



MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)



(Affiliated to JNTUH, Hyderabad, Approved by AICTE - Accredited by NBA & NAAC – 'A' Grade - ISO 9001:2015 Certified)
Maisammaguda, Dhulapally (Post Via. Hakimpet), Secunderabad – 500100, Telangana State, INDIA.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SUBJECT WISE-COURSE OUTCOMES

II Year I Semester		
Probability and Statistics		
1	A30008 Probability and Statistics	CO1: students will be able to analyze the basic principles of probability CO2: students will be able to apply conditional probability CO3: students have ability to apply the basic discrete distributions (Binomial) CO4: students have ability to apply the basic continuous distributions (Uniform) CO5: students will be able to collect, organize, and represent data, and be able to recognize and describe relationships
Mathematical Foundations of Computer Science		
2	A30504 Mathematical Foundations of Computer Science	Co1: Students will be able to analyze the validity of argument by using propositional and predicate calculus. Co2: Students will be able to apply basic counting techniques to solve the combinatorial problems. Co3: Students will be able to understand the relationship between sequences and recurrence relations and able to solve recurrence relations. Co4: Students will be able to apply sets, relations and digraphs to solve applied problems. Co5: Students will be able to use basic concepts of graph theory and problems efficiently..
Data Structures		
3	A30502 Data Structures	CO1: Students will be able to analyze algorithms and to determine algorithm correctness, time and efficiency class. CO2: Students will be able to apply various searching and sorting techniques to solve computing problems. CO3: Students can Demonstrate abstract properties of various data structures such as stacks, queues, lists, trees and graphs. CO4: students will be able to apply advanced abstract data type (ADT), data structures, and their implementations using C++. CO5: students will be able to implement algorithms to solve real time problems using C++ with data structures

Digital logic Design		
4	A30401 Digital logic Design	<p>CO1: students will be able to solve problems in number system, Boolean algebra and logic gates.</p> <p>CO2: students will be able to learn the methods for simplifying Boolean expressions</p> <p>CO3: students will be able to design logic circuits with minimization and mapping using HD.</p> <p>CO4: students will be able to design synchronous and asynchronous sequential circuits useful for real time applications.</p> <p>CO5: students will be able to explore storage in registers, RAM, ROM, PROM, PA, P.A and constituents of memory and it's functioning.</p>
Electronics Devices and circuits		
5	A30404 Electronics Devices and circuits	<p>CO1: students will able to apply the knowledge of PN Junction diode and some special function diodes.</p> <p>CO2: students will able to design a rectifier circuit</p> <p>CO3: students will able to design various filter circuits</p> <p>CO4: students will able to apply the concepts of BJT and FET in electronics circuits</p> <p>CO5: students will able to design an amplifier circuit with proper biasing techniques using both BJT and FET</p>
Electrical Circuits		
6	A30202 Electrical Circuits	<p>CO1: Students will be able to know the basic circuit elements and the properties of elements so that he would be able to design a circuit</p> <p>CO2: Students will be able to analyze and simplify the network using reduction techniques.</p> <p>CO3: Students will be able to find the voltage, current and power in a single phase ac circuit using phasor analysis.</p> <p>CO4: Students will be able to design network theorems</p> <p>CO5: Students will be able to understand the design and working of transformers.</p>
Electrical and Electronics lab		
7	A30282 Electrical and Electronics lab	<p>CO1: Students will be able to know the basic circuit elements and the properties of elements so that he would be able to design a circuit</p> <p>CO2: Students will be able to understand the design and working of transformers.</p> <p>CO3: Students will able to apply the knowledge of PN Junction diode and some special function diodes.</p> <p>CO4: Students will able to design a rectifier circuit.</p>
Data Structures lab		
8	A30582 Data Structures lab	<p>CO1: Students will be able to write C++ program for given problem using appropriate data structure.</p> <p>CO2: Students will be able to implement stacks ADTs, queues ADT's, Dictionaries and Binary search trees using linked lists.</p> <p>CO3: Students will be implementing different searching and sorting techniques.</p> <p>CO4: Students will be able to implement graph traversals techniques such as DFS and BFS.</p>

II Year II Semester		
Computer Organization		
9	A40506 Computer Organization	<p>CO1: Students will be able to explain the architecture of modern computer</p> <p>CO2: Students will be able to explain different instruction types</p> <p>CO3: Students will be able to understand different addressing modes and can perform computer arithmetic operations.</p> <p>CO4: Students will be able to explain I/O and memory organization in depth</p> <p>CO5: Students will be able to write assembly language programs for various applications</p>
Database Management Systems		
10	A40507 Database Management Systems	<p>CO1: Students are able to conceptualize data using different data models.</p> <p>CO2: Students are able to design E-R model and convert E-R diagrams into RDBMS and formulate SQL queries on the respective data.</p> <p>CO3: Students will be able to normalize database design.</p> <p>CO4: Students will be able to understand transaction and their properties and locking protocols used to ensure Isolation.</p> <p>CO5: Students will be able to apply the storage and recovery techniques of database system.</p>
Java Programming		
11	A40503 Java Programming	<p>CO1: Students can apply object oriented concept for writing simple programs</p> <p>CO2: Students can able to Demonstrate the ability to employ various types of selection constructs in a Java program. Be able to employ a hierarchy of Java classes to provide a solution to a given set of requirements.</p> <p>CO3: Students can able to apply the exception handling technique for writing user defined exceptions in program.</p> <p>CO4: Students can able to connect to database from java program through JDBC.</p> <p>CO5: Students can able to develop applications using Applet, AWT, JDBC and Swings</p>
Formal Languages and Automata Theory		
12	A40509 Formal Languages and Automata Theory	<p>CO1: Students will be able to design the finite automata for computational problem.</p> <p>CO2: Students will be able to design Mealy & Moore Machines for real computational problems.</p> <p>CO3: Students will be able to develop the grammar used to build programming Language.</p> <p>CO 4: Be able to minimize FA's and Grammars of Context Free Languages.</p> <p>CO 5: Students will be able to design PDA and Turing machine concept and in turn the technique applied in computers.</p>

Design and Analysis of algorithms		
13	A40508 Design and Analysis of algorithms	<p>CO1: Students will be able to analyze algorithms and improve the efficiency of algorithms</p> <p>CO2: Students will be able to apply Searching and Traversal Techniques to solve real world problems.</p> <p>CO3: Students will be able to apply different design methods for development of algorithms to realistic problems such as divide and conquer, greedy and etc.</p> <p>CO4: Students will be able to analyze different backtracking and branch and bound problems.</p> <p>CO5: Know the concepts of tractable and intractable problems and the classes P, NP and NP-complete problems.</p>
Java Programming Lab		
14	A40585 Java Programming Lab	<p>CO1: Students can able to Demonstrate the ability to employ various types of selection constructs in a Java program. Be able to employ a hierarchy of Java classes to provide a solution to a given set of requirements.</p> <p>CO2: Students can able to apply the exception handling technique for writing user defined exceptions in program.</p> <p>CO3: Students can able to connect to database from java program through JDBC.</p> <p>CO4: Students can able to develop applications using Applet, AWT, JDBC and Swings</p>
Database Management Systems Lab		
15	A40584 Database Management Systems	<p>CO1: Students will able to model database for real world problem.</p> <p>CO2: Students are able write queries using DDL, DML & DCL languages of SQL.</p> <p>CO3: Students are able write queries using Selection qualifiers and aggregate functions of SQL.</p> <p>CO4: Students are able to write Procedures, Triggers & Cursors for dynamic databases.</p>
Environmental Studies		
16	A40009 Environmental Studies	<p>CO1: Students will able to identify the role of environment in the society.</p> <p>CO2: Students will able to analyze the renewable and non-renewable energy resources.</p> <p>CO3: Students will able to classify the flora, fauna, living –rare, extinct and endangered species.</p> <p>CO4: Students will able to design rules and regulations to control environmental pollutants.</p> <p>CO5: Students will able to get the knowledge about Constitutional provisions for the protection of environment.</p>

III Year I Semester		
Operating Systems		
17	A50510 Operating Systems	<p>CO1: students will be able to identify the functional aspects and implementation methods (system call And System programs of different modules in a general purpose operating System).</p> <p>CO2: students will be able to evaluate scheduling and communication methods of processes handled by Operating systems through examples.</p> <p>CO3: students will be able to evaluate memory management strategies such as paging and segmentation, Virtual Memory, swapping, and page replacement algorithms.</p> <p>CO4: students will be able to analyse the implementation strategies of file systems regarding directory, Allocation, free space management and file recovery.</p> <p>CO5: students will be able to analyse the process synchronization methods and deadlock handling Approaches employed in operating systems.</p>
Principles of programming languages		
18	A50511 Principles of programming languages	<p>CO1: Compare various categories of Programming Languages and their implementation methods, and represent the programming languages syntax using BNF, EBNF.</p> <p>CO2: Explore Semantic issues of variables in different programming languages and the design issues of the various categories of data types.</p> <p>CO3: Analyse statement level constructs and explore design issues of subprograms.</p> <p>CO4: Explore the process of responding to the occurrence of exceptions & events in Ada, C++ and Java.</p> <p>CO5: Analyse various kinds of concurrency and explore design issues for providing support for concurrency by Ada, Java and C# languages.</p>
Software Engineering		
19	A50518 Software Engineering	<p>CO1: Outline the fundamentals of software engineering concepts and software process standards.</p> <p>CO2: Demonstrate appropriate process model and software engineering practices.</p> <p>CO3: Analyze requirements of software system and explore all requirements gathering approaches</p> <p>CO4: Creating an architectural design using design engineering process.</p> <p>CO5: Apply software strategies and software testing tactics for testing real time projects effectively</p>
Compiler Design		
20	A50514 Compiler Design	<p>CO1. Students will be able to explain Language Processing and Language Translators.</p> <p>CO2. Students will be able to design various parsing Techniques of Syntax Analyzer</p> <p>CO 3. Students will be able to design Semantic Analysis and various Techniques in Code Generation.</p> <p>CO 4. Students will be able to design Code Optimization and Management of Symbol Table</p> <p>CO5: Students will be able to Analyze the control flow and data flow of a typical program.</p>

Computer Networks		
21	A50515 Computer Networks	<p>CO1: Understand how the data is transmitted from point-to-point.</p> <p>CO2: Summarize Data Link Layer Protocols.</p> <p>CO3: Analyze of different Medium Access Control protocols.</p> <p>CO4: Evaluate different routing protocols and Transport layer protocols.</p> <p>CO5: Understand the concepts of Presentation and Application Layer Protocols</p>
Intellectual Property Rights		
22	Open Elective A50017 Intellectual Property Rights	<p>CO1: Students will be able to analyze international intellectual property rights system, the main forms of intellectual property rights and the relevant.</p> <p>CO2: students will be aware of the basic legal aspects at present following at Global level.</p> <p>CO3: Students will be able to demonstrate context of sustainable development.</p> <p>CO4: Students will be able to emphasize three dimensions of sustainable development: Environmental, Economic and social.</p> <p>CO5: Students will be able to analyze necessary analytical tools of intellectual property rights.</p>
Operating Systems Lab		
23	A50589 Operating Systems Lab	<p>CO1: Describe and demonstrate the functions and features of current operating systems.</p> <p>CO2: Students will able to build the functions of a low level operating system including page replacement algorithms, deadlock handling routines.</p> <p>CO3: Demonstrate proficiency in common industry software applications (word processing, spreadsheet, presentation, and database) to effectively communicate in a professional business setting</p> <p>CO4: Demonstrate skills that meet industry standards and certification requirements in the use of system hardware, operating systems technologies, and application systems.</p>
Compiler Design Lab		
24	A50587 Compiler Design Lab	<p>CO1: Understand the practical approach of how a compiler is designed.</p> <p>CO2: Apply the techniques used in compiler construction.</p> <p>CO3: Construct components(few phase) of the compiler for the mini language</p> <p>CO4: Students will be able to apply the knowledge of lex-tool & yacc tool to develop a scanner & parser.</p>

III Year II Semester		
Distributed Systems		
25	A60521 Distributed Systems	<p>CO1: Students will understand the fundamentals of Distributed Systems and be able to Design.</p> <p>CO2: Students are able to identify the Processes, Synchronization, Consistency, Fault Tolerance and Security.</p> <p>CO3: Students will identify the core concepts of distributed systems: the way in which several machines orchestrate to correctly solve problems in an efficient, reliable and scalable way.</p> <p>CO4: Students will examine how existing systems have applied the concepts of distributed systems in designing large systems, and will additionally apply these concepts to develop sample systems.</p> <p>CO5: Students are able to Develop Distributed Systems and Applications</p>
Information Security Assessments & Audits		
26	A60522 Information Security Assessments & Audits	<p>CO1: Students will be able to understand the difference between Security Metrics and Audits.</p> <p>CO2: Students will get knowledge on Vulnerability Management.</p> <p>CO3: Students will be able to know the Information Security Audit Tasks, Reports and Post Auditing Actions.</p> <p>CO4: Students will be able to understand Information Security Assessments.</p> <p>CO5: Students will get knowledge on Configuration Management.</p>
Object Oriented Analysis and Design		
27	A60524 Object Oriented Analysis and Design	<p>CO1: Understand Unified Modeling Language Notation and Apply models for object-oriented system development</p> <p>CO2: Identify system development design patterns.</p> <p>CO3: Create use case diagram to represent the scope of development problem domain.</p> <p>CO4: Develop domain model, sequence diagram, activity diagram and state chart diagram based on use case narrative.</p> <p>CO5: Apply Unified Modeling Language Notation to object-oriented models.</p>
Software Testing Methodologies		
28	A60525 Software Testing Methodologies	<p>CO1: Interpret a model for testing and understand the process of testing.</p> <p>CO2: Visualize control flow graph and demonstrate complete path testing to achieve C1+C2 and identify the complications in a transaction flow testing and anomalies in data flow testing.</p> <p>CO3: Apply domain testing strategies for different domains.</p> <p>CO4: Apply reduction procedures to control flow graph and simplify it into a single path expression and understand the use of decision tables in test case design.</p> <p>CO5: Identify effective approach for node reduction.</p>

Managerial Economics and Financial Analysis		
29	A60010 Managerial Economics and Financial Analysis	<p>CO1. Students will be able to apply Concepts of managerial economics roles, responsibilities of manager and relation of managerial economics with other disciplines</p> <p>CO2. Students will be able to identifying the roles and responsibilities of a manager</p> <p>CO3. Students will be able to identifying the demand and supply of a product and factors relation to it</p> <p>CO4. Exploring the importance of pricing strategies and price fixation</p> <p>CO5. Students will be able to design various demand forecasting methods of products</p>
Web Technologies		
30	A60512 Web Technologies	<p>CO1: Design web pages by using HTML and DHTML</p> <p>CO2: Develop user defined tags and transfer data between components by using XML and Java Beans.</p> <p>CO3: Create data driven web applications by applying database connectivity techniques.</p> <p>CO4: Design and implement dynamic WebPages using server side components like servlets.</p> <p>CO5: Understand concepts of JSP and struts framework and apply them in solving real world problems</p>
Case Tools & Web Technologies lab		
31	A60591 Case Tools & Web Technologies lab	<p>CO1: Ability to understand the history, cost of using and building CASE tools.</p> <p>CO2: Ability to construct and evaluate hybrid CASE tools by integrating existing tools.</p> <p>CO3: Students will be able to design and implement dynamic websites with good aesthetic sense of designing and latest technical know-how's.</p> <p>CO4: Students will be able to have a Good grounding of Web Application Terminologies, Internet Tools, E – Commerce and other web services.</p>
Advanced Communication lab		
32	A60086 Advanced English communication lab	<p>CO1: Students will be able fluent in English through a well developed vocabulary.</p> <p>CO2: Better Understanding of nuances of language through audio-visual experience and group activities.</p> <p>CO3: Neutralization of accent for intelligibility</p> <p>CO4: Speaking with clarity and confidence thereby enhancing employability skills of the students.</p>
IV Year I Semester		
Linux Programming		
33	A70511 Linux Programming	<p>CO1: Explore LINUX Ecosystem.</p> <p>CO2: Implement Shell scripting in LINUX Kernel.</p> <p>CO3: Design AWK scripts for text processing and Apply Regular Expressions for Pattern matching</p> <p>CO4: Design Scripts for Process Creation & Network Management.</p> <p>CO5: Analyze multi-processing in Linux kernel.</p>

Design patterns		
34	A70530 Design patterns	<p>CO1: Have a deeper knowledge of the principles of object - oriented design</p> <p>CO2: Understand how these patterns related to object - oriented design.</p> <p>CO3: Understand the design patterns that are common in software applications.</p> <p>CO4: Will able to use patterns and have deeper knowledge of patterns.</p> <p>CO5: Will be able to document good design pattern structures.</p>
Data Warehousing and Data Mining		
35	A70520 Data Warehousing and Data Mining	<p>CO1:Students will be able to distinguish between OLTP and data warehouses and should able to model the data warehouse using Star/Snow flake/Fact Constellation schemas</p> <p>CO2:Students will be able to understand the data mining tasks and should able to apply the data preprocessing techniques to improve the quality of the data.</p> <p>CO3:Students will be able to mine the association rules from transactional databases.</p> <p>CO4:Students will be able to mine classification models and should able to classify the data by applying various classification techniques.</p> <p>CO5: Students will be able to apply the various clustering & outlier techniques to group the data into different clusters.</p>
Cloud Computing		
36	A70519 Cloud Computing	<p>CO1: Analyze various delivery and deployment models.</p> <p>CO2: Analyze the virtual machine provisioning and virtualized storage Strategies.</p> <p>CO3: Explore the PAAS Services.</p> <p>CO4: Explore the SAAS Services.</p> <p>CO5:Identify the issues in monitoring and management in cloud environment and also identifying the components for deployment of applications on the cloud.</p>
Mobile Computing		
37	Open Elective-I A70540 Mobile Computing	<p>CO1: To understand the concept of mobile computing and architecture of mobile communication.</p> <p>CO2:Apply the concepts of mobile communications to the transactions and transaction management.</p> <p>CO3: Apply the concepts of mobile computing and conventional wired network and simulate it on the simulator.</p> <p>CO4: To understand the working of heterogeneous networks.</p> <p>CO5: Students will be able to design and development of context-aware solutions for mobile devices</p>

Computer Forensics		
38	Open Elective-II A70628 Computer Forensics	<p>CO 1. Students will be able to analyze investigations and to show crime cases clearly in court.</p> <p>CO2. Students will be able to work with Windows and DOS Systems: exploring file systems</p> <p>CO 3. Students will be able to work with current Computer Forensic tools: evaluating computer forensic tool needs.</p> <p>CO4: Students will understand the usage of computers in forensic and how to use various forensic tools for a wide variety of investigations.</p> <p>CO5: It gives an opportunity to students to continue their zeal in research in computer forensics.</p>
Linux Programming lab		
39	A70596 Linux Programming lab	<p>CO1: Ability to understand the Linux environment</p> <p>CO2: Ability to perform the file management and multiple tasks using shell scripts in Linux environment. students will be able to implement the linux Commands & Shell Scripts.</p> <p>CO3: Students will be able to implement system level programming in UNIX File System</p> <p>CO4: Students will be able to illustrate process communication</p>
Data Warehousing and Data Mining lab		
40	A70595 Data Warehousing and Data Mining lab	<p>CO1: Understand the need of data mining and the details of different algorithms made available by popular commercial data mining software.</p> <p>CO2: Solve real data mining problems by using the right tools to find interesting Patterns and obtain hands-on experience with some popular data mining software</p> <p>CO3: Students will be able to identify the relevant attributes and are able to analyze the data sets of any organization.</p> <p>CO4: Students will be able to classify the data sets by constructing decision tree in WEKA Tool.</p>
IV Year II Semester		
Management Science		
41	A80014 Management Science	<p>CO1. Students will be able to develop responsibilities of manager and relations of with management other disciplines</p> <p>CO2. Students will be able to Identifying the roles and responsibilities of a manager</p> <p>CO3: Students will be able to explain the importance of organization behavior and leadership.</p> <p>CO4: Students will be able to develop production and production related functions.</p> <p>CO5: Students will be knowing the basic management practices, functional areas of the organization which helps the students to build up their career in the corporate world.</p>

Semantic Web and Social Networks		
42	Elective III A80538 Semantic Web and Social Networks	<p>CO1. Students are able to design a small Semantic Web and Social Network.</p> <p>CO2. Students are able to identify the different methods in Semantic Web and Social Networking using Web Intelligence</p> <p>CO3. Students are able to design the small Resource Description Framework (RDF) for proper communication.</p> <p>CO4. Students are able to generate and create a Web Ontology Services</p> <p>CO5: Ability to build a blogs and social networks</p>
Adhoc & Sensors Networks		
43	Elective IV A80542 Adhoc & Sensors Networks	<p>CO1. Students will be able to design the principles of sensor networks and mobile ad hoc networks, and their impact on protocol design</p> <p>CO2. Students will be able to Develop MAC and routing protocols for sensor and mobile networks</p> <p>CO3. Students will be able to develop information dissemination protocols for sensor and mobile networks.</p>
Industry Oriented Mini Project		
44	A80087 Industry Oriented Mini Project	<p>CO1. The students understands the process to be followed in the software development life cycle.</p> <p>CO2. Finds practical solutions to the problems</p> <p>CO3. Manage a project from beginning to end</p> <p>CO4. Define, formulate and analyze a problem</p>
Seminar		
45	A80089 Seminars	<p>CO1. Students will be able to express and master public speaking during technical presentations.</p> <p>CO2. Students will be able to get an opportunity; where in individuals can meet others with the same Interests/problems/concerns and also to envisage emerging technologies.</p> <p>CO3. Students will be able to have a sense of renewed hope and inspiration, as sometimes business concerns are lessened by sharing experiences with others.</p> <p>CO4. Students will be able to have a great morale booster for students for career making advancement</p> <p>CO5. Students will be able to become speaker and it will motivate students in facing technical and HR interview rounds</p>
Project Work		
46	A80088 Project Work	<p>CO1. Students will be able to analyze a problem, identify and define the computing requirements appropriate to its solutions.</p> <p>CO2. Students will be able to function effectively on teams to accomplish a common goal.</p> <p>CO3. Students will be able to use current techniques, skill and tools necessary for computing practices.</p> <p>CO4. Students will be able to design and development principles in the construction of software systems of varying complexity.</p> <p>CO5. Students will be able to get an eye opener to bridge gap between Academia and real time industry issues on technological front</p> <p>CO6. Students will be able to meet industrial requirement and to improve technical interview skills of a student.</p>

Comprehensive viva

47	A80090 Comprehensive viva	CO1. The Student able to communicate orally about analyzing a problem. CO2. Students will be able to express the effectively to accomplish a common goal. CO3. Students will be able to recapitulate fundamentals from across all semesters of B-Tech course work [4 years of learning]. CO4. Students will be able to handle difficult scenario during Viva Voce in the event of plenty of subjects under question CO5. Students will be able to meet industrial requirement and to improve technical interview skills of a student
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