



Department of Information Science & Engineering

2022-23-ODD-SEM-COs-CO-PO-PSO-MAPPING

SL. No.	SUBJECT CODE	COURSE CODE	COURSE OUTCOMES	
			CO NO.	COURSE OUTCOME DESCRIPTION

3rd Semester	21MAT301	C201	C201.1	Demonstrate the Fourier series to study the behaviour of periodic functions and their applications in system communications. Make use of Fourier transform to illustrate examples of signals and systems.
			C201.2	Solve first order ordinary differential equations arising in engineering problems using single-step and multistep numerical methods.
			C201.3	Discuss combinatorial principles and techniques to solve counting problems.
			C201.4	Use Propositional and Predicate logic in knowledge representation and truth verification
			C201.5	Providing theoretical foundations and applications of discrete structures of Relations and functions
	21CS32	C202	C202.1	Simplify digital circuits using Karnaugh Map.
			C202.2	Evaluate the logic design principles through flip flops, counters and registers to develop circuits.
			C202.3	Identify and design memory organization and achieve interconnection.
			C202.4	Understand Arithmetic and logical operations and I/O modules.
			C202.5	Analyze the functions of basic processing unit with machine instructions and programs.
	21CS33	C203	C203.1	Apply the concepts of classes and objects to find solutions for problems and Implement using Java programs.
			C203.2	Demonstrate how to achieve reusability using Inheritance, apply the concepts of packages and interfaces.
			C203.3	Illustrate the concept of multithreading for application development and examine the use of different Exception handling mechanisms.
			C203.4	Demonstrate the use of Event handling, swings and nodeJS in Java application development .
			C203.5	Use the Java API in application development.

3rd Semester	21CS34	C204	C204.1	Demonstrate the fundamental knowledge of various types of data structures, string operations and pattern matching techniques and apply stack data structure for problem solving.
			C204.2	Apply the concept of queues, circular queue using dynamic and static queue, priority queue for solving real world problems.
			C204.3	Illustrate the operations such as insertion, deletion and searching on singly linked lists, circular linked lists and doubly linked list.
			C204.4	Make use of tree data structure with different traversal methods to evaluate arithmetic expression.
			C204.5	Illustrate the concept of graphs with applications and the usage of hashing techniques.
	21CSL35	C205	C205.1	Design and implement array and stack data structures for a given application.
			C205.2	Design and implement queue data structures for a given application.
			C205.3	Design and implement the concepts of DLL and SCLL.
			C205.4	Utilize the concepts of trees and graphs to solve the real world problems.
			C205.5	Illustrate the application of hashing techniques to analyze the collision problems and develop suitable functions to resolve collision.

5th Semester	18CS51	C301	C301.1	Describe Management, Organization, Planning and outline their importance in the society.
			C301.2	Define Staffing and identify the traits of leadership indicating the importance of Coordination, Communication, Directing and Controlling.
			C301.3	Explain Entrepreneurship, its status in India by identifying various traits of becoming an Entrepreneur.
			C301.4	Identify and Discuss the steps involved in undertaking a project, importance of maintaining reports. Explain Enterprise Resource Planning and its use.
			C301.5	Define and identify the Government policies, Institutional supports available for Small and Micro Industries through various case studies. Explain the concept of IPR.
	18CS52	C302	C302.1	Discuss the principles of application layer protocols and importance of web and HTTP.
			C302.2	Analyze transport layer services and infer UDP and TCP protocols.
			C302.3	Examine routers, IP and Routing Algorithms in network layer.
			C302.4	Demonstrate Wireless and Mobile Networks covering IEEE 802.11 Standard.
			C302.5	Analyze the Multimedia Networking and summarization of Voice-over-IP,RTP,SIP

5th Semester	18CS53	C303	C303.1	Outline the fundamental concepts of database technology and make use of Entity Relationship (ER) model to illustrate conceptual database design.
			C303.2	Describe the basic principles of relational model of the data and make use of Structured Query Language (SQL) for database manipulation.
			C303.3	Describe the advanced features of the SQL for relational databases and discuss the concepts required for the database application development.
			C303.4	Apply normalization to the database design theory and analyze the normalization algorithms.
			C303.5	Design database applications and demonstrate the concepts of transaction processing, concurrency control and recovery in databases.
	18CS54	C304	C304.1	Solve the finite state machine problems for different formal languages by discussing the central concepts of Automata Theory.
			C304.2	Solve the regular expression and regular grammar problems. Also discuss the proofs of regular languages.
			C304.3	Solve the context free grammar and pushdown automata problems for the different formal languages.
			C304.4	Discuss the algorithms and decision procedures for context free languages. Also solve the turing machine problems for the different formal languages.
			C304.5	Discuss the concepts of decidability and complexity related to computational problems.
	18CS55	C305	C305.1	Demonstrate proficiency in handling python flow controls and creation of functions
			C305.2	Apply the methods to create and manipulate strings, lists, tuples and dictionaries
			C305.3	Solve the commonly used operations involving regular expressions and file system
			C305.4	Demonstrate the concepts of Object-Oriented Programming in Python
			C305.5	Illustrate the need for scraping websites and working with CSV, JSON and other file formats
	18CS56	C306	C306.1	Interpret the UNIX architecture and features of Linux operating system. Demonstrate the basic commands for file handling system and process control
			C306.2	Illustrate the changing of file permission and ownership. Discuss the importance of filters and their need in UNIX and apply them to various shell programming.
			C306.3	Make use of the UNIX File API provided in the unix environment system.
			C306.4	Demonstrate the application/service over a UNIX system.
			C306.5	Explain the signal ,daemon process and client server model.
18CSL57	C307	C307.1	Analyze the networking scenarios with respect to implementation issues	
		C307.2	Demonstrate the working of networking concepts.	
		C307.3	Explain the functionalities of Protocols-layers	
		C307.4	Illustrate the Connection oriented networks using suitable tools	
		C307.5	Illustrate the working of Wireless networks	

5th Semester	18CSL58	C308	C308.1	Use SQL programming and different concepts of DBMS to create, update and query on the Library and College databases.
			C308.2	Demonstrate SQL programming and different concepts of DBMS to create, update and query on the Order database.
			C308.3	Illustrate the concepts of SQL programming and DBMS to create, update and query on the Movie database.
			C308.4	Create, update and query on the Company database by using different concepts of DBMS and SQL programming.
			C308.5	Design, implement and demonstrate a mini project using front end tools and database and Compile the working with well document using modern tool.

7th Semester	18CS71	C401	C401.1	Discuss the need for machine learning for various problem solving and Heuristic Search Techniques.
			C401.2	Illustrate a wide variety of learning algorithms and evaluate models from generated data.
			C401.3	Apply Decision tree learning and Neural Networks in machine learning applications
			C401.4	Demonstrate Bayesian classifier to label data.
			C401.5	Illustrate instant based and reinforcement learning algorithms and identify its applicability in real life problems.
	18CS72	C402	C402.1	Discuss the fundamental concepts of Big Data analytics with its various applications and overview of data sources, pre-processing and storing.
			C402.2	Summarize the conceptualisation of Hadoop and its ecosystem, Hadoop Distributed File system and discuss various essential Hadoop Tools.
			C402.3	Illustrate the concepts and applications of NoSQL for Bigdata Analytics using MongoDB and Cassandra.
			C402.4	Demonstrate the MapReduce programming model to process the big data along with Hadoop tools.
			C402.5	Examine various Machine Learning algorithms used for Bigdata Analytics. Also discuss the overview of Text, Web Content, Link, and Social Network Analytics.

7th Semester	18CS731	C403	C403.1	Identify and describe a design pattern, Categorize the design pattern catalogue, explain various object oriented design concepts. Understand the importance of Analysis phase and apply the concept of UML for designing the Class diagrams, Use-Cases and Sequence diagrams for any given requirements.
			C403.2	Describe how the classes and objects are composed for forming a larger structure of the systems using Structural Patterns.
			C403.3	Describe the behavior of the system and explain the communication between the objects and the classes using the Behavioral Patterns
			C403.4	Explain the concepts of Interactive systems and summarize MVC architecture. Explain the architecture behind the working of the simple drawing program, implementing undo operations and completing the incomplete items.
			C403.5	Identify the design process related to Distributed Objects and describe its roles in building an object-oriented system.
	18CS732	C404	C404.1	Understand the Principles of Parallel Computing. Learn Parallel Programming Platforms. Discuss Physical organization, Communication costs in parallel machines and Routing mechanisms for Interconnection Networks
			C404.2	Learn, understand and apply principles of parallel algorithm design. Discuss various communication operations, and methodologies to improve speed of some communication operations.
			C404.3	Discuss the analytical modelling of parallel programs. Apply principles of message passing programming techniques to develop parallel programs. Use MPI for parallel programming.
			C404.4	Apply principles of shared address space platforms to develop parallel programs. Use OpenMP for parallel programming. Develop and analyze parallel programs for Dense Matrix algorithms and sorting algorithms.
			C404.5	Apply parallel programming techniques for various Graph Algorithms and analyze the outcomes. Apply parallel programming techniques for various Search Algorithms for Discrete Optimization Problems and analyze the outcomes.
	18CS743	C409	C409.1	Understand the fundamental concept of NLP, define grammar-based language model and statistical-based language model.
			C409.2	Demonstrate the use of morphological analysis and parsing using Finite State Transducers. Apply spelling error detection and correction methods, parts of speech tagging, context free grammar, and different parsing approach in NLP.
			C409.3	Determine the concepts associated with extracting relations from text, mining diagnostic text reports, and natural language-based web search.
			C409.4	Understand the concept of iSTART, textual signatures, automatic document separation, and explanatory novel patterns for semantically based text mining.
			C409.5	Illustrate the use of Information Retrieval in the context of NLP and understand the lexical resources such as WordNet, FrameNet, Stemmers, POS Tagger, and Research Corpora

7th Semester	18CS745	C411	C411.1	Discuss various Components of Robotic Process Automation and understand the management of process, memory and storage. Also discuss various types of RPA tools, operations on processes and the communication pattern between two processes.
			C411.2	Illustrate the concept of Activities involved in project Automation and discuss various Advanced concepts of RPA
			C411.3	Analyze the various RPA packages, its characteristics and its applications in process Automation
			C411.4	Illustrate the role of process automation in building interactive user interface and handling various file types
			C411.5	Examine the various phases of E-mail automation technique and use various tools for debugging and Exception Handling.
	18CS752	C413	C413.1	Illustrate the syntax and semantics of the Python including types, operators, Function, Loops and Conditional statements.
			C413.2	Demonstrate expertise in usage of Strings and File Systems.
			C413.3	Create, build and test Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
			C413.4	Apply the concepts of Object-Oriented Programming in Python.
			C413.5	Develop typical python applications associated with Network Programming, Web Services and Databases.
	18CSL76	C416	C416.1	Implement and Demonstrate AI search algorithms.
			C416.2	Demonstrate the Candidate Elimination Algorithm for finding the Hypothesis Space.
			C416.3	Demonstrate the implementation of Decision Tree Algorithm and use it to perform classification of a new data sample.
			C416.4	Demonstrate the implementation, training and testing of an Artificial Neural Network using Backpropagation Algorithm.
			C416.5	Demonstrate the use of Python ML libraries to implement Naïve Bayes Classifier, EM Algorithm, k-Means Clustering Algorithm, K-Nearest Neighbors Algorithm and Locally Weighted Regression algorithm.

7th Semester	18CSL77	C417	C417.1	Acquire and evaluate latest developments in the research regarding technological advancement in engineering disciplines and their impact on social, cultural, environmental and legal aspects
			C417.2	Analyse complex Engineering problems and apply appropriate engineering tools and techniques in design process
			C417.3	Work collaboratively with interdisciplinary departments, industries and agencies while planning and executing the project/research to appraise the advance technologies
			C417.4	Design and develop solutions to the complex engineering problems through innovative approaches
			C417.5	Execute responsibilities as a team member and contribute innovative ideas to accomplish the defined objectives and outcomes
			C417.6	Demonstrate a responsible, ethical and professional attitude regarding the role of engineers in society, including financial and cultural aspects
			C417.7	Prepare a high-quality engineering documents and exhibit a clear and coherent presentation of project/research findings to a range of technical and nontechnical audiences