



Department of Computer Science and Engineering

List of Course Outcomes for Academic year 2023-2024

Sl No.	Year & Semester	Course Code	Course Name	Course Outcome
1	II/III	MA3354	DISCRETE MATHEMATICS	CO1: Have knowledge of the concepts needed to test the logic of a program. CO2: Have an understanding in identifying structures on many levels. CO3: Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science. CO4: Be aware of the counting principles. CO5: Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.
2		CS3351	DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	CO1 : Design various combinational digital circuits using logic gates CO2 : Design sequential circuits and analyze the design procedures CO3 : State the fundamentals of computer systems and analyze the execution of an instruction CO4 : Analyze different types of control design and identify hazards CO5 : Identify the characteristics of various memory systems and I/O communication
3		CS3352	FOUNDATIONS OF DATA SCIENCE	CO1: Define the data science process CO2: Understand different types of data description for data science process CO3: Gain knowledge on relationships between data CO4: Use the Python Libraries for Data Wrangling CO5: Apply visualization Libraries in Python to interpret and explore data
4		CS3301	DATA STRUCTURES	CO1: Define linear and non-linear data structures. CO2: Implement linear and non-linear data structure operations. CO3: Use appropriate linear/non-linear data structure operations for solving a given problem. CO4: Apply appropriate graph algorithms for graph applications. CO5: Analyze the various searching and sorting algorithms
5		CS3391	OBJECT ORIENTED PROGRAMMING	CO1: Apply the concepts of classes and objects to solve simple problems CO2: Develop programs using inheritance, packages and interfaces CO3: Make use of exception handling mechanisms and multithreaded model to solve real world problems CO4: Build Java applications with I/O packages, string classes, Collections and generics concepts

				CO5: Integrate the concepts of event handling and JavaFX components and controls for developing GUI based applications
6		CS3311	DATA STRUCTURES LABORATORY	CO1: Implement Linear data structure algorithms. CO2: Implement applications using Stacks and Linked lists CO3: Implement Binary Search tree and AVL tree operations. CO4: Implement graph algorithms. CO5: Analyze the various searching and sorting algorithms
7		CS3381	OBJECT ORIENTED PROGRAMMING LABORATORY	CO1 : Design and develop java programs using object oriented programming concepts CO2 : Develop simple applications using object oriented concepts such as package, exceptions CO3: Implement multithreading, and generics concepts CO4 : Create GUIs and event driven programming applications for real world problems CO5: Implement and deploy web applications using Java
8		CS3361	DATA SCIENCE LABORATORY	CO1: Make use of the python libraries for data science CO2: Make use of the basic Statistical and Probability measures for data science. CO3: Perform descriptive analytics on the benchmark data sets. CO4: Perform correlation and regression analytics on standard data sets CO5: Present and interpret data using visualization packages in Python.
9		GE3361	PROFESSIONAL DEVELOPMENT	CO1: Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements CO2: Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding CO3: Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.
10	II/IV	CS3452	THEORY OF COMPUTATION	CO1: Construct automata theory using Finite Automata CO2: Write regular expressions for any pattern CO3: Design context free grammar and Pushdown Automata CO4: Design Turing machine for computational functions CO5: Differentiate between decidable and undecidable problems
11		CS3491	ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	CO1: Use appropriate search algorithms for problem solving CO2: Apply reasoning under uncertainty CO3: Build supervised learning models CO4: Build ensembling and unsupervised models CO5: Build deep learning neural network models
12		CS3492	DATABASE MANAGEMENT SYSTEMS	CO1: Construct SQL Queries using relational algebra CO2: Design database using ER model and normalize the database CO3: Construct queries to handle transaction processing and maintain consistency of the database CO4: Compare and contrast various indexing strategies and apply the knowledge to tune the performance of the database CO5: Appraise how advanced databases differ from Relational Databases and find a suitable Database for the given requirement.
13		CS3401	ALGORITHMS	CO1: Analyze the efficiency of algorithms using various frameworks CO2: Apply graph algorithms to solve problems and analyze their efficiency.

				CO3: Make use of algorithm design techniques like divide and conquer, dynamic programming and greedy techniques to solve problems CO4: Use the state space tree method for solving problems. CO5: Solve problems using approximation algorithms and randomized algorithms
14		CS3451	INTRODUCTION TO OPERATING SYSTEMS	CO1 : Analyze various scheduling algorithms and process synchronization. CO2 : Explain deadlock prevention and avoidance algorithms. CO3 : Compare and contrast various memory management schemes. CO4 : Explain the functionality of file systems, I/O systems, and Virtualization CO5 : Compare iOS and Android Operating Systems.
15		GE3451	ENVIRONMENTAL SCIENCES AND SUSTAINABILITY	CO1:To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation. CO2:To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society. CO3:To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations. CO4:To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development. CO5:To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.
16		CS3461	OPERATING SYSTEMS LABORATORY	CO1 : Define and implement UNIX Commands. CO2 : Compare the performance of various CPU Scheduling Algorithms. CO3 : Compare and contrast various Memory Allocation Methods. CO4 : Define File Organization and File Allocation Strategies. CO5 : Implement various Disk Scheduling Algorithms.
17		CS3481	DATABASE MANAGEMENT SYSTEMS LABORATORY	CO1: Create databases with different types of key constraints. CO2: Construct simple and complex SQL queries using DML and DCL commands. CO3: Use advanced features such as stored procedures and triggers and incorporate in GUI based application development. CO4: Create an XML database and validate with meta-data (XML schema). CO5: Create and manipulate data using NOSQL database.
18	III/V	CS3591	COMPUTER NETWORKS	CO 1: Explain the basic layers and its functions in computer networks. CO 2: Understand the basics of how data flows from one node to another. CO 3: Analyze routing algorithms. CO 4: Describe protocols for various functions in the network. CO 5: Analyze the working of various application layer protocols
19		CS3501	COMPILER DESIGN	CO1: Understand the techniques in different phases of a compiler. CO2: Design a lexical analyser for a sample language and learn to use the LEX tool. CO3: Apply different parsing algorithms to develop a parser and learn to use YACC tool

				CO4: Understand semantics rules (SDT), intermediate code generation and run-time environment. CO5: Implement code generation and apply code optimization techniques
20		CB3491	CRYPTOGRAPHY AND CYBER SECURITY	CO1: Understand the fundamentals of networks security, security architecture, threats and vulnerabilities CO2: Apply the different cryptographic operations of symmetric cryptographic algorithms CO3: Apply the different cryptographic operations of public key cryptography CO4: Apply the various Authentication schemes to simulate different applications. CO5: Understand various cybercrimes and cyber security.
21		CS3551	DISTRIBUTED COMPUTING	CO1: Explain the foundations of distributed systems (K2) CO2: Solve synchronization and state consistency problems (K3) CO3 Use resource sharing techniques in distributed systems (K3) CO4: Apply working model of consensus and reliability of distributed systems (K3) CO5: Explain the fundamentals of cloud computing (K2)
22		CCS375	WEB TECHNOLOGIES	CO1: Construct a basic website using HTML and Cascading Style Sheets CO2: Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms. CO3: Develop server side programs using Servlets and JSP. CO4: Construct simple web pages in PHP and to represent data in XML format. CO5: Develop interactive web applications
23		CCS332	APP DEVELOPMENT	CO1: Develop Native applications with GUI Components. CO2: Develop hybrid applications with basic event handling. CO3: Implement cross-platform applications with location and data storage capabilities. CO4: Implement cross platform applications with basic GUI and event handling. CO5: Develop web applications with cloud database access.
24		MG8591	PRINCIPLES OF MANAGEMENT	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management
25	IV/VII	CS8792	CRYPTOGRAPHY AND NETWORK SECURITY	CO1: Understand the fundamentals of networks security, security architecture, threats and vulnerabilities CO2: Apply the different cryptographic operations of symmetric cryptographic algorithms CO3: Apply the different cryptographic operations of public key cryptography CO4: Apply the various Authentication schemes to simulate different applications. CO5: Understand various Security practices and System security standards
26		CS8791	CLOUD COMPUTING	CO1: Articulate the main concepts, key technologies, strengths and limitations of cloud computing. CO2: Learn the key and enabling technologies that help in the development of cloud. CO3: Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.

				CO4: Explain the core issues of cloud computing such as resource management and security. CO5: Be able to install and use current cloud technologies.
27		IT8075	SOFTWARE PROJECT MANAGEMENT	CO1: Understand Project Management principles while developing software. CO2: Gain extensive knowledge about the basic project management concepts, framework and the process models. CO3: Obtain adequate knowledge about software process models and software effort estimation techniques. CO4: Estimate the risks involved in various project activities. CO5: Define the checkpoints, project reporting structure, project progress and tracking mechanisms using project management principles.
28		CS8079	HUMAN COMPUTER INTERACTION	CO1: Design effective dialog for HCI CO2: Design effective HCI for individuals and persons with disabilities. CO3: Assess the importance of user feedback. CO4: Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites. CO5: Develop meaningful user interface.
29		CS8711	CLOUD COMPUTING LABORATORY	CO1: Configure various virtualization tools such as Virtual Box, VMware workstation. CO2: Design and deploy a web application in a PaaS environment. CO3: Learn how to simulate a cloud environment to implement new schedulers. CO4: Install and use a generic cloud environment that can be used as a private cloud. CO5: Manipulate large data sets in a parallel environment
30		IT8761	SECURITY LABORATORY	CO1: Develop code for classical Encryption Techniques to solve the problems. CO2: Build cryptosystems by applying symmetric and public key encryption algorithms. CO3: Construct code for authentication algorithms. CO4: Develop a signature scheme using Digital signature standard. CO5: Demonstrate the network security system using open source tools
31	IV/VIII	GE8076	PROFESSIONAL ETHICS IN ENGINEERING	Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the Society.
32		CS8080	INFORMATION RETRIEVAL TECHNIQUES	CO1: Use an open source search engine framework and explore its capabilities CO2: Apply appropriate method of classification or clustering. CO3: Design and implement innovative features in a search engine. CO4: Design and implement a recommender system.

33		CS8811	PROJECT WORK	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology
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