

**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
				Illustrate the abstract algebraic systems - Semigroups, Monoids, Groups, Homomorphism and Isomorphism of Monoids and Groups
	CST 201	DATA STRUCTURES	Mr. Dhanunath R	compare different programming methodologies and define asymptotic notations to analyze performance of algorithms.
				use appropriate data structures like arrays, linked list, stacks and queues to solve real world problems efficiently.
				represent and manipulate data using nonlinear data structures like trees and graphs to design algorithms for various applications.
				illustrate and compare various techniques for searching and sorting.
				appreciate different memory management techniques and their significance.
	CST 203	LOGIC SYSTEM DESIGN	Ms. Namitha T N	illustrate various hashing techniques.
				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
	CST 205	Object Oriented Programming Using Java	Ms. Suma S G	Use algorithms to perform addition and subtraction on binary, BCD and floating point numbers
				Classify binary relations into various types and illustrate an application for each type of binary relation, in Computer Science
				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				
CST 205	Object Oriented Programming Using Java	Ms. Suma S G	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	
			Illustrate an application for Partially Ordered Sets and Complete Lattices, in Computer Science	
			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	
MCN 201	SUSTAINABLE ENGINEERING	Ms. Sreelakshmi	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	
			Explain Generating Functions and solve First Order and Second Order Linear Recurrence Relations with Constant Coefficients	
			Explain the different concepts and principles involved in design engineering.	
EST 200	DESIGN & ENGINEERING	Ms. Krishnendu	Apply design thinking while learning and practicing engineering.	
			Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.	
			Illustrate the abstract algebraic systems - Semigroups, Monoids, Groups, Homomorphism and Isomorphism of Monoids and Groups	

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

SS	CST 301	FORMAL LANGUAGES AND AUTOMATA THEORY	Mr. Dhanunath R	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. Chithra S Ravi	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
	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
	CST 307	MICROPROCESSORS AND MICROCONTROLLERS	Ms. Amitha R	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	MANAGEMENT OF 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. Krishnendu	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	
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	<p>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</p> <p>Compare different types of parsers(Bottom-up and Top-down) and construct parser for a given grammar</p> <p>Build Syntax Directed Translation for a context free grammar, compare various storage allocation strategies and classify intermediate representations</p> <p>Illustrate code optimization and code generation techniques in compilation</p>
	CST 304	COMPUTER GRAPHICS AND IMAGE PROCESSING	Ms. Preethi Mariyam	<p>Describe the working principles of graphics devices</p> <p>Illustrate line drawing, circle drawing and polygon filling algorithms</p> <p>Demonstrate geometric representations, transformations on 2D &amp; 3D objects, clipping algorithms and projection algorithms</p> <p>Summarize visible surface detection methods</p> <p>Summarize the concepts of digital image representation, processing and demonstrate pixel relationships</p> <p>Solve image enhancement and segmentation problems using spatial domain techniques</p>
	CST 306	ALGORITHM ANALYSIS AND DESIGN	Ms. Chithra S Ravi	<p>Analyze any given algorithm and express its time and space complexities in asymptotic notations.</p> <p>Derive recurrence equations and solve it using Iteration, Recurrence Tree, Substitution and Master's</p> <p>Illustrate Graph traversal algorithms &amp; applications and Advanced Data structures like AVL trees and</p> <p>Demonstrate Divide-and-conquer, Greedy Strategy, Dynamic programming, Branch-and Bound and Backtracking algorithm design</p> <p>Classify a problem as computationally tractable or intractable, and discuss strategies to address intractability.</p> <p>Identify the suitable design strategy to solve a given problem</p>
	CST 372	Data Communication	Ms. Suma S G	<p>Identify the characteristics of signals for analog and digital transmissions</p> <p>Identify the issues in data transmission</p> <p>Select transmission media based on characteristics and propagation modes</p> <p>Choose appropriate signal encoding techniques for a given scenario</p> <p>Illustrate multiplexing and spread spectrum technologies</p> <p>Use error detection, correction and switching techniques in data communication</p>
	HUT 300	INDUSTRIAL ECONOMICS & FOREIGN TRADE	Ms. Geetha Vimal	<p>Explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare.</p> <p>Take appropriate decisions regarding volume of output and to evaluate the social cost of production.</p> <p>Determine the functional requirement of a firm under various competitive conditions.</p> <p>Examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society.</p> <p>Determine the impact of changes in global economic policies on the business opportunities of a firm.</p>

S7	CS401	Computer Graphics	Ms. Preethi Mariam	compare various graphics devices. analyze and implement algorithms for line drawing, circle drawing and polygon filling. apply geometrical transformation on 2D and 3D objects. analyze and implement algorithms for clipping apply various projection techniques on 3D objects summarize visible surface detection methods interpret various concepts and basic operations of image processing
	CS403	Programming Paradigms	Ms. Krishnendu	compare scope and binding of names in different programming languages appraise data types in different programming languages analyze different control abstraction mechanisms appraise constructs in functional, logic and scripting languages analyze object oriented constructs in different programming languages compare different concurrency constructs
	CS405	Computer System Architecture	Mr. sukesh Babu	analyze the advanced processor technologies interpret memory hierarchy compare different multiprocessor system interconnecting mechanisms interpret the mechanisms for enforcing cache coherence analyze different message passing mechanisms analyze different pipe lining techniques
	CS407	Distributed Computing	Ms. Amitha R	To distinguish distributed computing paradigm from other computing paradigms To identify the core concepts of distributed systems To illustrate the mechanisms of inter process communication in distributed system To apply appropriate distributed system principles in ensuring transparency, consistency and fault-tolerance in distributed file system To compare the concurrency control mechanisms in distributed transactional environment and outline the need for mutual exclusion and election algorithms in
	CS409	Cryptography and Network Security	Ms. Sreelakshmi	The Students will be able to summarize different classical encryption techniques The Students will be able to identify mathematical concepts for different cryptographic algorithms The Students will be able to demonstrate cryptographic algorithms for encryption/key exchange The Students will be able to summarize different authentication and digital signature schemes The Students will be able to identify security issues in network, transport and application layers and outline
	CS463	Digital Image Processing	Ms. Chithra S Ravi	The Students will be able to compare different methods for image acquisition, storage and representation in digital The Students will be able to appreciate role of image transforms in representing, highlighting, and modifying image The Students will be able to interpret the mathematical principles in digital image enhancement and apply them in The Students will be able to apply various methods for segmenting image and identifying image components The Students will be able to summarise different reshaping operations on the image and their practical applications The Students will be able to identify image representation techniques that enable encoding and decoding images
S8	CS402	Data Mining and Ware Housing	Ms. Krishnendu	identify the key process of Datamining and warehouse apply appropriate techniques to convert raw data into suitable format for practical data mining tasks analyze and compare various classification algorithms and apply in appropriate domain evaluate the performane ofvarious classification methods using performance metrics. make use of the concept of association rule mining select appropriate clustering algorithm
	CS404	Embedded Systems	MS. Preethi Mariam	demonstrate the role of individual components involved in a typical embedded system analyze the characteristics of different computing elements and select the most appropriate one for an embedded system model the operation of a given embedded system substantiate the role of different software modules in the development of an embedded system develop simple tasks to run on an RTOS examine the latest trends prevalent in embedded system design
	CS 472	Principles of Information Security	Dr. Arun E	appreciate the common threats faced today interpret the foundational theory behind information security design a secure system identify the potential vulnerabilities in software appreciate the relevance of security in various domains