MAHAGURU INSTITUTE OF TECHNOLOGY
Department of COMPUTER SCIENCE & ENGINEERING
Course Outcomes

Semester	Subject Code	Subject Name	Staff name	Course Outcome
S3	MAT 203	DISCRETE MATHEMATICAL STRUCTURES	Mr. Ampadi	Check the validity of predicates in Propositional and Quantified Propositional Logic using truth tables, deductive reasoning and inference theory on Propositional Logic
				Solve counting problems by applying the elementary counting techniques - Rule of Sum, Rule of Product, Permutation, Combination, Binomial Theorem, Pigeonhole Principle and Principle of Inclusion and Exclusion
				Classify binary relations into various types and illustrate an application for each type of binary relation, in Computer Science
				Illustrate an application for Partially Ordered Sets and Complete Lattices, in Computer Science
				Explain Generating Functions and solve First Order and Second Order Linear Recurrence Relations with Constant Coefficients and to illustrate the abstract algebraic systems - Semigroups, Monoids, Groups, Homomorphism and Isomorphism of Monoids and Groups
	CST 201	DATA STRUCTURES	Ms. Tessy Abraham	Design an algorithm for a computational task and calculate the time/space complexities of that algorithm
				Identify the suitable data structure (array or linked list) to represent a data item required to be processed to solve a given computational problem and write an algorithm to find the solution of the computational problem
				Write an algorithm to find the solution of a computational problem by selecting an appropriate data structure (binary tree/graph) to represent a data item to be processed
				Store a given dataset using an appropriate Hash Function to enable efficient access of data in the given set
				Select appropriate sorting algorithms to be used in specific circumstances and to design and implement Data Structures for solving real world problems efficiently.
	CST 203	LOGIC SYSTEM DESIGN	Ms. Namitha T N	Illustrate decimal, binary, octal, hexadecimal and BCD number systems, perform conversions among them and do the operations - complementation, addition, subtraction, multiplication and division on binary numbers.
				Simplify a given Boolean Function and design a combinational circuit to implement the simplified function using Digital Logic Gates.
				Design combinational circuits - Adders, Code Convertors, Decoders, Magnitude Comparators, Parity Generator/Checker and design the Programmable Logic Devices - ROM and PLA
				Design sequential circuits - Registers, Counters and Shift Registers
				Use algorithms to perform addition and subtraction on binary, BCD and floating point numbers
	CST 205	Object Oriented Programming Using Java	Ms. Suma S G	Write Java programs using the object-oriented concepts - classes, objects, constructors, data hiding, inheritance and polymorphism
				Utilise datatypes, operators, control statements, built in packages & interfaces, Input/Output Streams and Files in Java to develop programs
				Illustrate how robust programs can be written in Java using exception handling mechanism
				Write application programs in Java using multithreading and database connectivity
				Write Graphical User Interface based application programs by utilising event handling features and Swing in Java.
	MCN 201	SUSTAINABLE ENGINEERING	Ms. Chitra S Ravi	Understand the relevance and the concept of sustainability and the global initiatives in this direction
				Explain the different types of environmental pollution problems and their sustainable solutions
				Discuss the environmental regulations and standards
				Outline the concepts related to conventional and non-conventional energy
				Demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles
	EST 200	DESIGN & ENGINEERING	Ms. Megha Vasu	Explain the different concepts and principles involved in design engineering.
				Apply design thinking while learning and practicing engineering.
				Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.

	Code	Course	Faculty	Course Outcomes
S4	MAT206	GRAPH THEORY	Mr. Ampadi	Explain vertices and their properties, types of paths, classification of graphs and trees & their properties.
				Demonstrate the fundamental theorems on Eulerian and Hamiltonian graphs.
				Illustrate the working of Prim's and Kruskal's algorithms for finding minimum cost spanning tree and Dijkstra's and Floyd-Warshall algorithms for finding shortest paths.
				Explain planar graphs, their properties and an application for planar graphs.
				Illustrate how one can represent a graph in a computer and to explain the Vertex Color problem in graphs and illustrate an example application for vertex coloring.
	CST 202	COMPUTER ORGANIZATION AND ARCHITECTURE	Ms. Amitha R	Recognize and express the relevance of basic components, I/O organization and pipelining schemes in a digital computer.
				Explain the types of memory systems and mapping functions used in memory systems.
				Demonstrate the control signals required for the execution of a given instruction.
				Illustrate the design of Arithmetic Logic Unit and explain the usage of registers in it.
				Explain the implementation aspects of arithmetic algorithms in a digital computer and to develop the control logic for a given arithmetic problem
	CST 204	DATABASE MANAGEMENT SYSTEMS	Ms. Chitra S Ravi	Summarize and exemplify fundamental nature and characteristics of database systems
				Model real word scenarios given as informal descriptions, using Entity Relationship diagrams.
				Model and design solutions for efficiently representing and querying data using relational model
				Demonstrate the features of indexing and hashing in database applications
				Discuss and compare the aspects of Concurrency Control and Recovery in Database Systems and to explain various types of NoSQL databases
	CST 206	OPERATING SYSTEMS	Ms. Chippy	Explain the relevance, structure and functions of Operating Systems in computing devices.
				Illustrate the concepts of process management and process scheduling mechanisms employed in Operating Systems.
				Explain process synchronization in Operating Systems and illustrate process synchronization mechanisms using Mutex Locks, Semaphores and Monitors
				Explain any one method for detection, prevention, avoidance and recovery for managing deadlocks in Operating Systems.
				Explain the memory management algorithms in Operating Systems and to explain the security aspects and algorithms for file and storage management in Operating Systems.
	HUT 200	Professional ethics	Ms. Megha Vasu	Understand the core values that shape the ethical behaviour of a professional.
				Adopt a good character and follow an ethical life.
				Explain the role and responsibility in technological development by keeping personal ethics and legal ethics.
				Solve moral and ethical problems through exploration and assessment by established experiments.
				Apply the knowledge of human values and social values to contemporary ethical values and global issues.
	MCN 202	CONSTITUTION OF INDIA	Ms. Tessy Abraham	Explain the background of the present constitution of India and features.
				Utilize the fundamental rights and duties.
				Understand the working of the union executive, parliament and judiciary.
				Understand the working of the state executive, legislature and judiciary.
				Utilize the special provisions and statutory institutions and to show national and patriotic spirit as responsible citizens of the country

S5	CST 301	FORMAL LANGUAGES AND AUTOMATA THEORY	Ms. Chitra S Ravi	Classify a given formal language into Regular, Context-Free, Context Sensitive, Recursive or Recursively Enumerable.
				Explain a formal representation of a given regular language as a finite state automaton, regular grammar, regular expression and Myhill-Nerode relation.
				Design a Pushdown Automaton and a Context-Free Grammar for a given context-free language.
				Design Turing machines as language acceptors or transducers.
				Explain the notion of decidability.
	CST 303	COMPUTER NETWORKS	Ms. Sreelekshmi	Explain the features of computer networks, protocols, and network design models
				Describe the fundamental characteristics of the physical layer and identify the usage in network communication
				Explain the design issues of data link layer, link layer protocols, bridges and switches
				Illustrate wired LAN protocols (IEEE 802.3) and wireless LAN protocols (IEEE 802.11)
				Select appropriate routing algorithms, congestion control techniques, and Quality of Service requirements for a network and to illustrate the functions and protocols of the network layer, transport layer, and application layer in inter-networking
	CST 305	SYSTEM SOFTWARE	Ms. Namitha T N	Distinguish softwares into system and application software categories.
				Identify standard and extended architectural features of machines
				Identify machine dependent features of system software
				Identify machine independent features of system software.
				Design algorithms for system softwares and analyze the effect of data structures and to understand the features of device drivers and editing & debugging tools
	CST 307	MICROPROCESSORS AND MICROCONTROLLERS	Ms. Chippy	Illustrate the architecture, modes of operation and addressing modes of microprocessors
				Develop 8086 assembly language programs
				Demonstrate interrupts, its handling and programming in 8086.
				Illustrate how different peripherals (8255,8254,8257) and memory are interfaced with microprocessors.
				Outline features of microcontrollers and develop low level programs.
	CST 309	M ANA GEMENT O F SOFTWARE SYSTEMS	MS. Preethi Mariyam	Demonstrate Traditional and Agile Software Development approaches
				Prepare Software Requirement Specification and Software Design for a given problem
				Justify the significance of design patterns and licensing terms in software development, prepare testing, maintenance and DevOps strategies for a project.
				Make use of software project management concepts while planning, estimation, scheduling, tracking and change management of a project, with a traditional/agile framework.
				Utilize SQA practices, Process Improvement techniques and Technology advancements in cloud based software models and containers & microservices.
	MCN 301	DISASTER MANAGEMENT	Ms. Amitha	Define and use various terminologies in use in disaster management parlance and organise each of these terms in relation to the disaster management cycle
				Distinguish between different hazard types and vulnerability types and do vulnerability assessment
				Identify the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk
				Explain the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sector and community
				Identify factors that determine the nature of disaster response and discuss the various disaster response actions and to explain the various legislations and best practices for disaster management and risk reduction at national and international level

S6	CST 302	COMPILER DESIGN	Ms. Namitha T N	Explain the phases in compilation process(lexical analysis, syntax analysis, semantic analysis, intermediate code generation, code optimization and code generation) and
				Model language syntax using Context Free Grammar and develop parse tree representation using leftmost and rightmost derivations
				Compare different types of parsers(Bottom-up and Top-down) and construct parser for a given grammar
				Build Syntax Directed Translation for a context free grammar, compare various storage allocation strategies and classify intermediate representations
				Illustrate code optimization and code generation techniques in compilation
	CST 304	COMPUTER GRAPHICS AND IMAGE PROCESSING	Ms. Preethi Mariyam	Describe the working principles of graphics devices
				Illustrate line drawing, circle drawing and polygon filling algorithms
				Demonstrate geometric representations, transformations on 2D & 3D objects, clipping algorithms and projection algorithms
				Summarize visible surface detection methods
				Summarize the concepts of digital image representation, processing and demonstrate pixel relationships and to solve image enhancement and segmentation problems using spatial domain techniques
	CST 306	ALGORITHM ANA LYSIS AND DESIGN	Ms. Mathu Uthaman	Analyze any given algorithm and express its time andspace complexities in asymptotic notations.
				Derive recurrence equations and solve it using Iteration, Recurrence Tree, Substitution and Master's Method to compute time complexity of algorithms.
				Illustrate Graph traversal algorithms & applications and Advanced Data structures like AVL trees and Disjoint set operations.
				Demonstrate Divide-and-conquer, Greedy Strategy, Dynamic programming, Branch-and Bound and Backtracking algorithm design techniques
				Classify a problem as computationally tractable or intractable, and discuss strategies to address intractability and to identify the suitable design strategy to solve a given problem
	CST 372	DATA COMMUNICATION	Ms. Suma S G	Identify the characteristics of signals for analog and digital transmissions
				Identify the issues in data transmission
				Select transmission media based on characteristics and propagation modes
				Choose appropriate signal encoding techniques for a given scenario
				Illustrate multiplexing and spread spectrum technologies
				Use error detection, correction and switching techniques in data communication
	HUT 300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	Ms. Geetha Vimal	Explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare.
				Take appropriate decisions regarding volume of output and to evaluate the social cost of production.
				Determine the functional requirement of a firm under various competitive conditions.
				Examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society.
				Determine the impact of changes in global economic policies on the business opportunities of a firm.

S7	CST401	ARTIFICIAL INTELLIGENCE	Ms. Preethi Mariam		Explain the fundamental concepts of intelligent systems and their architecture.
					Illustrate uninformed and informed search techniques for problem solving in intelligent systems
					Solve Constraint Satisfaction Problems using search techniques.
					Represent AI domain knowledge using logic systems and use inference techniques for reasoning in intelligent systems.
					Illustrate different types of learning techniques used in intelligent systems
	CST423	CLOUD COMPUTING	Dr. E Arun		Explain the various cloud computing models and services
					Demonstrate the significance of implementing virtualization techniques
					Explain different cloud enabling technologies and compare private cloud platforms
					Apply appropriate cloud programming methods to solve big data problems
					Describe the need for security mechanisms in cloud and to compare the different popular cloud computing platforms
	CST463	WEB PROGRAMMING	Ms. Tessy Abraham		Use HyperText Markup Language (HTML) for authoring web pages and understand the fundamentals of WWW.
					Construct and visually format responsive, interactive web pages using CSS and JavaScript (JS)
					Construct websites using advanced sever side programming tool PHP
					Develop dynamic web applications using PHP and perform MySQL database operations.
					Explain the importance of object exchange formats using JSON and the MVC based web application development frameworks (Laravel)
	MCN401	INDUSTRIAL SAFETY ENGINEERING	Mr. Anand		Describe the theories of accident causation and preventive measures of industrial accidents
					Explain about personal protective equipment, its selection, safety performance & indicators and importance of housekeeping.
					Explain different issues in construction industries
					Describe various hazards associated with different machines and mechanical material handling
					Utilise different hazard identification tools in different industries with the knowledge of different types of chemical hazards
	CET415	ENVIRONMENTAL IMPACT ASSESSMENT	Mr. Kevin		Explain the need for minimizing the environmental impacts of developmental activities
					Outline environmental legislation & clearance procedure in the country
					Apply various methodologies for assessing the environmental impacts of any developmental activity
					Prepare an environmental impact assessment report
					Conduct an environmental audit
S8	CST402	DISTRIBUTED COMPUTING	Ms. Megha Vasu		Summarize various aspects of distributed computation model and logical time.
					Illustrate election algorithm, global snapshot algorithm and termination detection algorithm.
					Compare token based, non-token based and quorum based mutual exclusion algorithms.
					Recognize the significance of deadlock detection and shared memory in distributed systems.
					Explain the concepts of failure recovery and consensus and to illustrate distributed file system architectures.
	CST434	NETWORK SECURITY PROTOCOLS	Ms. Mathu Uthaman		Explain authentication protocols, X.509 authentication service and Public Key Infrastructure (PKI).
					Identify the security mechanisms in E mail security services.
					Summarize the network and transport layer security services provided in a secure communication scenario.
					Describe real time communication security and application layer security protocols.
					Explain the concepts of firewalls and wireless network security
	CST426	CLIENT SERVER ARCHITECTURE	Dr. Arun E/Ms. Tessy Abraham		Explain the basics of client/server systems and the driving force behind the development of client/server systems
					Outline the architecture and classifications of client/server systems
					Choose the appropriate client/server network services for a typical application
					Describe management services and issues in network
					Compare and summarize the web extensions and choose appropriate web services standards for an application
	CST438	IMAGE PROCESSING TECHNIQUE	Ms. Preethi Mariam		Explain the concepts of image formation and the basis of digital image processing.
					Demonstrate the role of image transforms in representing, highlighting, and modifying image features.
					Solve image enhancement problems using spatial and frequency domain techniques.
					Make use of the concept of image restoration and image segmentation techniques in real-world problems.
					Interpret morphological operations, image representation, and description techniques