Program : Computer Science and Design

Second Year : Semester - III

Course Code: CSC301	Course Name: Engineering Mathematics-III

CSC301.1	Understand the concept of Laplace transform and its application to solve the real integrals in engineering problems.
CSC301.2	Understand the concept of inverse Laplace transform of various functions and its applications in engineering problems.
CSC301.3	Expand the periodic function by using the Fourier series for real-life problems and complex engineering problems.
CSC301.4	Understand complex variable theory, application of harmonic conjugate to get orthogonal trajectories and analytic functions.
CSC301.5	Apply the concept of Correlation and Regression to the engineering problems in data science, machine learning, and AI.
CSC301.6	Understand the concepts of probability and expectation for getting the spread of the data and distribution of probabilities.

Course Code: CSC302	Course Name: Discrete Structures and Graph Theory

CSC302.1	Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving.
CSC302.2	Ability to reason logically.
CSC302.3	Ability to understand relations, functions, Diagraph and Lattice.
CSC302.4	Ability to understand and apply concepts of graph theory in solving real world problems.
CSC302.5	Understand use of groups and codes in Encoding-Decoding.
CSC302.6	Analyze a complex computing problem and apply principles of discrete mathematics to identify solutions.

Course Code: CSC303	Course Name: Data Structure

CSC303.1	Implement Linear and Non-Linear data structures.
CSC303.2	Handle various operations like searching, insertion, deletion and traversals on various data structures.
CSC303.3	Explain various data structures, related terminologies and its types.
CSC303.4	Choose appropriate data structure and apply it to solve problems in various domains.
CSC303.5	Analyze and implement appropriate searching techniques for a given problem.
CSC303.6	Demonstrate the ability to analyze, design, apply and use data structures to solve engineering problems and evaluate their solutions.

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Second Year : Semester - III

Course Code: CSC304	Course Name: Digital Logic & Computer Architecture
CSC304.1	To learn different number systems and basic structure of computer systems.
CSC304.2	To demonstrate the arithmetic algorithms.
CSC304.3	To understand the basic concepts of digital components and processor organization.
CSC304.4	To understand the generation of control signals of computers.
CSC304.5	To demonstrate the memory organization.
CSC304.6	To describe the concepts of parallel processing and different Buses.

Course Code: CSC305	Course Name: Computer Graphics
CSC305.1	Describe the basic concepts of Computer Graphics.
CSC305.2	Demonstrate various algorithms for basic graphics primitives.
CSC305.3	Apply 2-D geometric transformations on graphical objects.
CSC305.4	Use various Clipping algorithms on graphical objects.
CSC305.5	Explore 3-D geometric transformations, curve representation techniques and projections methods.
CSC305.6	Explain visible surface detection techniques and Animation.

Course Code: CSL301	Course Name: Data Structure Lab
CSL301.1	Implement linear data structures & be able to handle operations like insertion, deletion, searching and traversing on them.
CSL301.2	Implement nonlinear data structures & be able to handle operations like insertion, deletion, searching and traversing on them.
CSL301.3	Choose appropriate data structure and apply it in various problems.
CSL301.4	Select appropriate searching techniques for given problems.

Course Code: CSL302	Course Name: Digital Logic & Computer Architecture Lab
CSL302.1	To understand the basics of digital components.
CSL302.2	Design the basic building blocks of a computer: ALU, registers, CPU and memory.
CSL302.3	To recognize the importance of digital systems in computer architecture.
CSL302.4	To implement various algorithms for arithmetic operations.

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Course Code: CSL303	Course Name: Computer Graphics Lab
CSL303.1	Implement various output and filled area primitive algorithms.
CSL303.2	Apply transformation, projection and clipping algorithms on graphical objects.
CSL303.3	Perform curve and fractal generation methods.
CSL303.4	Develop a Graphical application/Animation based on learned concept.

Course Code: CSL304	Course Name: Object Oriented Programming with Java Lab
CSL304.1	To apply fundamental programming constructs.
CSL304.2	To illustrate the concept of packages, classes and objects.
CSL304.3	To elaborate the concept of strings, arrays and vectors.
CSL304.4	To implement the concept of inheritance and interfaces.
CSL304.5	To implement the concept of exception handling and multithreading.
CSL304.6	To develop GUI based applications.

Course Code: CSM301	Course Name: Mini Project 1-A
CSM301.1	Identify problems based on societal /research needs.
CSM301.2	Apply Knowledge and skill to solve societal problems in a group.
CSM301.3	Develop interpersonal skills to work as a member of a group or leader.
CSM301.4	Draw the proper inferences from available results through theoretical/ experimental/simulations.
CSM301.5	Analyze the impact of solutions in societal and environmental context for sustainable development.
CSM301.6	Use standard norms of engineering practices.
CSM301.7	Excel in written and oral communication.
CSM301.8	Demonstrate capabilities of self-learning in a group, which leads to lifelong learning.
CSM301.9	Demonstrate project management principles during project work.

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Second Year : Semester - IV	
Course Code: CSC401	**Course Name: Engineering Mathematics-IV**
CSC401.1	Apply the concepts of eigenvalues and eigenvectors in engineering problems.
CSC401.2	Use the concepts of Complex Integration for evaluating integrals, computing residues & evaluate various contour integrals.
CSC401.3	Apply the concept of Z- transformation and inverse in engineering problems.
CSC401.4	Use the concept of probability distribution and sampling theory to engineering problems.
CSC401.5	Apply the concept of Linear Programming Problems to optimization.
CSC401.6	Solve Non-Linear Programming Problems for optimization of engineering problems.
Course Code: CSC402	**Course Name: Analysis of Algorithms**
CSC402.1	Analyze the running time and space complexity of algorithms.
CSC402.2	Describe, apply and analyze the complexity of divide and conquer strategy.
CSC402.3	Describe, apply and analyze the complexity of greedy strategy.
CSC402.4	Describe, apply and analyze the complexity of dynamic programming strategy.
CSC402.5	Explain and apply backtracking, branch and bound.
CSC402.6	Explain and apply string matching techniques.
Course Code: CSC403	**Course Name: Database Management System**
CSC403.1	Recognize the need of database management system.
CSC403.2	Design ER and EER diagram for real life applications.
CSC403.3	Construct relational model and write relational algebra queries.
CSC403.4	Formulate SQL queries.
CSC403.5	Apply the concept of normalization to relational database design.
CSC403.6	Describe the concept of transaction, concurrency and recovery.

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Course Code: CSC404	**Course Name: Operating System**
CSC404.1	Understand the objectives, functions and structure of OS
CSC404.2	Analyze the concept of process management and evaluate performance of process scheduling algorithms
CSC404.3	Understand and apply the concepts of synchronization and deadlocks
CSC404.4	Evaluate performance of Memory allocation and replacement policies
CSC404.5	Understand the concepts of file management.
CSC404.6	Apply concepts of I/O management and analyze techniques of disk scheduling.

Course Code: CSC405	**Course Name: Microprocessor**
CSC405.1	Describe core concepts of 8086 microprocessors.
CSC405.2	Interpret the instructions of 8086 and write assembly and Mixed language programs.
CSC405.3	Identify the specifications of peripheral chip.
CSC405.4	Design 8086 based system using memory and peripheral chips.
CSC405.5	Appraise the architecture of advanced processors.
CSC405.6	Understand hyperthreading technology.

Course Code: CSL401	**Course Name: Analysis of Algorithm Lab**
CSL401.1	Implement the algorithms using different approaches.
CSL401.2	Analyze the complexities of various algorithms.
CSL401.3	Compare the complexity of the algorithms for specific problem.

Course Code: CSL402	**Course Name: Database Management System Lab**
CSL402.1	Design ER /EER diagram and convert to relational model for the real-world application.
CSL402.2	Apply DDL, DML, DCL and TCL commands.
CSL402.3	Write simple and complex queries.
CSL402.4	Use PL / SQL Constructs.
CSL402.5	Demonstrate the concept of concurrent transactions execution and frontend-backend.

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Course Code: CSL403	Course Name: Operating System Lab
CSL403.1	Demonstrate basic Operating system Commands, Shell scripts, System Calls and API wrt Linux.
CSL403.2	Implement various process scheduling algorithms and evaluate their performance.
CSL403.3	Implement and analyze concepts of synchronization and deadlocks.
CSL403.4	Implement various Memory Management techniques and evaluate their performance.
CSL403.5	Implement and analyze concepts of virtual memory.
CSL403.6	Demonstrate and analyze concepts of file management and I/O management techniques.

Course Code: CSL404	Course Name: Microprocessor Lab
CSL404.1	Use appropriate instructions to program microprocessor to perform various task.
CSL404.2	Develop the program in assembly/ mixed language for Intel 8086 processor.
CSL404.3	Demonstrate the execution and debugging of assembly/ mixed language program.

Course Code: CSL405	Course Name: Python Programming Lab
CSL405.1	To understand basic concepts in python.
CSL405.2	To explore contents of files, directories and text processing with python.
CSL405.3	To develop program for data structure using built in functions in python.
CSL405.4	To explore django web framework for developing python-based web application.
CSL405.5	To understand Multithreading concepts using python.

Course Code: CSM401	Course Name: Mini Project 1-B
CSM401.1	Identify problems based on societal /research needs.
CSM401.2	Apply Knowledge and skill to solve societal problems in a group.
CSM401.3	Develop interpersonal skills to work as member of a group or leader.
CSM401.4	Draw the proper inferences from available results through theoretical/ experimental/ simulations.
CSM401.5	Analyze the impact of solutions in societal and environmental context for sustainable development.
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