# Department of Computer science Engineering

## Semester 3

| Sl.No. | Name of the Subject | CO Code | Course Outcomes |
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| 1 | LINEAR ALGEBRA AND COMPLEX ANALYSIS | MA201.1 | Describe analytic functions and Harmonic functions |
| | | MA201.2 | Explain conformal mapping and find regions that are mapped under certain transformations. |
| | | MA201.3 | Evaluate real life definite integrals as application of residue theorem. |
| | | MA201.4 | Solve any given system of linear equations. |
| | | MA201.5 | Evaluate the Eigen values of a matrix and how to diagonalize a matrix. |
| | | MA201.6 | Understand power series as a Taylor series. |
| 2 | DISCRETE COMPUTATIONAL STRUCTURES | CS201.1 | Identify and apply operations on discrete structures such as sets , relations and functions in different areas of computing. |
| | | CS201.2 | Solve problems in different domains using counting techniques and recurrence relations |
| | | CS201.3 | Solve problems using algebraic structures. |
| | | CS201.4 | Introduce the concepts of Lattice and Boolean Algebra in different areas |
| | | CS201.5 | Verify the validity of an argument using propositional and predicate logic and proof techniques. |
| 3 | Switching Theory and Logic Design | CS203.1 | To impart an understanding of the basic concepts of Boolean algebra and digital systems. |
| | | CS203.2 | To impart familiarity with the design and implementation of different types practically used sequential circuits. |
| | | CS203.3 | To provide an introduction to use hardware description language. |
| 4 | Data Structures | CS205.1 | Compare different programming methodologies and define asymptotic notations to analyze performance of algorithms. |
| | | CS205.2 | Use appropriate data structures like arrays, linked list, stacks and queues to solve real world problems efficiently. |
| | | CS205.3 | Represent and manipulate data using nonlinear data structures like trees and graphs to design algorithms for various applications. |
| | | CS205.4 | Illustrate and compare various sorting and searching techniques including hashing. |
| | | CS205.5 | Appreciate different memory management techniques and their significance. |
| | | CS207.1 | Memorize wave shaping and clamping circuits using diodes |
| | | CS207.2 | Understand protection techniques using transistors and IC 723 |
| | | CS207.3 | Understand the working of of amplifiers using transistors and MOSFET |

| | | CS207.4 | Analyze RC and IC oscillators |
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| | | CS207.5 | Understand the application of analog IC. |
| 5 | Electronic Devices & Circuits | CS207.6 | Summarize the applications of operational amplifiers. |
| | | HS210.1 | Understand the basics of effective communication |
| | | HS210.2 | Understand the basics of effective presentation |
| | | HS210.3 | Understand the skills for report writing, interviews and group discussion. |
| | | HS210.4 | Understand how to handle critital situations |
| | | HS210.5 | Understand how to work in groups and teams to become an effective leader |
| 6 | LIFESKILLS | HS210.6 | Create an awaareness amoung students on Engineering Ethics & Human values. |

| Semester 4 | | | |
|---|---|---|---|
| Sl.No. | Name of the Subject | CO Code | Course Outcomes |
| 1 | PROBABILITY DISTRIBUTIONS,TRANSFORMS AND NUMERICAL METHODS | MA202.1 | Understand discrete probability distribution fuctions and special discrete probability distributions |
| | | MA202.2 | Understand continuous probability density functions and special continuous probability distributions. |
| | | MA202.3 | Understand the concept of joint pribability distributions |
| | | MA202.4 | Understand the concept of autocorrelation and power spectral density for random signals |
| | | MA202.5 | Understand poisson process and markov chains. |
| | | MA202.6 | Recognize the application of numerical methods in linear algebra and calculus. |
| 2 | Computer Organization and Architecture | CS202.1 | Able to identify the basic structure and functional units of a digital computer |
| | | CS202.2 | Analyze effect of addressing modes on the execution time of a program and design processing unit using the concepts of ALU and control logic design |
| | | CS202.3 | Identify the pros and cons of different types of control logic design in processsors. |
| | | CS202.4 | Identify the pros and cons of different types of control logic design in processsors. |
| | | CS202.5 | Identify the roles of various functional units of a computer in instruction execution. |
| | | CS204.1 | Helps to identify the significance of operating system in computing devices and provide communication between application programs and hardware devices through system calls. |
| | | CS204.2 | Compare and illustrate various process scheduling algorithms. |
| | | CS204.3 | Apply appropriate memory and file managemnet scheme. |

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| 3 | Operating Systems | CS204.4 | Illustrate various disk scheduling algorithms. |
| | | CS204.5 | Appreciate the need of access control and protection in an operating system. |
| 4 | Object Oriented Design and Programming | CS206.1 | Apply object oriented principles in software design process |
| | | CS206.2 | Understand and apply various features like inheritance, data abstraction, polymorphism, exception handling and real applications using java constructs and libraries. |
| | | CS206.3 | Understand the concepts of threads, stream classes and strings |
| | | CS206.4 | Use graphical user interface and event handling, develop and deploy applet in java |
| 5 | Principles of Database Design | CS208.1 | Illustrate the fundamental concepts of database. |
| | | CS208.2 | Construct an ER model from specifications and to perform the transformation of the conceptual model into corresponding logical data structures. |
| | | CS208.3 | Design a relational data model and perform various operations. |
| | | CS208.4 | Develop queries for relational database following the design principles. |
| | | CS208.5 | Illustrate fundamental principles of data organization , query optimization and concurrent transaction processing and appreciate latest trends in databases. |
| 6 | BUSINESS ECONOMICS | HS200.1 | Generate critical thinking skills in business situations |
| | | HS200.2 | Analyze supply and demand analysis to relevant economic issues. |
| | | HS200.3 | Organize investment decisions based on capital budgeting methods in alignment with microeconomic and macroeconomic theories. |
| | | HS200.4 | analyse the profitability of the firm, economy of operation, determination of price under market situations. |
| | | HS200.5 | Excute various business tools , cost benefit analysis and rate of returns at an elementary level |
| | | HS200.6 | Analyze causes and consequences of inflation and economic growth |

| **Semester 5** | | | |
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| Sl.No. | Name of the Subject | CO Code | Course Outcomes |
| | | CS301.1 | Classify formal languages into regular, context-free, context sensitive and unrestricted languages. |
| | | CS301.2 | Design finite state automata, regular grammar, regular expression and Myhill-Nerode relation representations for regular languages |
| | | CS301.3 | Design push-down automata and context-free grammar representations for context-free languages. |
| | | CS301.4 | Design Turing Machines for accepting recursively enumerable languages |

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| 1 | THEORY OF COMPUTATION | CS301.5 | Understand the notions of decidability and undecidability of problems, Halting problem. | |
| | | CS301.6 | Identify the different computability problems | |
| 2 | SYSTEM SOFTWARE | CS303.1 | Distinguish different software into different categories | |
| | | CS303.2 | Analyze one pass ,two pass assembler | |
| | | CS303.3 | Design and implement one pass, two pass or multi pass assembler. | |
| | | CS303.4 | Design, analyze and implement loader and linker. | |
| | | CS303.5 | Design, analyze and implement macro processors. | |
| | | CS303.6 | Critique the features of modern editing /debugging tools. | |
| 3 | MICROPROCESSOR AND MICROCONTROLLERS | CS305.1 | Understand modes of operation of a typical microprocessor and microcontroller | |
| | | CS305.2 | Design and develop 8086 assembly Language programs using software interrupts and various assembler directives. | |
| | | CS305.3 | Understand about the interrupts and types of interrupts | |
| | | CS305.4 | Understand the concepts of interface with microprocessor and peripherals devices. | |
| | | CS305.5 | Analyze and compare the features of microprocessors and microcontrollers | |
| | | CS305.6 | Design and develop assembly language program using 8051 microcontrollers. | |
| 4 | DATA COMMUNICATION | CS307.1 | Understand the concept of a data communication system and a transmission media | |
| | | CS307.2 | Analyze and select transmission media based on transmission impairments and channel capacity. | |
| | | CS307.3 | Understand the signal encoding techniques and their features | |
| | | CS307.4 | Understand appropriate multiplexing techniques for a communication system. | |
| | | CS307.5 | Understand the concept of error detection and error correction algorithm to achieve error free data communication. | |
| | | CS307.6 | Understand the concept of DSSS, FHSS and switching. | |
| | | CS309.1 | Demonstrate the knowledge of fundamental concepts in graph theory, including properties and characterization of graphs and trees. | |
| | | CS309.2 | Prove theorems in graph theory(subgraphs, Isomorphism, vertex degree, connected graph, disconnected graphs,Walk, Hamiltonian path and circute, tress) | |
| | | CS309.3 | Use graphs for solving real life problems. | |
| | | CS309.4 | Distinguish between planar and non-planar graphs and solve problems. | |
| | | CS309.5 | Demonstrate how the graphs can be represented as different types of Matrixec and solve problems | |

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| 5 | GRAPH THEORY AND COMBINATORICS | CS309.6 | Develop efficient algorithms for graph related problems in different domains of engineering and science. |
| | | CS361.1 | Learn about soft computing techniques and their applications |
| | | CS361.2 | Analyze various neural network architectures |
| | | CS361.3 | Define the fuzzy systems. |
| | | CS361.4 | Undestand fuzzy membership function and fuzzylogic |
| | | CS361.5 | Understand the genetic algorithm concepts and their applications. |
| 6 | SOFT COMPUTING | CS361.6 | Identify and select a suitable Soft Computing technology to solve the problem; construct a solution and implement a Soft Computing solution |
| **Semester 6** | | | |
| Sl.No. | Name of the Subject | CO Code | Course Outcomes |
| | | HS300.1 | Determine how to manage people and organizations |
| | | HS300.2 | Analyse management theories and practices. |
| | | HS300.3 | Plan decisions for organizations. |
| | | HS300.4 | Determine staffing and related HRD functions |
| | | HS300.5 | Generate their own innovative management competencies, required for today's complex and global workplace |
| 1 | Principles of Management | HS300.6 | Understand ethical theories and social responsibility ideologies to create sustainable organizations |
| | | CS302.1 | To introduce the concepts of algorithm analysis, time complexity and space complexity |
| | | CS302.2 | To discuss the various techniques related to red-black trees, B-Trees, AVL trees |
| 2 | Design and Analysis of Algorithms | CS302.3 | To discuss various algorithm design strategies with proper illustrative examples |
| | | CS304.1 | Understand the concept of different phases of Compilation, and Lexical Analysis Phase in detail. |
| | | CS304.2 | Analyze top down and bottom up parsers, and develop appropriate parser to produce parse tree representation of the input. |
| | | CS304.3 | Understand the syntax directed translation schemes and intermediate code generation methods. |
| 3 | Compiler Design | CS304.4 | Apply optimization techniques to intermediate code and generate machine code for high level language program |
| | | CS306.1 | To Visualize the different aspects of network, protocol and network design |
| | | CS306.2 | To Examine various Data Link Layer issues and Data Link Protocols. |

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| | | CS306.3 | To Analyse and compare different LAN protocols. |
| | | CS306.4 | To Compare and select appropriate routing algorithm for a network. |
| 4 | Computer Networks | CS306.5 | To Examine the important aspects and functions of network layer, transport layer and application layer in inter-networking. |
| | | CS308.1 | Able to identify the suitable life cycle models to be used. |
| | | CS308.2 | Analyze the problem and helps to define the computing requirements for that problem. |
| | Software Engineering and Project Management | CS308.3 | Translate a Requirement specification to a design using software engineering methodologies. |
| 5 | | CS308.4 | Formulate appropriate testing strategy for the given software system. |
| | | CS368.1 | To impart the design, development and implementation of dynamic web pages , know about CGI ,CMS and develop web pages using HTML. |
| | | CS368.2 | To develop websites for user interactions using java script, present documents using style sheets. |
| 6 | Web Technologies | CS368.3 | To give an introduction to data interchange formats in web like XML and develop web applications using PHP. |
| **Semester 7** | | | |
| Sl.No. | Name of the Subject | CO Code | Course Outcomes |
| | | CS401.01 | compare various graphics devices |
| | | CS401.02 | analyze and implement algorithms for line drawing, circle drawing and polygon filling |
| | | CS401.03 | apply geometrical transformation on 2D and 3D objects |
| | | CS401.04 | analyze and implement algorithms for clipping |
| | Computer | CS401.05 | apply various projection techniques on 3D objects |
| 1 | Graphics | CS401.06 | summarize visible surface detection methods |
| | | CS403.01 | compare scope and binding of names in different programming languages |
| | | CS403.02 | analyze control flow structures in different programming languages |
| | | CS403.03 | appraise data types in different programming languages |
| | | CS403.04 | analyze different control abstraction mechanisms |
| | Programming | CS403.05 | analyze object oriented constructs in different programming languages |
| 2 | Paradigms | CS403.06 | compare different concurrency constructs |
| | | CS405.01 | Summarize different parallel computer models |
| | | CS405.02 | Analyze the advanced processor technologies |
| | | CS405.03 | Compare different multiprocessor system interconnecting mechanisms |

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| 3 | Computer System Architecture | CS405.04 | Analyze different message passing mechanisms |
| | | CS405.05 | Analyze different pipe lining techniques |
| | | CS405.06 | Appraise concepts of multithreaded and data flow architectures |
| 4 | Distributed Computing | CS407.01 | distinguish distributed computing paradigm from other computing paradigms |
| | | CS407.02 | identify the core concepts of distributed systems |
| | | CS407.03 | illustrate the mechanisms of inter process communication in distributed system |
| | | CS407.04 | apply appropriate distributed system principles in ensuring transparency, consistency and fault-tolerance in distributed file system |
| | | CS407.05 | compare the concurrency control mechanisms in distributed transactional environment |
| | | CS407.06 | outline the need for mutual exclusion and election algorithm in distributed systems |
| 5 | Cryptography and Network Security | CS409.01 | summarize different classical encryption techniques |
| | | CS409.02 | identify mathematical concepts for different cryptographic algorithms |
| | | CS409.03 | demonstrate cryptographic algorithms for encryption/key exchange |
| | | CS409.04 | summarize different authentication and digital signature schemes |
| | | CS409.05 | identify security issues in network, transport and application layers and outline appropriate security protocols |
| | | CS409.06 | To introduce network security and web security protocols. |
| 6 | Bioinformatics | CS465.01 | interpret the concepts of bioinformatics |
| | | CS465.01 | identify different types of biological sequence |
| | | CS465.01 | analyse multiple sequences and find conserved regions |
| | | CS465.01 | predict RNA and Protein secondary structures |
| | | CS465.01 | analyse genomic sequences and identify encoded gene regions |
| | | CS465.01 | Explain how protein folding takes place |

| **Semester 8** | | | |
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| Sl.No. | Name of the Subject | CO Code | Course Outcomes |
| 1 | Data Mining and Ware Housing | CS402.01 | To introduce the concepts of data Mining and its applications |
| | | CS402.02 | To understand investigation ofe data using practical data mining tools |
| | | CS402.03 | To introduce Association Rules Mining |
| | | CS402.04 | To introduce advanced Data Mining techniques |
| 2 | Embedded Systems | CS404.01 | To introduce the technologies behind embedded computing systems. |
| | | CS404.02 | To introduce and discuss various software components involved in embedded system design and development. |
| | | CS404.03 | To expose students to the recent trends in embedded system design. |

| | | CS472.01 | To introduce fundamental concepts of security. |
|---|---|---|---|
| | Principles of Information | CS472.02 | To introduce and discuss the relevance of security in operating system, web services |
| 3 | Security | CS472.03 | To introduce fundamental concepts of secure electronic transactions. |
| 4 | RESPONSIBLE ENGINEERING | FS482.01 | To enable the students to create an awareness on responsibilities and Human Values, to instill Moral and Social Values and Loyalty and to appreciate the rights of others. |