Department of Information Technology

Course Outcomes (COs) - (R18)

Course name: MATHEMATICS I

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Write the matrix representation of system of linear equations and identify the consistency of the system of equations.
CO2	Find the Eigen values and Eigen vectors of the matrix and discuss the nature of the quadratic form.
CO3	Analyze the convergence of sequence and series.
CO4	Discuss the applications of mean value theorems to the mathematical problems, Evaluation of improper integrals using Beta and Gamma functions.
CO5	Examine the extrema of functions of two variables with/ without constraints.

Course name: APPLIED PHYSICS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Identify various optical phenomena of light.
CO2	Discuss the basic principles of quantum mechanics.
CO3	Classify solids based on the band theory.
CO4	Elucidate the characteristics of semiconductors and semiconductor devices.
CO5	Explain the working principle of lasers and optical fibers.

Course name: APPLIED PHYSICS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Apply optical phenomena to characterize optical sources and components.
CO2	Determine the energy gap of a semiconductor diode and time constant of RC circuit
CO3	Describe the electrical characteristics of PN junction diode, photodiode, LED and solar cell.
CO4	Demonstrate the resonance in mechanical and electrical waves.
CO5	Identify the magnetic Induction along the axis of current carrying coil.

Course name: BASIC ELECTRICAL ENGINEERING

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the fundamentals of basic circuit components and their characteristics.
CO2	Analyze basic electrical circuits with A.C excitation.
CO3	Understand the concepts of magnetic circuits and transformers.
CO4	Acquire the basic concepts of electrical motors.
CO5	Understand the concept of A.C generator and low voltage electrical installations

Course name: BASIC ELECTRICAL ENGINEERING LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Get an exposure to basic electrical laws.
CO2	Understand the response of different types of electrical circuits to different excitations.
CO3	Understand the measurement, calculation and relation between the basic electrical parameters.
CO4	Understand the performance characteristics of D.C electrical machines.
CO5	Understand the performance characteristics of A.C electrical machines.

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Course Outcomes (COs) - (R18)

Course name: ENGINEERING WORKSHOP

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understanding the tools and methods of using to fabricate engineering components
CO2	Applying the measuring techniques to verify the dimensional accuracy
CO3	Evaluating various methods and trades of workshop in the component building

Course name: ENGLISH LANGUAGE SKILLS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Reproduce speech sounds and improve fluency in language.
CO2	Understand syllables and consonant clusters for appropriate pronunciation.
CO3	Exhibit effective professional skills with rhetoric eloquence.
CO4	Deliver enthusiastic and well-practiced presentation.
CO5	Learn Task-Based Language Learning (TBLL) through various language learning activities effectively

Course name: PROGRAMMING FOR PROBLEM SOLVING-I

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Design Algorithms and Flowcharts for real world applications using 'C'.
CO2	Know the usage of various operators in Program development.
CO3	Design programs involving decision and iteration structures.
CO4	Apply the concepts code reusability using Functions.
CO5	Analyze various searching and sorting techniques using Arrays.

Course name: PROGRAMMING FOR PROBLEM SOLVING LAB – I

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Apply the specification of syntax rules for numerical constants and variables, data types.
CO2	Know the Usage of various operators and other C constructs.
CO3	Design programs on decision and control constructs.
CO4	Develop programs on code reusability using functions.
CO5	Implement various searching and sorting techniques using arrays.

Course name: MATHEMATICS - II

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Classify the various types of differential equations of first order and first degree and Apply the concepts of differential equations to the real-world problems.
CO2	Solve higher order differential equations and apply the concepts of differential equations to the real-world problems
CO3	Find the Laplace Transform of various functions and apply to find the solutions of differential equations
CO4	Evaluate the multiple integrals and identify the vector differential operators physically in engineering problems.
CO5	Evaluate the line, surface and volume integrals and converting them from one to Another by using vector integral theorems.

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Course Outcomes (COs) - (R18)

Course name: CHEMISTRY

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Acquire knowledge of atomic, molecular and electronic changes related to conductivity.
CO2	Apply the various processes of treatment of water for both domestic and industrial purpose.
CO3	Apply the knowledge of electrode potentials for the protection of metals from corrosion.
CO4	Analyze the major chemical reactions that are used in the synthesis of compounds.
CO5	Apply the knowledge of polymers in every day's life.

Course name: CHEMISTRY LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Determination of parameters like hardness, alkalinity and chloride content in water.
CO2	Estimation of rate constant of a reaction from concentration-time relationships.
CO3	Determination of physical properties like adsorption, surface tension and viscosity.
CO4	Synthesize a small drug molecule and analyze a salt sample.
CO5	Calculation of strength of compound using instrumentation techniques.

Course name: ENGLISH

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Infer the importance of scientific discoveries in promoting social responsibilities.
CO2	Comprehend the given texts and respond appropriately for technical and professional purposes.
CO3	Communicate confidently and transfer information into various forms of writing.
CO4	Understand the importance of health and nutrition for a better society.
CO5	Present various forms of business writing skills for successful careers.

Course name: ENGLISH COMMUNICATION SKILLS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the variants in pronunciation.
CO2	Identify the diverse purposes of listening and speaking.
CO3	Discuss ideas in diverse communicative settings.
CO4	Exhibit increased confidence in public speaking.
CO5	Display critical thinking, problem solving and decision making skills through GD's.

Course name: PROGRAMMING FOR PROBLEM SOLVING-II

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Identify various string handling functions in 'C'.
CO2	Develop programs with user defined data types.
CO3	Use Dynamic memory allocation functions with pointers.
CO4	Distinguish between Stacks and Queues.
CO5	Analyze various Dynamic Data Structures.

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Course Outcomes (COs) - (R18)

Course name: PROGRAMMING FOR PROBLEM SOLVING LAB – II

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Build programs on various string handling functions.
CO2	Develop applications on user defined data types.
CO3	Apply dynamic memory allocation through pointers.
CO4	Implement linear data structures through stacks and queues.
CO5	Create linked list dynamically through stacks and queues.

Course name: ENGINEERING GRAPHICS & MODELING

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the concepts of engineering drawing of planes, solids and the CAD drawing software.
CO2	Applying the principles of engineering graphics while drawing the engineering components.
CO3	Analyze the sectional views for their configurations.
CO4	Evaluate the surfaces of solids developed for further processing in the engineering applications.

Course name: PROBABILITY AND STATISTICS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	To differentiate among random variables involved in the probability models which are useful for all branches of engineering.
CO2	Derive relationship among variety of performance measures using probability distributions.
CO3	Acquire elementary knowledge of parametric and non-parametric tests and understand the use of observing state analysis for predicting future conditions.
CO4	Identify and examine situations that generate using problems and able to solve the tests of ANOVA for classified data.
CO5	Apply proper measurements, Indicators and techniques of Correlation and regression analysis.

Course name: DIGITAL LOGIC DESIGN

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand various number systems, conversions, range and error detecting and correcting codes and their significance.
CO2	Evaluate the minimization of logic gates using Boolean algebraic principles and k-maps.
CO3	Design various simple and complex combinational circuits with real time applications.
CO4	Analyze the basic principles behind Flip flops & the design of sequential circuits with real time applications.
CO5	Illustrate various types of memory devices and their design.

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Course Outcomes (COs) - (R18)

Course name: ELECTRONIC DEVICES AND CIRCUITS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Interpret the characteristics of different semiconductor devices with its applications.
CO2	Apply different biasing techniques of transistors for amplification.
CO3	Analyze transistor amplifiers using small signal model.

Course name: DATA STRUCTURES

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the concepts of Stacks and Queues with their applications.
CO2	Analyze various operations on Binary trees.
CO3	Examine of various concepts of binary trees with real time applications.
CO4	Analyze the shortest path algorithm on graph data structures.
CO5	Outline the concepts of hashing, collision and its resolution methods using hash functions.

Course name: MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Analyze elementary mathematical arguments.
CO2	Apply discrete mathematics problems that involve computing permutations and combinations of a set.
CO3	Analyze problems involving recurrence relations & generating functions.
CO4	Demonstrate various operations on discrete structures.
CO5	Apply graph theory models to solve the problems of networks.

Course name: PYTHON PROGRAMMING

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Identify the differences between scripts and programs
CO2	Solve the problems based on decision control statements
CO3	Develop programs on functions and data structures.
CO4	Demonstrate the programs on string operations
CO5	Analyze the object oriented techniques for solving real time problems

Course name: DATA STRUCTURES & PYTHON PROGRAMMING LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Develop the programs on stacks, trees and its applications.
CO2	Design and implementation of programs on BST and Graph Traversals.
CO3	Apply Hashing techniques in real world applications
CO4	Implement oops concepts in Python
CO5	Develop Programs on modules and Packages
CO6	Design Programs that handle errors

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Course Outcomes (COs) - (R18)

Course name: DIGITAL LOGIC DESIGN & ELECTRONIC DEVICES & CIRCUITS LABORATORY

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Identify and use the basic components and instruments in electronics laboratory
CO2	Outline the characteristics of different semiconductor devices.
CO3	Design and construct the combinational and sequential circuits using digital IC's

Course name: PROFESSIONAL COMMUNICATION

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Acquire enhanced personality
CO2	Exhibit appropriate professional etiquette
CO3	Practice team building with strong communication skills
CO4	Develop problem solving skills and decision-making
CO5	Demonstrate effective presentation skills

Course name: GENDER SENSITIZATION

After completing this course the student must demonstrate the knowledge and ability to	
CO1	To develop awareness about gender discrimination and take measurable steps to counter it.
CO2	To identify the basic dimensions of biological, sociological, psychological and legal aspects of gender.
CO3	To acquire knowledge about gendered division of labour in relation to politics and economics.
CO4	To prepare the students against gender violence.
CO5	To prepare the students to work and live together as equals.

Course name: DESIGN AND ANALYSIS OF ALGORITHMS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Analyze the efficiency of algorithms
CO2	Develop algorithms divide & conquer, greedy and related problems
CO3	Examine the performance of Dynamic programming
CO4	Explain performance of algorithm using Backtracking
CO5	Analyze NP-Hard and NP-Complete problems

Course name: COMPUTER ORGANIZATION

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the basic organization of computer and different instruction formats and addressing modes.
CO2	Outline the concepts of 8086 microprocessor and arithmetic operations.
CO3	Make use of micro processor instructions to write simple programs in assembly language.
CO4	Classify various modes of data transfers.
CO5	Outline various inter connection structures of multiprocessors.

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Course Outcomes (COs) - (R18)

Course name: ENVIRONMENTAL SCIENCE

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Define and explain the structure and functions of ecosystem, value of biodiversity, threats and conservation of biodiversity.
CO2	Explain the limitations of the resources and impacts of over utilization of all natural resources.
CO3	Explain the sources and effects of environmental pollutions and list the available techniques to control the pollution.
CO4	Explain the global environmental issues like climate change, ozone hole and can explain the scope of EIA, Environmental Management Plan environmental audit and list the EIA methods.
CO5	Mention the salient features of environmental acts and rules, define the sustainable goals along with measures required for the sustainability

Course name: JAVA PROGRAMMING

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand OOP concepts to apply basic Java constructs.
CO2	Analyze different forms of inheritance and usage of Exception Handling
CO3	Understand the different kinds of file I/Multithreading in complex Java programs, and usage of Container classes
CO4	Contrast different GUI layouts and design GUI applications
CO5	Construct a full-fledged Java GUI application, and Applet with database connectivity

Course name: SOFTWARE ENGINEERING

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Outline the framework activities for a given project.
CO2	Examine Right process model for a given project.
CO3	Analyze various system models for a given Context.
CO4	Understand various testing techniques for a given project.
CO5	Identify various risks in project development.

Course name: DATABASE MANGEMENT SYSTEMS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the concepts of Entity-Relationship Model for enterprise level databases.
CO2	Analyze the database and provide restricted access to different users of database.
CO3	Understand various Normal forms to carry out schema refinement.
CO4	Analyze various Concurrency control protocols.
CO5	Examine working principles of Recovery algorithms

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Course Outcomes (COs) - (R18)

Course name: JAVA PROGRAMMING LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Apply basic Java constructs and OOP to solve mathematical problems.
CO2	Apply Inheritance in Java programs and Analyze Exception Handling code
CO3	Implement File input/output and multithreading concepts in advanced Java programs.
CO4	Design different GUI applications using GUI layouts.
CO5	Apply Applet development and Database connectivity to build GUI applications

Course name: DATABASE MANAGEMENT SYSTEMS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Use the SQL command such as DDL, DML and DCL statements to perform different operations.
CO2	Apply various Integrity constraints on the database tables.
CO3	Apply Joins to retrieve the information from multiple tables.
CO4	Design different Views of tables for different users.
CO5	Design and implement a PL/SQL program which includes procedures, functions, cursors and triggers

Course name: FORMAL LANGUAGES AND AUTOMATA THEORY

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Appreciate the role and structure of Language theory.
CO2	Design of regular expressions for language constructs and conversions of NFA and DFA.
CO3	Demonstrate the derivations and properties of various CFG and Regular grammars.
CO4	Design of PDA for the given CFG.
CO5	Appreciate the role of the Turing machine as computational and universal machine

Course name: COMPUTER NETWORKS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the overview of reference models.
CO2	Classify and illustrate various sub protocols in multi access protocols.
CO3	Understand various routing algorithms and their operations.
CO4	Recommend transport protocol for the given scenarios.
CO5	Identify the protocols and functionalities in application layer

Course name: OPERATING SYSTEMS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the basic functions of Operating systems and system calls.
CO2	Analyze process scheduling and synchronization.
CO3	Understand the concepts of memory management.
CO4	Examine the concepts of MASS storage structure
CO5	Compare different protection methods of OS and understand the deadlock concepts

Course name: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

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Course Outcomes (COs) - (R18)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the importance of certain basic issues governing the business operations namely demand and supply, production function, cost analysis.
CO2	Apply managerial tools and techniques in obtaining optimal solutions for business problems.
CO3	Differentiate the various forms of business organizations.
CO4	Evaluate and interpret the financial statements of companies using ratios.
CO5	Apply the methods of capital budgeting in effective investment decision making.

Course name: **CLOUD COMPUTING (Professional Elective-1)**

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand different Cloud Services
CO2	Analyze different cloud deploy and service models.
CO3	Understand various enterprise applications in cloud computing
CO4	Understand and apply the virtualization concepts
CO5	Understand the data security mechanism and SLA management in cloud.

Course name: LINUX PROGRAMMING (Professional Elective-1)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand and make effective use of Linux file handling utilities.
CO2	Solve problems using shell scripting language (bash).
CO3	Develop the skills necessary for systems programming.
CO4	Examine various operations involved in process and signal management.
CO5	Distinguish intra and inter process communication.

Course name: **SOFTWARE PROJECT MANAGEMENT (Professional Elective-1)**

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Compare and contrast the various CSM models.
CO2	Understand the principle of software engineering.
CO3	Examine the lifecycle phases, artifacts of the process and model based software architectures.
CO4	Compare various work flow process models.
CO5	Evaluate different software product metrics.

Course name: Computer Graphics (Professional Elective-1)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Outline the areas of Computer Graphics.
CO2	Examine various 2D Geometrical transforms.
CO3	Understand 3D Geometrical transforms.
CO4	Apply different visible surface detection methods.
CO5	Plan the sequence of an animation for a given scenario.

Course name: OE-1 (TOTAL QUALITY MANAGEMENT)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	To explore the quality framework in production and operational aspects.

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Course Outcomes (COs) - (R18)

CO2	To evaluate the role of quality in product design and analysis.
CO3	To analyze quality in process improvement and modern production management tools.
CO4	To understand the role of TQM tools and techniques in elimination of wastages and reduction of defects.
CO5	To analyze the requirements of quality management system.

Course name: COMPUTER NETWORKS & OPERATING SYSTEMS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Implement various CPU scheduling algorithms
CO2	Apply the memory management techniques
CO3	Write Programs on File allocation strategies
CO4	Implement various algorithms for error detection and correction
CO5	Implement Algorithms on Shortest path routing
CO6	Write a program for congestion control

Course name: ADVANCED COMMUNICATION SKILLS (ACS) LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Develop sound communication skills in various situations with the help of enriched vocabulary.
CO2	Practice reading techniques for a faster and better comprehension.
CO3	Exhibit strong writing skills to express ideas effectively.
CO4	Demonstrate effective presentation skills.
CO5	Use appropriate verbal and non-verbal skills for a successful career

Course name: WEB TECHNOLOGIES

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the XML tags and to parse XML data with java.
CO2	Develop web applications using server side programming with PHP.
CO3	Implement web applications using JDBC and Servlets.
CO4	Apply web applications with JSP.

Course name: COMPILER DESIGN

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Formulate tokens for various programming languages.
CO2	Apply principles of parsing techniques to do syntax analysis.
CO3	Formulate semantic rules to do semantic analysis.
CO4	Apply optimization techniques on the intermediate code.
CO5	Generate the target code

Course name: DATA WAREHOUSING & DATA MINING

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the fundamentals of Data warehousing and OLAP technology.
CO2	Outline the Data Mining and Data pre-processing techniques.
CO3	Identify the frequent patterns using association algorithms.
CO4	Distinguish how classification algorithms are used on data sets.

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Course Outcomes (COs) - (R18)

CO5	Compare different clustering techniques on large data sets.

Course name: OBJECT ORIENTED ANALYSIS & DESIGN

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand Object Oriented Software Development Process
CO2	Construct class and object diagrams for the given scenario
CO3	Model interaction diagrams, usecase diagrams and activity diagrams for a given project
CO4	Design State diagrams involving processes and threads
CO5	Apply Unified Modeling Language Construct for Developing Structural Design of an ATM Project

Course name: ARTIFICIAL INTELLIGENCE (Professional Elective-2)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understanding the evolution and present status of AI.
CO2	Understanding different algorithms of AI.
CO3	Understanding different AI techniques like HMM and Reinforcement Learning.
CO4	Able to apply the basic concepts of AI in real life.

Course name: INFORMATION SECURITY (Professional Elective-2)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Identify various Security Attacks.
CO2	Understand various Encryption Principles and algorithms.
CO3	Implement Cryptography algorithms.
CO4	Understand various Security Associations and Key Management.
CO5	Design a Firewall for Security

Course name: SOFTWARE TESTING METHODOLOGIES (Professional Elective-2)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the purpose of Software testing.
CO2	Discuss various testing techniques and able to prepare the test cases for specific requirements.
CO3	Understand transaction and data flow testing.
CO4	Construct the test plans and validate the test plan
CO5	Understand the testing policies and standards.

Course name: PRINCIPLES OF PROGRAMMING LANGUAGES(Professional Elective-2)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the importance of programming paradigms.
CO2	Illustrate the syntax and semantics in formal notation.
CO3	Make use of expressions and statements for subprograms and blocks.
CO4	Select different object oriented concepts for solving a given problem.
CO5	Compare the features of different programming languages.

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Course Outcomes (COs) - (R18)

Course name: OE-II (FINANCIAL INSTITUTIONS & MARKETS)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	To explore Indian investment environment
CO2	To evaluate available investment avenues.
CO3	To study the operational framework of financial markets.
CO4	To analyze the role of regulatory bodies in Indian Financial system.
CO5	To identify recent trends and challenges in Indian banking sector.

Course name: DATA MINING & CASE TOOLS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Demonstrate frequent pattern algorithms
CO2	Explore Weka environment
CO3	Apply data mining techniques for realistic data
CO4	Design various UML diagrams for ATM application
CO5	Design Unified Library application
CO6	Explore real time applications

Course name: WEB TECHNOLOGIES LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Design static web pages that perform client side authentication.
CO2	Understand XML data representation.
CO3	Create dynamic web application using PHP and access database.
CO4	Implement sessions in web applications
CO5	Design dynamic web applications using MVC architecture

Course name: QUANTITATIVE METHODS & LOGICAL REASONING

After completing this course the student must demonstrate the knowledge and ability to	
CO1	To perform well in various competitive exams and placement drives.
CO2	To solve basic and complex mathematical problems in short time.
CO3	To become strong in Quantitative Aptitude and Reasoning which can be applied for GRE, GATE, GMAT or CAT exam also .
CO4	To develop problem solving skills and analytical abilities, which play a great role in corporate and industry, set up .
CO5	To perform well in various competitive exams and placement drives.

Course name: PERSONALITY DEVELOPMENT AND BEHAVIORAL SKILLS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Practice optimistic attitude for an efficient, socially viable and multi-faceted personality.
CO2	Demonstrate functions of non-verbal communication in formal context.
CO3	Build effective individual & team dynamics for professional accomplishments.
CO4	Analyze appropriate strategic Interpersonal Skills for productive workplace relationships.
CO5	Correspond in multiple contexts, for varied audiences, across genres and modalities.

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Course Outcomes (COs) - (R18)

Course name: MOBILE APPLICATION DEVELOPMENT

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the basics of Android devices and Platform.
CO2	Acquire knowledge on basic building blocks of Android programming required for App development.
CO3	Understand persistence Data storage mechanism in Android
CO4	Understand advanced application concepts like networking, Animations and Google Maps services etc.
CO5	Develop and publish Android applications in to Android Market

Course name: INTERNET OF THINGS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Describe various IoT enabled technologies.
CO2	Understand the concepts of M2M with necessary protocols.
CO3	Illustrate Python programming for IoT
CO4	Examine the Python programming with Raspberry PI
CO5	Design web applications for IoT

Course name: BIG DATA ANALYTICS (Professional Elective – 3)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Explain the foundations, definitions, and challenges of Big Data.
CO2	Use Hadoop file system interfaces.
CO3	Program using HADOOP and Map reduce.
CO4	Understand various Hadoop Eco Systems like Pig, Hive.
CO5	Outline Hadoop Eco System using HBase, Zookeeper.

Course name: IMAGE PROCESSING (Professional Elective – 3)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand Digital image fundamentals,
CO2	Program Image Transformations,
CO3	Design Color Image Processing and Restoration,
CO4	Implement Image segmentation techniques and
CO5	Program Image Compression techniques.

Course name: R PROGRAMMING (Professional Elective - 3)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Apply operations on basic data types using R
CO2	Apply various operators on data frames, factors and list
CO3	Develop functions using iterative programming for real world problems
CO4	Analyze the data by plotting using R
CO5	Formulate linear and multiple regression models for time series data & web data

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Course Outcomes (COs) - (R18)

Course name: DATA SCIENCE (Professional Elective - 3)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understanding the fundamental concepts of Data Science
CO2	Understanding how data is collected, managed and stored for data science
CO3	Understand the real-world applications of data scientists
CO4	Visualize and present the inference using various tools
CO5	Implement data collection and management scripts using MongoDB

Course name: MACHINE LEARNING (Professional Elective - 4)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Ability to understand the basic concepts such as Decision trees and Neural Networks.
CO2	Analyze various Machine Learning techniques and their efficiency.
CO3	Apply Machine Learning algorithms to solve problems of moderate complexity.
CO4	Understand Genetic algorithms and their applications.
CO5	Identify ML applications.

Course name: BLOCKCHAIN TECHNOLOGIES (Professional Elective – 4)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the Cryptography, and Block Chain
CO2	Discuss about Generic elements of blockchain
CO3	Demonstrate various methods and routes of Decentralization
CO4	Analyze the concepts of Bitcoin
CO5	Apply Block chain in Real time scenario.

Course name: ADVANCED DATABASES(Professional Elective - 4)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the concepts of Distributed Database Systems.
CO2	Identify different Architectural Models for Distributed DBMS.
CO3	Characterize the query processors.
CO4	Design Algorithms for Concurrency control Mechanisms.
CO5	Identify different Parallel DBMS Techniques based on given constraints.

Course name: INFORMATION RETRIEVAL SYSTEMS (Professional Elective – 4)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the concepts of information system models
CO2	Ability to use various retrieval utilities for improving search
CO3	Analyze the crossing language barrier and learn about crossing language information retrieval.
CO4	Evaluate indexing and compressing documents to improve space and time efficiency.
CO5	Understand issues in web search, structured and unstructured data.

Course name: OE-III (Fundamentals of Entrepreneurship)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	To provide awareness about entrepreneurship

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Course Outcomes (COs) - (R18)

CO2	To develop idea generation, creative and innovative skills among students.
CO3	To self-motivate the students by making aware of different opportunities by exploring themselves by discussing successful growth/failure stories.
CO4	To learn to start an enterprise and design business plans those are suitable for funding by considering all dimensions of business.
CO5	To understand entrepreneurial process by way of studying different case studies.

Course name: MOBILE APPLICATION DEVELOPMENT & INTERNET OF THINGS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Ability to develop GUI based Android applications.
CO2	Ability to develop event-based Android applications.
CO3	Design Android applications that can access database.
CO4	Apply the concepts of IoT by identifying different related technologies.
CO5	Apply IoT to different applications by evaluating IoT protocols.
CO6	Design and develop smart IoT solutions by analyzing the data received from sensors

Course name: BIG DATA ANALYTICS LAB(Professional Elective – 3 Lab

After completing this course the student must demonstrate the knowledge and ability to	
CO1	To introduce the tools required to manage and analyze big data like Hadoop, NoSql
CO2	To impart knowledge of map reduce paradigm to solve complex problems Map-Reduce
CO3	To introduce several new algorithms for big data mining like classification, clustering and finding frequent patterns

Course name: IMAGE PROCESSING LAB (Professional Elective–3 Lab)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand and apply mathematical transforms necessary for image processing.
CO2	Implement Edge detection and filtering techniques.
CO3	Implement Image Enhancement and Fourier Transformation techniques.
CO4	Develop segmentation Techniques.

Course name: R PROGRAMMING LAB(Professional Elective - 3 Lab)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Explore R environment
CO2	Visualize data insights using charts and graphs.
CO3	Analysis data with linear regression model.

Course name: DATA SCIENCE LAB (Professional Elective - 3 Lab)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	To make students understand learn about a Data Science – Python Programming, way of solving problems.
CO2	To teach students to write programs in Python to solve problems.
CO3	Demonstrate the usage of built-in objects in Python.
CO4	Analyze the significance of python program development environment by working on

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Course Outcomes (COs) - (R18)

	real world examples
CO5	Implement numerical programming, data handling and visualization through NumPy, Pandas and MatplotLib modules

Course name: MINI PROJECT

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Analyze and communicate software requirement specifications
CO2	Apply design and development principles in the construction of software systems of varying complexity

Course name: SEMANTIC WEB AND SOCIAL NETWORKS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Identify the Structure of the Semantic Web Technology in reference with the World Wide Web.
CO2	Design the concepts of Resource Description Framework, Ontology and Web Ontology Language (OWL).
CO3	Understand Ontology Engineering Tools and Methods.
CO4	Apply Logic, Rule and Inference Engines in Semantic Applications.
CO5	Understand and Analyze Social Networks and design solution for Web based Social Networks like Blogs and Online Communities.

Course name: E – COMMERCE

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Identify the anatomy of E-Commerce applications and its process models.
CO2	Categorize different Electronic payment systems.
CO3	Examine Supply chain Management.
CO4	Analyze the various marketing strategies for an online business.
CO5	Design strategies for E-Commerce Catalogues.

Course name: TECHNICAL SEMINAR

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Student able to communicate effectively.
CO2	Student able to develop good presentation skills.
CO3	Student able to analyze and consolidate the presentation
CO4	Student able to effectively interact with others.
CO5	Student able to explain the latest technologies and trends in computing

Course name: COMPREHENSIVE VIVA VOCE

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Revise the Information Technology principles postulations and other technical information in order to apply in various conditions.

Department of Information Technology

Course Outcomes (COs) - (R18)

CO2	Explain the relevance of a technical note for a given application.
CO3	Collate and justify the design by the acquired comprehensive technical knowledge and skill.

Course name: MAJOR PROJECT

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Analyze and communicate software requirement specifications
CO2	Apply design and development principles in the construction of software systems of varying complexity
CO3	Able to function effectively on team to accomplish a common goal
CO4	Exhibit documentation skills to generate project reports