



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

Campus: Green Fields, Vaddeswaram - 522 302, Guntur District, Andhra Pradesh, INDIA.

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Department of Computer Science and Engineering

Program: M. Tech - MLC

Academic Year : 2020-21

COURSE CODE	COURSE TITLE	CO. NO	DESCRIPTION OF THE COURSE OUTCOME
18CS5109	OPTIMIZATION TECHNIQUES	CO1	Learn efficient computational procedures to solve optimization problems,
		CO2	To develop and promote research interest in applying optimization techniques in problems of Engineering and Technology
		CO3	Cast engineering minima/maxima problems into optimization framework to solve real world problems.
		CO4	Apply and Evaluate knowledge of optimization to formulate and solve engineering problems
18CS5110	APPLIED STATISTICS	CO1	Identify the suitable probability distribution to the given experimental data and calculation of various characteristics of the respective probability distributions
		CO2	Draw the statistical inference of the given data through various tests of statistical hypothesis, viz., tests for means and proportions (single and two) and design of experiments
18CS5121	DATA WAREHOUSING & MINING	CO1	Understand stages in building a Data Warehouse
		CO2	Analyze Pre processing techniques for data cleansing and multi-dimensional modelling techniques
		CO3	Analyze performance of algorithms for Association Rule
		CO4	Analyze Classification and Clustering algorithms
18CS5112	MATRIX COMPUTATION	CO1	Use sophisticated scientific computing and visualization environments to solve application problems involving matrix computation algorithms and Explain the effects of errors in computation and how such errors affect solutions.
		CO2	Analyze numerical algorithms, and understand the relationships between the computational effort and the accuracy of these algorithms.
		CO3	Interpret the results produced by computer implementations of numerical algorithms.

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COURSE CODE	COURSE TITLE	CO. NO	DESCRIPTION OF THE COURSE OUTCOME
		C04	Apply Rayleigh quotient iterations and Explicit and implicit QR algorithms.
		C05	Demonstrate the necessary analytical background for further studies leading to research in Machine Learning
18CS5113	EVOLUTIONARY AND NATURAL COMPUTING	C01	Demonstrate the natural evolution, basic principles of GA
		C02	Apply techniques of genetic algorithms, genetic programming to understand the problems
		C03	Identifying different types of genetic algorithms, Improving GA, Types of Genomes and demonstration of basic principles of ACO
		C04	Demonstration of different techniques of Ant Colony Optimization, Swarm Intelligence and application to problems, Comparing the different approaches to solve problems. To Explain Artificial Immune Systems, Computational Embryology, and Artificial Life.
		C05	Execute lab experiments and develop a small project along with his/her team members.
18CS5114	DISCRETE MATHEMATICS	C01	Apply the principle of counting to solve the problems related to discrete event occurrences; Apply propositional logic to solve the problems
		C02	Apply the laws of set theory and formulate recurrence relation
		C03	Understand the sequence of symbols to represent in terms of finite sequence of characters; Understand graph & tree concepts; apply tree concepts to solve related problems
		C04	Apply graphs concepts using algorithms and Optimal transportation problems
18CS5115	PATTERN RECOGNITION AND MACHINE LEARNING	C01	The student will be able to apply kernel methods, support vector machines for classification and regression problems
		C02	The students will be able to apply Kernel Ridge Regression; Kernel Density Estimation; Kernel PCA
		C03	The students will be to apply Kernel Online Learning, Spectral Clustering, Model Based Clustering, Expectation Maximization
		C04	The student will be able to analyze Independent Component Analysis; Hidden Markov Models; Factor Analysis; Introduction to Graphical Models & Sampling Methods.

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		C05	The students will be able to apply above techniques for classification, clustering and multiclass classification etc...
18CS5116	COMPUTER MODELING & SIMULATION	C01	Understand the basics of simulation and modeling with examples and platforms supporting simulation
		C02	Analyze discrete event simulation principles, mathematical, Statistical and Queuing Models.
		C03	Analyze Input Modeling, Verification and Validation of the simulation Models
		C04	Apply the Simulation on Manufacturing and Material Handling Systems, Computer System and Computer Networks.
		C05	Develop the basic concepts of Simulation and Modeling using Arena simulation tool
18CS51E1	COMPUTER VISION AND IMAGE PROCESSING	C01	Understand image representation and modelling
		C02	Apply image transformation methods
		C03	Interpret image processing algorithms
		C04	Apply and analyse transformation, pose consistency and segmentation algorithms
18CS51E2	SERVICE ORIENTED ARCHITECTURE	C01	Understand the fundamentals of web services and distributed computing
		C02	Understand the basic standards and principles of service oriented architectures
		C03	Analyse the integration of SOA technological points with Web Services.
		C04	Implement of SOA in development cycle of Web Services.
18CS51E3	DATA ANALYSIS	C01	Understand a meaningful pattern in data and graphically interpret data
		C02	Implement the analytic algorithms
		C03	Handle large scale analytics projects from various domains
		C04	Develop intelligent decision support systems

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18CS51E4	CLOUD COMPUTING	C01	Articulate the main concepts, key technologies, strengths, limitations of cloud computing and the possible applications for state-of-the-art cloud computing.
		C02	Identify the architecture and infrastructure of cloud computing, including cloud delivery and deployment models
		C03	Analyse the core issues of cloud computing such as security, privacy, and interoperability.
		C04	Identify problems, analyse, and evaluate various cloud computing solutions.
18CS51F1	ARTIFICIAL NEURAL NETWORKS	C01	Understand and build basic network representations, topologies and models
		C02	Apply various techniques for training and optimizing neural networks
		C03	Analyze different techniques related to network stochastics
		C04	Analyze different techniques related to learning algorithms for neural networks and develop knowledge on emerging software, tools and technologies related to these algorithms
18CS51F2	APPLICATION DEVELOPMENT FRAMEWORKS	C01	Identify basic aspects of web-frameworks.
		C02	Apply the basic concepts, principles and practices of Web-site development using server-side technologies
		C03	Create and manage Blogs, Websites using WordPress
		C04	Create Web Application using Moodle and manage features of Moodle sites
18CS51F3	BIG DATA ANALYTICS	CO 1	Understand the concepts of big data, Initial exploration of analysis of data and Data visualization
		CO 2	Understand Initial exploration of data and advanced data analytics by using R
		CO 3	Apply advanced algorithms & Statistical modeling for big data using HDFS, HIVE, and PIG.
		CO 4	Apply advanced SQL functions for in-database analytics by MADlib, Greenplum along with common deliverables of analytics life cycle project

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COURSE CODE	COURSE TITLE	CO. NO	DESCRIPTION OF THE COURSE OUTCOME
18CS51F4	CLOUD SECURITY	C01	Understand the principles of cryptography and Apply various cryptographic algorithms
		C02	Analyze various security issues and system vulnerabilities in virtualization
		C03	Analyze the technologies for virtualization based security enhancements
		C04	Analyze legal and Compliance issues and examine modern security standards
18CS51A5	MACHINE LEARNING	C01	Understand supervised learning, Bayesian decision theory, and parametric method.
		C02	Apply multivariate methods, dimensionality reduction, and clustering techniques
		C03	Apply non parametric methods, decision trees, and linear discriminant methods
		C04	Analyse different machine learning technique's like MLP's, local methods, kernel machines, hidden Markov models, and Bayesian estimation
18CS52G1	CONTROL THEORY	C01	Understand the fundamentals of the Control system.
		C02	Understand about Type & Order of the system with Time Response Specification.
		C03	Examine different techniques for Time & Frequency Response Analysis
		C04	Design controller as per given specifications using different techniques.
18CS52G2	WEB SEMANTICS	C01	Understand the Cloud Computing Techniques and Virtualization on cloud platforms
		C02	Understand the semantic web Vision and technologies
		C03	Understand about ontology
		C04	Analyse about Data Web and apply linked open data Cloud

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COURSE CODE	COURSE TITLE	CO. NO	DESCRIPTION OF THE COURSE OUTCOME
18CS52G3	MAP REDUCE DESIGN PATTERNS	CO 1	Illustrate how Test Driven Development and Refactoring work in software design and maintenance.
		CO 2	Understanding Structural and Creational Patterns for effective design of a system
		CO 3	Utilization of behavioural design pattern and Anti-patterns for system design
		CO 4	Understanding the design patterns in an object oriented language along with clean coding principles to a real world application.
18CS52G4	DATA CENTRE VIRTUALIZATION	CO1	Configure and manage virtual network and storage such as vCenter server
		CO2	Deploy, manage and migrate virtual machines.
		CO3	Describe the architecture of a Data Center environment with RAID and Intelligent Storage Systems.
		CO4	Configure replication of data and configure security through best practices
18CS52M3	CLOUD SYSTEM INFRASTRUCTURE	CO1	Understand the Cloud Computing Techniques and Virtualization on cloud platforms
		CO2	Analyse and Apply AWS Services
		CO3	Understand Programming, management console and storage on AWS, AWS Security and Compliances and analyse AWS computing and Marketplace
		CO4	Analyse AWS networking and databases and AWS billing and dealing disaster
		CO5	Develop Cloud services using Amazon Web Services
		CO6	Implementing cloud on Amazon Web Services
18CS52H1	REINFORCEMENT LEARNING	CO1	Understand the key features of reinforcement learning that distinguishes it from AI and non-interactive machine learning.
		CO2	Apply reinforcement algorithms for real time applications.

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		C03	Describe (list and define) multiple criteria for analysing RL algorithms and evaluate algorithms
		C04	Describe the exploration vs exploitation challenge and compare and contrast at least two approaches for addressing this challenge
18CS52H2	MULTI AGENT SYSTEMS	C01	Understand the notion of an agent, how agents are distinct from other software paradigms (eg objects) and understand the characteristics of applications that lend themselves to an agent-oriented solution
		C02	Understand the key issues associated with constructing agents capable of intelligent autonomous action, and the main approaches taken to developing such agents
		C03	Understand the key issues in designing societies of agents that can effectively cooperate in order to solve problems, including an understanding of the key types of multi-agent interactions possible in such systems
		C04	Understand the main application areas of agent-based solutions, and be able to develop a meaningful agent-based system using a contemporary agent development platform
18CS52H3	NETWORK SECURITY	C01	Develop Concept of Security needed in Communication of data through computers and networks along with Various Possible Attacks
		C02	Understand Various Encryption mechanisms for secure transmission of data and management of key required for required for encryption
		C03	Understand authentication requirements and study various authentication mechanisms
		C04	Understand network security concepts and study different Web security mechanisms.
18CS52H4	CLOUD APPLICATION ARCHITECTURE	C01	identify and explain the function of core cloud computing technologies and services, such as virtualization, computing instances, virtual private clouds, storage, database, and identity and authentication management
		C02	build cloud computing solutions for several common application
			patterns, including web-tier applications and high availability solutions for computing, database, storage, and network systems.
		C03	Describe the tradeoffs of block versus object storage, the storage lifecycle, and how to select storage technologies that meet application requirements.
		C04	Formulate cloud solutions to several common types of application and enterprise problems.

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18CS52M4	DEEP LEARNING	C01	To be able to understand and remember the concepts of Perceptron, Back Propagation, Nesterov Accelerated GD, Stochastic GD, AdaGrad, RMSProp
		C02	To be able understand auto encoders- and apply Regularization, Denoising, Sparse, Contractive, Vectorial Representation of Words Convolutional Neural Networks, LeNet, AlexNet, ZF-Net, VGGNet, Google Net, ResNet
		C03	Build RCNN, Fast RCNN, Faster RCNN, LSTMs Encoder Decoder, Backpropagation Through Time (BPTT)
		C04	Able to Apply Markov Networks, Markov Chains, Backpropagation Through Time (BPTT), RBM models and Generative Adversarial Networks (GANs)
		C05	Able to implement neural networks CNN, RNN RBMs, GAN models for real time applications

M. Kavitha
Academic Professor I/C



HOD-CSE
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