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| **Sl. No** | **Syllabus** | **Curriculum** | **Deployment Strategy and**  **Tool** | **Cross-cutting issues**  **integrated** | **PO, PSO and CO** |
| 1. | Transform Calculus, Fourier Series And Numerical Techniques | * To provide the numerical methods of solving the nonlinear equations, interpolation, differentiation, and integration. To improve the student's skills in numerical methods by using the numerical analysis software and computer facilities. * Numerical methods are commonly used for solving mathematical problems that are formulated in science and engineering where it is difficult or impossible to obtain exact solutions. MATLAB has a large library of functions for numerically solving a wide variety of mathematical problems * Probability provides information about the likelihood that something will happen. Meteorologists, for instance, use weather patterns to predict the probability of rain. In epidemiology, probability theory is used to understand the relationship between exposures and the risk of health effects. | 1. Chalk and   Talk method  2. PPT | * Business   Ethics   * Human   values | CO1:Use Laplace transform and Inverse Laplace transform in solving differential / Integral equation arising in network analysis, control systems and other fields of engineering.  CO2:Demonstrate Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing and field theory.  CO3:Make use of Fourier transform and Z-transform to illustrate discrete/ continuous function arising in wave and heat propagation, signals and systems.  CO4:Solve first and second order ordinary differential equations arising in engineering problems using single step and multi step numerical methods.  CO5:Determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.  PO1: Engineering Knowledge  PO2: Problem Analysis  PO3: Design/Development Of Solutions  PO4: Conduct Investigations Of Complex Problems  PO11: Project Management and Finance.  PO12: Life-long Learning.  PSO2:Problem Solving Skill |
| 2 | DATA STRUCTURES AND APPLICATIONS | * To introduce the fundamental concept of data structures and to emphasize the importance of data structures in developing and implementing efficient algorithms. In addition, another objective of the course is to develop effective software engineering practice, emphasizing such principles as decomposition, procedural abstraction, and software reuse. * Data structures are used to implement printer spoolers so that jobs can be printed in the order of their arrival. To implement back functionality in the internet browser. To store the possible moves in a chess game. To store a set of ﬁxed key words which are referenced very frequently * They are essential components in creating fast and powerful algorithms. They help to manage and organize data so that it will make our code cleaner and easier to understand. Data structures can make the difference between an Okay product and an outstanding | 1. Chalk and   Talk method   1. PPT | * Business   Ethics   * Human   values | CO1:Apply different types of data structures, operation and algorithms for searching, sorting and pattern matching for the given problems.  CO2:Illustrate the operations of stack and queues and Implement the algorithms for stack and queue applications.  CO3:Distinguish between SLL, DLL and CLL by its operations and Implement algorithms for its applications such as polynomials and sparse matrix.  CO4:Illustrate the operations of trees and Implement the algorithms for the given problems using binary trees.  CO5:Implement the algorithms for searching, sorting and file manipulation operations in different applications.  PO1:Engineering Knowledge  PO2:Problem Analysis  PO3:Design/Development Of Solutions  PO4:Conduct Investigations Of Complex Problems  PO5:Modern Tool Usage  PSO1:Professional Skills  PSO2:Problem Solving Skill |
| 3 | ANALOG AND DIGITAL ELECTRONICS | * Students get knowledge of how our world is powered through electrical means. * Electronic circuits work to process and transmit electrical current information in our computers, TVs,­ ­radios, and mobile devices. Integrated circuits help manage power in our mobile devices. These are known as power management integrated circuits (PMICs) and are used mainly in mobile devices to lessen the required amount of space. * Learning about circuits will help students to understand how to analyze circuits that use direct current (DC) or alternating current (AC) voltage. You will learn about open, closed, and short circuits. Anyone who wants to become an electrician, or work in a public utility for electricity will need to know the foundational elements of circuits, resistors, capacitors, and inductors and how they work. | 1. Chalk and   Talk method   1. PPT | * Business   Ethics | CO1: Explain various analog circuits with their applications and understand the fundamental knowledge between analog and digital signal.  CO2:Understand and Describe different types of combinational logic circuits by using abridge mapping techniques.  CO3:Understand and Design combinational logic circuits with limited Gate fan-in, Operation of Decoders, Encoders, Multiplexers and PLD’s.  CO4:Illustrate combinational logic circuits using VHDL simulation and implement the working of Sequential Circuit.  CO5:Understand and Design different data processing circuits using flip flops.  PO1:Engineering Knowledge  PO2:Problem Analysis  PO3:Design/Development Of Solutions  PO4:Conduct Investigations Of Complex Problems  PO5:Modern Tool Usage  PO12: Life-long Learning.  PSO1:Professional Skills  PSO2:Problem Solving Skill |
| 4 | COMPUTER ORGANIZATION | * The computer organization is concerned with the structure and behaviour of digital computers. The main objective of this subject to understand the overall basic computer hardware structure, including the peripheral devices * Computer architecture deals with the design of computers, data storage devices, and networking components that store and run programs, transmit data, and drive interactions between computers, across networks, and with users. * Computer Organization and Architecture is the study of internal working, structuring and implementation of a computer system. ... Organization of computer system is the way of practical implementation which results in realization of architectural specifications of a computer system. | 1. Chalk and   Talk method   1. PPT | * Business   Ethics   * Human   values | CO1:Explain the working of a computer system by using machine level instructions.  CO2:Analyse and Choose appropriate interrupt hardware for communication with I/O devices.    CO3:Explain  different types of memory architecture and illustrate memory mapping, replacement and its performance  CO4:Apply various arithmetic and logical operations on integer data by choosing appropriate algorithms  CO5:Explain the processing unit, organization of processor and pipelining.  PO1:Engineering Knowledge  PO2:Problem Analysis  PO3:Design/Development Of Solutions  PO4:Conduct Investigations Of Complex Problems  PSO1:Professional Skills  PSO2:Problem Solving Skill |
| 5 | SOFTWARE ENGINEERING | * Software engineering is important because specific software is needed in almost every industry, in every business, and for every function. It becomes more important as time goes on – if something breaks within your application portfolio, a quick, efficient, and effective fix needs to happen as soon as possible * Using the techniques of software engineering is an integral part of the application of Total Quality Management (TQM) to software development. Improving overall quality and productivity by minimizing the number of software defects that can be prevented by expending additional effort during analysis and design. * As our connection to technology tightens, it drives rapid cultural evolution, in effect changing what it means to be human. Technological change driven by software also impacts our economy in basic ways, as computer technology drives more aspects of production, marketing, services, and sales. | 1. Chalk and   Talk method   1. PPT | * Business   Ethics   * Human   values | CO1:Understand software engineering principles, software processes and requirement engineering.  CO2:Demonstrate system models, using UML diagrams, design patterns and understand RUP.  CO3:Distinguish between various Software Testing and Evolution Processing.  CO4:Project Planning and quality management process.  CO5:Identify the need for agile software development using agile methods and practices.  PO1:Engineering Knowledge  PO2:Problem Analysis  PO3:Design/Development Of Solutions  PO5:Modern Tool Usage  PO7:Environment And Sustainability  PO8:ETHICS  PO9:INDIVIDUAL AND TEAM WORK  PO10:COMMUNICATION  PO11:Project Management and Finance.  PO12: Life-long Learning.  PSO3: Successful career and entrepreneurship. |
| 6 | DISCRETE MATHEMATICAL STRUCTURES | * Concepts and notations from discrete mathematics are useful in studying and describing objects and problems in all branches of computer science, such as computer algorithms, programming languages, cryptography, automated theorem proving, and software development. * Discrete math can be used for software design specifications, analysis of algorithms, and other practical applications, but it's really a great tool to develop as a programmer. * The mathematics of modern computer science is built almost entirely on discrete math, in particular combinatorics and graph theory. This means that in order to learn the fundamental algorithms used by computer programmers, students will need a solid background in these subjects. | 1. Chalk and   Talk method   1. PPT | * Business Ethics * Human values | CO1: Understand fundamentals of logic and apply proposition and predicate logic in correctness of argument.  CO2: Demonstrate the property of integer and solve problems using fundamental principles of counting.  CO3: Apply relations and functions concepts to solve fundamentals problems.  CO4:Understand the principle of inclusion and exclusion, recurrence relations and apply to solve complex problems.  CO5:Compare graph and trees, and understand the applications of graph theory in computer science.  PO1:Engineering Knowledge  PO2:Problem Analysis  PO4:Conduct Investigations Of Complex Problems  PO7:Environment And Sustainability  PO11:Project Management and Finance.  PO12: Life-long Learning.  PSO2:Problem Solving Skill |
| 7 | ANALOG AND DIGITAL ELECTRONICS LABORATORY | An ability to operate laboratory equipment.  An ability to construct, analyze, and troubleshoot simple combinational and sequential circuits.  An ability to design and troubleshoot a simple state machine.  An ability to measure and record the experimental data, analyze the results, and prepare a formal laboratory report. | 1. Chalk and   Talk method   1. PPT | * Business   Ethics | CO1:Design analog circuits along with different electronics devices and components.  CO2:Design and Implement several combinational logic circuits.  CO3:Design and Implement several sequential logic circuits.  CO4:Design and Implement various data processing circuits.  CO5:Understand and simulate numerous analog and digital circuits  PO1:Engineering Knowledge  PO2:Problem Analysis  PO3:Design/Development Of Solutions  PO5:Modern Tool  PO9:INDIVIDUAL AND TEAM WORK  PO12: Life-long  Learning.  PSO1:Professional Skills  PSO2:Problem Solving Skill |
| 8 | DATA STRUCTURES LABORATORY | * The objective is to implement some of the data structures learned in the theory course. * After the successful completion of the course, the student will be able to write C++ programs by choosing appropriate data structures to solve a problem.Implement / Design suitable data structures (abstract data types) as required in C++ programs.Analyze the time taken by the C++ program. * It is intended to teach the design and analysis of basic data structures and their implementation in an object-oriented language. | 1. Chalk and   Talk method   1. PPT | * Business   Ethics   * Human   values | CO1:Analyse and compare different linear and non-linear data structures.  CO2:Design and Develop linear data structures such as stacks, queues, lists and its applications.  CO3:Design and Develop Non-linear data structures such as tree, graphs, heap and its applications.  CO4:Implement and Analyze the searching, sorting, and hashing techniques.  PO1:Engineering Knowledge  PO2:Problem Analysis  PO3:Design/Development Of Solutions  PO4:Conduct Investigations Of Complex Problems  PO5:Modern Tool Usage  PO12: Life-long Learning.  PSO1:Professional Skills  PSO2:Problem Solving Skill |

