

COURSE OUTCOMES – 2010 Scheme

C201 – 10MAT31 - Engineering Mathematics III

C201.1	Know the use of periodic signals and Fourier series to analyze circuits and explain the general linear system theory for continuous-time signals and systems using the Fourier transform. Use the analytical method to find the solution of partial differential equations .
C201.2	Apply numerical methods to solve algebraic and transcendental equations
C201.3	Construct linear programming model to get optimum results in industries. Analyze discrete-time systems using convolution and z-transform.
C201.4	Apply numerical methods to compute a definite integral and find the solution of partial differential equations in the models involving oscillation, waves fluid mechanics, electromagnetism and heat transfer.

C202 – 10CS32 – Electronic Circuits

C202.1	Describe the applications of various electronic components like BJT, FET, SCR, UJT.
C202.2	Describe the various optoelectronic devices & power supplies.
C202.3	Evaluate the important parameters related to transistor biasing and various AC models
C202.4	Various application circuits like Oscillators, Multi vibrators and Op-amp based circuits.

C203 – 10CS33 – Logic Design

C203.1	Know and understand how Digital and Analog Systems differ, Logic Gates and Boolean Laws. Simplify, analyze and design of combinational logic Circuits (using Karnaugh map and Quine-Mc clusky method).
C203.2	Analyze data processing circuits such as Multiplexer, Decoder and Programmable Logic arrays .Design and Synthesize different sequential circuits with Flip-Flops.
C203.3	Design and synthesize different sequential circuits with Registers and Counters and Implement and validate Analog to Digital and Digital to Analog Conversion.

C204 – 10CS34 - Discrete Mathematical Structures

C204.1	Apply logical notation to define and reason about fundamental mathematical concepts such as sets, relations, functions, and integers. Techniques for constructing mathematical proofs, illustrated by discrete mathematics examples
C204.2	Applying logical reasoning for set theory concept .Synthesize induction hypotheses and simple induction proofs. How to use and analyze recursive definitions
C204.3	To analyze basic knowledge gain by function and relations and apply them. Able to apply the concepts of groups, coding theory and model different situations.

C205 – 10CS35 - Data Structures with C

C205.1	Able to use various methods of allocating memory, organizing data, accessing data. Performing operations like addition of polynomials, transpose of sparse matrix using associated algorithms and do the performance analysis.
C205.2	Implement stack and different types of Queues using dynamic arrays and linked list
C205.3	Apply the concept of trees, forests and graph in organizing data. Implementation of different types of binary trees, Binary search trees and graphs using basic data structures and algorithms. Enumerate and describe the different types of priority Queues and efficient binary search trees.

C206 – 10CS36 - Object oriented programming with C++

C206.1	Understand the differences between procedure oriented programming and object oriented programming and its features
C206.2	Understand user-defined classes conceptually and able to apply them in C++ programs along with constructors, destructors and static data members and static member functions and use the concept of friend functions and operator overloading in C++ programs
C206.3	Develop C++ programs with reusable classes using the concepts of inheritance
C206.4	Understand the concept of virtual functions in order to illustrate run time polymorphism and other aspects of OOP , I/O system basics and File I/O, exception handling fundamentals and options and use them in C++ program implementations

C207 – 10CSL37 - Data Structures with C/C++ Lab

C207.1	Analyse and able to execute programs to represent polynomials, sparse matrices using suitable data structures effectively and to illustrate the operations that can be performed on various data structures such as stacks, queues, doubly and singly linked lists..
C207.2	Able to design, develop and execute programs to convert infix expressions to postfix form and to evaluate the postfix expressions using stack data structure effectively.
C207.3	To be able to write C++ classes this can be reusable and use the concepts of constructors, operator overloading in order to solve various computing problems and to choose a suitable data structures to solve real world problems.

C208 – 10CSL38 - Electronic Circuits & Logic Design Laboratory

C208.1	Design & construct clipper, clamper and amplifier circuits. Design & construct an Opamp as Schmitt trigger and oscillator, timer as Astable multivibrator.
C208.2	Familiarize students designing of different digital circuits (like MUX, Register, counter). Design & implement D/A converter
C208.3	Perform simulation & implementation of logic circuits & electronic circuits using Xilinx and Multisim software.

C209 – 10MAT41 - Engineering Mathematics IV

C209.1	use appropriate numerical methods to solve first and second order ordinary differential equations
C209.2	Use Bessel's and Legendre's function which often arises when a problem possesses axial and spherical symmetry, such as in quantum mechanics, electromagnetic theory, hydrodynamics and heat conduction.
C209.3	State and prove Cauchy's theorem and its consequences including Cauchy's integral formula and solve two dimensional potential problem using analytic functions in the study of heat flow, fluid mechanics and electrostatics.
C209.4	analyze and interpret the data that involves uncertainty and apply different sampling theory in real situations and evaluate the quantity of the sample in the research

C210 – 10CS42 - Graph Theory & Combinatorics

C210.1	Able to define different terminologies of graphs, formulate problems in terms of graphs and apply algorithms or theorems of graph theory to solve various graph theoretic problems.
C210.2	Able to analyze concepts in trees and apply algorithms of Prim's, Kruskal to find minimum weight spanning tree and Dijkstra's algorithm for a shortest path spanning tree in a graph or digraph.
C210.3	Able to apply the techniques of counting to identify the ways in which a given task can be accomplished without listing all the possibilities explicitly and able to identify different physical situations in which principle of inclusion and exclusion can be used.
C210.4	Able to use generating functions of type ordinary and exponential, Recurrence relation of first order, second order, third and higher order linear homogeneous recurrence relations to solve variety of combinatorial problems.

C211 -10CS43- Design and Analysis of Algorithms

C211.1	Able to analyze mathematically the given complex problems and apply certain brute force, divide and conquer algorithm in solving the problems and analyze the complexity of the same
C211.2	Able to choose the appropriate algorithmic design technique like greedy method, Dynamic programming and Analyze and compare the efficiency of algorithms to solve the given appropriate problem.
C211.3	Apply and analyze decrease and conquer approaches, space time tradeoffs and Describe the classes P, NP, and NP-Complete problems.
C211.4	Able to apply and analyze Backtracking, Branch and bound and approximation algorithms and parallel algorithms to solve complex problems.

C212 – 10CS44 – UNIX and Shell Programming

C212.1	Ability to understand the Unix Operating System and the working of the built in commands available in unix
C212.2	Analyze the working of the user defined commands and will be able change the permissions associated with files.
C212.3	Understanding the concept of Shell and the different usage of the commands in shell.
C212.4	Ability to program in AWK language
C212.5	Identify and analyze various Perl programs and administrator privileges

C213 – 10CS45 – Microprocessors

C213.1	To be able to describe the architecture of x86 processors and addressing modes
C213.2	To be able describe Instruction set and develop programs for x86
C213.3	To be able to combining assembly language with c/c++ and hardware specification of 8086 &8088
C213.4	To be able to describe memory interfacing and interfacing with I/O devices like stepper motor, keypad, 7 segment display etc.. using 82C55.

C214 – 10CS46 - Computer Organization

C214.1	Able to describe the basics of computer organization, structure and operation of computers, performance, machine instructions, number representation, addressing techniques, generic assembly language features, simple input/output programming.
C214.2	Able to expose different ways of communicating with I/O devices and standard I/O interfaces, Interrupts, DMA methods, bus protocols and standards with PCI, SCSI, and USB standards.
C214.3	Able to describe the components and organization used to implement the memory, cache memory and virtual memory concepts. Able to describe the logic design of the hardware for fixed point arithmetic and the concept of floating point number representation.
C214.4	Able to describe the basic processing and organization of simple processor, multiple processor systems and the techniques employed to achieve parallelism.

C215 – 10CSL47 - Design and Analysis of Algorithms Lab

C215.1	Ability to apply divide and conquer technique for sorting problems and BFS, DFS methods for a given graph problem, also to analyze runtime complexity.
C215.2	Ability to apply greedy method to solve single source shortest path problem, Minimum cost spanning tree problems and Dynamic programming method to solve Knapsack problem, transitive closure of graph, all pair shortest path problem.
C215.3	Ability to apply Back tracking design techniques to solve subset sum problem, travelling salesperson problem and N-queen's problem.

C216 – 10CS148 – Microprocessors Lab

C216.1	Able to write programs on Searching, Sorting and String manipulation. Able to write programs using Macros, Procedures and files
C216.2	Able to write programs for parity checking, BCD Up-Down Counter and Multiplying two numbers using Logical controller Interface. Able to write program to generate Sine wave, Half Rectified Sine wave and Fully Rectified Sine waveform using the DAC interface.
C216.3	Able to write programs to Display two messages alternatively with flickering effect and display a message in rolling fashion Using 7 segment display interface. Able to write program to Drive stepper motor interface to rotate the motor in specified direction

C301 – 10CS51 – Software Engineering

C301.1	Explain the basic concepts of Software Engineering such as System engineering, Legacy system, Software process, Process activities and to demonstrate knowledge of the distinction between critical and non-critical system and various software process models.
C301.2	Analyse Software requirement design and documentation and the ability to manage a project including planning, scheduling and risk assessment/management
C301.3	Explain the concept of Architectural Design, Implementation and software Testing.
C301.4	Describe Enhanced team work, critical thinking and communication skills to construct software of high quality and to manage the people, Cost estimation

C302 – 10CS52 – System Software

C302.1	To be able to study & understand the machine architecture of a hypothetical machine (SIC & SIC/XE), the basic assembler function, and to describe the basic structure, design and implementation of an assembler for the machine.
C302.2	To be able to study & understand the machine independent assembler features and to describe the design features of Loader & Linker.
C302.3	To be able to study & describe the design features of Macro Processors, and to explain the functions and capabilities of interactive text editors and debugging systems.
C302.4	To understand and describe the basic features of LEX and YACC (lexical analyzer & parser generator) tools and to write & explain lex and yacc specifications.

C303 – 10CS53 – Operating Systems

C303.1	Able to describe the basic organization of computer system, services an operating system provides, various ways of structuring an operating system and able to understand process & thread management.
C303.2	Compare the common algorithms used for scheduling various tasks in operating systems and formulate solutions for critical section problem and able to describe deadlock.
C303.3	Able to understand the mechanisms of memory management and describe file system & it's implementation.
C303.4	Able to describe secondary storage structure and do the case study on Linux Operating System.

C304- 10CS54-Database Management Systems

C304.1	Apply the concepts and design database for given information system and prepare a relationship between the objects identified.
C304.2	Develop database programming skills in SQL using any database.
C304.3	Apply the concepts of Normalization and design database which possess a good database.
C304.4	Develop application programs by considering the issues like concurrency control, serializability and security and understand the recovery process.

C305 – 10CS55 – Computer Networks-I

C305.1	Understanding the basics of data communications, OSI model, TCP/IP model and applying different types of Multiplexing and Data conversion feature of physical layer
C305.2	Understand and apply different Switching, error detection and correction features in data communications
C305.3	Insight into data link layer features like framing ,Flow control and Error control protocols, Multiple access algorithms and Ethernet standards
C305.4	Understanding the architecture of cellular telephony, IPV4 and IPV6 addressing mechanism and insights into IEEE 802.11, Bluetooth towards the solving real world problems.

C306 – 10CS56 - Formal Languages and Automata Theory

C306.1	Able to Identify and introduce formal languages and Formal models in Automata theory.
C306.2	Able to understand and write regular expressions, pumping lemma for regular languages and grammars .
C306.3	Able to realize and apply Pushdown Automata, Pumping Lemma for non-regular languages.
C306.4	Realize and apply Turing Machine , the concept of un-decidability

C307 – 10CSL57 – Database Application Lab

C307.1	For a Specified Database create the tables by properly specifying the primary keys and the foreign keys.
C307.2	Enter at least five tuples for each relation, perform update, alter operations and Create suitable front end for querying and displaying the results.
C307.3	To write Query for a given Database and to understand concept of generating suitable reports

C308 - 10CSL58 - System Software and Operating system Lab

C308.1	Use of LEX and YACC Tools
C308.2	Apply UNIX/LINUX operating system commands and execute different UNIX shell scripts
C308.3	Analyze and evaluate different algorithms for CPU scheduling

C309 – 10CS61 - Management and Entrepreneurship

C309.1	Understand the meaning and scope of management and to know the development of management thoughts..
C309.2	Analyse the objectives of planning process and the importance of decision making of planning.
C309.3	Understand the Principles of organization, Committees – Centralization Vs Decentralization and to know the meaning of directing Leadership styles and controlling.
C309.4	Understand the meaning and function of Entrepreneur, the role of Entrepreneur in the economical development.
C309.5	Understand the need, scope and role of SSI towards economical development and available government fund.
C309.6	Understand institutional support and to know the procedures to apply them for the Preparation of project report and the feasibility analysis

C310 – 10CS62 – UNIX System Programming

C310.1	Explain the features of ANSI C and POSIX standards and the common characteristics of APIs.
C310.2	Determine the file types and the UNIX kernel support for files.
C310.3	Determine the various APIs for different file types.
C310.4	Explain the concept of process creation, termination and UNIX kernel support for processes.
C310.5	Explain the controlling of process, the process relationships, characteristics of daemon processes and UNIX kernel support for signals.
C310.6	Determine the characteristics of inter process communication mechanisms.

C311 – 10CS63 – Compiler Design

C311.1	Able to understand the basics of Compilers and its phases with implementation of lexical analysis phase of compiler. Identify the application of Compilers.
C311.2	Able to construct different types of parsing techniques & apply Top down parsing.
C311.3	Able to construct different types of Bottom up parsing techniques & apply bottom up parsing.
C311.4	Able to Understand evolution orders of Syntax Direct Translation and Syntax Directed Translation Schemes. Application of SDD.
C311.5	Able to State & generate various types of Intermediate codes for different language constructs like expression, flow control and procedure.
C311.6	Able to Understand Runtime environment & code generation & apply its basic optimization techniques.

C312 – 10CS64 – Computer Networks –II

C304.1	Insights into the internet backbone network architecture, switching mechanism in network and shortest path route identification algorithm in network.
C304.2	Insights on algorithms for identifying the shortest path route in network and different methods for congestion control in network.
C304.3	Understanding the TCP/IP Architecture and addressing mechanism in internet & insights into the different internet & multicast routing protocols, need of DHCP & NAT and knowledge on assigning mobile IP.
C304.4	Insight into the application layer & different applications and Conquer the different security issues in computer network.
C304.5	Understanding different methods for achieving expected QoS in network and insights on VPN, Overlay network. Understanding the different compression methods and protocols for multimedia services.
C304.6	Identify the need of mobile ad hoc network & sensor network and its issues related to routing and deeper insight on different routing protocols

C313 – 10CS65 - Computer Graphics & Visualization

C313.1	Understand the various methods of modeling 3D objects, its synthesis and rendering paradigms by doing a comprehensive & thorough study of basics of graphics system, its applications and GPUs
C313.2	Illustrate the usage of various API's in OpenGL by solving complex problems such as Marching Squares and Sierpinski gasket
C313.3	Apply various transformations on the 3D & 2D objects, should be able to animate them
C313.4	Understand various classical views and to implement various synthetic views in OpenGL
C313.5	Investigate light material interaction using OpenGL
C313.6	Implement line and polygon clipping algorithms using OpenGL

C314 – 10CS661 - Operation Research

C314.1	Able to formulate a real world problem as a linear programming model and solve using simplex methods
C314.2	Able to understand the working of Big M , Two phase methods and perform post optimality analysis and learn its computer implementation.
C314.3	Able to analyze the concepts of duality theory , perform sensitivity analysis and compute algorithms for Linear programming .
C314.4	Able to solve linear transportation and assignment problems
C314.5	Able to understand the concepts and applications of game theory and decision analysis.
C314.6	Able to Learn the nature of meta heuristics and related solution methodologies

C315 – 10CSL67 - Computer Graphics & Visualization Lab

C315.1	Design and implement various line clipping algorithms and polygon filling algorithm (any one)
C315.2	Understand and implement 3D sierpinski gasket; Implement a color cube , apply transformations and perspective view on it
C315.3	Implement various advanced primitives such as mesh, teapot and extruding surfaces and apply lighting and shading to them(any one)
C315.4	Able to build mini project to enhance and apply knowledge in graphics

C316 - 10CSL68 – USP & CD Lab

C316.1	Understand and implement the concepts of process, IPC and link(hard link, soft link)
C316.2	Analyze the various file APIs and create a C/C++ program to demonstrate the race condition, zombie process, system function, alarms.
C316.3	Design and develop a C program to implement Syntax directed definition and to produce a parse tree.

C401 - 10CS71 - Object Oriented Modeling and Design

C401.1	Able to Explain the concept and terms used in Object Oriented Modeling and Design and the importance of modeling as a design technique.
C401.2	Design and develop the Class, State and Implementation of Models after the process of system conception, Domain analysis.
C401.3	Able to Explain System Design and Estimating System performance
C401.4	Apply various design patterns and their usage to solve some design problems and to identify suitable design patterns to be applied depending on the application.

C402 – 10CS72 – Embedded Computing Systems

C402.1	Design Embedded System Using UML, understand designing with microprocessors and evaluate CPU performance metrics
C402.2	Understand RTOS based design and able to make choice of RTOS
C402.3	Understand bus based computer systems , analysis and optimization of programs , network based embedded system design; Developing and debugging and types of files generated on cross compilation

C403 – 10CS73 – Programming the Web

C403.1	Demonstrate understanding of (X)HTML(5) and CSS programming.
C403.2	Create and compile advanced dynamic web projects using JAVASCRIPT
C403.3	Create dynamic web pages using Perl and understand the concepts of XML for visualizing and manipulating that data
C403.4	Demonstrate database applications with MySQL using PHP, Ruby technologies for the development of Internet websites

C404 - 10CS74 - Advanced Computer Architecture

C404.1	To be able to describe and analyze the of performance of a computer architecture and understand design instruction pipeline.
C404.2	To be able to describe challenges in parallel computing and various methods for Instruction Level Parallelism
C404.3	To be able to describe multiprocessor parallelism and thread level parallelism and cache memory.
C404.4	To be able to describe advanced cache optimization and static methods for Instruction level parallelism

C405 – 10CS753 – Java &J2EE

C405.1	Ability to use simple data structures like arrays, object oriented programming concepts like classes, inheritance and to implement programs by applying concepts of exception handling and applets.
C405.2	Able to explain the concept of multithreading, event handling and are able to implement Java programs on various concept of swings.
C405.3	Implementation of client–server programs in Java by applying concepts of Servlet, JDBC and RMI.
C405.4	Develop JSP applications using JSP Tags, JSP Scriptlets, JavaBeans and to implement business tier and business logic based on EJB.

C406- 10CS761 – C# Programming and .Net

C406.1	Assess the shortcomings in previous technologies and to get insight .NET framework and its runtime environment
C406.2	To discuss the C# language fundamentals, Object Oriented Concepts and C# class hierarchy that supported by .net framework
C406.3	Design, develop and build applications in C# using .NET centric building blocks
C406.4	To discuss new features that are unique to c# such as properties, indexers, delegates, events, assembly and namespaces

C406 - 10CS765 – Storage Area Networks

C406.1	Understand RAID levels and their suitability for application environments.
C406.2	Explain about Fiber Channel protocols for communication and sharing of files on NAS and IP-SAN in a network.
C406.3	Describe the concepts of virtualization, business continuity and disaster recovery in a storage infrastructure.
C406.4	Describe processes and technologies for identifying, analyzing, and mitigating security risks in storage infrastructure

C407 - 10CSL77 – Networks Lab

C407.1	Insights into packet transmission in computer network and possible causes for packet drop through simulation based study and deeper insights on Transport layer functionalities.
C407.2	Deeper insights into Ethernet LAN and possible congestion scenarios in Ethernet LAN and simulation based study of wireless network scenario and its operations.
C407.3	Implementation level insights on popular network algorithms on error correction, shortest path finding and its operations. And Implementation level insights on security methods and congestion avoidance mechanisms in computer network

C408 - 10CSL78 - Web Programming Lab

C408.1	Understand, analyze and apply the role of languages like (X)HTML, CSS, JavaScript. Use client-side technologies (XHTML, CSS, forms, JavaScript) to implement websites. Create an XML application.
C408.2	Use server-side technology (Perl) to implement websites. Develop simple back-end database to support a website.
C408.3	Use server-side technology (PHP) to implement websites. Create a small Ruby on Rails application.

C409-10IS81: Software Architecture

	Course Outcome
C409.1	Understand the principles of software architecture, architectural best-practices used in modern software engineering.
C409.2	Analyze the architecture styles and solutions and to understand the quality attributes that the software architecture must possess
C409.3	Analyze the models of architectural patterns-I that include layers, pipe and filters and Blackboard architectural patterns.
C409.4	Apply the software architectural design for distributed system, interactive systems and Adaptable systems to large scale software system
C409.5	Understand the application of design pattern whole-part, Access control and Proxy in real time software system.
C409.6	Evaluate software documents to detect problems.

C410 - 10CS82- System Modeling and Simulation

C410.1	Define basic concepts, working of simulation systems and Classify various simulation models and give practical examples for each category
C410.2	Explain concept of Manual simulation Using Event Scheduling algorithm with examples
C410.3	Determine the different statistical and queuing models in simulation
C410.4	Construct a model for a given set of data and motivate its validity
C410.5	Generate and test random number variates and apply them to develop simulation models
C410.6	Explain validation, verification of simulation model and analyze output data produced by a model and test validity of the model.

C411- 10CS835: Information and Network Security

C411.1	Able to plan and work with information security related planning and associated projects
C411.2	Identify and Understand the treats in Information and network security
C411.3	Learn and work with various cryptographic algorithms and associated technology
C411.4	Understand and work with various secure approaches in the web(www) or Internet
C411.5	Identify and examine the various key management techniques in the domain of cyber security
C411.6	Understanding and work with different security tools.

412 - 10CS841 - Software Testing

C412.1	Explain fundamental concepts in software testing, including software testing objectives, process, Identifying test cases, illustrate the various unit testing Methods with examples.
C412.2	Identify various methods, strategies in functional Testing.
C412.3	Identify various methods, strategies in Structural Testing.
C412.4	Explain various methods in Integration Testing and System Testing.
C412.5	Explain Fault based Testing and various tools which can be used for automating the testing process
C412.6	States and explain Process Framework, Quality process, planning, monitoring the process and Documentation.

C412 - 10CS845 - Clouds, Grids and Clusters

C412.1	Understand the basic concepts of Cloud Computing, its benefits and limitations
C412.2	Describe the cloud services offered by major Cloud service providers to meet the customer needs
C412.3	Understand the concepts of Cloud Computing technology - Virtualization, Security, Migration and Cloud Storage
C412.4	Describe grid computing technology, grid computing activities and its applications in multiple domains
C412.5	Describe the cluster computing architecture, its applications in parallel processing and high performance computing
C412.6	Understand the factors and issues involved in overall management of the clusters (performance, availability, reliability)