MALLAREDDY ENGINEERING COLLEGE AND MANAGEMENT SCIENCES
(Approved by AICTE New Delhi & Affiliated to JNTU Hyderabad)
Kistapur Village, Medchal, Medchal District-501401

DEPT. OF INFORMATION TECHNOLOGY						
Academic Year 2018-19 - COURSE OUTCOMES						
S. No	**CLASS**	**REGULATION**	**Subject**	**Course Code**	**CO's**	**Course Oucomes**
1	II-I SEM	R-16	Mathematics – IV	MA301BS	CO-1	Analyze the complex functions with reference to their analyticity, integration using Cauchy's integral theorem
					CO-2	Find the Taylor's and Laurent's series expansion of complex functions
					CO-3	The bi-linear transformation
					CO-4	Express any periodic function in term of sines and cosines
					CO-5	Express a non-periodic function as integral representation
2	II-I SEM	R-16	Data Structures through C++	CS302ES	CO-1	Ability to choose appropriate data structures to represent data items in real world problems.
					CO-2	Ability to analyse the time and space complexities of algorithms.
					CO-3	Ability to design programs using a variety of data structures such as stacks, queues, hash tables, binary trees, search trees, heaps, graphs, and B-trees.
					CO-4	Able to analyse and implement various kinds of searching and sorting techniques.
					CO-5	Enhance their algorithmic thinking skills and learn how to design algorithms that leverage the strengths of specific data structures to solve problems efficiently.
3	II-I SEM	R-16	Mathematical Foundations of Computer Science	CS303ES	CO-1	Define the fundamental discrete mathematical structures
					CO-2	Apply logical reasoning to solve a variety of problems.
					CO-3	Able to use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, and functions.
					CO-4	Able to formulate problems and solve recurrence relations.
					CO-5	Able to model and solve real-world problems using graphs and trees.

					CO-1	Able to understand number systems and codes
4	II-I SEM	R-16	Digital Logic Design	CS304ES	CO-2	Able to solve Boolean expressions using Minimization methods.
					CO-3	Able to design the sequential and combi national circuits.
					CO-4	Able to apply state reduction methods to solve sequential circuits.
					CO-5	Design different types of registers and counters.
5	II-I SEM	R-16	Object Oriented Programming through Java	CS305ES	CO-1	Able to solve real world problems using OOP techniques.
					CO-2	Able to understand the use of abstract classes.
					CO-3	Able to solve problems using java collection framework and I/o classes.
					CO-4	Able to develop multi threaded applications with synchronization.
					CO-5	Able to develop applets for web applications.
6	II-I SEM	R-16	Data Structures through C++ Lab	CS306ES	CO-1	Able to identify the appropriate data structures and algorithms for solving real world problems
					CO-2	Able to implement various kinds of searching and sorting techniques.
					CO-3	Able to implement data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems.
					CO-4	Postulates of Boolean algebra and to minimize combi national functions
					CO-5	Design and analyze combi national and sequential circuits
7	II-I SEM	R-16	IT Workshop	CS307ES	CO-1	Apply knowledge for computer assembling and software installation.
					CO-2	Ability how to solve the trouble shooting problems.
					CO-3	Apply the tools for preparation of PPT, Documentation and budget sheet etc.
					CO-4	Will learn how to design and manage databases, perform queries, and understand basic concepts like normalization and data modeling.
					CO-5	Gain hands-on experience in configuring and managing computer networks, including setting up routers, switches, and network protocols.
8	II-I SEM	R-16	Object Oriented Programming through Java Lab	CS308ES	CO-1	Able to write programs for solving real world problems using java collection frame work.
					CO-2	Able to write programs using abstract classes.
					CO-3	Able to write multi threaded programs.
					CO-4	Able to write GUI programs using swing controls in Java.
					CO-5	Gain hands-on experience in configuring and managing computer networks, including setting up routers, switches, and network protocols.

9	II-I SEM	R-16	Environmental Science and Technology	* MC300ES	CO-1	Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development
					CO-2	Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.
					CO-3	Gain knowledge about the conservation of biodiversity and its importance.
					CO-4	Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.
10	II-II SEM	R-16	Computer Organization	CS401BS	CO-1	Able to understand the basic components and the design of CPU, ALU and Control Unit.
					CO-2	Ability to understand memory hierarchy and its impact on computer cost/performance.
					CO-3	Ability to understand the advantage of instruction level parallelism and pipelining for high performance Processor design.
					CO-4	Ability to understand the instruction set, instruction formats and addressing modes of 8086.
					CO-5	Ability to write assembly language programs to solve problems.
11	II-II SEM	R-16	Database Management Systems	CS402BS	CO-1	Demonstrate the basic elements of a relational database management system.
					CO-2	Ability to identify the data models for relevant problems.
					CO-3	Ability to design entity relationship model and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data.
					CO-4	Apply normalization for the development of application software.
					CO-5	Study distributed database systems and the challenges associated with data distribution and replication
12	II-II SEM	R-16	Operating Systems	CS403BS	CO-1	Apply optimization techniques for the improvement of system performance.
					CO-2	Ability to design and solve synchronization problems.
					CO-3	Learn about minimization of turnaround time, waiting time and response time and also maximization of throughput by keeping CPU as busy as possible.
					CO-4	Ability to change access controls to protect files.
					CO-5	Ability to compare the different operating systems.

13	II-II SEM	R-16	Formal Languages and Automata Theory	CS404BS	CO-1	Able to understand the concept of abstract machines and their power to recognize the languages.
					CO-2	Able to employ finite state machines for modeling and solving computing problems.
					CO-3	Able to design context free grammars for formal languages.
					CO-4	Able to distinguish between desirability and undesirability.
					CO-5	Able to gain proficiency with mathematical tools and formal methods.
14	II-II SEM	R-16	Business Economics and Financial Analysis	SM405MS	CO-1	The students will understand the various Forms of Business and the impact of economic variables on the Business
					CO-2	The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.
					CO-3	The Students can study the firm's financial position by analysing the Financial Statements of a Company.
					CO-4	Learn how to apply economic principles to make rational decisions in various business scenarios, considering factors like opportunity cost, marginal analysis, and cost-benefit analysis.
					CO-5	Able to analyze markets and industry trends, assess competitive forces, and make strategic business decisions based on market conditions.
15	II-II SEM	R-16	Computer Organization Lab	CS406ES	CO-1	Understand the modern computers with their processing units and also performance measurement of the computer system.
					CO-2	Understand the fundamentals of different addressing modes and instruction sets
					CO-3	Compare different processors and their instruction types and addressing modes respectively.
					CO-4	Analyze the concepts of interfacing the I/O devices using different types of buses.
					CO-5	Understand the concepts of memory systems and their mapping functions.
16	II-II SEM	R-16	Database Management Systems Lab	CS407ES	CO-1	Ability to design and implement a database schema for given problem
					CO-2	Apply the normalization techniques for development of application software to realistic problems.
					CO-3	Ability to formulate queries using SQL DML/DDL/DCL commands.
					CO-4	Learn how to design and implement databases based on specific requirements, including creating tables, defining relationships, and ensuring data integrity.
					CO-5	Become proficient in using SQL (Structured Query Language) to perform various database operations

17	II-II SEM	R-16	Operating Systems Lab	CS408ES	CO-1	Ability to develop application programs using system calls in Unix.
					CO-2	Ability to implement inter process communication between two processes
					CO-3	Ability to design and solve synchronization problems.
					CO-4	Ability to simulate and implement operating system concepts such as scheduling, deadlock management, file management, and memory management
					CO-5	Demonstrate Inter Process Communication Techniques using shared memory.
18	II-II SEM	R-16	Gender Sensitization Lab	* MC400HS	CO-1	Students will have developed a better understanding of important issues related to gender in contemporary India.
					CO-2	Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film.
					CO-3	Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
					CO-4	Students will acquire insight into the gendered division of labour and its relation to politics and economics.
19	III-I SEM	R-16	Design and Analysis of Algorithms	CS501PC	CO-1	Describe different types of Algorithms
					CO-2	Estimate performance of an Algorithm
					CO-3	Compare different types of design techniques of Algorithms
					CO-4	Choose Appropriate design techniques or Algorithms for solving problems
					CO-5	Develop Algorithms for real time scenarios
20	III-I SEM	R-16	Data Communication and Computer Networks	CS502PC	CO-1	Define Network and its components
					CO-2	Illustrate the functionality of OSI and TCP/IP reference models
					CO-3	Compare different network layer protocols
					CO-4	Evaluate Architecture for Application layer protocols
					CO-5	Choose appropriate protocol for desired communication service
21	III-I SEM	R-16	Software Engineering	CS503PC	CO-1	Able to define software engineering process and practices, and demonstrate various process models
					CO-2	Able to identify different types of risks in software development
					CO-3	Able to distinguish different testing strategies and it's working
					CO-4	Able to Estimate the quality of software process
					CO-5	Able to develop the SRS document for project.

22	III-I SEM	R-16	Fundamentals of Management	SM504MS	CO-1	Understand the significance of management in their profession.
					CO-2	Define and summarize the importance of planning and decision making techniques.
					CO-3	Describe the organizational structures and effective utilization of Human resources in the organization
					CO-4	Importance of leadership and motivation to reach the organizational goals
					CO-5	Define controlling and enlist its features, process and different controlling techniques
23	III-I SEM	R-16	Open Elective –I IPR	CE623OE	CO-1	Able to Define different types of Intellectual Property Rights.
					CO-2	Able to Classify different Intellectual Property Rights
					CO-3	Able to Identify importance of Trademark & Copy Right Laws.
					CO-4	Able to Explain importance of Patents, Trade Secret Laws
24	III-I SEM	R-16	Design and Analysis of Algorithms Lab	CS505PC	CO-1	Able to write programs in java to solve problems using divide and conquer strategy.
					CO-2	Able to write programs in java to solve problems on graph traversals.
					CO-3	Able to write programs in java to solve problems using back tracking strategy.
					CO-4	Able to write programs in java to solve problems using greedy techniques
					CO-5	Able to write programs in java to solve problems using dynamic programming.
25	III-I SEM	R-16	Computer Networks Lab	CS506PC	CO-1	Ability to implement error detection techniques.
					CO-2	Ability to apply appropriate algorithm for finding of shortest route.
					CO-3	Ability to configure the routing table
					CO-4	Ability to understand the encryption and decryption concepts in Linux environment
					CO-5	Ability to implement client/server communication
26	III-I SEM	R-16	Software Engineering Lab	CS507PC	CO-1	Able to Plan a software engineering process lifecycle.
					CO-2	Able to elicit, analyze and specify software requirements.
					CO-3	Able to Analyze and translate a specification into a design.
					CO-4	Able to Built an SRS documents: Realized sign practically, using an appropriate software engineering
					CO-5	Develop proto type model for a given case study using modern engineering tools.

27	III-I SEM	R-16	Professional Ethics	*MC500HS	CO-1	The students will understand the importance of Values and Ethics in their personal lives and professional careers.
					CO-2	The students will learn the rights and responsibilities as an employee, team member and a global citizen.
					CO-3	Acquiring knowledge of various roles of Engineer In applying ethical principles at various professional levels
					CO-4	Professional Ethical values and contemporary issues.
28	III-II SEM	R-16	Compiler Design	CS601PC	CO-1	Able to define different types of translators used in programming
					CO-2	Explain symbol table organizationand role of semantic analysis incompiler design
					CO-3	Able to construct atop down and bottom-up parser
					CO-4	List various code generation techniques
					CO-5	Able to design a Lexical analyzer
29	III-II SEM	R-16	Web Technologies	CS602PC	CO-1	Able to explain server side scripting and make use of PHP
					CO-2	Able to define client side scripting and make use of JavaScript and AJAX to validate at client side.
					CO-3	Able to define XML and choose appropriate parser techniques (DOM and SAX).
					CO-4	Able demonstrate Server side programming and adopt to build applications with java Servlets and JSP's.
					CO-5	Able to contrast servers ide scripting and Servers ide programming and develop database connectivity by make use of java and PHP.
30	III-II SEM	R-16	Cryptography and Network Security	CS603PC	CO-1	Understand and apply the crypto graphic algorithms to safe guard from intruders
					CO-2	Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack
					CO-3	Implement the various key distribution, management and message authentication schemes to send the messages with security
					CO-4	Identify information system requirements for Transport level, wireless network, E-Mail and IP
					CO-5	Design a network security system by implementing all the concepts of encryption and decryption algorithms
31	III-II SEM	R-16	Open Elective-II PCCN	EC621OE	CO-1	The student can get the knowledge of networking of computers , data transmission between computers.
					CO-2	Will have the exposure about the various communication concepts.
					CO-3	Will get awareness about the structure and equipment of computer network structures
					CO-4	Understand the concept of digital communication concepts

					CO-5	Understand the concepts of Physical and data link layer concepts.

					CO-1	Graduate can able to take up the case studies
32	III-II SEM	R-16	Professional Elective-I OOAD	IT612PE	CO-2	model it in different views with respect user requirement such as use case, logical, component and deployment and etc,
					CO-3	preparation of document of the project for the unified Library application.
33	III-II SEM	R-16	Cryptography and Network Security Lab	CS604PC	CO-1	Use C language to develop simple XOR operation for encryption of data
					CO-2	Make use of C/Java to implement Symmetric cryptography
					CO-3	Choose C/Java to develop Asymmetric cryptography
					CO-4	Implement Diffie-Hellman Key exchange using HTML and JavaScript
					CO-5	DevelopjavaprogramsonMD-5andSHA-1 algorithms
34	III-II SEM	R-16	Web Technologies Lab	CS605PC	CO-1	Able to build a static web site using HTML
					CO-2	Able to include JavaScript for validations
					CO-3	Able to use XML to store and forwarding data.
					CO-4	Students able to implement dynamic websites using PHP
					CO-5	Able to develop Web applications by using JSP with Database Connectivity.
35	III-II SEM	R-16	Advanced English Communication Skills Lab	EN606HS	CO-1	Develops confidence to use relevant vocabulary, using apt kinesics or body language in communication
					CO-2	Infer the meaning of the text easily through comprehension techniques like, skimming, scanning and effective reading through proper vocabulary
					CO-3	Analyse the writing skills through letters, reports and resume writing from the text and use for all professional settings
					CO-4	Gather ideas, information and organize them relevantly in making presentations
					CO-5	Self-assured to organize and deliver discussions, presentations and strategies to face the interviews effectively
36	IV-I SEM	R-16	Data Mining	CS701PC	CO-1	Utilize the existing tool and perform data pre-processing
					CO-2	Ability to analyze the data and apply appropriate algorithm for decision making
					CO-3	Ability to add mining algorithms as a component to the existing tool
					CO-4	Ability to develop a system to help a loan officer to decide whether the credit of a customer is good or bad using mining algorithms
					CO-5	Ability to classify web pages, extracting knowledge from the web

37	IV-I SEM	R-16	Android Application Development	IT702PC	CO-1	The key concepts and components of the Android operating system, including the kernel, middleware, application framework, and applications.
					CO-2	Demonstrate proficiency in using Android Studio and other relevant tools for Android application development, including the Android SDK, emulator, and debugging tools.
					CO-3	To design, implement, and test Android applications of reasonable complexity, incorporating essential features such as user interfaces, data storage, and interactions with device capabilities (e.g., camera, sensors).
					CO-4	the ability to deploy Android applications to mobile devices, including smart phones and tablets. They will understand the deployment process, handle versioning, and ensure compatibility with different Android devices.
					CO-5	Demonstrate effective debugging skills for Android applications. They will be able to identify and fix common issues, use debugging tools, and analyze log outputs to troubleshoot problems on mobile devices.
38	IV-I SEM	R-16	Professional Elective – II PYTHON PROGRAMMING	CS721PE	CO-1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
					CO-2	Demonstrate proficiency in handling Threads, File and Exceptions.
					CO-3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions
					CO-4	Interpret the concepts of GUI and WEB Programming as used in Python
					CO-5	Implement exemplary applications related to Database Programming with OR Min Python.
39	IV-I SEM	R-16	Professional Elective – III BCT	CS743PE	CO-1	Learn about research advances related to one of the most popular technological areas today
					CO-2	gain a solid grasp of what blockchain technology is, how it works, and its core components such as blocks, chains, cryptographic hashing, and consensus mechanisms.
					CO-3	explore the role of cryptocurrencies (e.g., Bitcoin, Ethereum) and digital assets in blockchain ecosystems, including how transactions are validated and recorded on the blockchain.
					CO-4	understand the security features of blockchain technology, including cryptographic techniques, immutability, and protection against tampering.
					CO-5	explore various consensus algorithms (e.g., Proof of Work, Proof of Stake) that govern how transactions are verified and added to the blockchain.

40	IV-I SEM	R-16	Professional Elective – IV SPPM	CS734PE	CO-1	Gain knowledge of software economics, phases in the life cycle of software development, project organization, project control and process instrumentation
					CO-2	Analyse the major and minor mile stones, art if acts and metrics from management and technical perspective
					CO-3	Design and develop software product using conventional and modern principles of software project management
					CO-4	Gain insights into cost estimation techniques, budgeting, and tracking expenses throughout the project lifecycle.
					CO-5	Learn how to lead and manage software development teams, handle conflicts, motivate team members, and promote a positive work environment.
41	IV-I SEM	R-16	Android Application Development Lab	IT703PC	CO-1	Understanding different layout types (Linear, Relative, Grid/Table) and UI components like text boxes, buttons, radio buttons, etc.
					CO-2	Handling different layouts for various device orientations and using fragments efficiently.
					CO-3	Implementing actions like dialling a number, opening a website, and sending an SMS using intents.
					CO-4	Incorporating notifications and showing details via toasts. Storing and validating user credentials from a text file or a database.
					CO-5	Storing user details in a database and performing CRUD (Create, Read, Update, Delete) operations. Validating user login credentials against stored data.
42	IV-I SEM	R-16	PE-II Lab # Python Programming Lab	CS751PC	CO-1	Student should be able to understand the basic concepts scripting and the contributions of scripting language
					CO-2	Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data.
					CO-3	Identify the external modules and import specific methods form them
					CO-4	Demonstrate proficiency in handling Strings and File Systems.
					CO-5	Ability to explore python especially the object-oriented concepts, and the built-in objects of Python
43	IV-I SEM	R-16	Industry Oriented Mini Project	IT705PC	CO-1	Apply his/her knowledge to understand the industrial applications
					CO-2	Observe the process of problem identification its formulation and solution.
					CO-3	Prepare a detailed report on the work carried
					CO-4	Present in front of the evaluation committee and other participants

44	IV-I SEM	R-16	Seminar	IT706PC	CO-1	Conduct the literature survey in his / her chosen work of the specialized engineering domain
					CO-2	Have the recent developments in the chosen work
					CO-3	Prepare a detailed report on the work carried
					CO-4	Present in front of the evaluation committee and other participants
45	IV-II SEM	R-16	Open Elective – III MIS		CO-1	Understand the usage of MIS in organizations and the constituents of the MIS
					CO-2	Understand the classifications of MIS, understanding of functional MIS and the different functionalities of these MIS. This would be followed by case study on Knowledge management.
					CO-3	Assess the requirement and stage in which the organization is placed. Nolan model is expected to aid such decisions
					CO-4	Learn the functions and issues at each stage of system development. Further different ways in which systems can be developed are also learnt.
					CO-5	Supports long-term planning by providing historical data, trend analysis, and forecasting.
46	IV-II SEM	R-16	Professional Elective – V MSE	CS854PE	CO-1	Learn about agile methodologies and practices, enabling them to work collaboratively, adapt to changing requirements, and deliver software in iterative cycles.
					CO-2	Become familiar with common design patterns and best practices for creating modular, maintainable, and scalable software architectures.
					CO-3	Understand the importance of writing tests before code and practice TDD principles to ensure robust and reliable software.
					CO-4	Explore container technologies like Docker and container orchestration platforms like Kubernetes, which are crucial for scalable and portable applications.
					CO-5	Learn about software security best practices, understanding how to identify and mitigate potential vulnerabilities and threats.
47	IV-II SEM	R-16	Professional Elective – VI NNDP	CS864PE	CO-1	understand the concepts of Neural Networks
					CO-2	select the Learning Networks in modelling real world systems
					CO-3	the functioning of feed-forward networks, optimization methods, activation functions, architectural design considerations, and the mechanics of back-propagation
					CO-4	understanding of various regularization techniques and related concepts in deep learning.
					CO-5	Storing user details in a database and performing CRUD (Create, Read, Update, Delete) operations. Validating user login credentials against stored data.

48	IV-II SEM	R-16	Major Project	IT801PC	CO-1	Demonstrate the technical knowledge of their selected project topic.
					CO-2	Undertake problem identification, formulation and solution.
					CO-3	Design engineering solutions to complex problems utilizing a systems approach.
					CO-4	Work with practicing engineers
					CO-5	Demonstrate the knowledge and skills acquired during the course work