ✓ Design reactions with the help of name reactions and rearrangements and use of suitable reagents.
Inorganic Chemistry-1	R22OCH/AC H103	2022-23	<ul style="list-style-type: none"> ✓ Understand the d-orbital splitting pattern in different geometries like octahedral, tetrahedral. ✓ Calculate magnetic moment & crystal field stabilization energy of metal complexes. ✓ Explain high spin and low spin complexes & formation of metal complexes in solution. ✓ Understand HSAB rule, chelation, macro cyclic, cryptate effect. ✓ 5. Determine stability constant of particular complex through pH metry , polagraphic methods etc •
Physical Chemistry-1	R22OCH/AC H104	2022-23	<ul style="list-style-type: none"> ✓ The basic principles of quantum mechanics. Introduction to new operators such as Hermitian and Hamiltonian and their use in the solution of Hydrogen and Hydrogen like atoms.

			<ul style="list-style-type: none"> ✓ Account for the physical interpretation of distribution functions and discuss and show how these can be used in calculations of basic thermodynamic properties. ✓ Define and explain surface and interfacial phenomenon. ✓ Correlate electrochemistry with thermodynamics that will enable to get best output from industrial perspective. ✓ 5. Understand the concept of activation energy and its calculation from kinetic data.
Personality Development through life Enlightenment Skills	R22OCH/AC H105	2022-23	<ul style="list-style-type: none"> ✓ Develop their personality and achieve their highest goals of life. ✓ Lead the nation and mankind to peace and prosperity ✓ Practice emotional self regulation. ✓ Develop a positive approach to work and duties ✓ Develop a versatile personality.
Programming and Problem Solving Using Python	R22MCA101	2022-23	<ul style="list-style-type: none"> ✓ Understand computer architecture and data representations (variables, representation of numbers and character strings). ✓ Learn basic algorithmic problem, solving techniques (decision structures, loops, functions). ✓ Use and understand objects used in programming. ✓ Design, document, implement and test solutions to programming problems. ✓ Identify and repair coding errors in a program.
Data Structures	R22MCA102	2022-23	<ul style="list-style-type: none"> ✓ Ability to select the data structures that efficiently model the information in a problem. ✓ Ability to assess efficiency trade offs among different data structure implementations or combinations. ✓ Implement and know the application of algorithms for sorting and pattern matching. ✓ Design programs using a variety of data structures, including hash tables

			<ul style="list-style-type: none"> ✓ Binary and general tree structures, search trees, , graphs, and AVL trees
Mathematical and Statistical Foundations	R22MCA103	2022-23	<ul style="list-style-type: none"> ✓ Apply the basic rules and theorems of probability theory such as Baye's Theorem ✓ Determine probabilities that help to solve engineering problems and to determine the expectation and variance of a random variable from its distribution. ✓ Able to perform and analyze of sampling, means, proportions, variances and estimates the maximum likelihood based on population parameters. ✓ Learn how to formulate and test hypotheses about sample means, variances and proportions andto draw conclusions based on the results of statistical tests. ✓ Design various ciphers using number theory
Operating Systems	R22MCA104	2022-23	<ul style="list-style-type: none"> ✓ Understand fundamental operating system abstractions such as processes, threads, files, semaphores, ✓ IPC abstractions, shared memory regions, etc., ✓ Analyze important algorithms eg. Process scheduling and memory management algorithms. ✓ Categorize the operating system's resource management techniques, dead lock management techniques, ✓ memory management techniques
Personality Development through Life Enlightenment Skills	R22MCA105	2022-23	<ul style="list-style-type: none"> ✓ Develop their personality and achieve their highest goals of life. ✓ Lead the nation and mankind to peace and prosperity ✓ Practice emotional self-regulation. ✓ Develop a positive approach to work and duties ✓ Develop a versatile personality.
Programming with R and Python	R23DS101	2023-24	<ul style="list-style-type: none"> ✓ Students will gain proficiency in the fundamental concepts and syntax of both R and Python programming languages, enabling them to write efficient and effective code. ✓ Students will learn to manipulate, clean, and analyze data using libraries

			<p>and tools available in R and Python. They will be able to perform exploratory data analysis, summarize data, and create informative visualizations.</p> <ul style="list-style-type: none"> ✓ Students will understand how to apply statistical methods and machine learning algorithms using R and Python to solve real-world data problems. They will be able to implement various models and evaluate their performance. ✓ Students will develop skills to integrate R and Python with other tools and platforms, automate data workflows, and develop reproducible and scalable data analysis pipelines. ✓ Students will enhance their problem-solving and critical thinking skills by working on practical projects and case studies. They will be able to identify appropriate techniques, implement solutions, and effectively communicate their findings.
Data Structures	R23DS102	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a thorough understanding of fundamental data structures such as arrays, linked lists, stacks, queues, trees, and graphs. They will learn the properties, implementations, and use cases of these structures. ✓ Students will be able to design and analyze algorithms for manipulating data structures. They will understand concepts such as time complexity, space complexity, and algorithmic efficiency. ✓ Students will develop practical skills to implement various data structures in programming languages such as C++, Java, or Python. They will be able to write code for data structures and related algorithms from ✓ Students will enhance their problem-solving abilities by applying data structures to solve complex computational problems. They will learn to choose the appropriate data structure for a given problem and implement efficient solutions. ✓ Students will understand the principles of memory management and optimization in the context of data structures. They will learn techniques to minimize memory usage and optimize the performance of their

			<p>programs.</p> <ul style="list-style-type: none"> ✓ Students will be introduced to advanced data structures such as hash tables, heaps, balanced trees (e.g., AVL, Red-Black Trees), and graphs. They will explore real-world applications of these data structures in various domains.
Database Management Systems	R23DS103	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a comprehensive understanding of fundamental database concepts, including database architecture, data models (relational, hierarchical, network), and the importance of databases in modern applications. ✓ Students will develop proficiency in Structured Query Language (SQL) for creating, querying, updating, and managing databases. ✓ Students will acquire skills in designing efficient and normalized database schemas. ✓ Students will understand the concepts of transaction management, including ACID properties (Atomicity, Consistency, Isolation, Durability). ✓ Students will learn about database security mechanisms, including access control, authentication, and authorization. ✓ Students will gain practical experience using popular DBMS software such as MySQL, PostgreSQL, Oracle, or Microsoft SQL Server. ✓ Students will explore advanced topics such as distributed databases, NoSQL databases, data warehousing, and big data technologies.
Probability and Statistics	R23DS104	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a solid understanding of the basic principles of probability, including concepts such as random experiments, sample spaces, events, and probability axioms. ✓ Students will learn about various probability distributions (discrete and continuous) such as binomial, Poisson, normal, and exponential distributions. ✓ Students will develop the ability to apply statistical methods for data analysis, including descriptive statistics, inferential statistics, hypothesis testing, confidence intervals, and regression analysis. ✓ Students will acquire skills in designing experiments and surveys,

			<p>collecting data, and performing exploratory data analysis.</p> <ul style="list-style-type: none"> ✓ Students will understand the concepts of sampling distributions and estimation theory. ✓ Students will gain practical experience using statistical software packages such as R, Python (with libraries like NumPy, SciPy, and pandas), or SPSS. ✓ Students will explore advanced topics in probability, including joint, marginal, and conditional probabilities, Bayes' theorem, and Markov chains.
Operating Systems	R23DS105	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a comprehensive understanding of the fundamental concepts and components of operating systems, including process management, memory management, file systems, and device management. ✓ Students will learn about process scheduling algorithms, inter-process communication mechanisms, and process synchronization techniques. ✓ Students will understand memory hierarchy, virtual memory concepts, paging, segmentation, and memory allocation strategies. ✓ Students will learn about file system organization, file operations, directory structures, and disk management techniques. ✓ Students will explore principles of concurrency, race conditions, deadlock prevention, and synchronization mechanisms such as semaphores, monitors, and mutex locks. ✓ Students will learn about operating system security features, access control mechanisms, authentication, and encryption techniques. ✓ Students will gain insights into the design and implementation of operating systems. ✓ Students will be introduced to virtualization concepts, hypervisors, and cloud computing models.
Semester-II			
A Course In Reading & Writing	R23ENG201	2023-24	<ul style="list-style-type: none"> ✓ Use reading skills for effective comprehension. ✓ Build up a repository of active vocabulary.

Skills			<ul style="list-style-type: none"> ✓ Own writing strategies in academic skills. ✓ Enable writing skills for future purposes. ✓ Enhance communicative competence through Reading and Writings skills acquired.
General Telugu	R23TEL201	2023-24	<ul style="list-style-type: none"> ✓ Enable students to enhance their proficiency in Telugu literature and creative skills, emphasizing language proficiency, the necessity of language in society, and cultivating a deeper understanding of linguistic nuances in Telugu. ✓ Foster awareness of significant components in Telugu language such as grammar, prosody, and semantics, facilitating comprehensive comprehension and appreciation. ✓ Attain competence in debate arenas, developing skills in reasoning, logical thinking, and effective communication. ✓ Offer avenues for creative expression and professional opportunities in media, broadcasting, and creative industries. ✓ Teach how to write an outline. ✓ Demonstrate how to succeed in the technical aspects of Telugu.
General Hindi	R23HIN201	2023-24	<ul style="list-style-type: none"> ✓ Enable students to understand and analyze the universal and relevant philosophical ideas expressed in the works of Tulsidas, which are pertinent even in today's context. ✓ Gain insights into the rhythmic and lyrical qualities of his compositions. ✓ Assess the contributions of prominent modern Hindi poets and their unique literary styles in contemporary literary movements. ✓ Deepen students' understanding of cultural knowledge through performing arts. ✓ Obtain knowledge of various purposeful Hindi literary forms through different academic papers. ✓ Develop proficiency in language skills through exercises that focus on expression and communication in various languages.
Digital Literacy	R23SDP201	2023-24	<ul style="list-style-type: none"> ✓ Perform operations on the computer.

			<ul style="list-style-type: none"> ✓ Access the Internet and finding information of interest. ✓ Register for an E-mail account and operating it. ✓ Make bill payments and use other applications of Internet. ✓ Create, edit and format documents using a word processor.
Marketing Skills	R23SDPA202	2023-24	<ul style="list-style-type: none"> ✓ Formulate a marketing plan that will meet the needs or goals of a business or organization and Conduct market research to provide information needed to make marketing decisions. ✓ Understand different strategies for effective design of Marketing Mix. ✓ Know the Sales Skills including effective personal selling skills.
Problem Solving Using C	R23CSC201	2023-24	<ul style="list-style-type: none"> ✓ Certainly! Here are the course outcomes for a course on Problem Solving Using C: ✓ Students will develop a strong foundation in programming concepts using the C language, including variables, data types, operators, control structures (loops and conditionals), functions, and arrays. ✓ Students will learn to think algorithmically and develop problem-solving skills by designing, implementing, and analyzing algorithms to solve a variety of computational problems using C. ✓ Gain proficiency in implementing fundamental data structures such as arrays, linked lists, stacks, queues, and trees using C. ✓ Learn the principles of modular programming and software development practices in C, including modularization of code using functions and libraries, code reusability, and maintaining code quality through documentation and commenting. ✓ Acquire skills in debugging techniques and error handling strategies specific to C programming, including identifying runtime errors, memory leaks, and logical errors. ✓ Apply C programming skills to develop applications of varying complexity, from simple utilities to more complex systems.
Digital Logic Design	R23CSC202	2023-24	<ul style="list-style-type: none"> ✓ Develop a thorough understanding of digital systems and their components, including logic gates, flip-flops, registers, counters, and

			<p>memory units.</p> <ul style="list-style-type: none"> ✓ Design and analyze combinational logic circuits using basic gates (AND, OR, NOT, XOR, NAND, NOR) and advanced components such as multiplexers, decoders, encoders, and comparators. ✓ Understand sequential logic circuits, including flip-flops, latches, registers, and counters. Design finite state machines (FSMs) using state diagrams and state tables. ✓ Explore memory devices such as ROM, RAM, and programmable logic devices (PLDs). Design and implement memory units and programmable logic arrays (PLAs). ✓ Utilize simulation software tools (e.g., Verilog, VHDL, or simulation software like Logisim, Quartus) to simulate and verify digital circuit designs. ✓ Gain proficiency in writing and understanding hardware description languages (HDLs) such as Verilog or VHDL for digital circuit design, simulation, and synthesis. ✓ Perform timing analysis of digital circuits to ensure proper operation and synchronization. Design clocking strategies and understand clock distribution in synchronous digital systems. ✓ Apply digital logic design principles and techniques to real-world applications and projects. Develop critical thinking and problem-solving skills by solving complex design problems and implementing innovative solutions.
Mechanics and Properties of Matter	R23MPHY203	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to understand and apply the concepts of scalar and vector fields, calculate the gradient of a scalar field, determine the divergence and curl of a vector field. ✓ Students will be able to apply the laws of motion, solve equations of motion for variable mass systems. ✓ Students will be able to define a rigid body and comprehend rotational kinematic relations, derive equations of motion for rotating bodies, analyze the precession of a top and gyroscope, understand the precession

			<p>of the equinoxes.</p> <ul style="list-style-type: none"> ✓ Students will be able to define central forces and provide examples, understand the characteristics and conservative nature of central forces, derive equations of motion under central forces. ✓ Students will be able to differentiate between Galilean relativity and the concept of absolute frames, comprehend the postulates of the special theory of relativity, apply Lorentz transformations, understand and solve problems.
Fundamentals of Electricity and Electronics	R23MELE203	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a deep understanding of electrostatic principles, including electric charges, Coulomb's law, electric field, electric intensity, and electric potential. ✓ Students will acquire knowledge about the definition, unit, and various types of capacitors, including parallel plate capacitors and the effect of dielectrics on capacitance. ✓ Students will become proficient in using electrical measurement tools and techniques, including the Carey-Foster bridge for determining specific resistance and the potentiometer for calibrating voltmeters and ammeters. ✓ Students will learn about the characteristics and applications of junction diodes in rectifier circuits, including half-wave and full-wave rectifiers, bridge rectifiers, and filter circuits. ✓ Students will gain knowledge of transistor characteristics in different configurations (CB and CE modes) and their applications as amplifiers.
Differential Equations and Problem Solving Sessions	R23MMAT203	2023-24	<ul style="list-style-type: none"> ✓ solve first order first degree linear differential equations. ✓ Convert a non-exact homogeneous equation to exact differential equation by using an integrating factor. ✓ Know the methods of finding solution of a differential equation of first order but not of first degree. ✓ Solve higher-order linear differential equations for both homogeneous and non-homogeneous, with constant coefficients. ✓ Understand and apply the appropriate methods for solving higher order

			differential equations.
General and Inorganic Chemistry	R23MCHE203	2023-24	<ul style="list-style-type: none"> ✓ Understand the structure of atom and the arrangement of elements in the periodic table. ✓ Understand the nature and properties of ionic compounds. ✓ Identify the structure of a given inorganic compound. ✓ Explain the existence of special types of compounds through weak chemical forces. ✓ Define acids and bases and predict the nature of salts.
Business Writing	R23SDPB202	2023-24	<ul style="list-style-type: none"> ✓ Understand the fundamentals of business writing, including style, tone, and language. ✓ Produce well-structured and concise business documents, such as emails, memos, and reports. ✓ Apply principles of effective communication in business letters and interoffice correspondence. ✓ Craft persuasive and well-organized business proposals and formal reports. ✓ Cultivate a professional and ethical approach to business writing.
Financial Accounting	R23COM201	2023-24	<ul style="list-style-type: none"> ✓ Exemplify to prepare and analyse the consignment accounts. ✓ Acquire the basic concept of accounting terms. ✓ Journalize the ability to rectify the errors in bank reconciliation statement. ✓ Exposed to various methods of depreciation ✓ Demonstrate insight into single and double entry system of accounting.
Problem Solving in C	R23COMC202	2023-24	<ul style="list-style-type: none"> ✓ Certainly! Here are the course outcomes for a course on Problem Solving Using C: ✓ Students will develop a strong foundation in programming concepts using the C language, including variables, data types, operators, control structures (loops and conditionals), functions, and arrays. ✓ Students will learn to think algorithmically and develop problem-solving skills by designing, implementing, and analyzing algorithms to solve a

			<p>variety of computational problems using C.</p> <ul style="list-style-type: none"> ✓ Gain proficiency in implementing fundamental data structures such as arrays, linked lists, stacks, queues, and trees using C. ✓ Learn the principles of modular programming and software development practices in C, including modularization of code using functions and libraries, code reusability, and maintaining code quality through documentation and commenting. ✓ Acquire skills in debugging techniques and error handling strategies specific to C programming, including identifying runtime errors, memory leaks, and logical errors. ✓ Apply C programming skills to develop applications of varying complexity, from simple utilities to more complex systems.
Principles of HRM	R23MMT203	2023-24	<ul style="list-style-type: none"> ✓ Students will develop a thorough understanding of the fundamental principles and functions of Human Resource Management, including recruitment, selection, training, development, performance appraisal, and compensation management. ✓ Students will learn how to align HRM strategies with organizational goals. ✓ Students will gain knowledge and skills in designing and implementing effective recruitment and selection processes. ✓ Students will understand the importance of employee training and development in enhancing organizational performance. ✓ Students will be able to design and implement performance management systems that align individual performance with organizational objectives. ✓ Students will gain knowledge of labor relations, including collective bargaining, conflict resolution, and handling grievances. ✓ Learn the importance of diversity and inclusion in the workplace.
Introduction to Data Science and R programming	R23MBCA203	2023-24	<ul style="list-style-type: none"> ✓ Recognize the various discipline that contribute to a successful data science effort. ✓ Understand the processes of data science identifying the problem to be solved, data collection, preparation, modeling, evaluation and

			<p>visualization.</p> <ul style="list-style-type: none"> ✓ Be aware of the challenges that arise in Data Sciences. ✓ Be able to identify the application of the type of algorithm based on the type of the problem. ✓ Be comfortable using commercial and open source tools such as the R/Python language and its associated libraries for data analytics and Visualization.
Principles of Management	R23BBA201	2023-24	<ul style="list-style-type: none"> ✓ Recognize opportunities and challenges associated with strategy-making ✓ Identify how environments, strategy, structure, culture, tasks, people, and outputs, inform managerial decisions ✓ Understand and analyze how managers can formulate and implement strategies effectively ✓ Understand how the managerial tasks of planning, organizing, and controlling can be executed in a variety of circumstances. ✓ To learn how good managers make organizations successful by building competitive advantages in the forms of cost competitiveness, quality, speed and innovation.
Business Economics	R23BBA202	2023-24	<ul style="list-style-type: none"> ✓ Paraphrase the importance of business economics and its terms. ✓ Articulate the basic knowledge of the demand functions ✓ Diagnose the factors of consumer behavior ✓ Enumerate and identify the types of market and product pricing. ✓ Identify and develop the in depth knowledge of business economics.
Fundamentals of Political Science	R23PS201	2023-24	<ul style="list-style-type: none"> ✓ Learn nature, importance, and relationship with other social sciences. ✓ Understand the traditional and modern approaches. ✓ Know the origin and evolution of the state. ✓ Comprehend the development of social contract theory. ✓ Understand the birth of modern state.
Concepts and ideologies of	R23PS202	2023-24	<ul style="list-style-type: none"> ✓ Learn the significance of concepts. ✓ Understand the law and liberty.

Political Science			<ul style="list-style-type: none"> ✓ Know equality and power and its constituents. ✓ Experience the rights and its theories. ✓ Understanding of political ideologies.
Sociological Analysis	R23MSOC20 1	2023-24	<ul style="list-style-type: none"> ✓ Understanding the Fundamentals of Sociology. ✓ Analyzing Human Society and Social Structures. ✓ Exploring Culture and Socialization. ✓ Investigating Social Stratification ✓ Examining Social Processes
Business Management	R23COM202	2023-24	<ul style="list-style-type: none"> ✓ Understand the concept of Business Management along with the basic laws and norms. ✓ Able to understand the terminologies associated with the field of Business Management and control along with their relevance and to identify the appropriate method and techniques of Business Management for solving different problems. ✓ They apply basic Business Management principles to solve business and industry related problems and to understand the concept of Planning, Organizing, Direction, Motivation and Control etc.
Web Designing	R23MCS203	2023-24	<ul style="list-style-type: none"> ✓ Insert a graphic, table, form, links within a web page. ✓ Use cascading style sheets. ✓ Create and validate a web page and Ability to build a website. ✓ Use operators, variables, arrays, control structures, functions and objects in JavaScript. ✓ Use regular expressions for form validation.

Descriptive Statistics	R23DSSTAT2 01	2023-24	<ul style="list-style-type: none"> ✓ knowledge of Statistics and its implementation through practical understanding for various domains related to data science. ✓ Knowledge of various types of data, their organization and evaluation of summary measures such as measures of central tendency and dispersion etc. ✓ knowledge of other types of data reflecting quality characteristics including concepts of independence and association between two attributes, insights into preliminary exploration of different types of data. ✓ Knowledge of correlation, regression analysis, regression diagnostics, partial and multiple correlations.
Random variables and Mathematical Expectations	R23MSTAT20 3	2023-24	<ul style="list-style-type: none"> ✓ To acquaint with the role of statistics in dealing with the univariate random variables. ✓ To learn the extension of the univariate data to bivariate data. ✓ To learn the measure of randomness mathematically by using expectations. ✓ To get the familiarity about the generating functions, law of large numbers and central limit theorem, further to apply in research and allied fields.
Economics of Transport	R23COML20 2	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a broad understanding of the meaning, importance, evolution, advantages, and disadvantages of transport. ✓ Students will acquire detailed knowledge of road transport, including its economic significance, advantages, and disadvantages. 3. **Proficiency in Rail Transport Economics:** ✓ Students will learn about the economic aspects of rail transport, including its importance, price fixation, advantages, and disadvantages. ✓ Students will explore water transport, including its economic benefits, importance, and role in the global transport system. They will learn about price fixation in water transport, the advantages and disadvantages, and the insurance requirements.

			<ul style="list-style-type: none"> ✓ Students will study the economics of air transport, including its importance, price fixation, advantages, and disadvantages.
Quantitative Methods for Managers	R23BBAA202	2023-24	<ul style="list-style-type: none"> ✓ Engage in independent and reflective learning. Analyse problems, apply critical thinking, and draw conclusions based on business data. ✓ Be familiar with relevant mathematical and statistical terminology. ✓ Understand various quantitative & statistical methods ✓ Understand data and draw inference from data ✓ Identify ethical issues in business practice and statistical reporting.
Statistical Methods & Probability Distributions	R23AISTAT201	2023-24	<ul style="list-style-type: none"> ✓ know about correlation and regression techniques, the two very powerful tools in statistics. ✓ Study concept of coefficient of determination and inference on partial and multiple correlation and regression coefficients. ✓ Knowledge of important discrete distributions such as Binomial, Poisson, Geometric, Negative Binomial and Hyper geometric and their interrelations if any. ✓ Knowledge of important continuous distributions such as Uniform, Normal, Exponential and Gamma and relations with some other distributions. ✓ Basic knowledge of complete enumeration and sample, sampling frame, sampling distribution, sampling and non-sampling errors, principal steps in sample surveys, limitations of sampling etc.,

Python for data science	R23AICSC202	2023-24	<ul style="list-style-type: none"> ✓ To Understand Features and basic concepts of python. ✓ To learn control structures in python and apply them to real world problems. ✓ To implement functions and modules in python. ✓ To understand data structures in python. ✓ oops concepts To construct data and perform data analysis.
Inorganic Chemistry	R23CHE202	2023-24	<ul style="list-style-type: none"> ✓ Understand the basic concepts of p-block elements. ✓ Explain the concepts of d-block elements ✓ Distinguish lanthanides and actinides. ✓ Describe the importance of radioactivity.
Random Variables & Mathematical Expectations	R23STAT202	2023-24	<ul style="list-style-type: none"> ✓ To acquaint with the role of statistics in dealing with the univariate random variables. ✓ To learn the extension of the univariate data to bivariate data. ✓ To learn the measure of randomness mathematically by using expectations. ✓ To get the familiarity about the generating functions, law of large numbers and central limit theorem, further to apply in research and allied fiends.
Front-end Web Development	R23BV201	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to create and style web pages using HTML5 and CSS3, including the use of semantic elements, forms, and responsive design techniques. ✓ Students will understand and apply core JavaScript concepts such as variables, data types, functions, loops, and event handling to create dynamic web content. ✓ Students will gain hands-on experience with popular front-end frameworks and libraries, such as React, Angular, or Vue.js, to build interactive and efficient user interfaces. ✓ Students will be able to design and develop web pages that are

			<p>responsive and adapt to various screen sizes and devices using media queries, Flexbox, and CSS Grid.</p> <ul style="list-style-type: none"> ✓ Students will be able to ensure their web applications function consistently across different browsers and devices, addressing compatibility issues and using polyfills when necessary. ✓ Students will be able to fetch and manipulate data from external APIs using AJAX, Fetch API, or Axios, and integrate it into their web applications.
Database Management System	R23BV202	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a thorough understanding of fundamental database concepts, including data models, schema, instances, and database architecture. ✓ Students will be able to design and implement relational databases using entity-relationship (ER) modeling and normalization techniques to ensure data integrity and reduce redundancy. ✓ Students will be proficient in writing SQL queries for data definition, data manipulation, and data control, including complex queries involving joins, subqueries, and transactions. ✓ ✓ Students will understand the roles and responsibilities of a database administrator, including tasks such as user management, backup and recovery, and performance tuning. ✓ Students will learn techniques to ensure data integrity, enforce constraints, and implement security measures to protect sensitive data within a database. ✓ Students will gain an understanding of NoSQL databases, including their types (e.g., document, key-value, column-family, graph databases) and use cases where they are more suitable than traditional relational databases.

R Programming	R23MBV203	2023-24	<ul style="list-style-type: none"> ✓ Recognize the various disciplines that contribute to a successful data science effort. and Understand the processes of data science identifying the problem to be solved, data collection, preparation, modeling, evaluation and visualization. ✓ Be aware of the challenges that arise in data sciences. ✓ Develop an appreciation of the many techniques for data modeling and mining. ✓ Be cognizant of ethical issues in many data science tasks. ✓ Be comfortable using commercial and open source tools such as the R language and its associated libraries for data analytics and visualization.
Fundamentals of Electricity and Electronics	R23ELE201	2023-24	<ul style="list-style-type: none"> ✓ Students will comprehend fundamental principles of electrostatics, including electric charges, Coulomb's law, electric field, and electric potential. ✓ Students will be able to calculate electric intensity and potential due to a uniformly charged conducting sphere at different points (outside, on, and inside the conductor), and understand the concepts of electric dipoles and dipole moments. ✓ Students will be able to state, prove, and apply Gauss's law to solve problems involving uniformly charged solid spheres, enhancing their problem-solving skills in electrostatics. ✓ Students will understand the definition and unit of capacitance, calculate the capacitance of a parallel plate capacitor, and analyze the effect of dielectrics on capacitance. ✓ 5. Students will be proficient in using instruments like the Carey-Foster bridge to determine specific resistance, calibrate voltmeters and ammeters using a potentiometer, and understand the principles of Biot-Savart's law, the magnetic effect of current, and the operation of a moving coil ballistic galvanometer for comparing capacitors.

Circuit Theory & Electronic Devices	R23ELE202	2023-24	<ul style="list-style-type: none"> ✓ Students will grasp the fundamental concepts of current and voltage, the sine wave, and its general format for voltage or current. They will understand phase relations, and the calculations of average and RMS values. ✓ Students will develop skills in analyzing electrical circuits using methods such as the branch current method and nodal analysis. They will perform star to delta and delta to star conversions and apply various network theorems, including Superposition, ✓ Students will investigate the frequency response of RC and RL circuits and understand their functioning as low pass and high pass filters. They will be able to design and analyze passive differentiating and integrating circuits, and comprehend series and parallel resonance circuits, including calculating the Q-factor. ✓ Students will learn about the construction, working principles, and characteristics of Bipolar Junction Transistors (BJT) in CE configuration, including hybrid parameters and equivalent circuits. They will study the construction, working, and characteristics of Field Effect Transistors (FET), including JFET and MOSFET, and understand their advantages over BJTs. ✓ Students will gain knowledge of rectifiers (half-wave and full-wave) and their efficiency and ripple factors. They will learn about filter circuits (L-section and π-section) and three-terminal fixed voltage IC regulators (78XX and 79XX series).
Introduction to Microbiology	R23MB201	2023-24	<ul style="list-style-type: none"> ✓ Understand the historical significance of microbiology and the contributions of key scientists. ✓ Recognize the classification of microorganisms and their place in the living world. ✓ Comprehend the scope and applications of microbiology, including the origin of microbial life and the distinction between eukaryotic and prokaryotic cells. ✓ Describe the characteristics of bacteria, archaea, fungi, algae, and

			<p>protozoa.</p> <ul style="list-style-type: none"> ✓ Describe viruses, including their nature, composition, and diversity in structure. ✓ Develop practical skills in aseptic techniques, growth media preparation, isolation methods, and the identification of bacteria and fungi.
Bacteriology & Virology	R23MB202	2023-24	<ul style="list-style-type: none"> ✓ Understand the concept of prokaryotic diversity and taxonomy. ✓ Identify and describe the salient features of various bacterial groups. ✓ Comprehend the discovery, nature, and definition of viruses. ✓ Describe the replication processes of specific viruses ✓ Comprehend the concept of oncogenic viruses, and role of viruses in the ecosystem.
Biomolecules and Analytical techniques	R23BT201	2023-24	<ul style="list-style-type: none"> ✓ Learn about classification, structure and properties of Carbohydrates, Proteins and Lipids. ✓ Learn about structure and function of DNA, RNA, Vitamins and Bioenergetics. ✓ Learn about basic principles of Centrifugation, Chromatography and Electrophoresis. ✓ Learn about principles of Spectroscopy, Microscopy and Techniques. ✓ Learn about basics of Biostatistics.
Microbiology, Cell biology	R23BT202	2023-24	<ul style="list-style-type: none"> ✓ Learn about Scope and Techniques of Microbiology. ✓ Learn about concept of Microbial species and strains. ✓ Learn about cell structure and function. ✓ Learn about cell signaling and control mechanisms. ✓ Learn about genome organization of prokaryotic and eukaryotic organisms.
Differential Equations and Problem Solving Sessions	R23MAT201	2023-24	<ul style="list-style-type: none"> ✓ Solve first order first degree linear differential equations. ✓ Convert a non-exact homogeneous equation to exact differential equation by using an integrating factor. ✓ Know the methods of finding solution of a differential equation of first order but not of first degree.

			<ul style="list-style-type: none"> ✓ Solve higher-order linear differential equations for both homogeneous and non-homogeneous, with constant coefficients. ✓ Understand and apply the appropriate methods for solving higher order differential equations.
Analytical Solid Geometry & Problem Solving Sessions	R23MAT202	2023-24	<ul style="list-style-type: none"> ✓ Understand planes and system of planes. ✓ Know the detailed idea of lines. ✓ Understand spheres and their properties. ✓ Know system of spheres and coaxial system of spheres. ✓ Understand various types of cones.
Mechanics & Properties of Matter	R23PHY201	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to understand and apply the concepts of scalar and vector fields, calculate the gradient of a scalar field, determine the divergence and curl of a vector field. ✓ Students will be able to apply the laws of motion, solve equations of motion for variable mass systems ✓ Students will be able to define a rigid body and comprehend rotational kinematic relations, derive equations of motion for rotating bodies, analyze the precession of a top and gyroscope, understand the precession of the equinoxes ✓ Students will be able to define central forces and provide examples, understand the characteristics and conservative nature of central forces, derive equations of motion under central forces. ✓ Students will be able to differentiate between Galilean relativity and the concept of absolute frames, comprehend the postulates of the special theory of relativity, apply Lorentz transformations, understand and solve problems.
Waves and Oscillations	R23PHY202	2023-24	<ul style="list-style-type: none"> ✓ Describe the basic characteristics of waves such as frequency, wavelength, amplitude, period, and speed. ✓ To utilize mathematical relationships related to wave characteristics. ✓ To compare particle motion and wave motion in different types of waves. ✓ To distinguish between Longitudinal and Transverse waves.

			<ul style="list-style-type: none"> ✓ To get the knowledge about how to construct and analysis the square waves, saw tooth waves, etc. from Fourier analysis.
PG Programmes			
Marketing Management	R22MBA201	2022-23	<ul style="list-style-type: none"> ✓ Formulate a Marketing plan for meeting the needs of the customer in the society ✓ Relate Marketing Mix as a frame work for marketing Decision - Making ✓ Formulate Marketing Communication to convince the customers ✓ Understand the marketing channel system for promoting products in the market ✓ Understand the need, importance and process of marketing planning & control.
Human Resource Management	R22MBA202	2022-23	<ul style="list-style-type: none"> ✓ Understand the role of HRM in an organization ✓ Familiar with different Recruitment & Selection process in the organization ✓ Develop & Design Training methods for the organization ✓ Understand the performance appraisal methods of organizations ✓ Gain Knowledge about Grievance procedures in the organization ✓ Understand the different dimensions in Quality of work life ✓ Understand different payment systems in different organizations. ✓ Know the different elements in HR Audit.
Financial Management	R22MBA203	2022-23	<ul style="list-style-type: none"> ✓ Students can understand the different concepts relates to financial management ✓ Develop & Design Training methods for the organization ✓ Use finance theory/ concepts, techniques and models for qualitative and quantitative analysis. ✓ Communicate complex financial information and analysis effectively both in speaking and writing. ✓ Apply financial knowledge/skills and an ethical compass to guide business

			<p>decisions in academic simulations or real-world professional environments.</p> <ul style="list-style-type: none"> ✓ Formulate financial management solutions based on qualitative and quantitative analysis.
Entrepreneurship and Small Scale Business	R22MBA204	2022-23	<ul style="list-style-type: none"> ✓ Develop an understanding of entrepreneurship and small business and appreciate their role in an economy, particularly in the Indian economy ✓ Analyze the entrepreneurial process through which business ideas are evaluated; ✓ Distinguish between business ideas and opportunities; and ✓ Examine entrepreneurial potential ✓ Learn Preparation of detailed Project report for starting new business ✓ Understand the different Business challenges faced in society.
Research Methodology & IPR	R22MBA205	2022-23	<ul style="list-style-type: none"> ✓ Understand some basic concepts of research and its methodologies ✓ Demonstrate the ability to choose methods appropriate to research aims and objectives ✓ Have basic awareness of data analysis-and hypothesis testing procedures ✓ File Patents, Trademarks and Copy Rights ✓ Have adequate knowledge on measurement & scaling techniques .
Operation Research	R22MBA206	2022-23	<ul style="list-style-type: none"> ✓ Solve linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained. ✓ Determine optimal strategy for Minimization of Cost of shipping of products from source to Destination/ Maximization of profits of shipping products using various methods, Finding initial basic feasible and optimal solution of the Transportation problems ✓ Optimize the allocation of resources to Demand points in the best possible way using various techniques and minimize the cost or time of completion of number of jobs by number of persons. ✓ Model competitive real-world phenomena using concepts from game theory. Analyse pure and mixed strategy games ✓ Formulate Network models for service and manufacturing systems, and apply operations research techniques and algorithms to solve these Network

			problems
Leadership and Change Management	R22MBA207	2022-23	<ul style="list-style-type: none"> ✓ Gain knowledge and leadership skills to help organizations chart a successful course through change ✓ Understand the link between effective leadership strategies and successful implementation of change; ✓ Plan and implement organizational changes by applying effective methodologies ✓ Understand to effectively lead others through change ✓ Describe the role of leadership in anticipating and planning readiness and navigating organizational change.
Consumer Behaviour	R22MBA207(i i)	2022-23	<ul style="list-style-type: none"> ✓ Understand the consumer behaviour in the market. ✓ Apply consumer behaviour concepts to real world marketing problems and develop better marketing programs and strategies to influence those behaviours ✓ Understand how consumer behaviour affected by the family & other trends. ✓ Get awareness about different models of consumer behaviour in the market. ✓ Different approaches for convincing the customer in the market. ✓ Pricing Strategies for meeting the consumer needs in the market. ✓ Distribution channels of Consumer behaviour in the present market scenario.
Cost & Management Accounting	R22MBA207(i ii)	2022-23	<ul style="list-style-type: none"> ✓ Understand the basic concepts in management accounting ✓ Apply various methods and techniques of management and cost accounting to optimize the utilization of the resources ✓ Formulate the budgets and interpret the results produced by the applied models. ✓ Application of Marginal costing to managerial decision making. ✓ Preparation of Functional budget for operational & non operational Functions.
Selling and Negotiation Skills	R22MBA208	2022-23	<ul style="list-style-type: none"> ✓ Understand the appreciation skills and competencies required to be an effective sales person ✓ Learn negotiation skills in the market

			<ul style="list-style-type: none"> ✓ Perform different selling techniques for convincing the customers ✓ Develop the Problem solving skills for negotiation ✓ Prepare sales Demonstration.
Software Engineering and Design Patterns	R22MCA201	2022-23	<ul style="list-style-type: none"> ✓ Gain knowledge on the concepts of Software Engineering requirements, analysis and design. ✓ Understand different life cycle models. ✓ Known the concept of object oriented paradigm . ✓ Understand the working of software Architecture ✓ Understand their design patterns
Database Management Systems	R22MCA202	2022-23	<ul style="list-style-type: none"> ✓ Learn the concepts of databases and database users. ✓ Learn the basics of normalization. ✓ Learn entity relationship models. ✓ To understand the relational algebra and relational calculus. ✓ To know Querying, Creating, Updating & Deleting documents in SQL
Computer Networks	R22MCA203	2022-23	<ul style="list-style-type: none"> ✓ Understand and describe the layered protocol model. ✓ Describe, analyse and evaluate a number of data link, network, and transport layer protocols. ✓ Program network communication services for client/server and other application layouts. ✓ Describe, analyse and evaluate various related technical, administrative and social aspects of specific computer network protocols from standards documents and other primary materials found through research. ✓ Design, analyse, and evaluate networks and services for homes, data centres, IoT/IoE, LANs and WANs
Research Methodology & Intellectual Property Rights (IPR)	R22MCA204	2022-23	<ul style="list-style-type: none"> ✓ Understand some basic concepts of research and its methodologies ✓ Identify appropriate research topics ✓ Select and define appropriate research problem and parameters ✓ Demonstrate the ability to choose methods appropriate to research aims and objectives

			<ul style="list-style-type: none"> ✓ Have adequate knowledge on measurement & scaling techniques ✓ Have basic awareness of data analysis-and hypothesis testing procedure ✓ Prepare a project proposal (to undertake a project) ✓ Write a research report and thesis ✓ File Patents, Trademarks and Copy Rights
Design and Analysis of Algorithms	R22MCA205E 1	2022-23	<ul style="list-style-type: none"> ✓ Understand the basic notation for analyzing the performance of the algorithms. ✓ Use divide-and-conquer techniques for solving suitable problems ✓ Use greedy approach to solve an appropriate problem for optimal solution. ✓ Apply dynamic programming approach to solve suitable problems ✓ Understand the limitations of algorithm power and study how to cope with the limitations of algorithm power
Data Warehousing and Data Mining	R22MCA205E 2	2022-23	<ul style="list-style-type: none"> ✓ Understand the basics of types of data, quality of data, suitable techniques required for preprocessing and measures required to perform data analysis ✓ Describe the need of classification, identify suitable technique(s) to perform classification, model building and evaluation ✓ Identify the requirements and usage of association rule mining on categorical and continuous data. ✓ Compare and Identify suitable clustering algorithm(s) (apply with open source tools), interpret, evaluate and report the result ✓ Describe the requirements and the need of web mining
Cloud Computing	R22MCA205E 3	2022-23	<ul style="list-style-type: none"> ✓ core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics. ✓ advantages and challenges brought about by the various models and services in cloud computing. ✓ Apply the fundamental concepts in data centers to understand the trade offs in power, Efficiency and cost. ✓ Identify resource management fundamentals, i.e. resource abstraction, sharing and Sandboxing and outline their role in managing infrastructure in cloud computing.

			<ul style="list-style-type: none"> ✓ Analyze various cloud programming models and apply them to solve problems on the cloud
General Chemistry	R22OCH/AC H101	2022-23	<ul style="list-style-type: none"> ✓ Could able to process the analytical Data and could learn how to minimise errors in chemical experiments. ✓ Acquire skill on different titrations for quantitative determinations and on choice of indicators in titrations. ✓ Could aware on the Batch extraction, continuous extraction and counter current extraction and their applications. ✓ Understand the process of natural product isolation. ✓ Understand the concept of chromatography and develops the separation techniques for a mixture of organic molecules and drug materials through chromatographic technique.
Organic Chemistry	R22OCH/AC H102	2022-23	<ul style="list-style-type: none"> ✓ Apply the concepts of bonding, resonance, aromaticity, hyperconjugation and tautomerism to higher organic compounds. ✓ Predict the products, identify reaction intermediates and propose suitable mechanism for organic reactions. ✓ Identify stereogenic centres, recognize enantiomers, diastereomers, meso compounds, draw stereochemical structures, and provide R/S designations of stereocenters. ✓ Apply the concepts of substitution, addition and elimination reactions to some synthetic organic reactions. <p>Design reactions with the help of name reactions and rearrangements and use of suitable reagents.</p>
Inorganic Chemistry-1	R22OCH/AC H103	2022-23	<ul style="list-style-type: none"> ✓ Understand the d-orbital splitting pattern in different geometries like octahedral, tetrahedral. ✓ Calculate magnetic moment & crystal field stabilization energy of metal complexes.

			<ul style="list-style-type: none"> ✓ Explain high spin and low spin complexes & formation of metal complexes in solution. ✓ Understand HSAB rule, chelation, macro cyclic, cryptate effect. ✓ Determine stability constant of particular complex through pH metry , polagraphic methods etc •
Physical Chemistry-1	R22OCH/AC H104	2022-23	<ul style="list-style-type: none"> ✓ The basic principles of quantum mechanics. Introduction to new operators such as Hermitian and Hamiltonian and their use in the solution of Hydrogen and Hydrogen like atoms. ✓ Account for the physical interpretation of distribution functions and discuss and show how these can be used in calculations of basic thermodynamic properties. ✓ Define and explain surface and interfacial phenomenon. ✓ Correlate electrochemistry with thermodynamics that will enable to get best output from industrial perspective. ✓ Understand the concept of activation energy and its calculation from kinetic data.
Personality Development through life Enlightenment Skills	R22OCH/AC H105	2022-23	<ul style="list-style-type: none"> ✓ Develop their personality and achieve their highest goals of life. ✓ Lead the nation and mankind to peace and prosperity ✓ Practice emotional self regulation. ✓ Develop a positive approach to work and duties ✓ Develop a versatile personality.
ORGANIC SPECTROSCOPY	R22OCH/AC H201	2022-23	<ul style="list-style-type: none"> ✓ Understand basic concepts of organic spectroscopy. ✓ Calculate the λ_{max} value of organic molecules by Wood ward rules. ✓ Learn the fundamentals of instrumentation of UV, IR, NMR and mass. ✓ Analysis of organic molecules by different spectroscopic techniques. ✓ Do fragmentation pattern (analysis) of organic molecules by using mass spectrometry.

Physical Chemistry-II	R22OCH/AC H202	2022-23	<ul style="list-style-type: none"> ✓ Recognize symmetry elements, identify point groups of molecules, construct and explain character table for simple molecules. ✓ Categorize molecules based on their symmetry properties and predict their molecular properties. ✓ Combine, evaluate and interpret information from the various spectroscopic techniques in determination of molecular structures. ✓ Account for the physical interpretation of partition functions and be able to calculate thermodynamic properties of model systems with using Boltzmann - , Fermi-Dirac and Bose-Einstein statistics. ✓ Account for the physical interpretation of distribution functions and discuss and show how these can be used in calculations of basic thermodynamic properties. ✓ Explain fundamental aspects of electrochemical reaction in terms of thermodynamics, and kinetics.
Inorganic Chemistry-II	R22OCH/AC H203	2022-23	<ul style="list-style-type: none"> ✓ Understand the classification of clusters and different structural patterns of metal clusters. ✓ Discuss how ligand substitution reaction takes place in octahedral and square- planar, trans effect and trans influence and how trans effect is applicable in synthesis of different metal complexes. ✓ Interpret the magnetic properties of transition metal complexes based on magnetic measurements. ✓ Discuss terms, state & microstate & Orgel diagram and calculate microstate & terms of different configurations. ✓ Explain how metal ions take part in biological system and their concentration effect and physiological effect on biological system.
Research Methodology	R22OCH/AC H204	2022-23	<ul style="list-style-type: none"> ✓ Understand the formulation of Research problems. ✓ Collect and prepare suitable data for research. ✓ Design experiments for different statistical Concepts. ✓ Write research proposals and reports. ✓ 5. Apply their research work for patent through IPR.

Chemistry of Bioorganic compounds	R22OCH/AC H206	2022-23	<ul style="list-style-type: none"> ✓ Understand the stereochemistry of carbohydrates and their reactions. ✓ Learn the molecular structures of 20 amino acids, differentiating essential and non-essential amino acids, biologically important modified amino acids and their functions. ✓ Understand the difference between the water soluble and fat soluble vitamins and their key role in the metabolism as coenzymes. ✓ Relate the structure of DNA with its function in Replication and gene expression that include both transcription and translation. ✓ Describe what happens: - when lipids are metabolized, cholesterol, prostaglandins etc. are synthesized, emphasizing the genetic defects of lipid metabolism.
Data Processing and Visualization using Tableau	R23DS201	2023-24	<ul style="list-style-type: none"> ✓ Students will learn to import data from various sources into Tableau, including Excel, databases, and cloud services. ✓ Students will master the creation of various types of visualizations, such as bar charts, line charts, scatter plots, maps, and more. ✓ Students will gain proficiency in designing and building interactive dashboards that combine multiple visualizations. ✓ Students will understand and apply advanced analytical techniques in Tableau, including the use of calculated fields, table calculations, and level of detail (LOD) expressions. ✓ Students will develop the ability to use Tableau's storytelling features to create compelling data narratives.
Data Mining & Data warehousing	R23DS202	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a comprehensive understanding of data warehousing architecture, including the concepts of data marts, online analytical processing (OLAP), and data warehouse design techniques. ✓ Students will develop skills in data preprocessing techniques, including data cleaning, integration, transformation, and reduction. ✓ Students will be proficient in various data mining techniques such as classification, clustering, association rule mining, and anomaly detection. ✓ Students will learn to evaluate the performance of data mining models using appropriate metrics and validation techniques.

			<ul style="list-style-type: none"> ✓ Students will gain hands-on experience in implementing end-to-end data warehousing and data mining solutions.
Data Science with R Programming	R23DS203	2023-24	<ul style="list-style-type: none"> ✓ Students will understand the fundamental concepts of data science and the role of R programming in data analysis. They will gain proficiency in the basics of R, including data types, data structures, and essential programming constructs such as loops, conditionals, and functions. ✓ Students will develop skills in data manipulation and cleaning using R packages such as dplyr and tidyR.. ✓ Students will be able to perform statistical analysis using R, including descriptive statistics, hypothesis testing, and regression analysis. ✓ Students will gain expertise in data visualization using R packages such as ggplot2. ✓ Students will understand and implement machine learning algorithms using R. They will gain hands-on experience with supervised and unsupervised learning techniques, including classification, regression, clustering, and decision trees, using R packages like caret and random Forest.
Optimization Techniques	R23DS204	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a comprehensive understanding of the fundamental principles and concepts of optimization. ✓ Students will develop proficiency in formulating and solving linear programming problems using methods such as the Simplex algorithm and graphical methods. ✓ Students will understand the principles and methods of nonlinear optimization, including unconstrained and constrained optimization techniques. ✓ Students will learn the techniques and applications of integer programming and dynamic programming.. ✓ Students will explore advanced and modern optimization techniques, including genetic algorithms, simulated annealing, and particle swarm optimization.
Linear Regression	R23DS205E1	2023-24	<ul style="list-style-type: none"> ✓ Students will grasp the core principles of linear regression, including the

Models			<p>underlying assumptions, the method of least squares, and the interpretation of coefficients.</p> <ul style="list-style-type: none"> ✓ Students will learn to diagnose and validate linear regression models. This includes checking for assumptions such as linearity, homoscedasticity, independence, and normality of residuals. ✓ Students will extend their understanding to multivariate linear regression models, where multiple independent variables are used to predict a single dependent variable. ✓ Students will explore regularization techniques such as Ridge Regression and Lasso (Least Absolute Shrinkage and Selection Operator) to address issues of overfitting and multi collinearity. ✓ Students will gain hands-on experience in implementing linear regression models using statistical software and programming languages such as R or Python.
Design and Analysis Algorithms	R23DS205E2	2023-24	<ul style="list-style-type: none"> ✓ Comprehend the basic principles of algorithm design, including divide-and-conquer, greedy algorithms, dynamic programming, and backtracking. ✓ Evaluate the efficiency of algorithms using Big O, Big Ω, and Big Θ notations. ✓ Apply appropriate algorithm design techniques to solve complex computational problems. ✓ Develop new algorithms and optimize existing ones to improve performance. ✓ Utilize advanced data structures like heaps, balanced trees, hash tables, and graphs in the design of efficient algorithms. ✓ Develop a systematic approach to breaking down complex problems into manageable sub-problems.
Semester-III			
Environment Education	R20LSC304	2021-22	<ul style="list-style-type: none"> ✓ Give information about the environment and the resources to act at our own level to protect them. ✓ Analyse the roles of organisms as part of interconnected food webs, populations, communities, and ecosystems. ✓ Understand the scale dependence of biodiversity and its measurement.

			<ul style="list-style-type: none"> ✓ Learn how to assess pollution sources, study exposure pathways and fate, and evaluate consequences of human exposure to pollution and its impacts to environmental quality. ✓ Balance our economic, environmental and social needs, allowing prosperity for now and future generations.
Analytical Skills	R20LSC301	2021-22	<ul style="list-style-type: none"> ✓ Understand the basic concepts of arithmetic ability, quantitative ability, logical reasoning, business computations and data interpretation and obtain the associated skills. ✓ Acquire competency in the use of verbal reasoning. ✓ Apply the skills and competencies acquired in the related areas. ✓ Solve problems pertaining to quantitative ability, logical reasoning and verbal ability inside and outside the campus. ✓ Apply Skill development in quantitative techniques.
Environmental Audit	R20SDC301C	2021-22	<ul style="list-style-type: none"> ✓ Gain knowledge of the regulatory frameworks and standards governing environmental audits. ✓ Understand the significance of environmental impact assessments (EIAs) in the auditing process. ✓ Utilize auditing tools and techniques to evaluate compliance with environmental regulations and standards. ✓ Understand the components and implementation of Environmental Management Systems (EMS), such as ISO 14001. ✓ Promote sustainable practices and environmental stewardship within organizations. ✓ Understand the ethical and legal responsibilities of environmental auditors. ✓ Engage with various stakeholders, including regulatory bodies, local communities, and non-governmental organizations (NGOs).
A course in conversation skills	R20ENG301	2021-22	<ul style="list-style-type: none"> ✓ Students become confident of speaking in English impeccably and with utmost enthusiasm. ✓ Develop knowledge, skills, and judgment around human communication

			<p>that facilitate their ability to work collaboratively with others.</p> <ul style="list-style-type: none"> ✓ Students can become extroverts with improved confidence. ✓ Understand and practice Interview Etiquettes. ✓ Become more self-confident and develop strong determination.
General Telugu	R20TEL301	2021-22	<ul style="list-style-type: none"> ✓ వ్యక్తీకరణ నైపుణ్యాలపై పరిచయం,భాషా వర్ణము,వాక్య నిర్మాణాలపై అవగాహన పొందగలరు. ✓ సృజనాత్మక రచనా పరిచయం, కవిత,కథ,వ్యాస రచనలపై అవగాహన పొందగలరు. ✓ అనువాద రచన పై అవగాహన, అనువాదకుడికి ఉండే అవరోధాలపై అవగాహన పొందగలరు. ✓ మాధ్యమాలకు రచనపై పరిచయం,వివిధ మాధ్యమాల రచనాపై అవగాహన పొందగలరు. ✓ ప్రసార మాధ్యమాలు రేడియో,టిలివిజన్ రంగాలపై అవగాహన పొందగలరు.
General Hindi	R20HIN301	2021-22	<ul style="list-style-type: none"> ✓ Students understood different stages and relevance of Hindi Literature. ✓ Describing the progressive nature of Sant Kabir and his Writing. ✓ Evaluate Hindi Literature from past to present. ✓ Gaining socio culture consciousness. ✓ Understanding the importance of translation.
Abstract Algebra	R20MAT301	2021-22	<ul style="list-style-type: none"> ✓ Understand the concept of abstract algebra ✓ Express complex problems in algebraic form and to solve them. ✓ Understand the concept of Groups. ✓ Define algebraic structures. ✓ Understand the concept of binary operations by definitions and examples.

Heat and Thermodynamics	R20PHY301	2021-22	<ul style="list-style-type: none"> ✓ Understand the concept of abstract algebra ✓ Express complex problems in algebraic form and to solve them. ✓ Understand the concept of Groups. ✓ Define algebraic structures. ✓ Understand the concept of binary operations by definitions and examples.
Organic Chemistry and Spectroscopy	R20CHE301	2021-22	<ul style="list-style-type: none"> ✓ Acquires knowledge on halogen derivatives of organic compounds, Types of organic reactions, Importance of stereochemistry in the organic reactions especially in substitution reactions. ✓ Able to differentiate alcohols and phenols, able to write preparative methods for alcohols and phenols. ✓ Distinguishes between different carbonyl compounds, able to write preparation methods of carbonyl compounds, Synthetic importance of base catalysed reactions. ✓ Able to describe the importance of carbanion in the organic synthesis, write the synthetic applications of malonic ester and acetoacetic ester. ✓ Names the carboxylic acids according to IUPAC, describes the acidity, write the methods of preparation and reactivity. ✓ Students will able to apply Beer- Lambert law for quantitative determinations. Able to know the modes of vibrations in organic molecules. → Able to identify type of functional group present in the organic molecules. → Able to learn the magnetic behaviour of ^1H and elucidation of structures of organic compounds by using ^1H-NMR data. ✓ Able to identify the type of conjugation in organic molecules and effect of conjugation on colour of the compounds.

Anatomy and Embriology of Angiosperms, Ecology and bio-diversity	R20BOT301	2021-22	<ul style="list-style-type: none"> ✓ Understand the organization of tissues and tissue systems in plants. ✓ Understand the basic concepts of plant ecology, and evaluate the effects of environmental and biotic factors on plant communities. ✓ Correlate the importance of biodiversity and consequences due to its loss. ✓ Illustrate and interpret various aspects of embryology. ✓ Enlist the endemic/endangered flora and fauna from two biodiversity hot spots in India and assess their strategies of conversation.
Cell biology, Genetics, Molecular Biology and Evolution	R20ZOO301	2021-22	<ul style="list-style-type: none"> ✓ Explain the procedures of selection and hybridization for improvement of crops. ✓ Understand the basics of Mendelian genetics, its variations and interpret inheritance of traits in living beings. ✓ Evaluate the structure, function and regulation of genetic material. ✓ Understand the applications, principles and modern techniques in plant breeding. ✓ Explain the organization of a eukaryotic chromosome and the structure of genetic material.
Advanced Accounting	R20COM301	2021-22	<ul style="list-style-type: none"> ✓ To develop the skill of preparing income and expenditure account and balance sheet of an organization with the help of given receipts and payments account and additional information. ✓ To understand the difference between Single Entry and Double Entry System. ✓ To gain basic knowledge of hire purchase transactions and its applicability in practical life. ✓ To develop the skill of valuation of goodwill using different methods. ✓ To develop the application skills to apply Garner Vs. Murray rule at the time of insolvency of a partner.
Business Statistics	R20COM302	2021-22	<ul style="list-style-type: none"> ✓ To describe and discuss the key terminology, concepts tools and techniques used in business statistical analysis. ✓ To apply discrete and continuous probability distributions to some

			<p>business problems.</p> <ul style="list-style-type: none"> ✓ To calculate and apply some measures of location and measures of dispersion for grouped and ungrouped data. ✓ To know the complementary relationship of skewness with measures of central tendency and dispersion in describing a set of data. ✓ To describe how correlation is used to identify relationships between variables and describe how regression analysis is used to predict outcomes.
Marketing	R20COMG30 3	2021-22	<ul style="list-style-type: none"> ✓ To describe a range of common strategies for use with each of the various Marketing mix tools: product, pricing, promotion and distribution. ✓ To understand the role of psychology and the study of consumer behavior and understand the market segmentation, needs, motivation and measurement of motives. ✓ Make product marketing decisions based on product life cycle and Explain key strategies for developing brands including brand ownership, brand and line extensions. ✓ Understand pricing strategies to enhance marketing of products and services and identify how price affects the value of the organization's products or services. ✓ Learn how to develop effective messaging for marketing communications and understand how channels affect the marketing of products and services.
Retailing	R20SDC302B	2021-22	<ul style="list-style-type: none"> ✓ Develop a sound understanding of the important role of logistics and supply chain management in today's business environment. ✓ Understand the categorization of inventories using various techniques and optimize the efficiency of warehouse operations. ✓ Understand the usage of different material handling equipment in Industry. ✓ To devise purchase procedures, inspection methods, storing and issuing procedures, common to all materials in a class. ✓ Describe the need and role of codification, standardisation and

			<p>simplification of materials from the viewpoint of the functions of planning, control,</p> <ul style="list-style-type: none"> ✓ purchases, inventory, stores, etc.
Data Base Management Systems	R20CSC301	2021-22	<ul style="list-style-type: none"> ✓ Comprehend the fundamental concepts of database systems, including data models, schemas, and instances. ✓ Apply normalization techniques to eliminate redundancy and ensure data integrity. ✓ Create, modify, and manage databases using Structured Query Language (SQL). ✓ Understand the concepts of transactions, concurrency control, and recovery in DBMS. ✓ Understand and implement indexing techniques to improve query performance. ✓ Develop database applications using programming languages and DBMS APIs.
Indian Banking System	R20COMT303	2021-22	<ul style="list-style-type: none"> ✓ Get enriched with the knowledge of functioning of banks and helps them realize the role of banks. ✓ Apply the imparted knowledge about functions, role and monetary policy of Reserve Bank of India. ✓ Understand the Payment Systems and Electronic Banking like ATMs, HWAK; PIN; Electromagnetic Cards Recent Developments in India ✓ Gain knowledge regarding different types of banks in India. ✓ Understand the general and special relationship between banker and customer in various capacities.
Programming with C and C++	R20COMC303	2021-22	<ul style="list-style-type: none"> ✓ ### Course Outcomes of "Programming with C and C++" ✓ ✓ Upon successful completion of the course "Programming with C and C++," students will be able to: ✓ Write and execute simple programs in C and C++ to solve basic computational problems.

			<ul style="list-style-type: none"> ✓ Develop programs using functions for code reusability and better organization. ✓ Understand the concept of pointers and their applications in C and C++. ✓ Apply OOP concepts to develop modular and reusable code in C++. ✓ Perform file input and output operations in C and C++ and develop programs that read from and write to files for persistent data storage. ✓ Use advanced data structures such as linked lists, stacks, queues, and trees in C and C++. ✓ Implement real-world projects that require comprehensive use of C and C++ features.
Objected Oriented Programming through Java	R20BCA302	2021-22	<ul style="list-style-type: none"> ✓ Comprehend the core principles of object-oriented programming (OOP) including encapsulation, inheritance, polymorphism, and abstraction. ✓ Design and implement Java classes and objects to model real-world entities, utilizing OOP principles to create modular and reusable code. ✓ Write, compile, and execute Java programs to solve complex problems. ✓ Use exception handling mechanisms to develop robust and error-free applications. ✓ Employ the Java Collections Framework to store, retrieve, and manipulate collections of data. ✓ Effectively use collections such as ArrayList, LinkedList, HashSet, and HashMap to manage and organize data. ✓ Understand and apply the concepts of multithreading and concurrency in Java. ✓ Create graphical user interfaces using Java's Abstract Window Toolkit (AWT) and Swing. ✓ Develop interactive applications with various GUI components such as buttons, text fields, and event handlers, enhancing user experience and interaction.
Operating Systems	R20BCA303	2021-22	<ul style="list-style-type: none"> ✓ Understand fundamental operating system abstractions such as processes, threads, files, semaphores, ✓ IPC abstractions, shared memory regions, etc.,

			<ul style="list-style-type: none"> ✓ Analyze important algorithms eg. Process scheduling and memory management algorithms. ✓ Categorize the operating system's resource management techniques, dead lock management techniques, ✓ memory management techniques.
Accounting and Financial Management	R20BCA301	2021-22	<ul style="list-style-type: none"> ✓ Acquire the knowledge in accounting, system of maintenance of accounts, journal, ledger, and understand the basic accounting concepts and conventions, preparation of subsidiary books and final accounts. ✓ Exemplify to prepare and analyse the financial statements. ✓ Students would calculate the various ratios and would be able to discuss the significance and use of the various ratios and be able to prepare cash flow statements using indirect method. ✓ To understand t the preparation of cost sheet and classification of costs. ✓ Learn the process of preparing various types of budgets and understand the break-even analysis, working capital management, capital budgeting techniques.
Analog Circuits and Communication	R20ELE301	2021-22	<ul style="list-style-type: none"> ✓ Analyse important types of integrated circuits. ✓ Demonstrate the ability to design practical circuits that perform the desired operation. ✓ Use of different modulation and demodulation techniques used in analog communication. ✓ Identify and solve basic communication problems. ✓ Analyse transmitters and receiver circuits.
Organisation Behaviour	R20BBA301	2021-22	<ul style="list-style-type: none"> ✓ Explain the concept of Organisation Design and determine the factors that affect Organisation Design. ✓ Identify the components of Individual Behaviour and apply the concept of Learning, Perception, Attitudes and values. ✓ Analyse the behaviour of individuals and groups in organisations in terms of the key factors that influence organisational behaviour and demonstrate skills required for working in groups.

			<ul style="list-style-type: none"> ✓ Justify how organizational change and conflict affect working relationships within organizations and demonstrate how to apply relevant theories to solve problems of change and conflict within organizations.
Human Resource Management	R20BBA302	2021-22	<ul style="list-style-type: none"> ✓ To study the objectives and functions of Human resource management. ✓ To understand the concept of Human resource planning and HRP process and job analysis. ✓ Lime lighting the selection process, recruitment and training development. ✓ Develop Employability skills and contribute to employee performance management and organizational effectiveness ✓ Identify and evaluate social, cultural, ethical and environmental responsibilities and issues in global contexts.
Financial Management	R20BBA303	2021-22	<ul style="list-style-type: none"> ✓ Recognize the importance of financial management from a strategic perspective. ✓ Enable the students to evaluate the capital budgets through capital budgeting techniques. ✓ Impart deeper understanding in working capital management to avail the adequate working capital for business functions. ✓ Analyze the capital structure decisions through relevant models. ✓ Discuss the dividend policy of a firm.
Statistical Inference	R20STAT301	2021-22	<ul style="list-style-type: none"> ✓ Construct the point and interval estimators. Evaluate the properties of estimators. Demonstrate understanding of the theory of maximum likelihood estimation. ✓ Understand testing of statistical hypothesis, Neymann Pearson Lemma. ✓ Distinguish various large sample tests used in sampling theory. ✓ Distinguish various small sample tests used in sampling theory. ✓ Understand the concept of non- parametric tests.
Material Management	R20COML303	2021-22	<ul style="list-style-type: none"> ✓ Develop a sound understanding of the important role of logistics and supply chain management in today's business environment. ✓ Understand the categorization of inventories using various techniques and optimize the efficiency of warehouse operations.

			<ul style="list-style-type: none"> ✓ Understand the usage of different material handling equipment in Industry. ✓ To devise purchase procedures, inspection methods, storing and issuing procedures, common to all materials in a class. ✓ Describe the need and role of codification, standardisation and simplification of materials from the viewpoint of the functions of planning, control, purchases, inventory, stores, etc.
Data Mining and Data Analytics	R20DSDD301	2021-22	<ul style="list-style-type: none"> ✓ Compare various conceptions of data mining as evidenced in both research and application. ✓ Characterize the various kinds of patterns that can be discovered by association rule mining. ✓ Evaluate mathematical methods underlying the effective application of data mining.
OOPS with Java	R20DSOJ301	2021-22	<ul style="list-style-type: none"> ✓ To learn Object-Oriented programming concepts and techniques using the Java programming language. ✓ To learn to write, test, and debug introductory level Object-Oriented programs using Java. In addition, the student will be introduced to the following concepts, which are important workforce activities: ✓ Design/Develop Program ✓ Design classes ,interfaces, packages ✓ Design the applet programs ✓ Understanding Inheritance.
Descriptive Statistics	R20IOTSTAT301	2021-22	<ul style="list-style-type: none"> ✓ Tabulate and represent the data in Diagrams and Graphs. ✓ Apply the formula and calculate descriptive measures of statistics. ✓ Calculate and interpret the correlation between two variables and analyse the data and predict the future value using curve fitting. ✓ Calculate the simple linear regression equation for a set of data and significance of the correlation coefficient. ✓ Examine the association between the attributes.
Digital Electronics	R20IOTELE301	2021-22	<ul style="list-style-type: none"> ✓ Understand the binary number theory of digital circuits. ✓ Remember the concepts of Boolean algebra and have knowledge to analyse

			<p>and design Combinational systems using standard gates and minimization methods (such as karnaugh maps).</p> <ul style="list-style-type: none"> ✓ Remember various logical inputs of different IC- logic families. ✓ Apply and design flip-flops and latches for sequential systems composed of standard Sequential modules, such as counters and registers. ✓ Analyse design combinational systems composed of standard combinational modules, such as multiplexers and decoders and understand various data manipulation circuits.
OOPS With Python	R20IOTOP30 1	2021-22	<ul style="list-style-type: none"> ✓ Understand the core principles of object-oriented programming (OOP) such as encapsulation, inheritance, polymorphism, and abstraction. ✓ Design and implement Python classes and objects to model real-world entities, utilizing OOP principles to create modular and reusable code. ✓ Write, test, and debug Python programs to solve complex problems. ✓ Use exception handling mechanisms to develop robust and error-free applications, ensuring reliability and stability. ✓ Utilize Python's built-in data structures such as lists, tuples, sets, and dictionaries to store and manipulate data efficiently. ✓ Apply inheritance to create a hierarchy of classes and promote code reuse. ✓ Create and use Python modules and packages to organize code and promote code reuse. ✓ Understand and apply the concepts of namespaces and scope to manage the organization of large codebases effectively.
Algebraic Solutions and Numerical Analysis	R20WSMAT3 01	2021-22	<ul style="list-style-type: none"> ✓ Apply methods such as factorization, substitution, elimination, and the use of matrices and determinants to solve systems of equations. ✓ Understand and implement numerical methods for solving mathematical problems that cannot be solved analytically. ✓ Use techniques such as Newton-Raphson, bisection, and fixed-point iteration to find roots of equations and solutions to systems of nonlinear equations. ✓ Evaluate the stability, convergence, and accuracy of numerical methods. ✓ Apply Interpolation and Approximation Techniques ✓ Implement numerical integration and differentiation techniques to

			<p>approximate the area under curves and the rate of change of functions.</p> <ul style="list-style-type: none"> ✓ Utilize numerical techniques such as Euler's method, Runge-Kutta methods, and finite difference methods to solve initial and boundary value problems.
E-Commerce	R20WSEC30 2	2021-22	<ul style="list-style-type: none"> ✓ To gain strong knowledge on basic commerce courses. ✓ To understand the unique features of e-Commerce environment. ✓ To impart entrepreneurial capabilities required for e-businesses ✓ To encourage overall academic development of students to pursue higher studies or to take up employment. ✓ To gain knowledge on ethical values of e-business environment.
Programming in Java	R20WSPJ301	2021-22	<ul style="list-style-type: none"> ✓ Understand core Java concepts such as variables, data types, operators, control structures, and functions. ✓ Apply object-oriented programming principles, including encapsulation, inheritance, polymorphism, and abstraction, to design and implement robust Java applications. ✓ Develop and use Java classes and objects to model real-world scenarios and create reusable code. ✓ Understand and implement algorithms for sorting and searching data within these collections. ✓ Perform file input and output operations in Java to read from and write to files. ✓ Understand and apply concurrency concepts, such as threads and synchronization, to develop multithreaded applications for improved performance and responsiveness.
Advanced Angular JS	R20WSAAJ30 3	2021-22	<ul style="list-style-type: none"> ✓ Understand and apply advanced AngularJS core concepts such as dependency injection, directives, filters, services, and modules to build scalable and maintainable web applications. ✓ Use AngularJS's built-in directives effectively to enhance application interactivity and user experience.

			<ul style="list-style-type: none"> ✓ Design and implement AngularJS services to handle data retrieval, business logic, and cross-component communication. ✓ Use AngularJS's `http` and `resource` services for making AJAX requests and interacting with RESTful APIs. ✓ Apply performance optimization techniques, including lazy loading, caching, and efficient data binding, to enhance application performance. ✓ Use AngularJS's routing mechanisms to manage navigation and URL handling within single-page applications (SPAs).
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PG Programmes

Strategic Management	R22MBA301	2023-24	<ul style="list-style-type: none"> ✓ To understand the how functional areas such as operations, marketing, accounting, and finance work together in a successful firm. ✓ Apply concepts and frameworks learned in the course to case analysis and company strategic analysis. ✓ How to analyse the different strategies for different problems in companies. ✓ What are the ethics are followed in strategic management. ✓ Analyse the internal and external factors in the companies while preparing the Strategies.
B2B Marketing	R22MBA302	2023-24	<ul style="list-style-type: none"> ✓ To understand the differences between B2C and B2B marketing. ✓ Expanded analytical capability to capitalise on business opportunities ✓ Advanced knowledge and skills to compete effectively in B2B context. ✓ Increased skill-set in the domain of strategic planning, decision-making, problem-solving, and general management. ✓ How B2B Marketing impacts the Customers perception in the society ✓ Improved ability to develop and/or strengthen relationship with your customer and supplier.

<p>PRODUCT & BRAND MANAGEMENT</p>	<p>R22MBA302(II)</p>	<p>2023-24</p>	<ul style="list-style-type: none"> ✓ To Understand the advantages associated with creating strong product lines and brands (using traditional and online marketing) while learning to leverage that strength to build future business ✓ Understand key principles of branding ✓ Understand branding concepts and ideas in their own words ✓ Understand and conduct the measurement of brand equity and brand performance ✓ Describe the purpose and methods of effectively managing brands including how to build brand equity and establish brand identity. ✓ Formulate effective brand strategies for consumer and business goods and services.
<p>DIGITAL MARKETING</p>	<p>R22MBA302 (III)</p>	<p>2023-24</p>	<ul style="list-style-type: none"> ✓ Understand the concept of digital marketing and its real-world iterations ✓ Articulate innovative insights of digital marketing enabling a competitive edge ✓ Understand how to create and run digital media based campaigns ✓ Identify and utilise various tools such as social media etc. ✓ Explain the role and importance of digital marketing in a rapidly changing business landscape ✓ Discuss the key elements of a digital marketing strategy ✓ Demonstrate advanced practical skills in common digital marketing tools such as SEO, SEM, Social media and Blogs.
<p>Customer Relationship Management</p>	<p>R22MBA302(IV)</p>	<p>2023-24</p>	<ul style="list-style-type: none"> ✓ Able to Know what is customer relationship ✓ Analyse the CRM link with the other aspects of marketing ✓ Impart the basic knowledge of the Role of CRM in increasing the sales of the company. ✓ Aware of the different CRM models in service industry ✓ Make aware and analyse the different issues in CRM ✓ know present trends in Customer Relationship management

			How various companies are using the CRM strategies for their customers.
HUMAN RESOURCES PALNNING	R22MBA302(V)	2023-24	<ul style="list-style-type: none"> ✓ Analyze alternative strategies for maintaining and/or improving an organization's human resources and/or performance and correctly match them to appropriate business and/or organizational strategies; ✓ Examine the different levels of planning in an organization and explain the relationship between human resource planning (HRP) and business planning at each level; ✓ Analyze and explain the different steps in the HRP process and discuss how the process can be applied at both the operational and strategic level; ✓ To Develop strategies to address environmental factors and shape organizational and HR plans and strategies; ✓ Analyze how job analysis and/or job design and organizational change and/or development are linked to HRP; ✓ To Explain the purpose of a human resource information system (HRIS) and describe how it facilitates HRP; ✓ Analyse alternative HR strategies for the merger, acquisition and separation of human resources and correctly match them to appropriate business and/or organization strategies; ✓ Critically assess and evaluate the cultural impact of IHRM strategies and practices in an organizational setting; ✓ Evaluate human resources outsourcing risks, limitations and benefits to HRP and organizational effectiveness; ✓ Assess alternative methods of evaluating an organization's HRM and HRP strategies.
PERFORMANCE & REWARD MANAGEMENT	R22MBA302(VI)	2023-24	<ul style="list-style-type: none"> ✓ Here are five major outcomes of a course on Performance & Reward Management:

			<ul style="list-style-type: none"> ✓ Students will gain comprehensive knowledge of performance management systems, including setting performance standards, conducting appraisals, and providing constructive feedback. ✓ Students will learn to design and implement effective reward systems that motivate employees and enhance performance. This includes understanding various types of rewards, such as financial incentives, recognition programs, and career development opportunities. ✓ The course will equip students with the skills to measure and evaluate employee performance accurately. ✓ Students will learn about the legal and ethical aspects of performance and reward management. This includes understanding labor laws, anti-discrimination policies, and ensuring fair and equitable treatment of all employees. ✓ The course will enable students to integrate performance and reward management into broader human resource strategies.
MANAGERIAL COMPETENCIES & EMPLOYEE DEVELOPMENT	R22MBA302(VII)	2023-24	<ul style="list-style-type: none"> ✓ Students will develop key managerial competencies such as leadership, decision-making, strategic thinking, and effective communication. ✓ Students will learn to design and implement effective employee development programs. This includes understanding training needs assessment, creating development plans, and evaluating the impact of training and development initiatives on employee performance. ✓ The course will equip students with knowledge of talent management practices, including recruitment, on boarding, performance management, and succession planning. ✓ Students will gain insights into organizational behaviour and how it impacts employee development. ✓ The course will teach students how to effectively apply coaching and

			mentoring techniques to support employee growth and development.
BEHAVIOURAL FINANCE	R22MBA302(V III)	2023-24	<ul style="list-style-type: none"> ✓ Understand what behavioral finance is, how it differs from modern finance, and how it impacts financial markets ✓ Describe the most common self-deception biases, their causes, and potential measures you can take to prevent them ✓ Understand cognitive biases and explore their root causes with real-life examples. ✓ Identify the behavioral bias and psychological characteristics of investors. ✓ Develop strategies to manage wealth effectively and wisely from mispriced assets. ✓ Understand the various effects like endowment, disposition etc. ✓ Understand investors' behaviour in secondary markets
SECURITY ANALYSIS & PORTFOLIO MANAGEMENT	R22MBA302(IX)	2023-24	<ul style="list-style-type: none"> ✓ Able to recognize and apply appropriate theories, principles, and concepts relevant to securities analysis and portfolio management. ✓ Identify the investment opportunities and the nature of investment decisions. ✓ Interpret the investment environment and assess the procedural issues of the security markets. ✓ Choose from a framework of risk and return for enabling an understanding of the theoretical tenets of investment analysis. ✓ Discuss and explore the relational and exploratory methods and influences considered by technical analysts. ✓ Organize the various instruments and their regulatory systems on the portfolio analysis
MANAGEMENT OF BANKS & FINACIAL INSTITUTIONS	R22MBA302(X)	2023-24	<ul style="list-style-type: none"> ✓ To Understand the peculiarities of valuing a bank, factors shaping the banking industry (e.g., regulation), and how this bears on value-based bank management.

			<ul style="list-style-type: none"> ✓ Apply key concepts of value-based bank management like deposit and loan pricing. ✓ Recognize the different components, primary and support activities in a Bank. ✓ Explain the various ways an account can be opened and operated in a Bank. ✓ Recognize the predominant payment system of Cheques and legalities of the payment. ✓ Analyze Asset-Liability Management Techniques and related Hedging techniques. ✓ Become familiar with current issues in financial institutions as well as reasons for and consequences of industry financial scandals during the last several decades. ✓ Able to analyse the performance of Non-Banking financial institutions and the measures for NBFC given by RBI.
CRISIS MANAGEMENT SKILLS	R22MBA303	2023-24	<ul style="list-style-type: none"> ✓ Understand the fundamentals of crisis management and its role in organizational success. ✓ Identify potential crises and develop prevention strategies. ✓ Create and implement effective crisis communication plans. ✓ Evaluate and improve crisis response and recovery processes. ✓ Develop leadership skills to manage teams during high-stress situations. ✓ Analyze case studies to apply learned concepts in real-world situations. ✓ Practice techniques for successfully solving problems in high-pressure crisis situations. ✓ Create a crisis management plan using best principles and practices.
STRESS MANAGEMENT	R22MBA304	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a thorough understanding of what stress is, the different types of stressors, and how stress affects the body and mind. ✓ Participants will acquire practical tools and techniques to manage stress effectively.

			<ul style="list-style-type: none"> ✓ The course will teach students how to develop healthy coping strategies to handle stress. ✓ Students will learn to regulate their emotions better, improving their ability to respond to stressors calmly and effectively. ✓ The course will emphasize the importance of physical health in managing stress.
DESIGN THINKING	R22MBA304(II)	2023-24	<ul style="list-style-type: none"> ✓ Students will develop advanced problem-solving skills by learning to approach challenges creatively and iteratively. They will be equipped to identify and define problems, generate innovative solutions, and refine those solutions based on feedback. ✓ Participants will gain the ability to empathize with users and understand their needs and experiences. This user-centric mindset is crucial for designing products, services, and processes that truly meet the needs of the end-users. ✓ The course will provide a comprehensive understanding of the design thinking process, including the stages of empathize, define, ideate, prototype, and test. ✓ Students will develop skills in collaboration and teamwork, essential for successful design thinking. They will learn how to work effectively in multidisciplinary teams, leverage diverse perspectives, and foster a collaborative environment. ✓ The course will enhance students' ability to think creatively and drive innovation. They will learn techniques for brainstorming, idea generation, and creative thinking that can be applied to various domains and industries to create breakthrough solutions.
IT FOR MANAGERS	R22MBA304(III)	2023-24	<ul style="list-style-type: none"> ✓ Students will gain a comprehensive understanding of essential information technology concepts and systems. ✓ Participants will learn how to leverage IT to support and enhance business

			<p>strategies.</p> <ul style="list-style-type: none"> ✓ The course will equip students with skills in managing IT projects, including planning, execution, and monitoring. ✓ Students will develop the ability to use data analytics tools and techniques to make informed business decisions. ✓ The course will provide knowledge of IT governance frameworks and regulatory compliance.
MANAGING THE SELF & LEADING OTHERS	R22MBA304(IV)	2023-24	<ul style="list-style-type: none"> ✓ Students will develop a deeper understanding of their own strengths, weaknesses, values, and emotional triggers. ✓ Participants will learn to recognize, understand, and manage their own emotions as well as those of others. ✓ The course will equip students with essential leadership skills such as vision setting, strategic thinking, decision-making, and conflict resolution. ✓ Students will enhance their communication skills, including active listening, clear and persuasive speaking, and non-verbal communication. ✓ The course will provide strategies for effective time management and stress reduction.
TOTAL QUALITY MANAGEMENT	R22MBA304(V)	2023-24	<ul style="list-style-type: none"> ✓ Demonstrate knowledge of the fundamental principles and concepts of Total Quality Management. ✓ Identify and apply various quality improvement tools and techniques, such as Six Sigma, Lean, and Kaizen. ✓ Utilize statistical process control (SPC) charts, flowcharts, and cause-and-effect diagrams for quality improvement. ✓ Analyze and implement quality management systems (QMS) such as ISO 9001. ✓ Develop and evaluate quality management plans and documentation. ✓ Understand the importance of customer satisfaction and customer focus in

			<p>TQM.</p> <ul style="list-style-type: none"> ✓ Apply the principles of continuous improvement and the PDCA (Plan-Do-Check-Act) cycle. ✓ Develop skills for effective teamwork and leadership in a quality management context. ✓ Develop strategies for effective supplier evaluation and improvement. ✓ Analyze real-world case studies of TQM implementation in various industries.
Data Science	R22MCA301	2023-24	<ul style="list-style-type: none"> ✓ Understand the fundamental concepts, principles, and techniques of data science. ✓ Apply statistical methods to analyze and interpret data. ✓ Utilize visualization tools such as Matplotlib, Seaborn, and Tableau. ✓ ✓ Understand and implement various machine learning algorithms, including supervised and unsupervised learning techniques. ✓ Develop proficiency in programming languages commonly used in data science, such as Python and R. ✓ Understand the concepts and tools associated with big data, such as Hadoop, Spark, and NoSQL databases. ✓ Apply data science techniques to solve real-world problems and make data-driven decisions.
Principles of Programming Languages	R22MCA302E 1	2023-24	<ul style="list-style-type: none"> ✓ Understand the fundamental principles and concepts of programming languages. ✓ Analyze the syntax and semantics of various programming languages. ✓ Compare and contrast the features and use cases of different paradigms. ✓ Understand the principles of programming language design and implementation. ✓ Analyze and implement various control structures such as loops, conditionals,

			<p>and exception handling.</p> <ul style="list-style-type: none"> ✓ Understand concepts related to memory management, including stack and heap allocation, garbage collection, and memory safety. ✓ - Analyze the impact of memory management techniques on program performance and reliability. ✓ Apply concepts of compilers and interpreters to translate high-level code into machine code. ✓ Analyze and implement concurrent and parallel programming constructs. ✓ - Apply theoretical concepts to practical problems and projects in various programming languages.
Artificial Intelligence	R22MCA302E 2	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of the fundamental principles and concepts of artificial intelligence, including historical development, key areas, and current trends. ✓ Gain proficiency in the principles, techniques, and algorithms of machine learning, including supervised, unsupervised, and reinforcement learning, and be able to implement and evaluate machine learning models using appropriate tools and libraries. ✓ Understand and apply various methods of knowledge representation and reasoning, such as logic-based and probabilistic approaches, to develop intelligent systems capable of problem-solving and decision-making. ✓ Acquire the skills to design, implement, and evaluate AI applications in domains such as natural language processing, computer vision, and robotics, using relevant programming languages and frameworks. ✓ Recognize and address the ethical, societal, and legal implications of AI technologies, and understand the responsibilities associated with the development and deployment of AI systems to ensure they are used responsibly and for the benefit of society.

<p>Block Chain Technology</p>	<p>R22MCA302E 3</p>	<p>2023-24</p>	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of the fundamental principles and concepts of blockchain technology, including its architecture, components, and the underlying cryptographic techniques. ✓ Gain proficiency in designing, implementing, and deploying blockchain solutions using platforms such as Ethereum, Hyperledger, and Bitcoin, including writing and testing smart contracts using languages like Solidity. ✓ Understand various consensus mechanisms (e.g., Proof of Work, Proof of Stake, Byzantine Fault Tolerance) and their implications on the security, scalability, and efficiency of blockchain networks. ✓ Explore and develop applications of blockchain technology across different industries, such as finance, supply chain, healthcare, and real estate, and evaluate the potential benefits and challenges of blockchain adoption in these domains. ✓ Understand the legal, ethical, and regulatory issues surrounding blockchain technology, including data privacy, compliance, and the impact of blockchain on existing regulatory frameworks, and develop strategies to address these challenges in blockchain projects.
<p>Information Security</p>	<p>R22MCA302E 4</p>	<p>2023-24</p>	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of the fundamental principles and concepts of information security, including confidentiality, integrity, availability, risk management, and security policies. ✓ Gain proficiency in identifying, analyzing, and mitigating security threats and vulnerabilities in various systems and networks, including the use of penetration testing and vulnerability assessment tools. ✓ Learn to design, implement, and manage security measures such as encryption, firewalls, intrusion detection systems, and access controls to protect information assets. ✓ Develop the skills to effectively respond to and recover from security incidents, including the creation and execution of incident response plans,

			<p>disaster recovery plans, and business continuity plans.</p> <ul style="list-style-type: none"> ✓ Understand the legal, ethical, and regulatory aspects of information security, including data protection laws, industry standards, and best practices, and learn to ensure compliance with relevant regulations and ethical guidelines in the implementation of security measures.
Applied data Analytics	R22MCA302E 5	2023-24	<ul style="list-style-type: none"> ✓ Develop the skills to collect, clean, and preprocess data from various sources, ensuring data quality and readiness for analysis. ✓ Gain proficiency in conducting exploratory data analysis using statistical techniques and visualization tools to identify patterns, trends, and insights within datasets. ✓ Learn to apply various data analysis techniques, including regression analysis, clustering, classification, and time-series analysis, to solve real-world problems. ✓ Develop the ability to create effective data visualizations using tools such as Tableau, Power BI, and Matplotlib, and to communicate findings clearly and persuasively to both technical and non-technical audiences. ✓ Acquire the skills to leverage data analytics for informed decision-making, developing actionable insights and recommendations to address business challenges and opportunities.
Dynamic Web Programming	R22MCA302E 6	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of the fundamental technologies used in dynamic web programming, including HTML, CSS, JavaScript, and modern frameworks and libraries such as React, Angular, or Vue.js. ✓ Gain proficiency in server-side programming using languages and frameworks such as Node.js, PHP, Ruby on Rails, or Django, including the development and management of web servers and APIs. ✓ Learn to integrate and manage databases in web applications, using technologies like SQL, MongoDB, or Firebase, including performing CRUD

			<p>(Create, Read, Update, Delete) operations and ensuring data security.</p> <ul style="list-style-type: none"> ✓ Acquire the skills to create dynamic and interactive web applications by implementing client-side scripting, AJAX for asynchronous data fetching, and handling user interactions effectively. ✓ Understand the processes and tools for deploying and maintaining dynamic web applications, including version control systems like Git, continuous integration/continuous deployment (CI/CD) practices, and web hosting platforms like AWS, Heroku, or Netlify.
R Programming	R22MCAOE1	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of the R programming language, including syntax, data types, and basic programming constructs such as loops, conditionals, and functions. ✓ Gain skills in data manipulation and cleaning using R, employing packages like dplyr, tidyr, and readr to efficiently process and transform data for analysis. ✓ Learn to perform statistical analysis and build statistical models in R, utilizing functions and packages for descriptive statistics, hypothesis testing, regression analysis, and more. ✓ Acquire the ability to create effective and insightful data visualizations using R, leveraging packages such as ggplot2 to produce various types of plots and graphs. ✓ Develop the capability to apply R programming skills to solve real-world problems, including conducting data analysis, building predictive models, and presenting findings in a clear and actionable manner.
Organic Reactions and Mechanisms	R22OCH 301	2023-24	<ul style="list-style-type: none"> ✓ Comprehend various oxidation reactions in organic chemistry, including the use of oxidizing agents like potassium permanganate, chromium trioxide, and ozone. ✓ Understand various reduction reactions in organic chemistry, including the use of reducing agents like lithium aluminium hydride, sodium borohydride, and hydrogen.

			<ul style="list-style-type: none"> ✓ Comprehend key molecular rearrangement reactions, including the mechanisms and outcomes of rearrangements such as the Beckmann, Hofmann, and Wagner-Meerwein rearrangements. ✓ Identify and apply important named reactions in organic chemistry, including reactions such as the Friedel-Crafts alkylation and acylation, Grignard reactions, and Diels-Alder reactions. ✓ Design and execute synthetic routes for the preparation of complex organic molecules by applying knowledge of oxidation, reduction, rearrangements, and named reactions.
Medicinal Chemistry	R22OCH 302	2023-24	<ul style="list-style-type: none"> ✓ Comprehend the mechanisms of action and biological activities of β-lactam antibiotics (penicillins and cephalosporins), chloramphenicol, aminoglycosides (e.g., streptomycin), tetracyclines, and antiviral agents (e.g., acyclovir). ✓ Understand the classification, synthesis, and structure-activity relationship (SAR) of sulpha drugs including sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine, sulfaguanidine, sulfamerazine, sulfadimidine, and sulfamethizole. ✓ Study the structure, synthesis, and therapeutic applications of CNS stimulants (e.g., dextro-amphetamine), respiratory stimulants (e.g., doxapram), CNS antidepressants, antipsychotics (e.g., chlorpromazine), anxiolytics (e.g., diazepam), and antiepileptics (e.g., phenobarbital). ✓ Comprehend the synthesis, mechanisms of action, and therapeutic applications of anti-inflammatory drugs such as naproxen, ibuprofen, oxaprozin, diclofenac sodium, and celecoxib. ✓ Understand the structure, synthesis, and therapeutic uses of anti-hypertensive drugs (e.g., verapamil, captopril, atenolol, diltiazem) and anti-diabetic drugs (e.g., troglitazone, chlorpropamide, solbutamide).

Organometallic Chemistry	R22OCH 303	2023-24	<ul style="list-style-type: none"> ✓ Comprehend the introduction, classification, and key concepts of organometallic compounds, including denticity, hapticity, metal carbonyls, and metal π-systems. ✓ Apply the 18-electron rule and understand the significance of Cp (cyclopentadienyl) complexes in organometallic chemistry. ✓ Prepare and use Grignard reagents and alkyl lithium reagents in various reactions, including alkylation of carbonyl compounds, esters, alcohols, amines, and acids. ✓ Understand the preparation and applications of organocopper reagents, including organocuprates and lithium organocuprates (Gilman reagents). ✓ Study organonickel and organoplatinum compounds, including π-allyl nickel complexes, nickel carbonyl, and the medicinal applications of organoplatinum complexes. ✓ Prepare and study various organoboranes, including hydroboration products, dicyclohexyl boranes, and other specialized boranes like 9-BBN and iso-pino camphenyl borane. ✓ Perform functional group transformations with organoboranes, including oxidation, isomerization, cyclization, and reactions with α-bromo ketones and esters. ✓ Apply silylation techniques for functional group protection and transformation, including Peterson's olefination and the use of α-silyl carbanions and β-silylcarbonyl compounds in synthetic strategies.
Chemistry of Natural Products	R22OCH 304	2023-24	<ul style="list-style-type: none"> ✓ Perform structural elucidation of key alkaloids such as morphine, nicotine, quinine, and atropine, including understanding their chemical properties and biological activities. ✓ Apply the isoprene rule and special isoprene rule to the structural elucidation of terpenoids and synthesize key examples like farnesol, zingiberene, α-terpineol, and camphor.

			<ul style="list-style-type: none"> ✓ Isolate, synthesize, and elucidate the structures of important steroids such as cholesterol, androsterone, testosterone, and progesterone. ✓ Comprehend the introduction, definition, nomenclature, classification, occurrence, isolation, and physiological actions of flavonoids and isoflavonoids. ✓ Study their synthesis, biosynthesis, and perform structural elucidation of compounds like kaempferol and quercetin. ✓ Synthesize and analyze plant pigments such as quinones (e.g., polyporic acid), chlorophyll, and haemin, including their roles in plant physiology and potential applications.
Organic Photo chemistry and pericyclic reactions	R22OCH 305	2023-24	<ul style="list-style-type: none"> ✓ ### Major Five Course Outcomes of "Principles of Photochemistry and Pericyclic Reactions" ✓ Analyze and predict photochemical reactions involving π, π^* transitions, such as excited states of alkenes, cis-trans isomerization, and di π-methane rearrangement. Understand intermolecular reactions like photo cycloadditions and photo dimerization, as well as photo substitution reactions of aromatic compounds and the Photo-Fries rearrangement. ✓ Understand the photochemistry of (n, π^*) transitions, including the excited states of carbonyl compounds, Norrish type I and II reactions, and associated processes like photo reductions, photo oxidations, and dimerization. ✓ - Study specific reactions such as the Paterno-Buchi reaction, photochemical rearrangements, and the behavior of α, β-unsaturated ketones under photochemical conditions. ✓ Explore the features and classification of pericyclic reactions, including understanding phases, nodes, and symmetry properties of molecular orbitals in ethylene, 1,3-butadiene, and 1,3,5-hexatriene. ✓ Apply the Woodward-Hoffmann selection rules to electrocyclic reactions, and explain these reactions using methods like FMO (Frontier Molecular Orbital)

			<p>theory, orbital symmetry correlation diagrams, and Huckel-Mobius aromatic and antiaromatic transition states.</p> <ul style="list-style-type: none"> ✓ Comprehend cycloaddition reactions, including 2+2 and 4+2 types, and analyze them using the Woodward-Hoffmann selection rules. ✓ Use FMO theory and Huckel-Mobius transition states to explain the mechanisms of cycloaddition reactions, with specific focus on the Diels-Alder reaction and the endo-exo selectivity. ✓ Explain sigmatropic reactions involving hydrogen and carbon as migrating atoms using FMO theory and Huckel-Mobius transition state methods. Study specific reactions such as the Cope, degenerate Cope, and Claisen rearrangements.
Green Chemistry	R22OCH 306	2023-24	<ul style="list-style-type: none"> ✓ Apply green chemistry principles to organic synthesis using benign solvents, analyzing and improving reactions such as Claisen rearrangement, Wittig-Horner reaction, Heck reaction, aldol condensation, pinacol coupling, benzoin condensation, and Wurtz reaction. ✓ Evaluate the environmental benefits and efficiency of green synthesis routes in comparison to traditional methods. ✓ Apply microwave-assisted methods to enhance reaction rates and yields, and explore phase transfer catalysis for C-alkylation, N-alkylation, and S-alkylation. ✓ Analyze different types of sonochemical reactions, including homogeneous, heterogeneous liquid-liquid, and heterogeneous solid-liquid reactions, to improve reaction conditions and outcomes. ✓ Apply ionic liquids in various organic synthesis processes, including alkylation, allylation, oxidation, hydrogenation, and carbon-carbon bond-forming reactions such as Friedel-Craft's reaction, Suzuki coupling reaction, Stille coupling reaction, and Negishi cross-coupling reaction.
Biological Chemistry	R22OCH 307	2023-24	<ul style="list-style-type: none"> ✓ Understand the structure and function of key biomolecules and the building blocks of biopolymers. ✓ Describe the structure and functions of prokaryotic and eukaryotic cells,

			<p>including intracellular organelles and their roles.</p> <ul style="list-style-type: none"> ✓ Apply methods used in nucleic acid separation and characterization, and understand nucleic acid sequencing techniques. ✓ Analyze the processes of transcription and translation, including the roles of messenger RNA, RNA polymerase, and the genetic code. ✓ Understand tRNA structure, codon-anticodon interactions, ribosome structure, and the regulation of transcription and protein-DNA interactions. ✓ Explore the application of enzymes in chemical synthesis and study enzyme models and their practical applications.
Chemistry in Daily life	R22OCH 310	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to: ✓ Understand Chemistry Laboratory Safety ✓ Analyze Environmental Chemistry Issues ✓ Explore Bioinorganic Chemistry <ul style="list-style-type: none"> - Understand the biological significance of essential elements such as Na, K, Mg, Ca, Fe, Co, Ni, Cu, Zn, and Cl. - Study the functions of metalloporphyrins, focusing on the roles of hemoglobin, myoglobin, and chlorophyll in biological systems. ✓ Understand Biological Functions of Hormones Examine how these hormones regulate physiological processes and their roles in maintaining homeostasis. ✓ Understand the medicinal molecules used to treat specific diseases, including artesunate acetaminophen albuterol metformin and insulin brimonidine, acyclovir, citalopram, levothyroxine estazolam, and omeprazole and pantoprazole. ✓ - Analyze the mode of action of these medicinal molecules and their effectiveness in treating various conditions.
Environmental Chemistry	R22OCH 311	2023-24	<ul style="list-style-type: none"> ✓ Identify and Assess Water Pollution Sources and Effects ✓ Understand Air Pollution and Its Impacts ✓ Explore Metal Toxicology and Nuclear Pollution ✓ Evaluate Pesticides and Soil Pollution ✓ Apply Pollution Analysis and Control Techniques

Techniques for modern industrial application	R22OCH 312	2023-24	<ul style="list-style-type: none"> ✓ Understand Classical Purification Methods ✓ Implement Chromatography Techniques ✓ Apply Gas Chromatography (GC) and High-Performance Liquid Chromatography (HPLC) ✓ Utilize Ion-Exchange Chromatography and Electrophoresis ✓ Operate and Analyze Using GC-MS
Separation Methods	R22ACH 301	2023-24	<ul style="list-style-type: none"> ✓ Understand the significance of qualitative and quantitative analysis in research and development across various industries and scientific disciplines. Develop and validate analytical methods, with a focus on separation techniques and their importance in solving industrial problems. ✓ Apply key chromatographic concepts such as retardation factor, retention time, column efficiency, and temperature effects. Use the Van Deemter equation to understand column performance and zone spreading in chromatographic separations. ✓ Apply ion exchange chromatography principles, including the use of synthetic resins, ion-exchange mechanisms, and equilibria. Utilize ion chromatography for analyzing water pollutants, understanding instrumentation and detector principles. ✓ Apply principles of gel exclusion chromatography for separating organic compounds, including properties of xerogels and resolution techniques. Utilize capillary electrophoresis for various applications and understand ion exclusion chromatography principles and uses. ✓ Implement sampling techniques for solids, liquids, and gases, including methods for preserving and handling samples to ensure accuracy and reliability.- Apply principles of solvent extraction, including Distribution Law and Partition coefficient, and use different extraction systems like batch, continuous, and counter-current extractions.
Applied Analysis-I	R22ACH 302	2023-24	<ul style="list-style-type: none"> ✓ Conduct detailed analyses of iron ore, manganese ore, chromite ore, and bauxite, including the determination of various constituents like iron, manganese, silica, alumina, and other elements. ✓ Analyze non-ferrous alloys such as brass, bronze, and solder, as well as ferro

			<p>alloys including ferro vanadium, ferro manganese, and ferro chromium, identifying key components like copper, zinc, tin, and chromium.</p> <ul style="list-style-type: none"> ✓ Execute soil analysis by sampling and determining moisture content, nitrogen, phosphorus, silica, lime, and humus levels. Analyze different types of fertilizers (ammonical, phosphate, and nitrate) to assess their composition and efficacy. ✓ Perform proximate and ultimate analyses of solid fuels like coal to evaluate their composition and quality. ✓ Conduct chemical analysis of cement, including the determination of constituents such as silica, ferric oxide, alumina, and free CaO. ✓ Analyze paints to determine components like vehicle, pigment, BaSO₄, and lead content. Perform non-aqueous titrations using various solvents and indicators to determine acids, bases, and moisture content in drugs and other samples.
Chemical and Spectral Methods of Analysis	R22ACH 303	2023-24	<ul style="list-style-type: none"> ✓ Apply electrogravimetric analysis to determine metal content, such as Cu, Pb, and Sn, in various materials using constant current and controlled potential electrolysis methods. ✓ Conduct coulometric analyses using constant current and controlled potential methods to analyze cations such as As(III), Fe(II), I⁻, and S₂⁻. ✓ Utilize methods involving I₂ liberation and Ce⁴⁺ liberation for accurate analytical results. ✓ Detect and measure radioactivity and apply radioactive tracers in various analytical applications. Perform isotope dilution analysis and activation analysis, understanding their advantages and disadvantages. ✓ Apply radio carbon dating techniques for age determination and other analytical purposes. ✓ Understand the principles and classifications of electron microscopy techniques, including scanning electron microscopy (SEM), scanning tunneling microscopy (STM), transmission electron microscopy (TEM), and atomic force microscopy (AFM). Utilize these techniques to analyze samples, understanding their basic principles, instrumentation, and practical

			<p>applications.</p> <ul style="list-style-type: none"> ✓ Apply the principles and theory of Mossbauer spectroscopy for analyzing various materials. Interpret Mossbauer spectra and understand its applications in analytical, chemical, physical, and biological sciences.
Quality Control and Standard Methods of Analysis	R22ACH 304	2023-24	<ul style="list-style-type: none"> ✓ Familiarize yourself with the ISO (International Organization for Standardization) standards relevant to your industry. ✓ Learn the importance of accurate record keeping and documentation in quality control, including laboratory notebooks, standard operating procedures (SOPs), and batch records. ✓ Understand the principles of QA and its role in maintaining consistent product quality. ✓ Study the chemistry behind the formation of precipitates and the conditions that favor their formation. . ✓ Master techniques for isolating and collecting precipitates from solution. . ✓ Learn about various filtration methods, including gravity filtration, vacuum filtration, and microfiltration. ✓ Understand sample digestion techniques for converting analytes into a suitable form for precipitation.
Bio Inorganic chemistry, Bioorganic & Bio Physical Chemistry	R22ACH 305	2023-24	<ul style="list-style-type: none"> ✓ Describe the role of metal complexes, such as heme proteins (hemoglobin and myoglobin) and non-heme proteins (hemerythrin and hemocyanin), in oxygen transport and electron transfer. ✓ Explain the function of model synthetic complexes and co-enzymes (e.g., Vitamin B12, carboxypeptidase, superoxide dismutase) in biological systems. ✓ Understand the mechanisms of metal ion transport and storage in biological systems, including ionophores and photosynthesis. ✓ Explore the structure and function of carbohydrates (mucopolysaccharides, glycoproteins, glycolipids) and lipids (triglycerides, phospholipids, cholesterol). ✓ Calculate standard free energy changes in biochemical reactions and understand the thermodynamics of biopolymer solutions. ✓ Describe membrane equilibrium, ion transport through cell membranes, and

			<p>the function of dialysis.</p> <ul style="list-style-type: none"> ✓ Explain the structure and functions of proteins, enzymes, DNA, and RNA, focusing on the forces involved in biomolecular interactions, including electrostatic, hydrophobic, and dispersion forces.
Food Chemistry	R22ACH 307	2023-24	<ul style="list-style-type: none"> ✓ Understand the source, functions, and classification of food, including the basic five food groups and their role in health. Gain knowledge of various water purification processes, including ion exchangers, reverse osmosis, activated charcoal, chlorination, ozone, and UV light disinfection, and their specifications for ensuring safe drinking water. ✓ Identify and analyze the main constituents of food, including carbohydrates, proteins, minerals, and vitamins. Learn the principles of carbohydrate analysis, protein analysis methods such as paper chromatography, and understand the sources, functions, and deficiencies of essential minerals and vitamins. ✓ Recognize and evaluate different food additives such as artificial sweeteners, flavors, antioxidants, colors, emulsifying agents, and preservatives. ✓ Understand the impact of pests and insects on food spoilage and quality, and identify various pesticides used in agriculture and post-harvest storage. ✓ Identify common adulterants in various foods such as milk, vegetable oils, spices, cereals, and beverages.
Semester-IV			
Real Analysis	R20MAT401A	2021-22	<ul style="list-style-type: none"> ✓ Get a clear idea about the real numbers and real valued functions. ✓ Obtain the skills of analysing the concepts and applying appropriate methods for testing convergence of a sequence/ series ✓ Test the continuity and differentiability and Riemann integration of a function. ✓ Know the Geometrical interpretation of mean value theorems. ✓ Understand the theory of Sequences and Series.

Linear Algebra	R20MAT402A	2021-22	<ul style="list-style-type: none"> ✓ Understand the concepts of vector spaces, subspaces, bases, dimension and their properties. ✓ Understand the concept of Linear Transformation and their properties. ✓ Apply Cayley-Hamilton Theorem for finding Inverse of Matrix and high powers of matrices without using routine methods. ✓ Learn the properties of inner product spaces and determine orthogonality in inner product spaces. ✓ Understand Orthogonalisation Process.
Electricity, Magnetism & Electronics	R20PHY401A	2021-22	<ul style="list-style-type: none"> ✓ Understand the Gauss law and its application to obtain electric field in different cases and formulate the relationship between electric displacement vector, electric polarization, Susceptibility, Permittivity and Dielectric constant. ✓ Apply the knowledge of Gauss's law to derive relations connecting dielectric Parameters and their applications. ✓ Understand Biot and Savart's law and Ampere's circuital law to describe and explain the generation of magnetic fields by electrical currents. ✓ Develop an understanding on the unification of electric and magnetic fields and Maxwell's equations governing electromagnetic waves. ✓ Understand the operation of basic logic gates and universal gates and their truth tables.
Modern Physics	R20PHY402A	2021-22	<ul style="list-style-type: none"> ✓ Develop an understanding on the concepts of Atomic and Modern Physics, basic elementary quantum mechanics and nuclear physics. ✓ Develop critical understanding of concept of Matter waves and Uncertainty principle. ✓ Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications. ✓ Examine the basic properties of nuclei, characteristics of Nuclear forces, salient features of nuclear models and different nuclear radiation detectors. ✓ Get familiarized with the Nano materials, their unique properties and applications.

Inorganic, Organic & Physical Chemistry	R20CHE401A	2021-22	<ul style="list-style-type: none"> ✓ Students should be able to realize the potential applications of Organometallic compounds in the synthesis of various chemicals and polymers of day today use both in micro scale macro scale. ✓ Describe and recognize the basic and ring structures of glucose and fructose and their conversions. ✓ Predict the different type of amino acids and recognize the basic properties of amino acids. ✓ The student will learn nomenclature, structure, properties, syntheses, and reactions of the simple 5 and 6-membered ring heterocyclics. ✓ Able to understand the nomenclature of nitro hydrocarbons, tautomerism in nitro hydrocarbons. ✓ Students understand the nomenclature of amines, Basicity of amines, comparison of basicity, separation of amines. Chemical properties of amines. ✓ Understand difference between thermal and photochemical reactions, laws of photochemistry, quantum yield and types of photochemical reactions. ✓ Able to learn the different types of thermodynamic systems, reaction energies, feasibility of the chemical reactions, entropy and its significance.
Inorganic and Physical Chemistry	R20CHE402A	2021-22	<ul style="list-style-type: none"> ✓ Students able to learn the bonding in the coordinate compounds, stability, colour and magnetic properties, Learn the CFSE calculations, Isomerism in complex compounds. ✓ Able to know the stability and reactivity of the complexes, labile and inert complexes, methods for determination of composition of the complexes and calculation of magnetic moment. ✓ Students could able to learn the applications of phase rule in metallurgy, desilverisation of lead. ✓ Student could able differentiate strong electrolytes and weak electrolytes, determine the transport numbers able to calculate the EMF of the given cell. ✓ Apply experimental techniques to the determination of rate laws and rate

			constants.
Plant Physiology and Metabolism	R20BOT401A	2021-22	<ul style="list-style-type: none"> ✓ Evaluate the role of minerals in plant nutrition and their deficiency symptoms. ✓ Interpret the role of enzymes in plant metabolism. ✓ Critically understand the light reactions and carbon assimilation processes responsible for synthesis of food in plants. ✓ Analyze the biochemical reactions in relation to Nitrogen and lipid metabolisms. ✓ Evaluate the physiological factors that regulate growth and development in plants.
Cell Biology, Genetics and Plant Breeding	R20BOT402A	2021-22	<ul style="list-style-type: none"> ✓ Explain the procedures of selection and hybridization for improvement of crops. ✓ Understand the basics of Mendelian genetics, its variations and interpret inheritance of traits in living beings. ✓ Evaluate the structure, function and regulation of genetic material. ✓ Understand the applications, principles and modern techniques in plant breeding. ✓ Explain the organization of a eukaryotic chromosome and the structure of genetic material.
Animal Physiology, Cellular Metabolism and Embryology	R20ZOO401A	2021-22	<ul style="list-style-type: none"> ✓ Understand the functions of important animal physiological systems including digestion, cardio-respiratory and renal systems. ✓ Understand the muscular system and the neuro-endocrine regulation of animal growth, development and metabolism with a special knowledge of hormonal control of human reproduction. ✓ Describe the structure, classification and chemistry of biomolecules and enzymes responsible for sustenance of life in living organisms ✓ Develop broad understanding the basic metabolic activities pertaining to the catabolism and anabolism of various biomolecules ✓ Describe the key events in early embryonic development starting from

			the formation of gametes upto gastrulation and formation of primary germ layers.
Immunology and Animal Biotechnology	R20ZOO402A	2021-22	<ul style="list-style-type: none"> ✓ To provide students with a foundation in immunological processes ✓ To be able to compare and contrast the innate versus adaptive immune systems and humoral versus cell-mediated immune responses ✓ Understand the significance of the Major Histocompatibility Complex in terms of immune response and transplantation ✓ To provide knowledge on animal cell and tissue culture and their preservation ✓ To empower students with latest biotechnology techniques like stem cell technology, genetic engineering, hybridoma technology, transgenic technology and their application in medicine and industry for the benefit of living organisms.
Corporate Accounting	R20COM401A	2021-22	<ul style="list-style-type: none"> ✓ Familiarise with the rules relating to issues of shares and debentures. ✓ Familiarise with the rules relating to underwriting of shares. ✓ Make aware of computation of the financial results of companies. ✓ Prepare Investments account. ✓ Become familiar with computation of Insurance claims.
Cost and Management Accounting	R20COM402A	2021-22	<ul style="list-style-type: none"> ✓ Understand various costing systems and management systems ✓ Analyse and provide recommendations to improve the operations of organisations through the application of Cost and Management accounting techniques ✓ Evaluate the costs and benefits of different conventional and contemporary costing systems ✓ Differentiate methods of schedule costs as per unit of production. ✓ Differentiate methods of calculating stock consumption.
Business Laws	R20COM403A	2021-22	<ul style="list-style-type: none"> ✓ Demonstrate an understanding of the Legal Environment of Business. ✓ Communicate effectively using standard business and legal terminology. ✓ Demonstrate recognition of the requirements of the contract agreement ✓ Demonstrate understanding of contract consideration and capacity

			<ul style="list-style-type: none"> ✓ Demonstrate recognition of the genuineness of assent in contract formation.
Auditing	R20COM404A	2021-22	<ul style="list-style-type: none"> ✓ Understand the environment and types relating to the auditing function ✓ Identify the steps needed to prepare for an audit. ✓ Understand general audit terminology. ✓ Plan an audit taking into account concepts of evidence, risk and materiality. ✓ Know the steps for performing an audit.
Goods and Services Tax	R20COM405A	2021-22	<ul style="list-style-type: none"> ✓ Provide knowledge about goods service tax. ✓ Create employability to the students in the commercial tax practices ✓ Understand the procedure for registration, payment and refund of GST ✓ Know tax procedures for movement of goods. ✓ Understand the appeals, offences and penalties with respect to GST.
Income Tax	R20COM406A	2021-22	<ul style="list-style-type: none"> ✓ Collect the basic concepts and definitions of Income Tax Act 1961. ✓ Know the residential status of assessee and incomes exempted from tax. ✓ Become familiar with the computations of income from salary, income from house property, income from business and profession.
Data Structures	R20CSC401A	2021-22	<ul style="list-style-type: none"> ✓ Ability to select the data structures that efficiently model the information in a problem. ✓ Ability to assess efficiency trade offs among different data structure implementations or combinations. ✓ Implement and know the application of algorithms for sorting and pattern matching. ✓ Design programs using a variety of data structures, including hash tables ✓ Binary and general tree structures, search trees, , graphs, and AVL trees.
Operating Systems	R20CSC402A	2021-22	<ul style="list-style-type: none"> ✓ Understand fundamental operating system abstractions such as processes, threads, files, semaphores. ✓ IPC abstractions, shared memory regions, etc., ✓ Analyze important algorithms eg. Process scheduling and memory management algorithms.

			<ul style="list-style-type: none"> ✓ Categorize the operating system's resource management techniques, dead lock management techniques. ✓ Memory management techniques.
Assessment of Individual, HUF & Partnership	R20COMT406 A	2021-22	<ul style="list-style-type: none"> ✓ Acquire the complete knowledge of the tax evasion, tax avoidance and tax planning ✓ Understand the provisions and compute income tax for various sources ✓ Grasp amendments made from time to time in Finance Act ✓ Compute total income and define tax complications and structure ✓ Prepare and File IT returns of individual at his own.
Income Tax	R20COMC404 A	2021-22	<ul style="list-style-type: none"> ✓ To identify the technical terms related to Income Tax. ✓ To determine the residential status of an individual and scope of total income. ✓ To enable the students to compute income under various heads namely income from salaries, house property ✓ To enable the students to discuss the various exemptions under section 10 the Income tax act, 1961. ✓ To comprehend the basic knowledge of the laws governing to Income Tax.
Data Base Management System	R20BCOMP40 1A	2021-22	<ul style="list-style-type: none"> ✓ An ability to apply Knowledge of computing and mathematics in Computer Science & Engineering. ✓ An ability to analyze a problem, identify and define the computing requirements appropriate to its solution. ✓ An ability to design, implement and evaluate a computer-based system to meet desired needs with appropriate societal considerations. ✓ An ability to conduct investigations, interpret data and provide conclusions in investigating complex problems related to Computer Science & Engineering. ✓ An ability to engage in continuing professional development and life-long learning.
OOPS with Java	R20BCOMP40	2021-22	<ul style="list-style-type: none"> ✓ Learn Object-Oriented programming concepts and techniques using the

	2A		<p>Java programming language.</p> <ul style="list-style-type: none"> ✓ Learn to write, test, and debug introductory level Object-Oriented programs using Java. ✓ In addition, the student will be introduced to the following concepts, which are important workforce activities: <ul style="list-style-type: none"> • Design/Develop Program • Design classes ,interfaces, packages • Design the applet programs • Understanding Inheritance.
Cyber Laws	R20BCA401A	2021-22	<ul style="list-style-type: none"> ✓ Critically evaluate ongoing developments in law relating to information technologies. ✓ Display an understanding of how these developments relate to one another. ✓ Examine areas of doctrinal and political debate surrounding rules and theories; ✓ Evaluate those rules and theories in terms of internal coherence and practical outcomes. ✓ Draw on the analysis and evaluation contained in primary and secondary sources.
Data Mining and Data Warehousing	R20BCA402A	2021-22	<ul style="list-style-type: none"> ✓ Examine the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system. ✓ Apply pre-processing statistical methods for any given raw data ✓ Discover interesting patterns from large amounts of data to analyse and extract patterns to solve problems, make predictions of outcomes ✓ Comprehend the roles that data mining plays in various fields and manipulate different data mining techniques ✓ Select and apply proper data mining algorithms to build analytical applications. ✓ Evaluate and implement a wide range of emerging and newly-adopted methodologies and technologies to facilitate the knowledge discovery.

Web Programming	R20BCA40 3A	2021-22	<ul style="list-style-type: none"> ✓ Able to use Building Blocks of PHP, Access array elements. ✓ Able to use various functions and handle data using files.. ✓ Able to use working with Forms, Sessions, Cookies. ✓ Able to implement Java Script. ✓ Able to implement basic concepts of Angular JS for Web development.
Design of Object Oriented Applications	R20BCA40 4A	2021-22	<ul style="list-style-type: none"> ✓ Have Knowledge in micro and macro process. ✓ Have Knowledge in management planning, quality assurance and metrics along with documentation of object oriented development. ✓ Have Knowledge in system architecture. ✓ Basic knowledge in AI and Data Acquisition. ✓ Knowledge in applications of Object Oriented Design.
Date Analytics using R	R20BCA40 5A	2021-22	<ul style="list-style-type: none"> ✓ Data-Visualization tools and techniques offer executives and other knowledge workers new approaches to dramatically improve their ability to grasp information hiding in their data. ✓ Data visualization is a general term that describes any effort to help people understand the significance of data by placing it in a visual context. ✓ Patterns, trends and correlations that might go undetected in text-based data can be exposed and recognized easier with data visualization software. ✓ It isn't just the attraction of the huge range of statistical analyses afforded by R that attracts data people to R. The language has also developed a rich ecosystem of charts, plots and visualizations over the years. ✓ ggplot2 is a data visualization package for the statistical programming language R.
Object Oriented Software Engineering	R20BCA40 6A	2021-22	<ul style="list-style-type: none"> ✓ Explain the motivation for and development of object-oriented programming languages. ✓ Produce a set of use cases given a problem statement. ✓ Produce class diagrams, object interaction diagrams and object state transition diagrams for a given problem. ✓ Describe the essential features of an object-oriented programming language. ✓ Produce and/or debug code fragments that illustrate principles of object-

			<p>oriented software development.</p> <ul style="list-style-type: none"> ✓ Describe the principles for testing object-oriented software and derive sets of test data given a specification.
Microprocessor Systems	R20ELE40 1A	2021-22	<ul style="list-style-type: none"> ✓ Gain good knowledge on microprocessor and implement in practical applications ✓ Design system using memory chips and peripheral chips for 16 bit 8086 microprocessor. ✓ Understand and devise techniques for faster execution of instructions, ✓ Learn to understand speed of operations and performance of microprocessors. ✓ Understand multi core processor and its advantages.
Microcontroller and Interfacing	R20ELE40 2A	2021-22	<ul style="list-style-type: none"> ✓ Acquire knowledge about microcontrollers embedded processors and their applications. ✓ Understand the internal architecture and interfacing of different peripheral devices ✓ With Microcontrollers. ✓ Write the programs for microcontroller. ✓ Understand the role of embedded systems in industry. ✓ Understand the design concept of embedded systems.
Training and Development	R20BBA40 1A	2021-22	<ul style="list-style-type: none"> ✓ Develop an understanding of the evolution of training & development from a tactical to a strategic function . ✓ Provide an insight into what motivates adults to learn and the most appropriate methodologies to impart training ✓ Understand the concept of training audit & training evaluation ✓ Learn to design a training module and execute it ✓ Understand the need to learn the concept of Performance Management.
Business Laws	R20BBA40 2A	2021-22	<ul style="list-style-type: none"> ✓ Demonstrate an understanding of the Legal Environment of Business. ✓ Communicate effectively using standard business and legal terminology. ✓ Demonstrate recognition of the requirements of the contract agreement ✓ Demonstrate understanding of contract consideration and capacity

			<ul style="list-style-type: none"> ✓ Demonstrate recognition of the genuineness of assent in contract formation.
Micro, Small and Medium Enterprises Management	R20BBA40 3A	2021-22	<ul style="list-style-type: none"> ✓ Explain basic concepts of SME and challenges of MSMEs. ✓ Outline the opportunities to Set-Up SSI/SME Units and role of rural & women entrepreneurship. ✓ Illustrate roles of various institutions supporting MSMEs. ✓ Manage MSME, NPA & sickness units. ✓ Evaluate role of Government in Promoting Entrepreneurship.
International Business	R20BBA40 4A	2021-22	<ul style="list-style-type: none"> ✓ Understand various concepts and terminologies involved in International Business and importance of international trade ✓ Evaluate various modes of entry in to International business and should be able to select the best mode of entry given a situation. ✓ Relate and discuss the presence of macro factors (PESTEL) on international business environment ✓ Examine and elaborate the role of various Government institutions in India which support International trade. ✓ Perceive the concepts in recent EXIM policy of India and relate it to the flow of FDI as well as direction of Indian foreign trade.
Cost and Management Accounting	R20BBA40 5A	2021-22	<ul style="list-style-type: none"> ✓ Understand various costing systems and management systems ✓ Analyse and provide recommendations to improve the operations of organisations through the application of Cost and Management accounting techniques ✓ Evaluate the costs and benefits of different conventional and contemporary costing systems ✓ Differentiate methods of schedule costs as per unit of production ✓ Differentiate methods of calculating stock consumption.
Financial Services	R20BBA40 6A	2021-22	<ul style="list-style-type: none"> ✓ Competence in Oral, Written and visual Communication. ✓ Demonstrate critical and innovative thinking. ✓ Communicate ethically. ✓ Understand the process of communication and its effect on giving and receiving information.

			<ul style="list-style-type: none"> ✓ Apply effective communication skills in a variety of public and interpersonal settings.
Sampling Techniques & Design of Experiments	R20STAT401A	2021-22	<ul style="list-style-type: none"> ✓ Gain knowledge about simple random sampling with and without replacement and estimation of variances. ✓ Analyse various sampling techniques and make interpretations for further studies. ✓ Able to analyse one-way and two-way classification without interactions ✓ Can design CRD, RBD and LSD Layouts and their Statistical analysis- and can estimate the efficiencies of LSD over RBD and CRD ✓ Can do the statistical analysis of 2^2, 2^3 and 3^2 Factorial Experiment designs.
Applied Statistics	R20STAT402A	2021-22	<ul style="list-style-type: none"> ✓ Identify the components of time series and the method of measuring trend. ✓ Apply the different measures of variations to forecast the data. ✓ Construct, evaluate and interpret the index numbers. ✓ Can estimate measures of vital events basic aspects, viz. the fertility, mortality and migration. ✓ Construction and implication of life tables.
Distribution Management	R20COML406 A	2021-22	<ul style="list-style-type: none"> ✓ Understand the roles and responsibilities of sales function. ✓ Manage the channel efficiency and effectiveness. ✓ Manage and enhance the sales force productivity and performance. ✓ Plan and implement an effective sales strategy for their organizations. ✓ Frame socially, legally and ethically acceptable policies and plans for Marketing channels.
Data Processing and Visualisation	R20DSDPV40 1A	2021-22	<ul style="list-style-type: none"> ✓ proficiently navigate Tableau using a full suite of commands ✓ analyse data and calculate with tables using Tableau commands ✓ generate the most meaningful visualisations ✓ develop interactive dashboards ✓ deliver insightful stories visually in addressing a business problem.
Sampling	R20DSSTAT40	2021-22	<ul style="list-style-type: none"> ✓ Gain knowledge about simple random sampling with and without

Techniques & Design of Experiments	1A		<p>replacement and estimation of variances.</p> <ul style="list-style-type: none"> ✓ Analyse various sampling techniques and make interpretations for further studies. ✓ Able to analyse one-way and two-way classification without interactions ✓ Can design CRD, RBD and LSD Layouts and their Statistical analysis- and can estimate the efficiencies of LSD over RBD and CRD ✓ Can do the statistical analysis of 2^2, 2^3 and 3^2 Factorial Experiment designs.
Applied Statistics	R20DSSTAT40 2A	2021-22	<ul style="list-style-type: none"> ✓ Identify the components of time series and the method of measuring trend. ✓ Apply the different measures of variations to forecast the data. ✓ Construct, evaluate and interpret the index numbers. ✓ Can estimate measures of vital events basic aspects, viz. the fertility, mortality and migration. ✓ Construction and implication of life tables.
Advanced Java	R20DSAJ402A	2021-22	<ul style="list-style-type: none"> ✓ To understand the meaning and basic components of servlets and JSP ✓ To know the required software to run Java programs ✓ Understanding the use of servers ✓ Understanding the use of Jsp ✓ Understanding the use of Databases
Data Base Management System	R20DSDBMS40 4A	2021-22	<ul style="list-style-type: none"> ✓ Gain knowledge of Database and DBMS. ✓ Understand the fundamental concepts of DBMS with special emphasis on relational data model. ✓ Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database. ✓ Model database using ER Diagrams and design database schemas based on the model. ✓ Create a small database using SQL. ✓ Store, Retrieve data in database.
Artificial Intelligence	R20DSAI403A	2021-22	<ul style="list-style-type: none"> ✓ Find appropriate idealizations for converting real world problems into AI search problems formulated using the appropriate search algorithm. . ✓ Implement CNN

			<ul style="list-style-type: none"> ✓ Implement RNN. ✓ It is expected that the students to apply techniques to design expert systems. ✓ Understand the Basic Concepts.
Introduction to Microprocessor and Microcontroller	R20IOTELE40 1A	2021-22	<ul style="list-style-type: none"> ✓ Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor and microcontroller. Compare accepted standards and guidelines to select appropriate Microprocessor (8085 & 8086) and Microcontroller to meet specified performance requirements. ✓ Analyze assembly language programs; select appropriate assemble into machine a cross assembler utility of a microprocessor and microcontroller. ✓ Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices. ✓ Evaluate assembly language programs and download the machine code that will provide solutions real-world control problems.
Introduction to ARM Microcontroller	R20IOTELE40 2A	2021-22	<ul style="list-style-type: none"> ✓ Understand the features of embedded systems, architecture of ARM7 and applications. ✓ Analyse and understand the instruction set and development tools of ARM. ✓ Analyse and understand the THUMB state and achieving competency in assembly programming of ARM. ✓ Understand the exception, interrupts and interrupt handling schemes. ✓ Understand the hardware and interfacing peripheral devices to LPC2148.
Statistical Inference	R20IOTSTAT4 01A	2021-22	<ul style="list-style-type: none"> ✓ Construct the point and interval estimators, evaluate the properties of estimators and demonstrate the theory of maximum likelihood estimation. ✓ Understand testing of statistical hypothesis, Neymann Pearson Lemma. ✓ Distinguish various large sample tests used in sampling theory. ✓ Distinguish various small sample tests used in sampling theory. ✓ Analyze various sampling techniques and make interpretations for further studies.
Advanced	R20IOTMAT4	2021-22	<ul style="list-style-type: none"> ✓ Find solutions for algebraic equations, ordinary differential equations

Numerical Analysis	01A		<ul style="list-style-type: none"> ✓ Calculate the errors and approximations in numerical methods. ✓ Analyse finite differences. ✓ Apply Knowledge in Statistics through Curve Fitting. ✓ Gain knowledge on Numerical Differentiation and Integration Concepts.
Data Base Management System	R20IOTDBMS404A	2021-22	<ul style="list-style-type: none"> ✓ Gain knowledge of Database and DBMS. ✓ Understand the fundamental concepts of DBMS with special emphasis on relational data model. ✓ Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database. ✓ Model database using ER Diagrams and design database schemas based on the model. ✓ Create a small database using SQL. ✓ Store, Retrieve data in database.
Programming with R	R20IOTPR401A	2021-22	<ul style="list-style-type: none"> ✓ List motivation for learning a programming language. ✓ Access online resources for R and import new function packages into the R workspace. ✓ Import, review, manipulate and summarize data-sets in R. ✓ Explore data-sets to create testable hypotheses and identify appropriate statistical tests. ✓ Perform appropriate statistical tests using R Create and edit visualizations.
Personality Enhancement and Leadership	R20ENG401A	2021-22	<ul style="list-style-type: none"> ✓ Students will gain a deeper understanding of their own personalities, strengths, weaknesses, values, and motivations. ✓ Participants will develop effective communication skills, including active listening, public speaking, and persuasive communication. ✓ The course will equip students with various leadership theories and styles, enabling them to identify and develop their own leadership style. ✓ Students will learn to recognize, understand, and manage their own emotions as well as those of others. ✓ The course will train students to think strategically, analyze complex situations, and develop effective solutions.

Entrepreneurship	R20ESP401A	2021-22	<ul style="list-style-type: none"> ✓ Students will develop an entrepreneurial mindset characterized by innovation, risk-taking, and proactiveness. ✓ Participants will gain skills in creating comprehensive business plans, including market research, financial planning, and strategic management. ✓ The course will equip students with knowledge of financial management, including budgeting, forecasting, and financial analysis. ✓ Students will learn effective marketing and sales strategies to attract and retain customers. ✓ The course will provide insights into the legal and ethical considerations in entrepreneurship.
Numerical and Statistical Methods	R20WSMAT401A	2021-22	<ul style="list-style-type: none"> ✓ Develop Skill to choose and apply appropriate numerical methods to obtain appropriate solutions to different mathematical problems. ✓ Apply various statistical technique such as measures of central tendency and dispersion ✓ Understand the relation between variables using the method of correlation and fit analysis. ✓ Develop Skills to execute programs of various numerical methods and statistical techniques for solving mathematical problems. ✓ Understand and implement various concepts of Statistics in real life.
Advanced Java	R20WSAJ401A	2021-22	<ul style="list-style-type: none"> ✓ To understand the meaning and basic components of servlets and JSP. ✓ To know the required software to run Java programs. ✓ Understanding the use of servers. ✓ Understanding the use of Jsp. ✓ Understanding the use of Databases.
Software Engineering	R20WSSE401A	2021-22	<ul style="list-style-type: none"> ✓ The ability to analyse, design, verify, validate, implement, apply and maintain software systems. ✓ The ability to work in one or more significant application domains. ✓ The ability to manage the development, measuring using Size & Function Oriented Metrics. ✓ The ability to understand the analysis model with its elements and designing

			<p>with its models.</p> <ul style="list-style-type: none"> ✓ The ability to understand the concepts of Quality and Testability.
Programming with R	R20WSPR401A	2021-22	<ul style="list-style-type: none"> ✓ List motivation for learning a programming language. ✓ Access online resources for R and import new function packages into the R workspace. ✓ Import, review, manipulate and summarize data-sets in R. ✓ Explore data-sets to create testable hypotheses and identify appropriate statistical tests. ✓ Perform appropriate statistical tests using R Create and edit visualizations.
PG Programmes			
International Business	R22MBA401	2023-24	<ul style="list-style-type: none"> ✓ Understand how political, economic, and legal systems collectively influence a country's ability to achieve meaningful economic progress ✓ Demonstrate how currency exchange rates are determined. ✓ 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. ✓ Discuss how culture is different because of differences in social structure, religion, language, education, economic philosophy, and political philosophy ✓ Assess the role played by the International Monetary Fund and the World Bank in the global monetary system.
Strategic Marketing	R22MBA402(I)	2023-24	<ul style="list-style-type: none"> ✓ Understand key principles of marketing strategy and explain marketing and strategy concepts and ideas in their own words. ✓ Think strategically about marketing issues and provide recommendations ✓ Critically evaluate an organization's strategic approach. ✓ Apply key learning to a company's strategic (marketing) efforts through detailed exploration. ✓ Use key frameworks to analyze situations and make strategic marketing decisions.
Sales and Distribution	R22MBA402(II)	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of key sales and distribution strategies, including channel management, sales force management, and

Management			<p>distribution logistics.</p> <ul style="list-style-type: none"> ✓ Gain proficiency in planning and forecasting sales, using techniques to analyze market trends, predict sales performance, and develop effective sales strategies and targets. ✓ Learn to implement and manage customer relationship management (CRM) systems to enhance customer interactions, improve satisfaction, and drive sales growth. ✓ Acquire skills in designing and managing distribution networks, including the selection and optimization of distribution channels, inventory management, and logistics coordination. ✓ Understand how to measure and evaluate the performance of sales and distribution activities, utilizing key performance indicators (KPIs), sales metrics, and performance analysis to optimize operations and achieve business objectives.
Retail Management	R22MBA402(III)	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of retail strategies and operations, including store layout, merchandising, inventory management, and supply chain coordination to drive retail performance. ✓ Gain skills in managing and enhancing the customer experience, including customer service practices, relationship management, and strategies to increase customer satisfaction and loyalty. ✓ Learn to apply retail marketing and sales techniques, including promotional strategies, pricing strategies, and sales tactics to attract and retain customers and drive sales growth. ✓ Acquire the ability to use data and analytics for making informed decisions in retail management, including analyzing sales data, market trends, and customer behavior to optimize retail strategies and operations. ✓ Understand the role of technology and innovation in retail, including the use of point-of-sale systems, e-commerce platforms, and emerging technologies to improve retail efficiency and customer engagement.
Service Operations	R22MBA402(IV)	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of the fundamental principles and concepts of service operations management, including service design, service

Management			<p>delivery, and quality management.</p> <ul style="list-style-type: none"> ✓ Gain proficiency in designing and improving service processes, using tools and techniques such as process mapping, workflow analysis, and continuous improvement methodologies to enhance service efficiency and effectiveness. ✓ Learn to manage capacity and demand in service operations, including strategies for balancing service supply and demand, resource allocation, and managing customer expectations. ✓ Acquire skills in measuring and managing service quality and customer satisfaction, using frameworks like SERVQUAL and tools for gathering and analyzing customer feedback to drive service excellence. ✓ Understand the impact of technology and innovation on service operations, including the implementation of service management systems, automation, and digital tools to improve service delivery and operational efficiency.
Strategic HRM	R22MBA402(V)	2023-24	<ul style="list-style-type: none"> ✓ Develop the ability to align HR strategies with organizational goals and objectives, including the design and implementation of HR plans that support the overall strategic direction of the organization. ✓ Gain proficiency in managing and developing talent through effective recruitment, training, and development programs, including strategies for talent acquisition, performance management, and succession planning. ✓ Learn to manage organizational change and development initiatives, including change management strategies, organizational development practices, and methods for fostering a positive organizational culture. ✓ Acquire skills in using HR analytics and metrics to make data-driven decisions, including the analysis of HR data, measurement of key performance indicators (KPIs), and the application of insights to improve HR practices and organizational performance. ✓ Understand the legal and ethical aspects of human resource management, including compliance with labor laws, regulations, and ethical standards, and develop strategies to address legal and ethical issues in HR practices.
Industrial	R22MBA402(VI))	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of the industrial relations

<p>Relations and Labour Managements</p>			<p>framework, including the roles of various stakeholders such as employers, employees, trade unions, and government agencies, and the legal and regulatory environment governing industrial relations.</p> <ul style="list-style-type: none"> ✓ Gain proficiency in interpreting and applying labor laws and regulations, including those related to employment standards, collective bargaining, dispute resolution, and workers' rights, to ensure compliance and effective management. ✓ Learn techniques for resolving industrial disputes and managing conflict through effective negotiation, mediation, and arbitration processes, including strategies for maintaining positive labour-management relations. ✓ Acquire skills in managing collective bargaining processes and working with trade unions, including negotiating labour contracts, understanding union dynamics, and addressing issues related to union-management relations. ✓ Understand labour market trends and their impact on workforce planning, including the analysis of labour supply and demand, workforce development strategies, and the implementation of policies to address labour market challenges and opportunities.
<p>Human Resource Analytics</p>	<p>R22MBA402(V II)</p>	<p>2023-24</p>	<ul style="list-style-type: none"> ✓ Develop the skills to collect, manage, and organize HR data from various sources, ensuring data accuracy, consistency, and integrity for effective analysis. ✓ Gain proficiency in identifying, developing, and using HR metrics and key performance indicators (KPIs) to measure and evaluate HR functions and their impact on organizational performance. ✓ Learn to apply statistical and analytical techniques to HR data, including the use of software tools and methodologies to identify trends, patterns, and insights that inform HR decision-making. ✓ Acquire skills in developing and applying predictive models to forecast HR-related outcomes, such as employee turnover, performance, and engagement, and use these insights to make data-driven strategic decisions. ✓ Develop the ability to effectively communicate analytical findings and insights to stakeholders through clear and actionable data visualizations, reports, and

			presentations, enhancing decision-making and strategic planning in HR.
International Financial Management	R22MBA402(V III)	2023-24	<ul style="list-style-type: none"> ✓ Develop the skills to collect, manage, and organize HR data from various sources, ensuring data accuracy, consistency, and integrity for effective analysis. ✓ Gain proficiency in identifying, developing, and using HR metrics and key performance indicators (KPIs) to measure and evaluate HR functions and their impact on organizational performance. ✓ Learn to apply statistical and analytical techniques to HR data, including the use of software tools and methodologies to identify trends, patterns, and insights that inform HR decision-making. ✓ Acquire skills in developing and applying predictive models to forecast HR-related outcomes, such as employee turnover, performance, and engagement, and use these insights to make data-driven strategic decisions. ✓ Develop the ability to effectively communicate analytical findings and insights to stakeholders through clear and actionable data visualizations, reports, and presentations, enhancing decision-making and strategic planning in HR.
Strategic Tax Management	R22MBA402(I X)	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of tax strategy and planning principles, including the identification of tax-saving opportunities and the integration of tax planning with overall business strategy. ✓ Gain proficiency in navigating and ensuring compliance with tax regulations and laws, including the preparation and filing of tax returns, and understanding the implications of regulatory changes on business operations. ✓ Learn to assess and manage tax-related risks, including the development of strategies to mitigate risks associated with tax audits, disputes, and non-compliance. ✓ Acquire skills in managing international tax issues, including transfer pricing, tax treaties, and cross-border tax planning, to optimize tax outcomes for multinational organizations. ✓ Understand and apply techniques for optimizing tax efficiency, including structuring transactions, investments, and operations to minimize tax

			liabilities while maximizing financial performance and shareholder value.
Financial Derivatives	R22MBA402(X))	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of financial derivatives, including the various types such as options, futures, forwards, and swaps, and their roles in financial markets. ✓ Gain proficiency in the pricing and valuation of derivatives using various models and techniques, such as the Black-Scholes model for options and the binomial model for option pricing. ✓ Learn to use financial derivatives for risk management and hedging purposes, including the development and implementation of strategies to manage exposure to market, credit, and interest rate risks. ✓ Acquire skills in developing and applying trading strategies involving derivatives, including speculative and arbitrage strategies, and perform market analysis to inform trading decisions. ✓ Understand the regulatory environment and ethical considerations related to the use of financial derivatives, including compliance with financial regulations, reporting requirements, and the impact of derivatives on financial stability and market integrity.
Banking Technology Management	R22MBA404(I))	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of the technology infrastructure used in banking, including core banking systems, payment processing, and digital banking platforms. ✓ Gain proficiency in the implementation, management, and optimization of banking technology systems, including the deployment of software solutions and hardware for efficient banking operations. ✓ Learn to ensure the security and compliance of banking technology systems, including the implementation of cybersecurity measures, data protection practices, and adherence to regulatory requirements. ✓ Acquire skills in driving digital transformation within banking organizations, including the adoption of emerging technologies such as fintech, blockchain, and artificial intelligence to enhance banking services and customer experience.

			<ul style="list-style-type: none"> ✓ Understand the processes and best practices for integrating new technologies into existing banking systems and managing technology projects, including change management, risk assessment, and project lifecycle management.
E-Business	R22MBA404 (II)	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of various e-business models and strategies, including B2B, B2C, C2C, and C2B, and learn how to design and implement effective e-business strategies. ✓ Gain proficiency in the technologies and platforms used in e-commerce, including website development, payment systems, content management systems, and customer relationship management (CRM) tools. ✓ Learn to apply digital marketing techniques and online sales strategies, including search engine optimization (SEO), social media marketing, email marketing, and online advertising to drive e-business growth. ✓ Acquire skills in managing e-business security and risks, including implementing measures for data protection, fraud prevention, and compliance with regulatory requirements to ensure secure online transactions. ✓ Understand how to use analytics and performance measurement tools to assess the effectiveness of e-business strategies, including analyzing web traffic, conversion rates, and customer behavior to make data-driven decisions and optimize e-business operations.
Knowledge Management	R22MBA404 (III)	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of the key concepts and principles of knowledge management, including knowledge creation, sharing, storage, and utilization within organizations. ✓ Gain proficiency in using various knowledge management systems and tools, such as content management systems, knowledge bases, and collaborative platforms, to facilitate the efficient management of organizational knowledge. ✓ Learn to design and implement effective knowledge management strategies that align with organizational goals, including the development of processes and practices to capture, retain, and leverage knowledge. ✓ Acquire skills in evaluating the effectiveness of knowledge management initiatives, including the use of metrics and performance indicators to assess

			<p>the impact on organizational performance and identify areas for improvement.</p> <ul style="list-style-type: none"> ✓ Understand and address the challenges and emerging trends in knowledge management, such as dealing with knowledge silos, fostering a knowledge-sharing culture, and adapting to technological advancements and organizational changes.
Advanced Organic Spectroscopy	R22OCH 401	2023-24	<ul style="list-style-type: none"> ✓ Develop a comprehensive understanding of advanced spectroscopic techniques used in organic chemistry, including Nuclear Magnetic Resonance (NMR), Mass Spectrometry (MS), Infrared Spectroscopy (IR), and Ultraviolet-Visible Spectroscopy (UV-Vis). ✓ Gain proficiency in analyzing and interpreting complex spectral data to determine the structure, functional groups, and properties of organic molecules, including the ability to solve challenging structural problems. ✓ Learn to apply advanced spectroscopic techniques in the context of organic synthesis, including the use of spectroscopy for monitoring reactions, verifying product formation, and optimizing synthesis processes. ✓ Acquire skills in integrating data from multiple spectroscopic techniques to provide a comprehensive analysis of organic compounds, enabling a more accurate and complete characterization of complex molecules. ✓ Develop the ability to conduct research and address complex problems in organic spectroscopy, including designing and executing experiments, troubleshooting spectral issues, and staying updated with advancements and innovations in the field.
Modern Organic Synthesis	R22OCH 402	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to explain the mechanisms of various organic reactions, including nucleophilic substitutions, electrophilic additions, and radical processes. ✓ Students will demonstrate the ability to design and execute synthetic routes to construct complex organic molecules from simpler precursors. ✓ Students will gain proficiency in using modern techniques and instrumentation for characterizing organic compounds, such as NMR, IR, and mass spectrometry.

			<ul style="list-style-type: none"> ✓ Students will be able to troubleshoot and solve problems encountered during organic synthesis, including issues with yields, selectivity, and reaction conditions. ✓ Students will incorporate green chemistry principles into their synthetic strategies to minimize waste and enhance sustainability in organic synthesis.
Reagents in organic synthesis	R22OCH 403	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to identify and describe the function of common reagents used in organic synthesis, including acids, bases, oxidants, and reductants. ✓ Students will gain an understanding of the chemical properties and reactivity of various reagents, including their role in specific types of reactions. ✓ Students will demonstrate the ability to select and apply appropriate reagents to achieve desired transformations in organic synthesis. ✓ Students will assess and choose compatible reagents for multi-step synthesis, considering factors such as reaction conditions and potential side reactions. ✓ Students will practice safe handling and proper disposal of reagents, understanding their potential hazards and environmental impact.
Retrosynthetic Analysis	R22OCH 404	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to explain the principles of retrosynthetic analysis and how it is used to plan the synthesis of complex organic molecules. ✓ Students will demonstrate the ability to deconstruct complex target molecules into simpler, more manageable precursors through a systematic approach. ✓ Students will develop and propose feasible synthetic routes for the construction of target molecules, considering available reagents and conditions. ✓ Students will apply various disconnection strategies and functional group inter conversions to devise efficient and practical synthesis plans. ✓ Students will assess the feasibility and practicality of proposed synthetic routes, including considerations of reaction conditions, yields, and potential challenges.
Supramolecular Chemistry	R22OCH 405	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to describe the types and roles of non-covalent interactions (e.g., hydrogen bonding, van der Waals forces, π-π interactions)

			<p>in the formation of supramolecular structures.</p> <ul style="list-style-type: none"> ✓ Students will demonstrate the ability to design and predict the structures and properties of supramolecular assemblies, such as host-guest complexes and self-assembled materials. ✓ Students will gain proficiency in the techniques used to characterize supramolecular systems, including spectroscopy, crystallography, and microscopy. ✓ Students will analyze the functional properties of supramolecular systems, such as their use in molecular recognition, sensing, and catalysis. ✓ Students will apply principles of supramolecular chemistry to solve problems in various fields, including materials science, biology, and nanotechnology.
Nanochemistry	R22OCH 406	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to describe the unique properties and types of nanomaterials, including nanoparticles, nanowires, and nanotubes. ✓ Students will demonstrate the ability to synthesize nanomaterials using various methods such as chemical vapor deposition, sol-gel processes, and self-assembly techniques. ✓ Students will gain proficiency in using techniques for characterizing nanostructures, such as electron microscopy, atomic force microscopy, and spectroscopy. ✓ Students will analyze the applications of nanochemistry in fields like medicine, electronics, energy, and environmental science, understanding how nanomaterials can solve real-world problems. ✓ Students will evaluate the safety, ethical, and environmental implications of nanotechnology, considering the potential risks and benefits of nanomaterials in various applications.
Molecular modelling	R22OCH 407	2023-24	<ul style="list-style-type: none"> ✓ Students will be able to explain the theoretical foundations of molecular modeling techniques, including quantum mechanics, molecular mechanics, and statistical mechanics. ✓ Students will demonstrate proficiency in using molecular modeling software to construct, visualize, and manipulate molecular structures. ✓ Students will perform computational simulations to predict molecular

			<p>properties, such as geometry, energy, and reactivity, using methods like molecular dynamics and Monte Carlo simulations.</p> <ul style="list-style-type: none"> ✓ Students will analyze and interpret the interactions between molecules, such as binding affinities, conformational changes, and reaction mechanisms, ✓ Students will apply molecular modeling techniques to solve real-world problems in fields such as drug design, materials science, and biochemistry, demonstrating the ability to develop hypotheses and test them computationally.
Drug Design and Drug Chemistry	R22OCH 409	2023-24	<ul style="list-style-type: none"> ✓ Explain the stages of the drug discovery process, including target identification, lead compound discovery, optimization, and preclinical testing. ✓ Demonstrate the ability to design drug molecules by applying principles of medicinal chemistry, such as structure-activity relationships (SAR) and pharmacophore modeling. ✓ Analyze the interactions between drug molecules and biological targets, understanding binding affinity, specificity, and mechanism of action. ✓ Utilize computational tools and techniques, such as molecular docking, virtual screening, and quantitative structure-activity relationship (QSAR) models, to aid in drug design and optimization. ✓ Assess the physicochemical properties, pharmacokinetics, and pharmacodynamics of drug candidates, considering factors like solubility, stability, metabolism, and toxicity in drug development.
Energy, environment and soil Chemistry	R22OCH 410	2023-24	<ul style="list-style-type: none"> ✓ Explain the chemistry behind various energy systems, including fossil fuels, renewable energy sources, and energy storage technologies. ✓ Understand the environmental impact of different energy sources and chemical processes, including their effects on air, water, and soil quality. ✓ Demonstrate the ability to analyze soil composition and properties, understanding the chemical processes that affect soil fertility, contamination, and remediation. ✓ Apply principles of green chemistry and sustainable practices to develop solutions that reduce environmental pollution and enhance energy efficiency. ✓

			<ul style="list-style-type: none"> ✓ 5. **Evaluate Regulatory Frameworks**: Students will evaluate the regulatory frameworks and policies related to environmental protection and energy management, understanding their implications for industry and society.
Catalysis for organic synthesis	R22OCH 411	2023-24	<ul style="list-style-type: none"> ✓ Explain the fundamental principles and mechanisms of catalysis, including homogeneous and heterogeneous catalysis, and their roles in organic reactions. ✓ Demonstrate the ability to design and optimize catalytic processes for the efficient synthesis of organic compounds, considering factors such as catalyst selection, reaction conditions, and reaction pathways. ✓ Evaluate the performance of different catalysts in terms of activity, selectivity, stability, and recyclability, using appropriate characterization techniques. ✓ Apply various catalytic techniques, such as organocatalysis, transition metal catalysis, and biocatalysis, to achieve specific organic transformations and build complex molecules. ✓ Incorporate principles of green chemistry into catalytic processes, aiming to minimize waste, reduce energy consumption, and use environmentally benign catalysts and solvents.
Big Data Analytics	R22MCA401	2023-24	<ul style="list-style-type: none"> ✓ Able to explain the fundamental concepts of big data, including its characteristics (volume, velocity, variety, veracity, and value), and the challenges associated with managing and analyzing large datasets. ✓ Demonstrate proficiency in using various tools and techniques for big data analytics, such as Hadoop, Spark, SQL, and machine learning algorithms. ✓ Perform data processing, cleaning, and transformation on large datasets, and apply analytical methods to extract meaningful insights and patterns. ✓ Develop and implement data-driven solutions for real-world problems, using predictive modeling, statistical analysis, and data visualization techniques. ✓ Evaluate ethical, legal, and privacy issues related to big data analytics, understanding the importance of data security, governance, and responsible use of data.

Dynamic Web Programming	R22MCA402E 1	2023-24	<ul style="list-style-type: none"> ✓ Explain the fundamental technologies used in dynamic web programming, including HTML, CSS, JavaScript, and server-side languages such as PHP, Python, or Node.js. ✓ Demonstrate the ability to create interactive and responsive web applications by using client-side scripting and frameworks such as React, Angular, or Vue.js. ✓ Develop server-side functionality for web applications, including handling requests, managing sessions, interacting with databases, and implementing RESTful APIs. ✓ Demonstrate proficiency in integrating databases with web applications, performing CRUD (Create, Read, Update, Delete) operations, and ensuring data security and integrity. ✓ Apply best practices for web security and performance optimization, including authentication, authorization, input validation, and efficient resource management.
Fog Computing for IOT	R22MCA402E 2	2023-24	<ul style="list-style-type: none"> ✓ Explain the fundamental concepts of fog computing, its architecture, and how it differs from cloud computing. ✓ Design and implement fog computing solutions for IoT applications. ✓ Develop a comprehensive understanding of the security and privacy issues specific to fog computing in IoT environments. ✓ Analyze and optimize the performance of fog computing systems. ✓ Apply their knowledge to real-world IoT scenarios, identifying suitable use cases for fog computing.
Technical Report writing	R22MCA402E 3	2023-24	<ul style="list-style-type: none"> ✓ Understand and apply the conventions of technical writing, including clarity, conciseness, coherence, and organization. ✓ Develop the ability to conduct thorough research and document sources accurately. ✓ Gain proficiency in organizing and structuring technical reports. ✓ Acquire skills in editing and revising technical documents to improve clarity, coherence, and overall quality. ✓ Apply their technical writing skills to real-world scenarios. They will complete

			a comprehensive technical report on a relevant topic, incorporating feedback and presenting their findings effectively.
Machine Learning	R22MCA402E 4	2023-24	<ul style="list-style-type: none"> ✓ Explain and differentiate between various machine learning algorithms, including supervised, unsupervised, and reinforcement learning methods. ✓ Gain proficiency in preprocessing and preparing data for machine learning models. ✓ Develop the ability to train, validate, and evaluate machine learning models. ✓ Acquire hands-on experience with popular machine learning libraries and frameworks, such as Scikit-Learn, TensorFlow, and PyTorch. ✓ Apply their knowledge to solve real-world problems through project-based learning.
Social Networking	R22MCA404E 1	2023-24	<ul style="list-style-type: none"> ✓ Explain key concepts and terminology related to social networking, including the structure of social networks, types of social media platforms, and the impact of social networking on society and business. ✓ Gain skills in developing and implementing social media strategies for personal branding or organizational purposes. ✓ Analyze current trends and emerging technologies in social networking. ✓ Acquire practical skills in designing and implementing social networking tools and applications. ✓ Develop an understanding of the ethical and legal issues associated with social networking, including privacy concerns, data protection, and intellectual property rights.
Deep Learning	R22MCA404E 2	2023-24	<ul style="list-style-type: none"> ✓ Explain and differentiate between various deep learning architectures, such as feedforward neural networks, convolutional neural networks (CNNs), recurrent neural networks (RNNs), and transformers. ✓ Gain practical experience in using popular deep learning frameworks and libraries, such as TensorFlow, Keras, and PyTorch. ✓ Develop skills in training and optimizing deep learning models. ✓ Apply their knowledge to solve real-world problems using deep learning. ✓ Gain an awareness of the ethical and societal implications of deep learning

			technologies.
Web Technologies	R22MCA404E 3	2023-24	<ul style="list-style-type: none"> ✓ Explain the core concepts and technologies used in web development, including HTML, CSS, JavaScript, and web standards. ✓ Gain practical skills in front-end web development, including creating and styling web pages, implementing responsive design techniques, and using JavaScript to enhance user interaction and functionality. ✓ Learn to work with server-side languages (such as Node.js, Python, or PHP), databases (SQL or NoSQL), and APIs to create dynamic and data-driven web applications. ✓ Learn to use version control systems (like Git), understand deployment processes, and utilize cloud services or hosting platforms to make their web applications accessible on the internet. ✓ Understand and apply best practices for securing web applications, including protection against common vulnerabilities (such as XSS and SQL injection) and ensuring data privacy.
Instrumental Methods of Analysis	R22ACH 401	2023-24	<ul style="list-style-type: none"> ✓ Based on the detailed course content provided, here are five potential course outcomes for the "Instrumental Methods of Analysis" course: ✓ ✓ Understand and apply the principles of various spectro-analytical methods, including UV-Visible spectroscopy, nephelometry, turbidimetry, fluorimetry, and phosphorimetry. ✓ Gain practical skills in the operation and application of flame photometry and atomic absorption spectroscopy (AAS) and apply these techniques for the analysis of elements like Na, K, Ca, and Mg, as well as understand the nuances of flame and non-flame techniques in AAS. ✓ Develop the ability to perform and interpret results from thermal analysis techniques, including Thermo Gravimetry (TG), Differential Thermal Analysis (DTA), and Differential Scanning Calorimetry (DSC). They will understand the principles, instrumentation, and applications of these methods, particularly for analyzing compounds such as $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ and CaCO_3.

			<ul style="list-style-type: none"> ✓ Acquire hands-on experience with electro-analytical methods, including polarography and amperometric titrations. ✓ Learn to integrate and apply multiple instrumental methods to solve complex analytical problems.
Traditional and Environmental Methods of analysis	R22ACH 402	2023-24	<ul style="list-style-type: none"> ✓ Understand the principles of decomposition and dissolution techniques in sample preparation. ✓ Acquire skills to classify and analyze organic functional groups. They will be able to determine the presence of acidic, basic, and neutral functional groups in organic compounds, using appropriate analytical techniques and methods. ✓ Gain practical experience in analyzing compounds such as acetylsalicylic acid, steroids, antibiotics, and vitamins, and understand the methods used for their quantification and characterization. ✓ Assess water quality by analyzing various pollutants and ions in water samples. They will be proficient in determining concentrations of anions, cations, dissolved oxygen, biochemical oxygen demand (BOD), and chemical oxygen demand (COD), and understand the standards for drinking water. ✓ Learn to analyze carbon compounds, sulfur compounds, nitrogen compounds, hydrocarbons, particulate matter, and understand the standards for ambient air quality and the implications of air pollution.
Applied Analysis-II	R22ACH 403	2023-24	<ul style="list-style-type: none"> ✓ Gain practical skills in analyzing the composition of different ferro alloys, and learn to accurately determine the concentrations of various elements such as Si, C, P, S, V, Mn, and Cr in these materials. ✓ Comprehensive analyses of soil, fertilizers, and fuels. They will learn methods for determining soil moisture, nutrient content (N, P, Si), and other properties; analyze different types of fertilizers; and conduct proximate and ultimate analysis of solid fuels, including coal grading based on heating values. ✓ Understand and apply kinetic methods of analysis to study slow and catalyzed reactions. ✓ They will learn various methods for determining catalyst concentrations and use kinetic techniques to analyze toxic metals and anions.

			<ul style="list-style-type: none"> ✓ Develop expertise in analyzing milk and milk products, including measuring acidity, total solids, fat, nitrogen, lactose, and other components. ✓ Gain knowledge and skills in the clinical analysis of blood, including understanding blood composition, performing various diagnostic tests, and estimating trace elements.
Spectroscopic Methods	R22ACH404	2023-24	<ul style="list-style-type: none"> ✓ Explain the fundamental principles and instrumentation of mass spectrometry, including concepts like isotopic abundance, molecular ions, and various mass spectral fragmentation modes. ✓ Gain proficiency in the principles and instrumentation of Gas Chromatography-Mass Spectrometry (GC-MS) and Liquid Chromatography-Mass Spectrometry (LC-MS). ✓ Skilled in interpreting high-resolution NMR spectra, understanding spin systems, and nomenclature. They will be able to analyze complex PMR spectra, including interactions like A2, AB, AX, ABX, ABC, and AMX. ✓ Understand the differences between Proton NMR (PMR) and Carbon-13 NMR (CMR), including factors affecting chemical shifts, and apply techniques such as off-resonance decoupling and NOE to elucidate carbon structures. ✓ Integrate Spectroscopic Techniques UV, IR, 1H-NMR, 13C-NMR, and Mass Spectrometry for Structural Elucidation.
Nuclear and Photo Chemistry	R22ACH405	2023-24	<ul style="list-style-type: none"> ✓ Explain the concepts of nuclear transitions, orbital electron capture, nuclear isomerism, and internal conversion. They will also be knowledgeable about methods for detecting and determining nuclear activity. ✓ Gain a comprehensive understanding of nuclear fission and fusion reactions, including their role as energy sources. ✓ Able to identify and explain the components of nuclear reactors, including the function of breeder reactors. ✓ Students will be proficient in using activation analysis techniques ✓ They will understand the applications of radioactive tracers in medicine, including diagnosis and treatment, as well as carbon dating. ✓ Explain photo redox and photo substitution reactions in coordination chemistry. They will also understand the principles and applications of

			<p>photovoltaic and photo galvanic cells, photoelectrochemistry, and aspects of solar energy conversion.</p> <ul style="list-style-type: none"> ✓ These outcomes will equip students with a solid understanding of both theoretical and practical aspects of photochemistry and nuclear chemistry, preparing them for applications in various scientific and technological fields.
Food Chemistry	R22ACH407	2023-24	<ul style="list-style-type: none"> ✓ Able to explain the sources and functions of different food groups, including the basic five food groups. ✓ Gain proficiency in the classification and analysis of food constituents such as carbohydrates, proteins, minerals, and vitamins. ✓ Identify various food additives, including artificial sweeteners, food flavors, antioxidants, and food colors. They will understand the roles and regulations of emulsifying agents, preservatives, leavening agents, and taste enhancers like MSG and vinegar in food preparation and preservation. ✓ Understand the impact of pesticides on food safety and quality. ✓ Proficient in identifying common adulterants in various foods, including milk products, vegetable oils, spices, cereals, and beverages. They will be able to recognize contamination with toxic chemicals such as pesticides and insecticides and understand the implications for food safety.
Semester V			
Synthetic Organic Chemistry	R20CHEA501/ R20CHEA601	2022-23	<ul style="list-style-type: none"> ✓ Able to analyse the mode of activation of a pericyclic reaction. ✓ Understand the concept of organic photochemistry with different processes and terminologies and know about the photochemical reactions of carbonyl compounds. ✓ Know about the synthesis of some simple molecules using disconnection approach. ✓ Understand the formation of C-C bonds through coupling reactions. ✓ Able to understand the different types of reagents used for oxidation and reduction reactions.
Analysis of Organic	R20CHEA502/ R20CHEA602	2022-23	<ul style="list-style-type: none"> ✓ Do fragmentation pattern (analysis) of organic molecules by using mass spectrometry.

Compounds			<ul style="list-style-type: none"> ✓ Analysis of organic molecules by IR, NMR and Mass spectroscopic techniques. ✓ Student could able to acquire some basic knowledge of Chromatographic techniques like TLC, Paper, Column and HPLC. ✓ Can apply these techniques for the separation of mixture of organic or inorganic compounds. ✓ Develops the extraction techniques for organic molecules from plant materials
Plant Propagation	R20BOTA501	2022-23	<ul style="list-style-type: none"> ✓ Explain various plant propagation structures and their utilization. ✓ Understand advantages and disadvantages of vegetative, asexual and sexual plant propagation methods. ✓ Assess the benefits of asexual propagation of certain economically valuable plants using apomictics and adventive polyembryony. ✓ Demonstrate skills related to vegetative plant propagation techniques such as cuttings, layering, grafting and budding. ✓ Apply a specific macro-propagation technique for a given plant species.
Seed Technology	R20BOTA502	2022-23	<ul style="list-style-type: none"> ✓ Explain the causes for seed dormancy and methods to break dormancy. ✓ Understand critical concepts of seed processing and seed storage procedures. ✓ Acquire skills related to various seed testing methods. ✓ Identify seed borne pathogens and prescribe methods to control them. ✓ Understand the legislations on seed production and procedure of seed certification.
Sustainable Aquaculture Management	R20ZOOA501	2022-23	<ul style="list-style-type: none"> ✓ Understand why there is a need for fisheries management and regulation. ✓ Be able to understand the various problems to be faced in maintaining water quality. ✓ Be able to analyse and discuss how different types of regulations affect economic behaviour. ✓ Be familiar with the feed formulation and feed storage. ✓ Know the relevant markets for fish and aquaculture products, know how these markets work and how they affect production.

Post-Harvest Technology of Fish and Fisheries	R20ZOO502	2022-23	<ul style="list-style-type: none"> ✓ Learn the importance of proper handling methods and timing of fish crops to obtain maximum benefit from aquaculture. ✓ Use methods to prevent spoilage of fish and its products by preservation and processing. ✓ Realise that no part of fish is waste and most of it can be recovered as useful by product. ✓ Know that an integrated approach by the aqua culturist, harvester and processor of aqua products is essential to obtain superior quality products.
Numerical Methods	R20MATA501/ R20MATA601	2022-23	<ul style="list-style-type: none"> ✓ Understand the subject of various numerical methods that are used to obtain approximate solutions ✓ Understand various finite difference concepts and interpolation methods. ✓ Work out numerical differentiation and integration whenever and wherever routine methods are not applicable. ✓ Find numerical solutions of ordinary differential equations by using various numerical methods. ✓ Analyze and evaluate the accuracy of numerical
Mathematical Special Functions	R20MATA502	2022-23	<ul style="list-style-type: none"> ✓ Understand the Beta and Gamma functions, their properties and relation between these two functions, understand the orthogonal properties of Chebyshev polynomials and recurrence relations. ✓ Find power series solutions of ordinary differential equations. ✓ Solve Hermite equation and write the Hermite Polynomial of order (degree) n, also find the generating function for Hermite Polynomials, study the orthogonal properties of Hermite Polynomials and recurrence relations. ✓ Solve Legendre equation and write the Legendre equation of first kind, also find the generating function for Legendre Polynomials, understand the orthogonal properties of Legendre Polynomials. ✓ Solve Bessel equation and write the Bessel equation of first kind of order n, also find the generating function for Bessel function understand the orthogonal properties of Bessel function.
Web Interface	R20CSCA501	2022-23	<ul style="list-style-type: none"> ✓ Understand and appreciate the web architecture and services.

Designing Technologies			<ul style="list-style-type: none"> ✓ Gain knowledge about various components of a website. ✓ Demonstrate skills regarding creation of a static website ✓ Interface to dynamic website. ✓ Learn how to install word press and gain the knowledge of installing various plugins to use in their websites.
Web Applications Development using PHP & MYSQL	R20CSCA502	2022-23	<ul style="list-style-type: none"> ✓ Write simple programs in PHP. ✓ Understand how to use regular expressions, handle exceptions, and validate data using PHP. ✓ Apply In-Built functions and Create User defined functions in PHP programming. ✓ Write PHP scripts to handle HTML forms. ✓ Write programs to create dynamic and interactive web based applications using PHP and MYSQL. ✓ Know how to use PHP with a MySQL database and can write database driven web pages ✓
Application of Electricity and Electronics	R20PHYC501/ R20PHYC601	2022-23	<ul style="list-style-type: none"> ✓ Identify various components present in Electricity & Electronics Laboratory. ✓ Acquire a critical knowledge of each component and its utility (like resistors, capacitors, inductors, power sources etc.). ✓ Demonstrate skills of constructing simple electronic circuits consisting of basic circuit elements. ✓ Understand the need & Functionality of various DC & AC Power sources. ✓ Comprehend the design, applications and practices of various electrical & Electronic devices and also their trouble shooting.
Electronic Instrumentation	R20PHYC502 / R20PHYC602	2022-23	<ul style="list-style-type: none"> ✓ Identify various facilities required to set up a basic Instrumentation Laboratory. ✓ Acquire a critical knowledge of various Electrical Instruments used in the Laboratory. ✓ Demonstrate skills of using instruments like CRO, Function Generator, Multimeter etc. through hands on experience.

			<ul style="list-style-type: none"> ✓ Understand the Principle and operation of different display devices used in the display systems and different transducers. ✓ Comprehend the applications of various biomedical instruments in daily life like B.P. meter, ECG, Pulse oxymeter etc. and know the handling procedures with safety and security.
Management Accounting	R20COMC501	2022-23	<ul style="list-style-type: none"> ✓ Understand the basic concepts of management accounting ✓ Understand the analysis of financial statements by using various methods ✓ Understand different ratios used for analysing financial Statements ✓ Prepare fund flow statement for the business organization ✓ Prepare the cash flow statement required for the business
Cost Control Techniques	R20COMC502	2022-23	<ul style="list-style-type: none"> ✓ Differentiate cost control, cost reduction concepts and identify effective techniques. ✓ Allocate overheads on the basis of Activity Based Costing. ✓ Evaluate techniques of cost audit and rules for cost record. ✓ Examine about the Standard Costing and Variance analysis ✓ To analyse about the various new techniques available for cost control.
Advertising and Media Planning	R20COMC503	2022-23	<ul style="list-style-type: none"> ✓ Identify misleading and false advertisements and will also get a general idea about framing advertisements. ✓ Acquire copy writing skills and will also be equipped with the ability to choose a particular medium for advertisement. ✓ Decide an appropriate test for measuring the effectiveness of advertisement as they become aware of various tests for measuring the effectiveness of advertisements. ✓ Prepare sales promotion budget and the knowledge about various sales promotion strategies may benefit those students who dream of a career in salesmanship. ✓ Formulate their own strategies to manage sales force in their client organization
Sales Promotion and Practice	R20COMC504	2022-23	<ul style="list-style-type: none"> ✓ Analyse various sales promotion activities ✓ Get exposed to new trends in sales Promotion

			<ul style="list-style-type: none"> ✓ Understand the concepts of creativity in sales promotion ✓ Enhance skills to motivate the salesperson to reach their targets ✓ Develop the skills of designing of sales promotion events
Mobile application development	R20BCOMP50 1	2022-23	<ul style="list-style-type: none"> ✓ Students will be able to design and develop functional mobile applications for various platforms (iOS, Android) using industry-standard development tools and programming languages. ✓ Students will gain proficiency in implementing mobile application architecture patterns such as Model-View-Controller (MVC), Model-View-ViewModel (MVVM), and Clean Architecture. ✓ Students will be skilled in integrating third-party APIs and services into mobile applications. They will understand how to manage and persist data using local storage solutions (e.g., SQLite, Room) and remote databases (e.g., Firebase, RESTful APIs). ✓ Students will be able to conduct thorough testing and debugging of mobile applications. ✓ Students will understand the processes involved in deploying mobile applications to app stores (e.g., Google Play Store, Apple App Store).
Cyber security and malware analysis	R20BCOMP50 2	2022-23	<ul style="list-style-type: none"> ✓ Understand the computer networks, networking tools and cyber security. ✓ Learn about NIST Cyber Security Framework. ✓ Understand the OWASP Vulnerabilities. ✓ Implement various Malware analysis tools. ✓ Understand about Information Technology act 2000.
Machine Learning Using Python	R20BCA501	2022-23	<ul style="list-style-type: none"> ✓ Identify the characteristics of machine learning. ✓ Summarize the Model building and evaluation approaches. ✓ Apply Bayesian learning and regression algorithms for real-world Problems. ✓ Apply supervised learning algorithms to solve the real-world Problems. ✓ Apply unsupervised learning algorithms for the real world data.
Digital Imaging	R20BCA502	2022-23	<ul style="list-style-type: none"> ✓ Gain knowledge about Types of Graphics, Types of Objects, Types of video editing tools ✓ Show their skills in editing and altering photographs for through a

			<ul style="list-style-type: none"> ✓ Basic understanding of the tool box. ✓ Gain knowledge in using the layers. ✓ Gain knowledge in using the selection tools, repair tools. ✓ Gain knowledge in using selection tools , applying filters and can show their skills.
Cyber Security and Malware Analysis	R20BCOMP50 2	2022-23	<ul style="list-style-type: none"> ✓ Students will be able to explain core concepts of cyber security, including threat modeling, risk assessment, and security protocols. ✓ Students will gain proficiency in identifying various types of malware (viruses, worms, trojans, ransomware) and analyzing their behavior and impact. ✓ Students will be skilled in implementing security measures and best practices to protect systems and networks. ✓ Students will be able to perform digital forensic investigations to analyze and recover data from compromised systems. ✓ Students will be able to develop and execute effective incident response strategies to handle security breaches and cyber-attacks.
Machine Learning Using Python	R20BCA501	2022-23	<ul style="list-style-type: none"> ✓ Identify the characteristics of machine learning. ✓ Summarize the Model building and evaluation approaches. ✓ Apply Bayesian learning and regression algorithms for real-world Problems. ✓ Apply supervised learning algorithms to solve the real-world Problems. ✓ Apply unsupervised learning algorithms for the real world data.
Digital Imaging	R20BCA502	2022-23	<ul style="list-style-type: none"> ✓ Gain knowledge about Types of Graphics, Types of Objects, Types of video editing tools ✓ Show their skills in editing and altering photographs for through a ✓ Basic understanding of the tool box. ✓ Gain knowledge in using the layers. ✓ Gain knowledge in using the selection tools, repair tools. ✓ Gain knowledge in using selection tools , applying filters and can show their skills.
Selenium	R20BCA504	2022-23	<ul style="list-style-type: none"> ✓ Explain the core concepts of Selenium, including its architecture, components (such as Selenium WebDriver, Selenium Grid, and Selenium IDE), and how it

			<p>fits into the broader context of automated testing.</p> <ul style="list-style-type: none"> ✓ Gain proficiency in writing and executing automated test scripts using Selenium WebDriver. ✓ Design and implement test automation frameworks using Selenium, including data-driven, keyword-driven, and hybrid frameworks. ✓ Skilled in using advanced Selenium features such as handling browser windows, frames, alerts, and pop-ups. ✓ Integrate Selenium with other testing and development tools, such as TestNG or JUnit for test management, Maven or Gradle for build automation, and Jenkins for continuous integration and continuous deployment (CI/CD).
Full Stack Development using java	R20BCA506	2022-23	<ul style="list-style-type: none"> ✓ Building Strong expertise to develop front end application using HTML5 ✓ Building Strong expertise to develop front end application using CSS3 ✓ To become proficient in Bootstrap concepts and To develop a web pages based on Bootstrap ✓ Implementation of web application employing efficient database access. ✓ Develop a fully functioning website and deploy on a web server.
Stress Management	R20BBA501	2022-23	<ul style="list-style-type: none"> ✓ Describe the relationship between stress, human health, behavior's, and perceptions. ✓ Recognize signs and symptoms of stress. ✓ Summarize the physiological response to stress and how it impacts human health. ✓ Identify stressors and possible root causes using health models. ✓ Evaluate the effectiveness of stress management strategies and relaxation techniques on a personal level.
Performance Management	R20BBA502	2022-23	<ul style="list-style-type: none"> ✓ Understand the Theory, Concept & Good practices in the area of PMS. Also understand & appreciate the "Strategic Importance" of PMS in any Organisation. ✓ Design an organization's performance management process that is compliant with law and supports organizational mission and strategy. ✓ Compare and contrast various organizational performance management

			<p>programs and best practices and define attributes of effective performance management systems.</p> <ul style="list-style-type: none"> ✓ Employ job-related performance standards and performance indicators that reflect the employee's range of responsibilities. ✓ Assess how increased employee involvement can contribute to effective performance and coach employees to identify career paths and resources available to support individual development.
Sales Promotion and Practice	R20BBA503	2022-23	<ul style="list-style-type: none"> ✓ Analyse various sales promotion activities ✓ Get exposed to new trends in sales Promotion ✓ Understand the concepts of creativity in sales promotion ✓ Enhance skills to motivate the salesperson to reach their targets ✓ Develop the skills of designing of sales promotion events
E-Business	R20BBA504	2022-23	<ul style="list-style-type: none"> ✓ Recognize the e-business concepts and how it is different from e-commerce. ✓ Recognize the e-business models and infrastructure and learn to apply these e-business concepts in different fields. ✓ Analyze the potential impacts of different e-Business strategies; the ability to evaluate the effects of business issues in relation to various e-Business models. ✓ Have awareness of the e-Business environment, the identification of contemporary e-Business issues, and the evaluation of their implications for organizations.
Foreign Exchange Management	R20BBA505	2022-23	<ul style="list-style-type: none"> ✓ Prepare to understand with foreign exchange market structure, market dealings. ✓ Understand the functions and players in the foreign exchange market. ✓ Understand the various forex exposures ✓ Gain knowledge to manage the exchange exposures ✓ Learn the forward and spot market operations
E-Payment System	R20BBA506	2022-23	<ul style="list-style-type: none"> ✓ Understand the basic concepts and technologies used in the field of management information systems; ✓ Have the knowledge of the different types of management information

			<p>systems;</p> <ul style="list-style-type: none"> ✓ Understand the processes of developing and implementing information systems; ✓ Be aware of the ethical, social, and security issues of information systems; ✓ Describe the risks, mediations, and controls related to various payment types, payment channels, and systems.
Operations Research - I	R20STATA501	2022-23	<ul style="list-style-type: none"> ✓ Able to formulate a given simplified description of a suitable real-world problem as a linear programming model in general, standard and canonical forms ✓ Can draw a graphical representation of a two-dimensional linear programming model given in general, standard or canonical forms. ✓ Use the simplex method to solve small linear programming models by hand, given a basic feasible point. ✓ Solve linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained. ✓ Solve Post optimal linear programming problems.
Operations Research - II	R20STATA502	2022-23	<ul style="list-style-type: none"> ✓ Interpret minimum cost of transporting item from Source and estimation. ✓ Analyze the optimum schedule and assignment schedule. ✓ Evaluate Total Elapsed time, Idle time for processing of jobs. ✓ Get Knowledge about network construction and to find critical path and total project duration. ✓ The intention of game theory is to produce optimal decision-making of independent and competing actors in a strategic setting.
Big Data Technology	R20DSDS501	2022-23	<ul style="list-style-type: none"> ✓ Learn tips and tricks for Big Data use cases and solutions. ✓ Learn to build and maintain reliable, scalable, distributed systems with Apache Hadoop. ✓ Able to apply Hadoop ecosystem components. ✓ Understand database concept ✓ Maintain website data.
Python	R20DSDS502	2022-23	<ul style="list-style-type: none"> ✓ Understand the Basics of python language and Python IDLE and Install and

Programming			<p>run python Interpreter.</p> <ul style="list-style-type: none"> ✓ Gain knowledge about different data types and operators. ✓ Use and explore control structures and loop constructs in python. ✓ Import and create arrays using array module. ✓ Explore the use of Lambdas, List, Tuples.
Machine Learning	R20DSCSC501	2022-23	<ul style="list-style-type: none"> ✓ Domain Knowledge for Productive use of Machine Learning and Diversity of Data. ✓ Demonstrate on Supervised and Computational Learning ✓ Analyze on Statistics in learning techniques and Logistic Regression ✓ Illustrate on Support Vector Machines and Perceptron Algorithm ✓ Design a Multilayer Perceptron Networks and classification of decision tree.
Robotics and its applications	R20IOTA501	2022-23	<ul style="list-style-type: none"> ✓ Gain a thorough understanding of the fundamental concepts in robotics, including kinematics, dynamics, control systems, and sensors. ✓ Students will develop proficiency in programming robots using languages such as Python, C++, or MATLAB. ✓ Acquire hands-on experience with various types of robotics hardware, including robotic arms, mobile robots, and drones. ✓ Explore and analyze the applications of robotics in various fields such as manufacturing, healthcare, service industries, and autonomous vehicles. ✓ Design and implement robotic solutions to address real-world problems.
IoT Sensors and Communication	R20IOTA502	2022-23	<ul style="list-style-type: none"> ✓ Students will understand the fundamental concepts of the Internet of Things (IoT), including the architecture, components, and protocols used in IoT systems. ✓ Students will develop a deep understanding of different types of sensors used in IoT applications, such as temperature, humidity, motion, and light sensors. ✓ Students will gain expertise in various communication protocols and standards used in IoT, such as MQTT, CoAP, Zigbee, Bluetooth, Wi-Fi, and LoRaWAN. ✓ Students will acquire skills in integrating sensors, communication modules,

			<p>and microcontrollers to build complete IoT systems.</p> <ul style="list-style-type: none"> ✓ Students will understand the security and privacy challenges associated with IoT systems.
<p>Embedded Systems design with STM32</p>	<p>R20IOTELEA5 01</p>	<p>2022-23</p>	<ul style="list-style-type: none"> ✓ Students will develop a comprehensive understanding of embedded systems concepts, including microcontroller architecture, real-time operating systems (RTOS), and hardware-software integration. ✓ Students will gain proficiency in programming STM32 microcontrollers using C/C++ and assembly language. ✓ Students will acquire practical experience in interfacing STM32 microcontrollers with various peripherals, such as GPIO, ADC, DAC, timers, UART, SPI, I2C, and CAN. ✓ They will gain expertise in debugging techniques, using tools like JTAG/SWD debuggers and logic analyzers to troubleshoot and optimize their designs. ✓ Students will understand the principles of real-time system design and low-power operation in embedded systems.
<p>Introduction to Arduino Programming</p>	<p>R20IOTELEA5 02</p>	<p>2022-23</p>	<ul style="list-style-type: none"> ✓ Students will gain a thorough understanding of the Arduino hardware and software platform, including the different models of Arduino boards, their components, and the Arduino Integrated Development Environment (IDE). ✓ Students will develop proficiency in writing and debugging Arduino sketches (programs) using the Arduino IDE. ✓ Students will acquire practical experience in interfacing Arduino boards with various sensors (e.g., temperature, light, distance) and actuators (e.g., LEDs, motors, servos). ✓ Students will engage in project-based learning, where they will design and implement simple Arduino projects that solve real-world problems. ✓ Students will understand basic communication protocols used with Arduino, such as serial communication, I2C, and SPI.
<p>PHP</p>		<p>2022-23</p>	<ul style="list-style-type: none"> ✓ Students will gain a thorough understanding of PHP syntax and semantics, including variables, data types, operators, control structures, functions, and error handling.

			<ul style="list-style-type: none"> ✓ Students will develop proficiency in using PHP for web development. ✓ Students will acquire hands-on experience in integrating PHP with databases, particularly using MySQL. ✓ Students will understand the basics of popular PHP frameworks such as Laravel, Symfony, or CodeIgniter. ✓ Students will develop skills in debugging PHP code and implementing security best practices.
Content Management System	R20WT501	2022-23	<ul style="list-style-type: none"> ✓ Define the purpose of using CMS for digital content development and publication management ✓ Evaluate the functional roles in a CMS ✓ Evaluate the considerations to be taken into account in the acquisition of a CMS ✓ Evaluate the considerations to be taken into account in content modelling ✓ Evaluate the considerations to be taken into account in content aggregation.
Data Base Management Systems	R20WT503	2022-23	<ul style="list-style-type: none"> ✓ Gain knowledge of Database and DBMS. ✓ Understand the fundamental concepts of DBMS with special emphasis on relational data model. ✓ Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database. ✓ Model database using ER Diagrams and design database schemas based on the model. ✓ Create a small database using SQL. ✓ Store, Retrieve data in database.
React JS	R20WT504	2022-23	<ul style="list-style-type: none"> ✓ Students will gain a thorough understanding of the fundamental concepts of React JS, including components, JSX, state, props, and the component lifecycle. ✓ Students will develop proficiency in using React to build dynamic and responsive user interfaces. ✓ Students will acquire hands-on experience with key tools and libraries in the React ecosystem, such as React Router for navigation, Redux or Context API

			<p>for state management, and Axios or Fetch API for making HTTP requests.</p> <ul style="list-style-type: none"> ✓ Students will understand advanced React concepts, including hooks, higher-order components (HOCs), render props, and context. ✓ Students will develop skills in testing and debugging React applications.
SEMESTER-VI			
NUMERICAL METHODS	R20MATA601	2022-23	<ul style="list-style-type: none"> ✓ Understand various finite difference concepts and interpolation methods. ✓ Work out numerical differentiation and integration whenever and wherever routine methods are not applicable. ✓ Find numerical solutions of ordinary differential equations by using various numerical methods. ✓ Analyze and evaluate the accuracy of numerical methods.
Advanced Corporate Accounting	R20COMG601	2022-23	<ul style="list-style-type: none"> ✓ Students will gain a comprehensive understanding of advanced financial reporting standards and practices, including the preparation and analysis of consolidated financial statements, segment reporting, and interim reporting. ✓ Students will develop proficiency in accounting for complex corporate transactions such as mergers and acquisitions, business combinations, foreign currency transactions, and derivative instruments. ✓ Students will acquire advanced skills in analyzing and interpreting financial statements. ✓ Students will understand the principles and application of International Financial Reporting Standards (IFRS) and Generally Accepted Accounting Principles (GAAP). ✓ Students will develop a deep understanding of the ethical considerations and regulatory requirements in corporate accounting.
Software Solutions to Accounting	R20COMG602	2022-23	<ul style="list-style-type: none"> ✓ Students will develop proficiency in using popular accounting software packages, such as QuickBooks, Sage, Xero, or SAP. ✓ Students will gain an understanding of integrated enterprise resource planning (ERP) systems and their role in accounting. ✓ Students will acquire skills in managing and analyzing accounting data using software tools.

			<ul style="list-style-type: none"> ✓ Students will understand the processes involved in selecting, implementing, and customizing accounting software solutions to meet the specific needs of an organization. ✓ Students will develop a deep understanding of the security and compliance issues related to accounting software.
Life Insurance with Practice	R20COMG603	2022-23	<ul style="list-style-type: none"> ✓ Understand the Features of Life Insurance, schemes and policies and insurance companies ✓ Analyze various schemes and policies related to Life Insurance sector ✓ Choose suitable insurance policy for given situation and respective persons ✓ Create awareness on Consumer protection on Claim and its settlements. ✓ To understand about the regulatory framework and identifying various middlemen's available in the Insurance Sector.
General Insurance with Practice	R20COMG604	2022-23	<ul style="list-style-type: none"> ✓ Understand the Features of General Insurance and Insurance Companies in India ✓ Analyse various schemes and policies related to General Insurance sector ✓ Choose suitable insurance policy under Health, Fire, Motor, and Marine Insurances ✓ Understand about the crop insurance and Livestock Insurance. ✓ Create awareness on different Health and Medical Insurance policies.
Income Tax Procedure and Practice	R20COMG605 /R20COMT60 5	2022-23	<ul style="list-style-type: none"> ✓ Know the Income Tax Act 1961 and important terms in income tax ✓ Provide knowledge about Residential status ✓ Understand the concept of income from Salary and its provisions. ✓ Gain knowledge about income from house property. ✓ Build an idea about income from Business or Profession.
GST Procedure and Practice	R20COMG606 /R20COMT60 6	2022-23	<ul style="list-style-type: none"> ✓ Enable the students to learn the concepts indirect tax and GST from the pre-GST period to post- GST period. ✓ Understand the importance of indirect taxes (GST) in the Indian and global economy and its contribution to the economic development. ✓ Comprehend the principles of taxations, objectives of taxes and its impact, shifting and incidence process of indirect taxes in the market orientated

			<p>economy.</p> <ul style="list-style-type: none"> ✓ Understand the implications of GST on the taxable capacity consumers, dealers and of the society at large and its changes. ✓ Make them to be a tax consultant in preparing the tax planning, tax management. Payment of tax and filing of tax returns.
Management Accounting	R20COMT601	2022-23	<ul style="list-style-type: none"> ✓ Provide a basic knowledge about management accounting concepts ✓ Understand use the different types of ratios ✓ Describe the method of preparing the cash flow statement as per AS-7 and fundflow statement ✓ Understand the basic concept of budget and its type ✓ Understand the basic concept of marginal cost
Cost Control Techniques	R20COMT602	2022-23	<ul style="list-style-type: none"> ✓ Differentiate cost control, cost reduction concepts and identify effective techniques. ✓ Allocate overheads on the basis of Activity Based Costing. ✓ 3: Evaluate techniques of cost audit and rules for cost record. ✓ Examine about the Standard Costing and Variance analysis ✓ Analyse about the various new techniques available for cost control.
Income Tax Procedure and Practice	R20COMG605 /R20COMT605	2022-23	<ul style="list-style-type: none"> ✓ Know the Income Tax Act 1961 and important terms in income tax ✓ Provide knowledge about Residential status ✓ Understand the concept of income from Salary and its provisions. ✓ Gain knowledge about income from house property. ✓ Build an idea about income from Business or Profession.
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			dealers and of the society at large and its changes. <ul style="list-style-type: none"> ✓ Make them to be a tax consultant in preparing the tax planning, tax management. Payment of tax and filing of tax returns.
Corporate Tax Planning	R20COMT603	2022-23	<ul style="list-style-type: none"> ✓ Introduce the basic concept of income tax and exempted incomes. ✓ Familiarise the provisions of salary income and house property income. ✓ Discuss about income from business and profession also know the concept of capital gains. ✓ Understand the concept of income from other sources, set off and carry forward losses. ✓ Know deductions form GTI, Clubbing of income & Assessment of Individual
Customs Procedures & Practice	R20COMT604	2022-23	<ul style="list-style-type: none"> ✓ Compute the tax liability and understand the various provisions relating to interest, TDS, TCS and refunds. ✓ Describe and discuss of various types of returns and various provisions related to filing of the same. ✓ Evaluate the practical aspects related to maintenance of accounts, conducting audit, assessment under GST. ✓ Get Acquaint with the various provisions of the Customs Act. ✓ Discuss various import and export procedures related to baggage, provisions relating to coastal goods, warehousing and duty drawback.
Industrial Electronics	R20ELEA601	2022-23	<ul style="list-style-type: none"> ✓ Identify various facilities required to set up a basic Instrumentation Laboratory. ✓ Acquire a critical knowledge of various Electrical Instruments used in the Laboratory. ✓ demonstrate skills in using instruments like Rectifiers, Multimeters, Power supplies, Voltage Regulators etc. through hands-on experience. ✓ Understand the Principle and operation of different Electronic Heating devices. ✓ Design and analyse circuits containing digital components and microprocessors.
Electronic Instrumentation	R20ELEA602	2022-23	<ul style="list-style-type: none"> ✓ Identify various facilities required to set up a basic Instrumentation

			<p>Laboratory.</p> <ul style="list-style-type: none"> ✓ Acquire a critical knowledge of various Electrical Instruments used in the Laboratory. ✓ Demonstrate skills of using instruments like CRO, Function Generator, and Multimeter etc. through hands on experience. ✓ Understand the Principle and operation of different display devices used in the display systems and different transducers ✓ Comprehend the applications of various biomedical instruments in daily life like B.P.meter, ECG, Pulse oximeter etc. and know the handling procedures with safety and Security.
WEB INTERFACE DESIGNING TECHNOLOGIES	R20CSCA601	2022-23	<ul style="list-style-type: none"> ✓ Understand and appreciate the web architecture and services. ✓ Gain knowledge about various components of a website. ✓ Demonstrate skills regarding creation of a static website ✓ Interface to dynamic website. ✓ Learn how to install word press and gain the knowledge of installing various plugins to use in their websites.
WEB APPLICATIONS DEVELOPMENT USING PHP & MYSQL	R20CSCA602	2022-23	<ul style="list-style-type: none"> ✓ Write simple programs in PHP. ✓ Understand how to use regular expressions, handle exceptions, and validate data using PHP. ✓ Apply In-Built functions and Create User defined functions in PHP programming. ✓ Write PHP scripts to handle HTML forms. ✓ Write programs to create dynamic and interactive web based applications using PHP and MYSQL. ✓ Know how to use PHP with a MySQL database and can write database driven web pages
Advanced Corporate Accounting	R20COMG601 /R20COML601	2022-23	<ul style="list-style-type: none"> ✓ Construct the financial statements of company within the frame work ✓ Develop a process for redemption of Preference shares ✓ Construct the Restructuring of capital structure in the financial statement of

			<p>Joint stock company ltd.</p> <ul style="list-style-type: none"> ✓ Calibrate the procedure involved in Amalgamation of companies ✓ Calibrate the procedure involved in Absorption of companies
Software Solutions to Accounting	R20COMG602 /R20COML602	2022-23	<ul style="list-style-type: none"> ✓ Understand the technical environment of accounting softwares. ✓ Highlight the major accounting softwares in India. ✓ Apply basics of accounting softwares into business firms for accounting transactions ✓ Understand about the Tally and Stock markets in practical. ✓ Examine about the Tally voucher Entry.
Logistic Services and Practice	R20COML603	2022-23	<ul style="list-style-type: none"> ✓ Appraise the Principles of Logistics and its informatics. ✓ Examine the Financial Issues in Logistics sector performance. ✓ Describe basic EOQ model and ABC analysis. ✓ Understand about the Ware housing and distribution Operations in the in the logistics industry. ✓ Define about retail sector and supply chain management.
EXIM Procedure and Practice	R20COML604	2022-23	<ul style="list-style-type: none"> ✓ Understand the significance of Export and Import Management and its role in Economy ✓ Acquire knowledge on Procedures of export and import ✓ Involve in pre and post EXIM activities ✓ Determine the factors for payment and methods for recovering amounts. ✓ Create awareness on Insurance and Shipment of goods.
E-Commerce	R20COML605	2022-23	<ul style="list-style-type: none"> ✓ Recognizes the impact of Information and Communication Technologies, on the Internet in business Operations. ✓ Acquire knowledge in identifying the main business and marketplace models for electronic Communications and Trading ✓ Understand Electronic Payment System and its environment. ✓ Make ethical decisions related to ecommerce based on laws, privacy, and security. ✓ Analyse the steps, tools, and security considerations needed create an E-commerce websites

E-Filing	R20COML606	2022-23	<ul style="list-style-type: none"> ✓ Define the procedure of direct tax assessment. ✓ File IT return on individual basis. ✓ Compute total income and define tax compliances and structure online. ✓ Understand amendments made from time to time in Finance Act. ✓ Differentiate between direct and indirect tax assessment online.
Data Structures	R20WSDS601	2022-23	<ul style="list-style-type: none"> ✓ Ability to analyze algorithms and algorithm correctness. ✓ Ability to summarize searching and sorting techniques. ✓ Ability to describe stack, queue and linked list operation. ✓ Ability to have knowledge of tree and graphs concepts.
.NET	R20WSN602	2022-23	<ul style="list-style-type: none"> ✓ Create, compile and run object-oriented C# programs using Visual Studio ✓ Write and understand C# language constructs, syntax and semantics ✓ Develop reusable .NET components via interface realization and standard design patterns. ✓ Develop a web based application with all validations. ✓ Leverage the major namespaces and classes of the .NET Framework ✓ Access databases using Language Integrated Query (LINQ).
Django	R20WSDJ603	2022-23	<ul style="list-style-type: none"> ✓ How to create routes (or views) with Django . ✓ How to serve static content and files using Django . ✓ How to connect templates with models to serve data dynamically. ✓ How to create Models and how to connect them with Templates and Views. ✓ How to work with databases using SQLite.
Mobile Application Development	R20WSMAD604	2022-23	<ul style="list-style-type: none"> ✓ Identify various concepts of mobile programming that make it unique from programming for other platforms. ✓ Critique mobile applications on their design pros and cons, ✓ Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces, ✓ Program mobile applications for the Android operating system that use basic and advanced phone features ✓ Deploy applications to the Android marketplace for distribution.