Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
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Department of Computer Science and Engineering

Program: M. Tech - CSE

Academic Year : 2021-2022

COURSE CODE	COURSE TITLE	CO. NO	DESCRIPTION OF THE COURSE OUTCOME
21CS5101	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
21CS5102	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

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			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
21CS5104	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 .
21IE5149	SEMINAR	CO1	To know and understanding the current scenario about Cyber Security research domain
		CO2	To understand the current field of digital forensics
		CO3	To understand the basic concepts of secure data communication
		CO4	To understand the basic idea about the blockchain technology
		CO5	To understand the need of modern secure system for business transaction
21CS5205	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

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			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.
21CS5206	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
21CS5207	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)
21CS5208	ENTERPRISE PROGRAMMING	CO1	Understand the basic concepts of XML. Apply JDBC API and callable statements Learn Maven to build Enterprise Java applications. Implement servlets using Maven

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		CO2	Implement enterprise application using JSP and Hibernate
		CO3	Implement enterprise application using Spring Framework
		CO4	Use Spring Boot, Rest APIs and Microservices for integrating Enterprise Java applications
		CO5	Develop the programs for enterprise application development.
21IE5250	TERM PAPER	CO5	The term paper 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 term paper, 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.
21IE6050	DISSERTATION	CO5	The course is specially designed to provide an opportunity to the students for development of their academic skills and logical thinking through open ended lab oriented activities. As a part of education, this project course follows a method of learning and therefore, the student's actual day-today task involvement would constitute the central thread of the learning process. The evaluation will recognize this aspect by demanding day-to-day productivity and punctuality of the student.
21CS51A1	SOFT COMPUTING	CO1	Interpret fuzzy logic system
		CO2	Analyze Artificial Neural Network Models
		CO3	Demonstrate Swarm and Evolutionary Algorithms
		CO4	Illustrate Hybrid Fuzzy-Neural- Evolutionary-Swarm Models
		CO5	Demonstration of neuro, fuzzy, evolutionary, and swarm algorithms using open source tools

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21CS51A2	MACHINE LEARNING	CO1	Apply Machine Learning Techniques using Decision Tree to solve Real World Problems
		CO2	Build Bayesian models for solving Classification and Prediction problems
		CO3	Apply Neural Network and Genetic Algorithm techniques to solve Classification, Prediction problem
		CO4	Demonstrates Learning First Order Rules, Analytical Learning, Explanation - Basel Learning and reinforcement learning, Feature Selection
		CO5	Implement Machine Leaning Techniques using Python Language
21CS51A3	DATA MINING	CO1	Illustration of Warehouse & Mining, ETL, OLAP & OLTP, Data Cube Operations and Data Warehouse architecture
		CO2	Demonstration of Data Pre-processing through different methods
		CO3	Apply Different Classification Algorithms to Segregate Input data into different class levels and find out Hidden relationship between transactional dataset using Association Rule Mining.
		CO4	Build different Clustering Models using the predefined dataset.
		CO5	Implementation of warehousing and mining algorithms using suitable tools and programming languages
21CS51A4	NATURAL LANGUAGE PROCESSING	CO1	Understand approaches to syntax and semantics in NLP
		CO2	Apply the statistical estimation and statistical alignment models
		CO3	Analyze grammar formalism and context free grammars
		CO4	Apply Rule based Techniques, Statistical Machine translation (SMT), word alignment

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COURSE CODE	COURSE TITLE	CO. NO	DESCRIPTION OF THE COURSE OUTCOME
		CO5	Inspect and Evaluate Language Processing Methods using python
21CS51B1	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
21CS51B2	PRINCIPLES OF PROGRAMMING LANGUAGES	CO 1	Understand various programming paradigms
		CO 2	Apply Object oriented principles to solve the problems
		CO 3	Implement functional language principles in programming
		CO 4	Apply concurrency and formal semantics with higher order constructs in programming
		CO 5	Develop the programs for application development.
21CS51B3	COMPILER DESIGN	CO 1	Design lexical analysers for corresponding regular expressions
		CO 2	Design efficient parsers for a given context free grammar
		CO 3	Design intermediate code generator
		CO 4	Apply code optimization techniques and apply them to generate efficient code.
		CO 5	Design a simple compiler using LeX and YACC

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21CS51B4	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
21CS52C1	CRYPTOGRAPHY AND 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
		CO4	To understand various protocols for network security to protect against the threats in the networks
21CS52C2	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.
21CS52C3	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

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		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
21CS52C4	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
21CS52C5	CONTINUOUS DELIVERY AND 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.
21CS52D1	SERVICE ORIENTED ARCHITECTURE	CO1	To gain understanding of the basic principles of service orientation
		CO2	To learn service oriented analysis techniques

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		CO3	To learn technology underlying the service design
		CO4	To learn advanced concepts such as service composition, orchestration and Choreography
21CS52D2	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
		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.
21CS52D3	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
21CS52D4	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.

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		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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