



Saraswati College of Engineering
Department- Computer Engineering
Semester-III
Scheme R-19

Subject- Engineering Mathematics-III

Subject Code-CSC301

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1,2,5	-	1.6	1.6.1	3	CO1	Apply the concept of Laplace transforms and use to solve real integrals in engineering problems
PO2,3	-	2.5	2.5.2	3,5	CO2	Identify the concept of inverse laplace transform and compare to various functions and its applications
PO3,4	-	3.5	3.5.6	3.6	CO3	Develop and determine Fourier series for real life problems and applications.
PO1,2	-	2.8	2.8.1	3,4	CO4	Apply the properties of Complex analysis and select the application to orthogonal trajectories.
PO2,3,5	-	5.4	5.4.2	3	CO5	Use the concept of statistical techniques to solve problems in data science, machine learning and AI.
PO1,2,12	-	1.2	1.2.2	3	CO6	Apply the concept of probability, expectation to determine the spread of data and probability distribution.

Course Objectives

Sr. No	Description
1	To familiarize with the Laplace, transform and its properties.
2	To study the Inverse Laplace, transform of various functions, theorem and its applications.
3	To understand the concept of fourier series, its complex form and enhance the problem.
4	To familiarize the concept of complex variables, C-R equations with applications.
5	To understand the basic techniques of statistics like correlation, regression and curve fitting for data analysis, machine learning and AI.
6	To study some advanced topic of probability, random variables with their distributions and expectations.

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO2	PSO1	2.5	2.5.3	3-Apply	CO1	Apply clear thinking for problem solving using laws of logic and mathematical induction.
PO1	PSO1	1.2	1.2.1	3-Apply	CO2	Apply the knowledge of Discrete Structure to solve complex relations and functions to find appropriate solution
PO2	PSO1	2.7	2.7.1	4-Analyze	CO3	Analyze complex relations and design Hasse diagram and Lattice
PO1	PSO1	1.2	1.2.2	3-Apply	CO4	Apply formulate and analyze permutation and combination using principle of mathematics.
PO1	PSO1	1.7	1.7.1	3-Apply	CO5	Apply the knowledge of mathematics to solve algebraic structure and detecting and correcting code in the transmitted data.
PO3	PSO1	3.6	3.6.1	3-Apply	CO6	Apply concepts of graph theory in solving real world problems.

Course Objectives

Sr. No.	Description
1	Apply clear thinking and creative problem solving using laws of logic and mathematical Induction.
2	Understand the concepts of relation and functions.
3	Understand the designing of Hasse diagram and Lattice
4	Understand the permutation and combination.
5	Understand the technique for detecting and correcting code in transmitted data.
6	Understand the basic concept in graph theory and their properties.

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
2		2.6 2.1	2.6.1 2.1.2	1	1	Identify functionalities of Data structure of a computer-based system to solve a engineering problem
3		3.6	3.6.2	1	2	Able to produce a variety of potential design solutions suited to meet functional requirements for implementation of stack and queue
5		5.4	5.4.1	1	3	Identify different Linked list techniques for engineering activities
4		4.5	4.4.3	1	4	Able to choose appropriate tree traversal method to conduct the experiment.
5		5.4	5.4.2	6	5	Adapt graph traversal techniques to solve engineering problems
1		1	1.7.1	3	6	Apply theory and principles searching techniques of computer science and engineering to solve an engineering problem

Course Objectives

Sr. No.	Description
1	Understand the basic concepts of Data Structure and efficient storage mechanism of data for an easy access.
2	Design and implementation of various Operations data structure.
3	Identify the various techniques for representation of the data in linked list.
4	Learn the different tree techniques.
5	Investigate the logical ability and understand the generic principles of graph as applied to sophisticated data structure.
6	Understand different searching techniques

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1		1.3	1.3.1	Level 1 Remember	CO 1	Describe the basic concepts of Computer Graphics.
PO2		2.1	2.1.3	Level 2 Understand	CO 2	Demonstrate various algorithms for basic graphics primitives.
PO 1		1.1	1.1.1	Level 3 Apply	CO 3	Apply 2-D geometric transformations on graphical objects Matrix multiplication.
PO 4		4.2	4.2.1	Level 3 Apply	CO 4	Use various Clipping algorithms on graphical objects
PO2		2.3	2.3.2	Level 4 Analyze	CO 5	Explore 3-D geometric transformations, curve representation techniques and projections methods
PO 3		3.1	3.1.1	Level 2 understand	CO 6	Explain visible surface detection techniques and Animation.

Course Objectives

Sr. No.	Description
1	To equip students with the fundamental knowledge and basic technical competence in the field of Computer Graphics.
2	To emphasize on implementation aspect of Computer Graphics Algorithms.
3	Understand the concept of 2-D geometric transformations on graphical objects.
4	Understand the concept 3-D geometric transformations, curve representation techniques and projections methods
5	Discuss the windows and view coordinate system and Develop understanding of Clipping algorithms on graphical objects
6	To prepare the student for advance areas and professional avenues in the field of Computer Graphics

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
3		3.6	3.6.2	1	1	Able to produce a variety of potential design solutions suited to meet functional requirements for implementation of stack
3		3.6	3.6.2	6	2	Design potential solutions suited to meet functional requirements for implementation of queue
5		5.4	5.4.1	3	3	illustrate and apply different Linked list techniques for engineering activities
4		4.5	4.4.3	1	4	Able to choose appropriate tree traversal method to conduct the experiment.
5		5.4	5.4.2	6	5	Adapt graph traversal techniques to solve engineering problems
1	PSO1	1	1.7.1	3	6	Apply theory and principles searching techniques of computer science and engineering to solve an engineering problem

Course Objectives

Sr.No.	Description
1	To implement basic data structures such as arrays, stacks
2	To implement basic data structures such as queue
3	To implement basic data structures such as linked list
4	Compute the complexity of various Tree algorithms.
5	Investigate the logical ability and understand the generic principles of graph as applied to sophisticated data structure.
6	Understand different searching techniques

Subject: DLCOA LAB

Subject Code: CSL302

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO2 PO3	PSO1	2.8 3.6	2.8.1 3.6.1	2- Understand 5-Evaluate	CO1	Understand the basics implementation of gates.
PO4	PSO2	4.4	4.4.2	5-Evaluate 6-Create	CO2	Implement arithmetic operations using Multiplexer/demultiplexer.
PO3 PO5	PSO1	3.6 5.4	3.6.2 5.4.1	2- Understand 3-Apply	CO3	Understand and learn about basics of counters.
PO2 PO5	PSO2	2.8 5.4	2.8.1 5.4.2	3-Apply 5-Evaluate	CO4	Implement arithmetic operations using various algorithms.
PO4	PSO1	4.4	4.4.3	2- Understand 6-Evaluate	CO5	Understand and implement the processor designing.
PO 5	PSO1	5.4	5.4.1	3-Apply 5-Evaluate	CO6	Implement the operation of memory and caches.

Course Objectives

Sr. No.	Description
1	To understand the basics implementation of gates.
2	To Implement arithmetic operations using Multiplexer/demultiplexer.
3	To understand and learn basics of counters.
4	To implement arithmetic operations using various algorithms.
5	To understand and implement the processor designing.
6	To implement the operation of memory and caches.

Subject: Computer Graphics Lab

Subject Code: CSL303

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1		1.3	1.3.1	Level 2 Understand	CO 1	Implement various algorithms for basic graphics primitives
PO2		2.1	2.1.3	Level 2 Understand	CO 2	Implement various filled area primitive algorithms
PO 1		1.1	1.1.1	Level 3 Apply	CO 3	Apply transformation on graphical objects
PO 4		4.2	4.2.1	Level 3 Apply	CO 4	Apply clipping algorithms on graphical objects
PO2		2.3	2.3.2	Level 4 Analyze	CO 5	Perform curve and fractal generation methods.
PO 3		3.1	3.1.1	Level 6 Create	CO 6	Develop a Graphical application/Animation based on learned concept

Course Objectives

Sr. No.	Description
1	Understand the need of developing graphics application.
2	Learn algorithmic development of graphics primitives like line, circle, polygon etc.
3	Learn the 2-D geometric transformations on graphical objects.
4	Understand the concept 3-D geometric transformations, curve representation techniques and projections methods
5	Learn the Clipping algorithms on graphical objects
6	To prepare the student for advance areas and professional avenues in the field of Computer Graphics

Subject: OOPM

Subject Code: CSL304

Course Outcomes

PO	PSO	Competency Level	PI	Bloom's Level	CO	Description
PO1	PSO1	1.6	1.6.1	Level 2 Understand	CO1	Understanding fundamental programming constructs
PO3	PSO1	3.6	3.6.2	Level 4 Analyze	CO2	Illustrate the concept of packages, classes and objects.
PO5	PSO1 PSO2	5.4	5.4.2	Level 3 Apply	CO3	Extending the concept of strings, arrays and vectors.
PO3	PSO2	3.6	3.6.1	Level 4 Analyze	CO4	Implement the concept of inheritance and interfaces
PO4	PSO1	4.5	4.5.1	Level 2 Understand	CO5	Deep understanding of handling exceptions and threads in JAVA Programming
PO4	PSO2	4.4	4.4.3	Level 3 Apply	CO6	Illustrating GUI based application.

Course Objectives

Sr. No.	Description
1	To understand fundamental programming constructs
2	To illustrate the concept of packages, classes and objects
3	To extend the concept of strings, arrays and vectors
4	To implement the concept of inheritance and interfaces in JAVA
5	To deep understand the exception handling and threads in JAVA programming
6	To illustrate the GUI based application

Subject: Mini Project -1 A

Subject Code: CSM301

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1 PO2	PSO1	1.7 2.5	1.7.1 2.5.2	2- Understand 3- Apply	CO1	Understand problems and use knowledge and skills to interpret societal/research problems in a group
PO9	PSO2	9.5	9.5.2 9.5.4	6-Create	CO2	Build interpersonal skills to work as member of a group or leader
PO5 PO7	PSO1	5.5 7.3	5.5.1 7.3.1 7.3.2	4-Analyze 6-Create	CO3	Design the proper inference through theoretical/experimental/simulation and illustrate the impact of solution in social, environmental context for sustainable development
PO8	PSO1	8.4	8.4.1 8.4.2	3-Apply	CO4	Apply standard norms of engineering practices
PO10	PSO1	10.4 10.5	10.4.1 10.4.2 10.5.2	6-Create	CO5	Develop in written and oral communication
PO11 PO12	PSO2	11.6 12.5	11.6.2 12.5.2	3 Apply	CO6	Apply project management principles and capabilities of self-learning in a group for a lifelong learning

Course Objectives

Sr. No.	Description
1	To understand problems and use knowledge and skills to interpret societal/research problems in a group
2	To build interpersonal skills to work as member of a group or leader
3	To design the proper inference through theoretical/experimental/simulation and illustrate the impact of solution in social, environmental context for sustainable development
4	To apply standard norms of engineering practices
5	To develop in written and oral communication
6	To apply project management principles and capabilities of self-learning in a group for a lifelong learning

Semester- IV

Subject: Applied Mathematics-IV

Subject Code: CSC401

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1,2,3	-	1.7	1.7.1	3	CO1	Apply the concept of eigen values and eigen vectors in engineering problems
PO2,4,5	-	2.8	2.8.1	3,5	CO2	Use the concepts of Complex integration for evaluating integrals, computing residues and evaluate various contour integrals.
PO1,5	-	5.4	5.4.2	3	CO3	Apply the concept of Z-transformation and inverse in engineering problem.
PO1,2,12	-	2.8	2.8.4	3.2	CO4	Illustrate understanding the concept of probability distribution and sampling theory to engineering problem.
PO1,2,4	-	4.5	4.5.1	3	CO5	Apply the concept of Linear programming problems to optimization.
PO1,2,4	-	2.6	2.6.3	3	CO6	Solve Non-linear programming problem for optimization of engineering problem.

Course Objectives

Sr. No.	Description
1	To understand matrix algebra for engineering problems.
2	To study line and contour integrals and expansion of a complex valued function in a power series.
3	To understand the concept of Z-Transform and iverse Z-Transform with its properties.
4	To familiarize the concept of probability distributions and sampling theory for small samples.
5	To study the basic techniques of LPP for optimization.
6	To apply the concept of NLPP to understand the optimization of engineering problem.

Subject: AOA

Subject Code: CSC402

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1 PO4	1	1.2	1.2.1	2- Understand, 3-Apply 4-Analyze	CO1	Analyze the running time and space complexity of algorithms.
PO2	1	2.1	2.5.2	2- Understand, 3-Apply 4-Analyze	CO2	Describe, apply and analyze the complexity of divide and conquer strategy.
PO2	1	3.7	3.7.1 3.7.2	2- Understand, 3-Apply 4-Analyze	CO3	Describe, apply and analyze the complexity of greedy strategy.
PO2	1	1.2	1.2.2	2- Understand, 3-Apply 4-Analyze	CO4	Describe, apply and analyze the complexity of dynamic programming strategy.
PO2 PO3		4.6	4.6.1	2- Understand, 3-Apply	CO5	Explain and apply backtracking, branch and bound.
PO2 PO5		2.6	2.6.5	2- Understand, 3-Apply	CO6	Explain and apply string matching techniques.

Course Objectives

Sr. No.	Description
1	To analyze the running time and space complexity of algorithms.
2	To describe, apply and analyze the complexity of divide and conquer strategy.
3	To describe, apply and analyze the complexity of greedy strategy.
4	To describe, apply and analyze the complexity of dynamic programming strategy.
5	To explain and apply backtracking, branch and bound.
6	To explain and apply the string matching techniques.

Subject: DBMS

Subject Code: CSC403

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO2	PSO1	2.6	2.6.3	4-Analyze 2-Understand	CO1	Identify and analyze the roles and responsibilities of different types of user and investigate the different architecture to find appropriate solution.
PO4	PSO1	4.5	4.5.1	6-Create 2-Understand	CO2	Understand and Design data modeling using ER and Extended ER features to meet the specified needs.
PO3	PSO1	3.6	3.6.2	3-Apply 6-Create	CO3	Investigate and apply different relational algebra operators to find appropriate solution leading to valid conclusion.
PO5	PSO1	5.4	5.4.2	6-Create	CO4	Investigate and formulate SQL queries to find appropriate solution to complex problems.
PO4	PSO1	4.6	4.6.4	4-Analyze 3-Apply	CO5	Analyze and apply different normalization techniques to process and meet the specified needs with appropriate solution
PO5	PSO1	5.5	5.5.1	2-Understand	CO6	Identify the strength and limitation of tools for concept of transaction, concurrency and recovery.

Course Outcomes

Sr. No.	Description
1	Understand the role of database management system in an organization.
2	Design data modeling using the entity-relationship and developing database designs.
3	Understand the relational algebra operators.
4	Understand the use of Structured Query Language (SQL) and learn SQL syntax.
5	Understand the normalization techniques to normalize the database.
6	Understand the needs of database processing and learn techniques for controlling the consequences of concurrent data access.

Course Objectives

Subject: OS

Subject Code: CSC404

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO7	PSO1	2.1	2.1.2	Level 2 Understand	CO1	Understand the objectives, functions and structure of Operating system.
PO2	PSO1	2.1 2.2	2.1.2 2.2.4	Level 4 Analyze	CO2	Analyse the concept of process management and evaluate performance of process scheduling algorithms
PO2	PSO1	2.6	2.6.3 2.6.4	Level 3 Apply	CO3	Understand and apply the concepts of synchronization and deadlocks.
PO2	PSO1	2.6	2.6.2	Level 4 Analyze	CO4	Evaluate performance of memory allocation and replacement policies
PO2	PSO1	2.7	2.7.2	Level 2 Understand	CO5	Understand the concepts of file management.
PO1	PSO1	1.7	1.7.1	Level 3 Apply	CO6	Apply concepts of I/O management and analyze techniques of disk scheduling

Course Objectives

Sr. No.	Description
1	To understand the objective, structure and function of operating system
2	To analyze and evaluate the process of scheduling algorithm
3	To understand and apply the concept of synchronization and deadlock
4	To evaluate the performance of memory allocation and replacement policies
5	To understand the concept of file management
6	To apply the concepts of I/O management and analyze techniques of disk scheduling

Subject: MP

Subject Code: CSC405

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1	PSO1	1.3	1.3.1	3-Apply	CO-1	Apply basic engineering fundamentals to describe the architecture of 8086 processor. Apply engineering fundamentals to describe DOS and BIOS interrupts.
PO2	PSO1	2.4	2.4.1 2.4.2	3-Apply 4-Analyze	CO-2	Apply the instructions of 8086 to implement the assembly language program. Analyse and interpret the result of ALP using integrated tool.
PO3	PSO2	3.4	3.4.1	3-Apply	CO-3	Able to refine architecture design into detailed design using processor, memory chip or different peripheral ICs within existing constraints
PO3	PSO1	3.1	3.1.5	3-Apply	CO-4	Explore and synthesize 80386 system requirements from larger social and professional concerns
PO3	PSO1	3.3	3.3.5	3-Apply	CO-5	Able to perform systematic evaluation of degree of microprocessor from 8086 to Pentium to which several design concepts meet the criteria.
PO1	PSO1	1.3	1.3.1	3-Apply	CO-6	Apply basic engineering fundamentals to describe the hyperthreading technology in higher processors

Course Objectives

Sr. No.	Description
1	To understand basic concepts of microprocessor & Understand the concepts of interrupts
2	Apply background knowledge and create the appropriate logic for building assembly language programs for 8086.
3	Explain various peripheral devices and their interfacing to 8086 and to apply it to design Microprocessor based system.
4	Prepare students for higher processor architecture and understand different modes of execution and extend the importance of protected mode of 80386.
5	Discuss Pentium i.e multicore processor architecture and its organization.
6	To Understand hyperthreading technology

Subject: AOA LAB

Subject Code: CSL401

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO2 PO4	1	2.8 4.6	2.8.2 4.6.1	4-Analyze	CO1	Analyze the complexities of various problems in different domains.
PO2 PO1 PO4	1	2.1 1.7 4.6	2.5.2 1.7.1 2.8.2	2- Understand, 3-Apply 4-Analyze	CO2	Describe, apply and analyze the running time of the basic algorithms for those classic problems in various domains using divide and conquer strategy.
PO2 PO1	1	2.1 1.7	2.5.2 1.7.1	2- Understand, 3-Apply 4-Analyze	CO3	Define and apply the efficient algorithms for the effective problem solving with the help of different strategies like greedy method.
PO1	1	1.7	1.7.1	3-Apply	CO4	Apply dynamic programming strategy to solve different problems effectively.
PO2 PO1	1	2.1 1.7	2.5.3 1.7.1	2- Understand, 3-Apply	CO5	Recognize and apply backtracking, branch and bound and to deal with some hard problems.
PO1 PO4	1	1.7 4.6	1.7.1 4.6.1	3-Apply 4-Analyze	CO6	Apply and analyze the string-matching algorithms to find the pattern.

Course Objectives

Sr. No.	Description
1	To analyze the complexities of various problems in different domains.
2	To Describe, apply and analyze the running time of the basic algorithms for those classic problems in various domains using divide and conquer strategy.
3	To Define and apply the efficient algorithms for the effective problem solving with the help of different strategies like greedy method.
4	To apply dynamic programming strategy to solve different problems effectively.
5	To Recognize and apply backtracking, branch and bound and string matching techniques to deal with some hard problems.
6	To apply and analyze the string matching algorithms to find the pattern.

Subject: DBMS LAB

Subject Code: CSL402

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO3	PSO1	3.5	3.5.1	4-Analyze	CO1	Identify and investigate the reallife problem to find appropriate solution and design and draw ER and EER diagram with software tool
PO4	PSO2	4.6	4.6.3	6-Create	CO2	Design, Create and update database and tables with different DDL and DML statements
P05	PSO2	5.6	5.6.1	3-Apply	CO3	Apply appropriate integrity constraints and provide security to data.
P04	PSO2	4.4	4.4.2	4-Analyze	CO4	Investigate and formulate SQL queries to find appropriate solution to complex problems.
P04	PSO1	4.5	4.5.1	4-Analyze 3-Apply	CO5	Identify and apply triggers and procedures for specific module to meet the specified needs with appropriate solution to safety standards and societal consideration.
P05	PSO2	5.6	5.6.2	3-Apply	CO3	Use PL / SQL Constructs.

Course Outcomes

Sr. No.	Description
1	Develop entity relationship data model and its mapping to relational model
2	Learn relational algebra and Formulate SQL queries
3	Learn integrity Constraints
4	Apply normalization techniques to normalize the database
5	Understand concept of transaction, concurrency control and recovery techniques
6	understand concept of PL/SQL

Course Objectives

Subject: OS LAB

Subject Code: CSL403

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1	PSO1	1.7	1.7.1	Level 2 Understand	CO1	Demonstrate basic operating sysytem commands, shell scripts, system calls and API wrt Linux.
PO2	PSO1	2.5	2.5.2	Level 5 Evaluate	CO2	Determine various process scheduling algorithms.
O2	PSO1	2.5	2.5.2	Level 4 Analyze	CO3	Analyze the concept of synchronization and deadlocks.
PO2	PSO1	2.5	2.5.2	Level 5 Evaluate	CO4	Determine various memory management techniquees and evaluate their performance.
PO2	PSO1	2.6	2.6.2 2.6.3	Level 4 Analyze	CO5	Identify the concept of virtual memory.
PO1 PO2	PSO1	1.7 2.5	1.7.1 2.5.2	Level 2 Understand Level 4 Analyze	CO6	Demonstrate and analyze concept of file management and I/O management techniques.

Course Objectives

Sr. No.	Description
1	To demonstrate basic operating sysytem commands, shell scripts, system calls and API wrt Linux.
2	To determine various process scheduling algorithms.
3	To analyze the concept of synchronization and deadlocks.
4	To determine various memory management techniquees and evaluate their performance.
5	To identify the concept of virtual memory.
6	To demonstrate and analyze concept of file management and I/O management techniques.

Subject: MP LAB

Subject Code: CSL404

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1	PSO1	1.7	1.7.1	3-Apply	CO-1	Explain basic engineering fundamentals to describe the architecture of 8086 processor.
PO3 PO5	PSO2	3.8 5.4	3.8.2 5.4.1 5.4.2	3-Apply 4-Analyze	CO-2	Explain the instructions of 8086 to implement the assembly language program. Identify and interpret the result of ALP using integrated tool.
PO3	PSO2	3.6	3.6.2	6- Create	CO-3	Design 8086 based system using Memory and peripheral chip.
PO2	PSO1	2.5	2.5.2	5- Evaluate	CO-4	Appraise the architecture of 80386 DX processor.
PO4	PSO1	4.6	4.6.1	5- Evaluate	CO-5	Determine the degree of microprocessor from 8086 to Pentium to which several design concepts meet the criteria.
PO1	PSO1	1.7	1.7.1	2- Understand	CO-6	Explain the hyperthreading technology in higher processors

Course Objectives

Sr. No.	Description
1	To explain basic engineering fundamentals to describe the architecture of 8086 processor.
2	To explain the instructions of 8086 to implement the assembly language program. Identify and interpret the result of ALP using integrated tool.
3	To design 8086 based system using Memory and peripheral chip.
4	To appraise the architecture of 80386 DX processor.
5	To determine the degree of microprocessor from 8086 to Pentium to which several design concepts meet the criteria.
6	To Understand hyperthreading technology.

Subject: Python Programming

Subject Code: CSL405

Course Outcomes

PO	PSO	Competency Level	PI	Bloom's Level	CO	Description
PO1	PSO1	1.6	1.6.1	Level 2 Understand	CO1	Understand basic concepts in python
PO3	PSO1 PSO2	3.6	3.6.2	Level 3 Analyze	CO2	Exploring contents of files, directories and text processing with python
PO4	PSO2	4.5	4.5.1	Level 6 Create	CO3	Develop program for data structure using built in functions in python.
PO5	PSO1	5.4	5.4.2	Level 3 Apply	CO4	To explore django web framework for developing python-based web application.
PO3	PSO1	3.6	3.6.1	Level 3 Analyze	CO2	Able to explore design alternatives
PO1	PSO2	1.6	1.6.1	Level 2 Understand	CO6	Understand the concept of numpy and pandas

Course Objectives

Sr. No.	Description
1	To understand fundamental of Python programming
2	To develop the files, directories and text processing in python
3	To explore the data structure in python using function
4	To develop the django web framework
5	To use design alternatives
6	To understand the concept of numpy and pandas

Subject: Mini Project- 1 B

Subject Code: CSM401

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1 PO2	PSO1	1.7 2.5	1.7.1 2.5.2	2- Understand 3- Apply	CO1	Understand problems and use knowledge and skills to interpret societal/research problems in a group
PO9	PSO2	9.5	9.5.2 9.5.4	6-Create	CO2	Build interpersonal skills to work as member of a group or leader
PO5 PO7	PSO1	5.5 7.3	5.5.1 7.3.1 7.3.2	4-Analyze 6-Create	CO3	Design the proper inference through theoretical/experimental/simulation and illustrate the impact of solution in social, environmental context for sustainable development
PO8	PSO1	8.4	8.4.1 8.4.2	3-Apply	CO4	Apply standard norms of engineering practices
PO10	PSO1	10.4 10.5	10.4.1 10.4.2 10.5.2	6-Create	CO5	Develop in written and oral communication
PO11 PO12	PSO2	11.6 12.5	11.6.2 12.5.2	3 Apply	CO6	Apply project management principles and capabilities of self-learning in a group for a lifelong learning

Sr. No.	Description
1	To understand problems and use knowledge and skills to interpret societal/research problems in a group
2	To build interpersonal skills to work as member of a group or leader
3	To design the proper inference through theoretical/experimental/simulation and illustrate the impact of solution in social, environmental context for sustainable development
4	To apply standard norms of engineering practices
5	To develop in written and oral communication
6	To apply project management principles and capabilities of self-learning in a group for a lifelong learning

Course Objectives

Semester- V

Subject: TCS

Subject Code: CSC501

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1		1.3	1.3.1	Level 4 Analyze	CO 1	Identify the central concepts in theory of computation and analyse differentiate between deterministic and nondeterministic automata, apply formulate knowledge to obtain equivalence of NFA and DFA.
PO2		2.4	2.4.1	Level 4 Analyze	CO 2	Investigate the equivalence of languages described by finite automata and regular expressions.
PO5		5.1	5.1.2	Level 6 Create	CO 3	Create and apply regular, context free grammars while recognizing the strings and tokens.
PO2		2.4	2.4.2	Level 6 Create	CO 4	Design pushdown automata model to recognize the language.
PO2		2.4	2.4.2	Level 6 Create	CO 5	Develop an understanding of computation through Turing Machine
PO1		1.3	1.3.1	Level 2 understand	CO 6	Acquire fundamental understanding of decidability and undecidability and apply the knowledge to solve computer engineering problem.

Course Objectives

Sr. No.	Description
1	To identify the central concepts in theory of computation and analyse differentiate between deterministic and nondeterministic automata, apply formulate knowledge to obtain equivalence of NFA and DFA.
2	To investigate the equivalence of languages described by finite automata and regular expressions.
3	To create and apply regular, context free grammars while recognizing the strings and tokens.
4	To design pushdown automata model to recognize the language.
5	To develop an understanding of computation through Turing Machine
6	To acquire fundamental understanding of decidability and undecidability and apply the knowledge to solve computer engineering problem.

Subject: SE

Subject Code: CSC502

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1	PSO1	1.7	1.7.1	2 - Understand 4- Analyze	CO1	Understand Software Engineering and analyze Process Models.
PO2 PO3	PSO1	2.5 3.5	2.5.1 3.5.2 3.5.6	2 - Understand 4- Analyze	CO2	Identify, Analyze Requirements in Software and develop Software Requirement Specification (SRS) document.
PO4	PSO1	4.4	4.4.2	2- Understand 3-Apply	CO3	Classify and execute the process of the project using project estimation techniques and tracking and scheduling the project.
PO4	PSO1	4.5	4.5.1	6-Create	CO4	Design of Software Project using basic Principles and concepts.
PO5	PSO1	5.4 5.5	5.4.2 5.5.1	5-Evaluate	CO5	Evaluate the Software by using various Testing Approaches.
PO5	PSO1	5.5 5.6	5.5.2 5.6.1 5.6.2	2- Understand	CO6	Identify Risk in software to assure Quality in software project.

Course Objectives

Sr. No.	Description
1	To understand Software Engineering and analyze Process Models.
2	To identify, Analyze Requirements in Software and develop Software Requirement Specification (SRS) document.
3	To classify and execute the process of the project using project estimation techniques and tracking and scheduling the project.
4	To design of Software Project using basic Principles and concepts.
5	To evaluate the Software by using various Testing Approaches.
6	To identify Risk in software to assure Quality in software project.

Subject: CN

Subject Code: CSC503

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1 PO2		1.3 2.2	1.3.1 2.2.4	2 Understand 3 Apply 4 Analyze	CO-1	Apply the knowledge of fundamentals of data communication to identify the differences between ISO - OSI model, TCP/IP model and connection oriented and connectionless services.
PO1 PO2		1.4 2.2, 2.4	1.4.1 2.2.2, 2.4.3	2 3 4	CO-2	Apply the knowledge of data communication fundamentals to identify & analyze different types of media i.e., guided media used at physical layer.
PO2 PO3	PSO1	2.2, 2.4 3.2	2.2.4, 2.4.3 3.2.2	2 3 4	CO-3	Apply the knowledge of different protocols used at data link layer to investigate appropriate protocol for system. Identify and analyze the differences in protocols.
PO2 PO5 PO6		2.3 5.2 6.2	2.3.1 5.2.1 6.2.1	2 3 4	CO-4	Select and apply appropriate concepts of subnetting / supernetting of IP addressing. Analyze various routing algorithms and protocols at network layer. Realize the impact of protocol on system.
PO2 PO3		2.3 3.2, 3.3	2.3.1 3.2.2, 3.3.1	2 3 4	CO-5	Classify and compare transport layer protocols. Relate connection management with real time communication. Investigate congestion and apply appropriate congestion control algorithm.
PO2 PO6		2.1, 2.2 6.1	2.1.2, 2.2.2 6.1.1	3 4	CO-6	Identify the protocols used at application layer. Analyze the protocols in terms of organization need, its impact.

Course Objectives

Sr. No.	Description
1	To explain and introduce concepts and fundamentals of data communication and computer networks.
2	To interrelate the inter-working of various layers of OSI. To distinguish between different media used for communication.
3	To discuss the issues and challenges of protocols design while delivering packet in network.
4	To study different protocols used for packet delivery in network layer. To assess the strengths and weaknesses of various routing algorithms.
5	To understand how process to process communication occurs i.e. transport layer and protocols used in this layer.
6	To understand various application layer protocols.

Subject: DWM

Subject Code: CSC504

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1	PSO1	1.7	1.7.1	2- Understand 4-Analyze 6-Create	CO1	Understand, design data warehouse with dimensional modelling and analyze different OLAP operations.
PO1	PSO1	1.7	1.7.1	2- Understand 3-Apply	CO2	Understand data mining principles and use data preprocessing and data exploration.
PO2	PSO1	2.5	2.5.2	2- Understand 5-Evaluate	CO3	Classify and evaluate appropriate data mining algorithm
PO4	PSO1	4.6	4.6.1	4-Analyze 5-Evaluate	CO4	Analyze and evaluate clustering technique
PO5	PSO1	5.4	5.4.1	2- Understand 3-Apply	CO5	Identify and apply associate rule mining technique for real time applications.
PO4 PO5	PSO1	4.6 5.4	4.6.1 5.4.1	2- Understand 3-Apply	CO6	Understand and apply the concept of web mining

Course Objectives

Sr. No.	Description
1	To understand, design data warehouse with dimensional modelling with analyzing different OLAP operations.
2	To understand data mining principles with data preprocessing and data exploration.
3	To classify and evaluate appropriate data mining algorithm
4	To analyze and evaluate clustering technique
5	To identify and apply associate rule mining technique for real time applications.
6	To understand and apply the concept of web mining

Subject: IP

Subject Code: CSDO501

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1, PO4		1.1, 4.5	1.1.2, 4.5.1	3,6	CO1	Apply the concept of web technology for solving the problem of web application & Design & develop web pages using HTML5 and CSS3
PO4		4.5	4.5.1	6	CO2	Design & Develop web pages using JavaScript
PO4		4.6	4.6.1	4	CO3	Use JDBC for database connectivity to collect & analyze data
PO4		4.5	4.5.1	6	CO4	Design rich internet application using AJAX
PO2		2.6	2.6.4	4	CO5	Compare & contrast alternative methods of web extension to select best method.
PO1, PO4		1.1, 4.5	1.1.2, 4.5.1	3,6	CO6	Apply the concept of REACT JS for solving the problem of web application & Design & develop web application using JSX

Course Objectives

Sr. No.	Description
1	To Understand basic concept of Internet Programming
2	To acquire knowledge & skills for creation of web site considering both client & server side programming
3	To develop responsive web applications.
4	To explore different web extensions & web services standards
5	To understand characteristics of RIA
6	To learn react JS

Subject: SE LAB

Subject Code: CSL501

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO2	PSO1	2.7	2.7.2	4- Analyze	CO1	Identify traditional and agile process Models.
PO3	PSO2	3.7	3.7.1	6-Create	CO2	Develop Software Requirement Specification (SRS) document and Data Flow Diagram (DFD).
PO4	PSO1	4.6	4.6.1	3-Apply	CO3	Calculate project estimation techniques and Show tracking and scheduling of the project.
PO3	PSO1	3.6	3.6.1 3.6.3	2- Understand	CO4	Explain and classify the design of Software Project using basic Principles and concepts.
PO5	PSO1	5.4	5.4.2	5-Evaluate	CO5	Test the Software by using various Testing Approaches.
PO4 PO5	PSO2	4.5 5.6	4.5.1 5.6.1	3- Apply 6- Create	CO6	Prepare Risk Mitigation plan and Construct Version Control.

Course Objectives

Sr. No.	Description
1	To identify and study traditional and agile process Models.
2	To develop Software Requirement Specification (SRS) document and Data Flow Diagram (DFD).
3	To Calculate project estimation techniques and Show tracking and scheduling of the project.
4	To explain and classify the design of Software Project using Principles and concepts.
5	To test the Software by using various Testing Approaches.
6	To prepare Risk Mitigation plan and Construct Version Control.

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO1 PO2	PSO2	1.3 2.2	1.3.1 2.2.4	3 Apply 4 Analyze 6 Create	CO-1	Apply the knowledge to design a network and configure it for IP addressing, subnetting. Apply appropriate technique for routing in different network system. Analyze its results. (Using Packet Tracer)
PO1 PO2	PSO1	1.3 2.2	1.3.1 2.2.4	2, 3	CO-2	Identify different network commands in Linux. Apply it to find solution for different network problems.
PO1		1.3	1.3.1	3	CO-3	Apply knowledge to understand the operation of TCP/IP layers using Wireshark.
PO1 PO2	PSO2	1.3 2.2	1.3.1 2.2.4	3, 4, 6	CO-4	Apply the knowledge to design chat application using TCP, UDP. Analyze the difference in working.
PO1 PO2		1.3 2.2	1.3.1 2.2.4	2 3	CO-5	Demonstrate working of different application layer protocols using packet tracer.
PO1 PO2		1.3 2.2	1.3.1 2.2.4	2 4	CO-6	Understand and compare working of different physical media used in Networks.L33

Course Objectives

Sr. No.	Description
1	To discuss the issues and challenges of protocols design while delivering packet in network. To assess the strengths and weaknesses of various routing algorithms.
2	To identify different network commands in Linux. Apply it to find solution for different network problems.
3	To apply knowledge to understand the operation of TCP/IP layers using Wireshark.
4	To understand how process to process communication occurs i.e. transport layer and protocols used in this layer.
5	To understand various application layer protocols.
6	To Understand different types of physical media used in Networks.

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO2 PO3	PSO1	2.4 3.2 3.3	2.4.1 3.2.2 3.3.1 3.3.2	5-Evaluate 6-Create	CO1	Design data warehouse with dimensional modelling and Determine different OLAP operations.
PO5	PSO2	5.4 5.6	5.4.2 5.6.2	5- Evaluate	CO2	Determine data preprocessing and data exploration using data mining tool (WEKA/R TOOL)
PO4	PSO1	4.6	4.6.1 4.6.3	4- Analyze	CO3	Classify appropriate data mining algorithm.
PO4 PO5	PSO2	4.6 5.6	4.6.1 4.6.3 5.6.2	5-Evaluate 6-Create	CO4	Measure and generate clustering algorithms.
PO5	PSO1	5.4	5.4.2	3-Apply 4-Analyze	CO5	Identify and solve associate rule mining technique for real time applications.
PO5	PSO1	5.4	5.4.1 5.4.2	2- Understand 3-Apply	CO6	Explain and use the concept of web mining

Course Objectives

Sr. No.	Description
1	To design data warehouse with dimensional modelling and Determine different OLAP operations.
2	To determine data preprocessing and data exploration using data mining tool (WEKA/R TOOL)
3	To classify appropriate data mining algorithm.
4	To measure and generate clustering algorithms.
5	To Identify and solve associate rule mining technique for real time applications.
6	To explain and use the concept of web mining

Subject: PCE-II

Subject Code: CSL504

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
3		3.5	3.5.1 & 3.5.2	6	1	Design a technical document using precise language, suitable vocabulary and apt style
3		3.5	5.4.1	6	2	Develop writing skills of a cover letter and a CV/resume/SOP
4		4.5	4.5.1	6	3	Develop interpersonal skills to progress professionally by building strong relationships with peers
4		4.5	4.5.1	6	4	Develop effective presentation skills and an impressive body language
1		1.5	1.5.1	3	5	Apply codes of personal integrity, values, aptitudes and skills
1		1.5	1.5.1	2	6	Demonstrate awareness of contemporary issues, knowledge of professional and ethical responsibilities

Course Objectives

Sr. No.	Description
1	To discern and develop an effective style of writing important technical/business documents.
2	To investigate possible resources and plan a successful job campaign.
3	To understand the dynamics of professional communication in the form of group discussions, meetings etc. required for career enhancement.
4	To develop creative and impactful presentation skills.
5	To analyze personal traits, interests, values, aptitudes and skills.
6	To understand the importance of integrity and develop a personal code of ethics.

Subject: Mini Project

Subject Code: CSM501

Course Outcomes

PO	PSO	Competancy	PI	Bloom's Level	CO	Description
PO2,PO3		2.1,3.5	2.1.2,3.5.1	3	CO1	Define problem statement with objective & scope & identify methodologies/algorithms to solve problem
PO3		3.8	3.8.3	4	CO2	Verify & validate results, functionalities & design of project
PO7		7.3	7.3.1,7.3.2	3	CO3	Identify impact of engineering products & understand relationship between the technical, socio-economics & environmental dimensions of sustainabilities.
PO9,PO11		9.4,11.6	9.4.2,11.6.2	3	CO4	Use project management tools to schedule an engineering project, so it is completed on time & on budget & implement norms of practice.
PO10		10.4, 10.6	10.4.2, 10.6.2	3.4	CO5	Produce clear, well structured & well supported written engineering document & use variety of media effectively to convey a message in a document or presentation
PO9		9.5	9.5.1	6	CO6	Demonstrate effective communication, problem-solving, conflict resolution & leadership skill

Course Objectives

Sr. No.	Description
1	To define problem statement with objective & scope & identify methodologies/algorithms to solve problem
2	To verify & validate results, functionalities & design of project
3	To identify impact of engineering products & understand relationship between the technical, socio-economics & environmental dimensions of sustainabilities.
4	To use project management tools to schedule an engineering project, so it is completed on time & on budget & implement norms of practice
5	To produce clear, well structured & well supported written engineering document & use variety of media effectively to convey a message in a document or presentation
6	To demonstrate effective communication, problem-solving, conflict resolution & leadership skill

