

COURSE OBJECTIVES AND COURSE OUTCOMES (R15 Regulation)

Dept	Year & Semester	Course Code	Course Name	Course Outcomes
CSE	Second year I Semester	CSE 211	DATA STRUCTURES AND ALGORITHMS	1. Analyze the complexities of recursive and Non recursive algorithms.
				2. Apply ADT concepts such as arrays, stacks and queues for solving infix to post fix, postfix evaluation, priority queues.
				3. Apply the concepts of dynamic memory allocation for reducing the time and space complexity of algorithms.
				4. Implement linear, binary, interpolation, hashing searching techniques and sorting techniques namely bubble, insertion, selection, quick, merge sort.
				5. Design and implement the Non linear data structures (trees and graphs) to optimize the solution.
CSE	Second year I Semester	CSE 214	OBJECT ORIENTED PROGRAMMING WITH JAVA	1. Design Classes for Real Time Applications.
				2. Establish The Connectivity Among The Classes Using Inheritances And Interfaces.
				3. Modularize The Application Using Packages and apply threads on classes to achieve parallelism through synchronization.
				4. Develop Test Cases By Including The Runtime Errors Using Exceptions Handling Mechanism.
				5. Identify AWT components to Design the GUI Using Applet & AWT Frameworks
CSE	Second year II Semester	CSE221	DATA COMMUNICATIONS	1. Describe the basic data communications model, differentiate TCP/IP models and examine the transmission impairments.
				2. Analyse and explain the features of Transmission media, various encoding techniques.
				3. Apply the error correction and detection techniques.
				4. Analyse the performance issues of different types of LANs
				5 Explain the characteristics of multiplexing and spread spectrum.
CSE	Second year II Semester	CSE 222	MICROPROCESSORS AND INTERFACING	1. To interpret the concepts of internal operations of the computer and the working principles of Microprocessor.
				2. To understand the architecture, pin configuration of 8085 Microprocessors along with the programming knowledge for practical implementation of assemble lev programming using instruction set of 8085
				3. To demonstrate the significance of Addressing modes and the timing diagrams to analyse the working of the microprocessor.
				4. Experimenting the interfacing of the 8085 microprocessor with co-processors and External I/O devices.
				5. To analyse the internal architecture and pin configuration of 8086 MicroProcessor along with the programming knowledge for practical implementation of assemble level programming using instruction set of 8085
CSE	Second year II Semester	CSE223	OPERATING SYSTEMS	1. Illustrate the structure of OS, Functionality and services provided by the OS. Analyse the concept of process state and state transitions.
				2. Implement the CPU Scheduling algorithms (FCFS, SJF, PRORITY and ROUND ROBIN). Demonstrate the concept of Process synchronization and resource allocation.

				3. Apply and analyze the memory management mechanism (virtual memory, demand paging and page replacement).
				4. Demonstrate the structure and organization of file systems and analyze the implementation of file systems.
				Analyze the disk structure, disk scheduling, management and protection issues
CSE	Second year II Semester	CSE 224	COMPUTER ORGANIZATION	1. Identify the basic principles and apply to arithmetic for ALU implementation.
				2. Examine the functional aspects of processor unit.
				3. Compare and assess the working principles of hardwired and microprogrammed control unit .
				4. Inspect addressing modes, instruction formats in various CPU organizations and Assess the performance implications of processing techniques.
				5. Infer the design issues in memory and I/O organizations.
CSE	Second year II Semester	CSE225	FORMAL LANGUAGES AND AUTOMATA THEORY	1. Analyze the finite automata and regular expressions for accepting the language.
				2. Apply rigorously formal mathematical methods to prove properties of languages, grammars and automata.
				3. Construct algorithms for different problems and correctness on different restricted machine models of computation (Context free grammar).
				4. Construct a Pushdown automata for languages acceptance of a PDA and pumping lemma for CFGs
				5. Construct the Turing machine for accepting unrestricted grammar and determine the decidability of computational problems.
CSE	Second year II Semester	CSE 226	MICROPROCESSOR & INTERFACING LAB	1. Design, build, and debug simple microprocessor(8085) based systems using MPS 85-3.
				2. Analyse the modes of 8255 PPI and interfacing of peripheral devices with 8-bit processor.
				3. Apply the TurboC programming to interface the peripheral interfaces to PCI component.
				4. Apply the instruction set of 8086 microprocessor using TASM/MASM emulators
CSE	Second year II Semester	CSE227	OPERATING SYSTEMS LAB	1. Implement the system calls to communicate with system programming
				2. Implement the Unix commands and Shell programming
				3. Implement the process management, page replacement, memory and resource allocation algorithms
CSE	Second year II Semester	CSE 228	HARDWARE LAB	
CSE	Third year I Semester	CSE311	COMPUTER NETWORKS	1. Identify the network model and the hardware components at physical layer.
				2. Analyze the organization structure; choose the most appropriate network architecture and technology.
				3. Contrast connection oriented and connection less services for datagram transformation. Discuss routing algorithms, congestion control algorithms and network layer protocols.
				4. Illustrate transport layer, application layer protocols and security issues in transport layer.
				5. Analyze domain name system, SNMP architecture and management protocols.

CSE	Third year I Semester	CSE 312	DATA BASE MANAGEMENT SYSTEMS	1. Interpret the basic concepts of Database Management Systems, Transaction Management and Architecture of DBMS.
				2. Apply the principles of ER Model and Relational Model in Conceptual and Logical Database Design.
				3. Construct and evaluate SQL Queries and Relational Algebra, Relational Calculus expressions.
				4. Apply the principles of normalization in schema refinement.
				5. Investigate different transaction management and recovery techniques
CSE	Third year I Semester	CSE313	COMPUTER GRAPHICS	1. Explain computer graphics, applications and contemporary terminology, hardware components etc.
				2. Design 2D and 3D objects using algorithms and apply attributes of primitives, anti-aliasing.
				3. Apply geometric transformations on 2D and 3D objects.
				4. Apply viewing transformations on 2D and 3D objects
				5. Explain visible surface methods
CSE	Third year I Semester	CSE 314	OPEN ELECTIVE I	
CSE	Third year I Semester	CSE315	DESIGN & ANALYSIS OF ALGORITHMS	1. Demonstrate the steps for algorithmic problem solving, types of problems and asymptotic notations. Analyze the recursive and non-recursive algorithms using time and space complexity.
				2. Analyze the brute force, decrease –and –conquer, divide –and- conquer methods for solving the sorting, searching, permutations and combinations, subset sum, matrix multiplication, convex hull and closest pair problems.
				3. Examine the transform-and-conquer, dynamic programming approaches for solving of pre-sorting techniques, heap sort, Balanced Trees, optimal binary search tree, Warshall's & Floyd's algorithms , Knapsack problems.
				4. Apply prim's, Kruskal's and Dijkstra's for finding a shortest path in a graph. Apply Huffman methods for encode and decode the text.
				5. Demonstrate the concepts of P , NP and NP-hard problems . Analyze limitations of Back tracking, branch and bound approaches.
CSE	Third year I Semester	CSE 316	DATA BASE MANAGEMENT SYSTEMS LAB	
CSE	Third year I Semester	CSE317	COMPUTER NETWORKS LAB	1. Implement various Network Topologies using Simulation Tools.
				2. Implement the various protocols using simulation tool
				3. Analyze the performance of the protocols in different layers.
				4. Implement and compare various routing algorithms
				5. Implement programs using socket
CSE	Third year I Semester	CSE 318	SOFT SKILLS LAB	
CSE	Third year I Semester	CSE 319	QUANTITATIVE& VERBAL APTITUDE I	

CSE	Third year II Semester	CSE321	COMPILER DESIGN	
CSE	Third year II Semester	CSE 322	SOFTWARE ENGINEERING	1. Classify the process of project life cycle model and design the SRS
				2. Summarize & Evaluate the different architecture styles
				3. Design the real world system based on Functional Oriented and Object Oriented Approach by using UML & DFD diagrams
				4. Apply testing techniques on software products
				5. Analyse & estimate the Software quality by using COCOMO model
CSE	Third year II Semester	CSE323	WEB TECHNOLOGIES	1. Given the knowledge of HTML, CSS and JAVASCRIPT, Learner is able to Design the static web pages using HTML5, apply styles using CSS and provide dynamic nature to the web pages using JAVASCRIPT to create a good website structure.
				2. Apply the PHP concepts of decision making, looping, form processing, cookies, sessions to create a responsive website, to deploy the website in the server, analyze the browser capabilities.
				3. Understand the need for a web server, servlets-life cycle, servlet API, HTTP Packages for handling http request and responses, cookies, session tracking concepts, compare servlets and CGI in website development with respect to handling request and responses..
				4. Understand Java Server Pages (JSP) objects, variables, error handling, passing control between JSP pages, scope and memory usage of objects, Compare JSP and servlets in website development.
				5. Develop a website to access database content from the user interface using database programming using PHP, Servlets and JSP. Identify the need of JSON in websites by understanding JSON syntax, objects and arrays.
CSE	Third year II Semester	CSE 324	ADVANCED COMPUTER ARCHITECTURE	1. Describe the functional requirements, performance analysis and technology enhancements of different classes of architecture.
				2. Explain about different levels of memory arrangement and demonstrate the memory hierarchical arrangement of Arm Cortex-A8 and Intel Core i7.
				3. Analyze the principle of instruction level parallelism through pipelining in Intel Core i7 and ARM CORTEX A-processors.
				4. Analyze the thread level parallelism on distributed shared memory and directory based coherence by applying synchronization techniques in multi core processor environment.
				5. Illustrate the workloads for Google warehouse-scale computer.
CSE	Third year II Semester	CSE325(A)	Smart Systems Design & Programming	1. To describe the Embedded system fundamentals, design and memory management.
				2. To write programs in ARM based assembly level language.
				3. To design Embedded system applications.
				4. To test and debug embedded system applications.
				5. To develop applications on Arduino and Raspberry Pi kits.

CSE	Third year II Semester	CSE325(B)	High Performance Computing	1. Interpret contemporary computing machines, Performance metrics of multicore machines, parallel programs.
				2. Apply PCAM methodology, Decomposition patterns for multicore machines, parallel programs.
				3. Examine shared memory programming and Thread Management methods.
				4. Analyze Loop-level parallelism, Task parallelism and its optimization issues.
				5. Estimate Distributed memory programming and communication methods namely point-to-point, Non-blocking communication
CSE	Third year II Semester	CSE325(A)	Principles Of Programming Languages	1. Identify the importance of programming languages and programming environments.
				2. Analyse the scope of the variables based on the datatypes.
				3. Evaluating the expressions and programs for solving a computational problem.
				4. Memorize the principles of programming language abstractions.
				5. Analyse the concepts of Exception Handling in object oriented programming languages.
CSE	Third year II Semester	CSE325(B)	Advanced Data Structures	1. Apply Sets, map ,Dictionary, skip lists and hash tables to text compression
				2. Analyse advantages and disadvantages to Red black trees, splay trees, and B-trees.
				3. Apply sorting algorithm to data structures to solve problems.
				4. Demonstrate the external memory and external sorting algorithms.
				5. Analyse variety of graph data structures (ADT) and their implementations of DFS.
CSE	Third year II Semester	CSE325(A)	Digital Image Processing	1. Apply the basic concepts of 2D image acquisition, sampling, quantization, relationships between pixels and components of image.
				2. Analyze the filtering techniques in spatial domain for face reorganization, pattern reorganization and segmentation.
				3. Analyze and apply the filtering techniques in frequency domain for classify the images.
				4. Apply image morphological techniques for manipulate digital images
				5. Apply the image Segmentation techniques on Edge detection and Region-Based Segmentation.
CSE	Third year II Semester	CSE325(B)	No SQL Data Bases	
CSE	Third year II Semester	CSE 326	OPEN SOURCE TECHNOLOGIES LAB	1.Understand and analyze an open source software project.
				2.Examine open source project workflow using github.
				3.Develop static web pages using HTML, CSS.
				4.Develop a dynamic web site with Client side scripting language-Javascript and Server side scripting language- PHP
				5.Integrate PHP, JAVASCRIPT and MYSQL technologies in open source environments to develop a complete web site and deploy the website using WAMP/MAMP/LAMP/XAMP Servers.
CSE	Third year II Semester	CSE327	SOFTWARE ENGINEERING LAB/MINI PROJECT LAB	1. Analyze the case study and apply the UML notations.
				2. Estimate the project metrics using COCOMO and estimate the complexity using McCabe's Cyclomatic method

				3. Compare and contrast testing techniques
CSE	Third year II Semester	CSE 328	QUANTITATIVE & VERBAL APTITUDE II	
CSE	Fourth year I Semester	CSE411(A)	Introduction to Soft Computing	
CSE	Fourth year I Semester	CSE411(B)	Web Designing	
				OPEN ELECTIVE -II
CSE	Fourth year I Semester	CSE411(D)	Cloud Computing Overview	
CSE	Fourth year I Semester	CSE411(D)	Fundamentals of Digital Image Processing	
CSE	Fourth year I Semester	CSE412	CRYPTOGRAPHY & NETWORK SECURITY	1. Memorizing the concepts of Cryptographic systems. 2. Interpret the application of Cryptographic Techniques in Network Security. 3. Apply the algorithms to achieve the security goals of Confidentiality, Authentication and Integrity to a given application. 4. Determine the applications of authentication mechanisms. 5. Illustrate the techniques of Intrusion Detection systems and Firewalls.
CSE	Fourth year I Semester	CSE413	OBJECT ORIENTED ANALYSIS & DESIGN	1. Outline the concepts & principles of Object Oriented Programming 2. Model UML diagrams according to object oriented Methodologies 3. Summarize on Object oriented Analysis & Identify the Classes 4. Structuring the basics of object Oriented Design along with patterns 5. Design Access Layer ,View layer & protocols for classes
CSE	Fourth year I Semester	CSE414(A)	Mobile Computing	1. Interpret the GSM architecture and its services. 2. Analyze the various wireless applications and study technical feasibility of various mobile applications. 3. Utilize the mobile network layer protocols and its functionalities. 4. Analyze & develop any existing or new models of mobile environments for 3G networks. 5. Evaluate and create the platform, protocols and relate concepts of Ad hoc and Enterprise wireless networks
CSE	Fourth year I Semester	CSE414(B)	Distributed Operating Systems	1. Analyze the system model, software layers of distributed operating systems and its challenges. 2. Examine the inter-process communication, TCP stream communication procedures and protocols.

				3.Evaluate the concepts of Remote procedural calls and communication among objects in distributed operating system.
				4. Apply the knowledge of peer-to-peer system, distributed mutual exclusion of distributed file system in real world scenario
				5.Apply concurrency control, deadlock management techniques in distributed operating system for group communication.
CSE	Fourth year I Semester	CSE414(C)	Neural Networks & Deep Learning	1.Examine different neural network architectures.
				2.Describe the underlying mathematics in neural networks and deep learning algorithms.
				3.Select an appropriate neural network approach for a given task.
				4.Identify the deep learning algorithms which are more appropriate for various types of learning tasks in various domains.
				5.Implement neural networks & deep learning algorithms and solve real-world problems.
CSE	Fourth year I Semester	CSE414(D)	Human Computer Interaction	1.Make use of four pillars of design, participatory design scenario development of design processes that support social, ethical and legal issues.
				2.Apply an interactive design process and universal design principles to design HCI systems.
				3. Analyze Importance of response time, attitudes and user productivity related to quality of service on Display Design, Web Page Design, Window Design HCI Systems.
				4.Distinguish the online user documentation from paper documentation along with online communities' assistance.
				5.Compare searching and visualization methodologies in Textual Documents, Database Querying, and Multimedia Documents.
CSE	Fourth year I Semester	CSE414(E)	Pattern Recognition	1. Apply pattern recognition techniques, simple pattern classifiers and discriminate functions for a normal density.
				2. Analyze the statistical bases of the classification theory
				3. Analyze segmentation using non parametric techniques and linear discriminate functions.
				4. Evaluate multi layer neural networks components, operations and algorithms.
				5. Apply stochastic methods and non metric methods on real world problems
CSE	Fourth year I Semester	CSE415(A)	Computer vision	1.Summarize the effect of radiometry in space and surface, Interpret local and global shading models and its effects.
				2.Identify appropriate linear filter mechanisms to enhance texture images
				3.Make use of clustering mechanisms in order to perform image segmentation.
				4.Apply fitting mechanisms on lines, curves and different shapes for image segmentation.
				5.Classify the images fitting using Class Histograms, Feature Selection, Neural Networks, Support Vector Machines.
CSE	Fourth year I Semester	CSE415(B)	Embedded Systems	1.Find the basic components required to build an embedded system.
				2.Select an appropriate software architecture to build an embedded system..
				3.Design embedded software using RTOS.
				4.Build embedded software using different software tools.
				5.Debug embedded software using different software and hardware tools.
CSE	Fourth year I Semester	CSE415©	Data Ware Housing & Data Mining	1. Extend the basics, challenging issues in Data Mining data warehousing and OLTP technologies.

				2. Focus on data pre-processing approaches and data mining primitives, language, system architecture.
				3. Analyze data generalization, summarization-based characterization; attribute relevance analysis in concept description. Analyze association rule mining in large databases.
				4. Illustrate classification by using decision tree induction, Bayesian , back propagation and prediction methods.
				5. Interpret categorization of major clustering methods.
CSE	Fourth year I Semester	CSE415(D)	Machine Learning	1. Demonstrate well posed machine learning problems and examine Find-s, version space and candidate elimination algorithm.
				2. Construct and analyze the problems and issues of decision tree learning algorithm.
				3. Apply Bayes theorem, concept learning, maximum likelihood, least squared error hypothesis for classification of text data.
				4. Illustrate neural network representation, problems of neural networks and back propagation algorithm
				5. Determine nearest neighborhood learning and locally weighted regression. Illustrate optimization problems using genetic algorithms.
CSE	Fourth year I Semester	CSE415(E)	Cyber Security	1. Explain about vulnerability scanning approaches and describe the functionality of different types of scanning and service tools.
				2. Comprehend about networking layers and summarize the defense methodologies and its relevant tools functionality.
				3. Describe and inspect web vulnerabilities through Zed Attack Proxy, Sqlmap, DVWA, Webgoat and password cracking mechanisms.
				4. Comprehend the cybercrime scenario and recognize the appropriate cyber law.
				5. Demonstrate the cybercrime scenario and solve the crime through investigation by applying ethical hacking mechanisms.
CSE	Fourth year I Semester	CSE416	CRYPTOGRAPHY & NETWORK SECURITY LAB	
CSE	Fourth year I Semester	CSE417	INDUSTRIAL TRAINING & SEMINAR	
CSE	Fourth year II Semester	CSE418	PROJECT I	1. Identify the problem and perform the literature survey
				2. able to summarize the literature review, analyze the previous researcher's work and relate them to current project
				3. able to identify the appropriate method to the particular problem
CSE	Fourth year II Semester	CSE421(A)	Client Server Computing	1. Analyse the concept of client server computing.
				2. Describe the components of client/ server applications.
				3. Analyze the client/ server network.
				4. Demonstrate the developments of client/ server systems

				5. Analyze the roles and responsibilities of server and database administrator.
CSE	Fourth year II Semester	CSE421(B)	Augmented Reality	
CSE	Fourth year II Semester	CSE421(C)	Semantic Web	
CSE	Fourth year II Semester	CSE421(D)	Big Data	
CSE	Fourth year II Semester	CSE421(E)	Advanced Operating Systems	
CSE	Fourth year II Semester	CSE421(F)	Information Security & Auditing	1. Explain the basic concepts and summarize techniques in intrusion detection system. 2. Interpret the types of firewalls and explain the mechanism of intrusion prevention system using security tools. 3. Develop the general techniques in establishing security and audit in IT Infrastructure. 4 .Describe and develop basic concepts and general techniques in risk assessment, handling legal and ethical issues. 5.Analyse various internet protocol security and standards and operating system security.
CSE	Fourth year II Semester	CSE421(G)	Social Network Analysis	1. Analyse the basic components of Social Network. 2. Model and visualize the social network. 3.Illustrate the mining communities in the social network 4.Infer and evaluate the techniques for Text and Opinion Mining. 5.Investigate security and privacy issues in social networking sites.
CSE	Fourth year II Semester	CSE422(A)	Network Management	CO 1: Describe Communications protocols, network management standards (OSI and TCP/IP) and illustrate the challenges and issues in network management. CO 2: Explain SNMP V1 model, functionality and its communication in the network. CO 3: Demonstrate SNMP V2 architecture, protocol and its information management. CO 4: Evaluate various commercial network management systems and open network management systems. CO 5 : Analyse and interpret functionality of Network Management Tools and Systems and useNMS tools on web based applications management.
CSE	Fourth year II Semester	CSE422(B)	Fuzzy Computing	1.Illustrate the Utility, Limitations, Uncertainty, accuracy in fuzzy system. Differentiate between Fuzzy sets ,crisp sets and their relational operations 2. Apply Fuzzification and de-Fuzzification with different member functions

				3. Demonstrate automated methods of learning, Rule-based systems, Graphical techniques of inferences
				4. Identify Batch least squares algorithm, Recursive least squares algorithm, Gradient method, Clustering method for problem solving
				5. Examine decision making methods Synthetic evaluation, Preference & consensus, Multiobjective decision making and classification & clustering methods namely Crisp relations and Fuzzy relations, Hard c-Means (HCM) and Fuzzy c-Means (FCM).
CSE	Fourth year II Semester	CSE422(C)	Wireless Sensor Networks	1. Memorizing the concepts and the need of wireless sensor networks.
				2. Apply the infrastructure of the WSN.
				3. Analyse the routing protocols & algorithms to implement the wireless sensor networks.
				4. Identify the challenges of wireless sensor networks.
				5. Evaluating the problems of critical nodes and links.
CSE	Fourth year II Semester	CSE422(D)	Bioinformatics	
CSE	Fourth year II Semester	CSE422(E)	Parallel Computing With CUDA	
CSE	Fourth year II Semester	CSE422(F)	Cloud Computing	1. Classify the architecture, taxonomy of parallel distributed computing and role of cloud computing for a business case.
				2. Analyze security, different levels of network and services in infrastructure of cloud
				3. Differentiate the IaaS, PaaS and SaaS cloud services, contrast the services to the business case as Amazon, Salesforce, Google App Engine and Microsoft.
				4. Analyzing the cloud data storage, data security challenges and cloud security
				5. Analyze the need to migrate to the cloud and best practices of cloud computing evolution
CSE	Fourth year II Semester	CSE422(G)	Computing Optimization	
CSE	Fourth year II Semester	CSE423	PROJECT II	CO1: Analyze the steps to find the solution to the problem
				CO2: Evaluate the result with the given problem
				CO3: Produce the project outcome of good quality
CSE	Fourth year II Semester	CSE424	MOOC	