Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
Accredited by **NAAC** as '**A++**' ❖Approved by AICTE ❖ ISO 21001:2018 Certified
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Department of Computer science and Engineering

Program: M.Tech -CSE

Academic Year:2022-2023

Course Code	Course Title	CO No	Description of the course outcome
22CS5101	MATHEMATICAL FOUNDATIONS FOR COMPUTER SCIENCE	CO1	Utilize the sets and apply the knowledge of mathematical reasoning
		CO2	Apply combinatorial Analysis, Apply procedure to solve a recurrence relations and digraphs
		CO3	Model the different types of graphs, their usefulness in representing data and graph colouring problems perspective of problem solving.
		CO4	Make use of the concept of automata and the use of grammars in languages
22CS5102	COMPUTER ORGANIZATION & ARCHITECTURE	CO1	Apply the concepts of logic design and understand Computer abstractions and technology: Assemblers, Linkers, and the SPIM Simulator
		CO2	Analyze different RISC architectures with their instruction sets, desktops and servers
		CO3	Analyze the performance of different processors and mapping control to Hardware.
		CO4	Analyze Large and Fast: Exploiting Memory Hierarchy, Parallel Processors from Client to Cloud 500
21CS5103	DATA STRUCTURES & ALGORITHMS	CO1	Apply measures of efficiency to algorithms and Compare various linear data structures like Stack ADT, Queue ADT, Linked lists
		CO2	Analyze and compare linear data structures and analyze different searching and hashing techniques
		CO3	Analyze and compare various non – linear data structures like Trees and Graphs.
		CO4	Analyze and compare various Shortest Path and Pattern Matching algorithms, to select from a range of possible options, to provide justification for that selection, and to implement the algorithm in a particular context.
		CO5	Execute lab experiments and develop a small project along with his/her team members
22CS5104	DISTRIBUTED DATABASE MANAGEMENT SYSTEMS	CO1	Understand the fundamentals of query optimization and database recovery protocols.
		CO2	Analyze emerging database technologies and distributed databases.
		CO3	Discriminate object oriented and relational database systems.
		CO4	Analyze multimedia databases.
		CO5	Evaluate various SQL ,design ER diagrams and prediction using different algorithms with Matlab programming .

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22IE5149	SEMINAR	CO5	The Seminar has to be taken up by the MTech Second Semester students. It is based on independent research in one of the areas opted by the student. In a Seminar, a student should demonstrate his/her ability in finding out the relevant sources, selection, an illustration of logic, and in organizing the information on the topic, gathering the data, processing, analyzing, and summarizing.
22CS5205	OPERATING SYSTEM DESIGN	CO1	Understand the internals of UNIX kernel architectures and explore design of File Subsystem, buffer cache, and File System Calls.
		CO2	Understand the internals of system call and explore design of structure of processes, process control, process system calls and scheduling in UNIX systems
		CO3	Understand Traps, interrupts, and drivers. Explore design tradeoffs and Implement parts of memory management policies, first address space, page tables and virtual memory in UNIX systems
		CO4	Analyse theory and implementation of inter-process communication, synchronization, concurrency, and Boot loader in UNIX variants.
		CO5	Implement parts of xv6 and develop Programs/commands using UNIX System Programming. Perform system administration.
22CS5206	COMPUTER NETWORKS & SECURITY	CO1	Outline OSI and TCP/IP reference models and classify the error control mechanisms like CRC and Hamming code.
		CO2	Infer Channel allocation problem and algorithms to avoid it.Classify list of static and dynamic routing algorithms like Dijkstra, Distance vector routing and link state.
		CO3	Identify the importance of IPv4 classful, classless addressing schemes and outline the functionalies of transport layer like TCP Connection management and congestion control.
		CO4	Identify the functionality of DNS, HTTP and SMTP protocols. Apply Encryption algorithms like DES and RSA on the given examples.
		CO5	To Analyze error detection and error correction methods, Routing Algorithms and Cryptographic algorithms
22CS5207	OBJECT ORIENTED ANALYSIS AND DESIGN	CO1	Understand the different phases involved in the Object Oriented Software development.
		CO2	Apply the concepts of system modelling and perform the analysis modelling for a given case study
		CO3	Examine the architecture and design specification of a given application
		CO4	Analyze and Test, verify and validate given piece of software code and Reusability.
		CO5	Implement and draw UML Diagrams (Lab Component)
22CS5208	ENTERPRISE PROGRAMMING	CO1	Understand the different phases involved in the Object Oriented Software development.
		CO2	Apply the concepts of system modelling and perform the analysis modelling for a given case study
		CO3	Examine the architecture and design specification of a given application
		CO4	Analyze and Test, verify and validate given piece of software code and Reusability.

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		CO4	Apply Rule based Techniques, Statistical Machine translation (SMT), word alignment
		CO5	Inspect and Evaluate Language Processing Methods using python
22CS51B1	REQUIREMENTS ENGINEERING	CO1	Explain about threats and its properties that target software and illustrate the resources that addresses these issues.
		CO2	Illustrate the process of analysing and validating security requirements.
		CO3	Apply software testing methods to analyse the software code to improve the quality and describe the assembly changes for system design.
		CO4	Apply the governance security policy to ensure enterprise security in project management
22CS51B2	PRINCIPLES OF PROGRAMMING LANGUAGES	CO1	Acquire the skills for expressing syntax and semantics in formal notation
		CO2	Identify and apply a suitable programming paradigm for a given computing application
		CO3	Gain knowledge of and able to compare the features of various programming languages
		CO4	An ability to program in different language paradigms and evaluate their relative benefits.
22CS51B3	COMPILER DESIGN	CO1	Design lexical analysers for corresponding regular expressions
		CO2	Design efficient parsers for a given context free grammar
		CO3	Design intermediate code generator
		CO4	Apply code optimization techniques and apply them to generate efficient code.
		CO5	Design a simple compiler using LeX and YACC
22CS51B4	SOFTWARE VERIFICATION & VALIDATION	CO1	Understand test cases suitable for a software *development for different domains.*
		CO2	Identify suitable tests to be carried out. Conduct an inspection or review of software source code for a small or medium sized software project.
		CO3	Prepare test planning based on the document using automatic testing tools
		CO4	Document test plans and test cases designed
		CO5	Test the software application completely and make it sure that it's performing well and as per the specifications
22CS52C1	CRYPTOGRAPHY & NETWORK SECURITY	CO1	To understand basics of Cryptography and Network Security.
		CO2	To be able to secure a message over insecure channel by various means.
		CO3	To learn about how to maintain the Confidentiality, Integrity and Availability of a data

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		CO4	To understand various protocols for network security to protect against the threats in the networks
22CS52C2	MOBILE COMPUTING	CO1	To understand concepts of Mobile Communication
		CO2	To analyse next generation Mobile Communication System
		CO3	To understand network and transport layers of Mobile Communication
		CO4	Analyse various protocols of all layers for mobile and ad hoc wireless communication networks.
22CS52C3	HIGH PERFORMANCE COMPUTING	CO1	Analyze the performance of GPU memory hierarchy and MPI programming
		CO2	Develop parallel programs using OpenCL library and understand FPGA-Based Supercomputer
		CO3	Develop mixed mode programs for Multicore, GPU and cluster optimization systems
		CO4	Generate parallel programs for matrix, graph and sorting problems using CUDA, OpenMP library
		CO5	Implementation and analysis of pre-defined services in the online cloud platform
22CS52C4	NETWORK MANAGEMENT SYSTEMS	CO1	Apply network management standards to manage practical networks
		CO2	Formulate possible approaches for managing OSI network model.
		CO3	Infer SNMP for managing the network and RMON for monitoring the behavior of the network
		CO4	Identify the various components of network and formulate the scheme for the managing them
22CS52C5	CONTINUOUS DELIVERY &DEVOPS	CO1	Identify the Need of DevOps in SDLC and Cloud Infrastructure in DevOps, Apply Version Control System to track the latest version of Software
		CO2	Analyze Continuous Integration and Continuous Deployment using Infrastructure as Code, Build in Cloud native Applications using Pipeline and Examine the Software and Automation Testing Frameworks.
		CO3	Analyze need of Containerization in SDLC and Examine the Kubernetes Pod Configuration.
		CO4	Inspect Configuration Management using Infrastructure as Code, Analyze Continuous Monitoring and Container Orchestration process.
		CO5	Build and Inspect the Tools associated to DevOps Life Cycle.
22CS52D1	SERVICE ORIENTED ARCHITECTURE	CO1	To gain understanding of the basic principles of service orientation
		CO2	To learn service oriented analysis techniques
		CO3	To learn technology underlying the service design
		CO4	To learn advanced concepts such as service composition, orchestration and Choreography
22CS52D2	VISUAL PROGRAMMING	CO1	Understanding the basic concepts of .Net framework, C#.Net and Build console and desktop applications using C#.net framework
		CO2	Build C#.net desktop applications using ADO.NET

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		CO3	Applying the concepts of ASP.NET Standard Server controls for visual programming application development
		CO4	Build the Visual programming applications using Web forms, Web Pages and MVC, Page and State management and master pages.
		CO5	Develop the programs for desktop, web and enterprise application development using Visual Programming Techniques.
22CS52D3	DIGITAL IMAGE PROCESSING	CO1	To understand the fundamental concepts of Digital Image Processing
		CO2	To understand the pre-processing process of remote sensing data
		CO3	To understand basic image processing operations
		CO4	To understand image classification techniques
		CO5	To apply digital image Processing techniques
22CS52D4	BIG DATA ANALYTICS	CO1	Understand the concepts of big data, Initial exploration of analysis of data and Data visualization.
		CO2	Analyze Initial exploration of data and advanced data analytics by using R
		CO3	Apply advanced algorithms & Statistical modelling for big data using HDFS, HIVE, and PIG.
		CO4	Apply advanced SQL functions for in-database analytics by MADlib, Greenplum along with common deliverables of analytics life cycle project
		CO5	Build and Evaluate the Big Data Analytical problems using R, Hadoop, HIVE Programming concepts.

M. Kavitha.
Academic Professor I/C

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