



Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

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

Phone No. +91 8645 - 350 200; www.klef.ac.in; www.klef.edu.in; www.kluniversity.in

Admin Off: 29-35-38, Museum Road, Governorpet, Vijayawada - 520 002. Ph: +91 - 866 - 3500122, 2576129

Department of Computer Science and Engineering

Programme: M.Tech - AI & DS

Academic Year :2022-2023

COURSE CODE	COURSE TITLE	CO NO	DESCRIPTION OF THE COURSE OUTCOME
22CS5109	MATHEMATICAL PROGRAMMING - 1	C01	Solve linear programming problems in engineering and business decision making problems
		C02	Make use of Duality and Sensitivity Analysis in Linear Programming models.
		C03	Solve network models and LPP using interior point methods.
		C04	Apply cutting plane and branch and bound methods to solve discrete optimization problems.
		C05	Applying the problem solving and optimization models for finding the optimal solution.
22CS5110	COMPUTATIONAL THINKING FOR OBJECT ORIENTED DESIGN	C01	Understand basic Concepts of OOP, fundamentals of java and apply the concepts of classes and objects through Java Language, Access control, Overloading.
		C02	Apply constructors, parameter passing, String, String Buffer and String Tokenizer.
		C03	Inheritance, Packages, Exception Handling
		C04	Multithreading, Apply collection framework and event driven programming.
		C05	Apply object-oriented programming concepts to write programs and Analyses requirements and design to implement lab-based project with SDLC in a group of students.
22CS5111	BIG DATA ANALYTICS	C01	Understand the concepts of big data, Initial exploration of analysis of data and Data visualization.
		C02	Analyse Initial exploration of data and advanced data analytics by using R
		C03	Apply advanced algorithms & Statistical modelling for big data using HDFS, HIVE, and PIG.

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COURSE CODE	COURSE TITLE	CO NO	DESCRIPTION OF THE COURSE OUTCOME
		C04	Apply advanced SQL functions for in-database analytics by MADlib, Greenplum along with common deliverables of analytics life cycle project
		C05	Build and Evaluate the Big Data Analytical problems using R, Hadoop, HIVE Programming concepts.
22CS5112	MACHINE LEARNING & REINFORCEMENT LEARNING	C01	Apply Machine Learning Techniques such as PCA, LDA, Decision Trees to solve Real World Problems
		C02	Build Bayesian models for solving Classification and Prediction problems
		C03	Inspect a movie recommender system
		C04	Apply Neural Network Algorithm techniques to solve Classification, Prediction problems Build a Q-Learning based model for real world problems
		C05	Implement Machine Learning Techniques using Python Language and develop a small project along with his/her team members.
22IE5149	SEMINAR	C05	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, analysing, and summarizing.
22CS5113	MATHEMATICAL PROGRAMMING - 2	C01	Solve linear programming problems in engineering and business decision making problems
		C02	Make use of Duality and Sensitivity Analysis in Linear Programming models.
		C03	Solve network models and LPP using interior point methods.
		C04	Apply Cutting plane and Branch and Bound methods to solve Discrete optimization problems.
		C05	Applying the problem solving and optimization models for finding the optimal solution
22CS5114	DATA STRUCTURES & ALGORITHMS	C01	Apply measures of efficiency to algorithms and Compare various linear data structures like Stack ADT, Queue ADT, Linked lists.
		C02	Analyse and compare linear data structures and analyse different searching and hashing techniques
		C03	Analyse and compare various non – linear data structures like Trees and Graphs.
		C04	Analyse 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.

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COURSE CODE	COURSE TITLE	CO NO	DESCRIPTION OF THE COURSE OUTCOME
		C05	Execute lab experiments and develop a small project along with his/her team members
	ADVANCED DATABASES	C01	Understand the fundamentals of query optimization and database recovery protocols.
		C02	Apply emerging database technologies and distributed databases.
22CS5115		C03	Analyse and Discriminate object oriented and relational database systems.
		C04	Analyse multimedia databases.
		C05	Build and Evaluate advanced database applications
22CS5116	DEEP LEARNING	C01	Able to understand and remember the concepts of Perception, Back Propagation, PCA, Singular Value Decomposition
		C02	Able to understand auto encoders- and apply Regularization, Denoising, Sparse, Contractive, Vectoral Representations of words Convolutional Neural Networks, LeNet, AlexNet, ZF-Net, VGGNet, GoogleNet, ResNet Object Detection , RCNN, Fast RCNN, Faster RCNN, YOLO,
		C03	Apply Long Short Term Memory (LSTM) Restricted Boltzmann Machines, Gibbs sampling for training RBMs, contrastive training RBMs. Deep Dream, GRU, Neural style transfer, Deep learning for computer vision, text and sequences.
		C04	Build Markov models, Markov networks, Markov chains, Variational autoencoders, Autoregressive Models: NADE, MADE, PixelRNN, Generative Adversarial Networks (GANs), and DCGAN,
		C05	Implement basic Neural Networks, optimization algorithms, engine vector decomposition, various types of auto encoders using tensorflow
22IE5250	TERM PAPER	C05	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, analysing, and summarizing.
22IE6050	DISSERTATION	C05	The Project 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 project research 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, analysing, and summarizing.

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COURSE CODE	COURSE TITLE	CO NO	DESCRIPTION OF THE COURSE OUTCOME
22CS51E1	CLOUD INFRASTRUCTURE & SERVICES	C01	Apply on-demand compute services, Understand IaaS Architectures and Implementation Guidelines.
		C02	Analyse applications and frameworks for data analysis and Content delivery in the cloud.
		C03	Analyse Cloud Service availability, Resiliency and Dynamic Scaling
		C04	Use Networking and Security Services, Automate Cloud Infrastructure, Deployment and Management
		C05	Hands-on Cloud Administration, Implement, Monitor and manage important cloud services and components including IaaS and PaaS
22CS51E2	PARALLEL & DISTRIBUTED COMPUTING	C01	Analyse Distributed Computations, Graph Algorithms, Causality and Time, Message Ordering and group communication
		C02	Analyse Coordination Algorithms, Consistency and Replication, Global state and snapshot recording algorithms, Self-stabilization, Fault-Tolerant Message-Passing Distributed Systems
		C03	Understand parallel algorithm design. Demonstrate the ability to differentiate among parallel architectures and interconnection networks models by analysing parallel sorting algorithms
		C04	Design and analyse Parallel Computational algorithms
		C05	Develop Parallel and Distributed computing programs using Hadoop Software tool and MapReduce Framework
22CS51E3	CLOUD DEVOPS	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
		C05	Analyse and implement computer vision techniques by means of Python using the OPENCV library.
22CS51F1	COMPUTER VISION AND PERCEPTION	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
		C05	Analyse and implement computer vision techniques by means of Python using the OPENCV library.
22CS51F2	SOFT COMPUTING	C01	Interpret fuzzy logic system
		C02	Analyse Artificial Neural Network Models
		C03	Demonstrate Swarm and Evolutionary Algorithms
		C04	Illustrate Hybrid Fuzzy-Neural- Evolutionary- Swarm Models

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		C05	Demonstration of neuro, fuzzy, evolutionary, and swarm algorithms using open source tools
22CS51F3	ARTIFICIAL NEURAL NETWORKS	C01	Understand and build basic network representations, topologies and models
		C02	Apply various techniques for training and optimizing neural networks
		C03	Analyse different techniques related to network stochastics
		C04	Analyse different techniques related to learning algorithms for neural networks and develop knowledge on emerging software, tools and technologies related to these algorithms
22CS51G1	DATA WAREHOUSING & MINING	C01	Illustration of Warehouse & Mining, ETL, OLAP & OLTP, Data Cube Operations and Data Warehouse architecture
		C02	Demonstration of Data Pre-processing through different methods
		C03	Apply Different Classification Algorithms to Segregate Input data into different class levels and find out Hidden relationship between transactional dataset using Association Rule Mining.
		C04	Build different Clustering Models using the predefined dataset.
		C05	Implementation of warehousing and mining algorithms using suitable tools and programming languages
22CS51G2	GRAPH & WEB ANALYTICS	C01	Understand the impact of big data on graphs, Network Basics and Social Networks
		C02	Make use of Web Analytics:- Data sources, tools, Web traffic data.
		C03	Analysing Web Analytics Strategy- website traffic analysis, audience identification and segmentation analysis, Emerging Analytics
		C04	Compare Email Testing Analysis, competitive Intelligence Analysis, and Social, Mobile, Video Analysis.
		C05	Implementing Python programing for graph and web analytics
22CS51G3	BIG DATA OPTIMIZATION	C01	Understand the concepts of big data, Initial exploration of analysis of data and Data visualization.
		C02	Analyse Initial exploration of data and advanced data analytics by using R
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22CS52H1	COGNITIVE COMPUTING	C01	Understand cognitive computing is, and how it differs from traditional approaches
		C02	Applying the primary tools associated with cognitive computing
		C03	Develop a project that leverages cognitive computing
		C04	Analyse and discuss the business implications of cognitive computing
		C05	Able to implement cognitive computing programs using IBM Watson
22CS52H2	NATURAL LANGUAGE PROCESSING	C01	Understand approaches to syntax and semantics in NLP
		C02	Apply the statistical estimation and statistical alignment models
		C03	Analyse grammar formalism and context free grammars
		C04	Apply Rule based Techniques, Statistical Machine translation (SMT), word alignment
		C05	Inspect and Evaluate Language Processing Methods using python
22CS52H3	EDGE COMPUTING	C01	Define the Edge/Fog Computing and infer the opportunities and challenges
		C02	Examine the Architecture of Edge Computing and explore the issues that are being addressed by the Industry
		C03	Determine the Middleware needed for Edge Computing and its Security Requirements
		C04	Using the Edge/Fog Computing in various real-time projects
		C05	Implement the programming on Edge and Fog computing

M. Kavitha
Academic Professor I/C



HOD-CSE
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