LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY
(UGC Autonomous)

Approved by AICTE | Affiliated to Osmania University | Estd.2003.

Department of Computer Science Engineering (Data Science)

Course Outcomes: U23CD504 – Basics of Data Science

Student will be able to

CO. No.	Description	Bloom's Taxonomy Level
C231.1	Work with Data Science applications using R Programming environment.	BTL3
C231.2	Implement various mathematical concepts in R such as Arithmetic Logical operations, Vector, Matrices.	BTL3
C231.3	Apply various visualization by plotting various graphs in R.	BTL3
C231.4	To use common data visualization tools & data optimization techniques to enhance the quality and usability of datasets.	BTL4
C231.5	To develop the ability to choose appropriate visual representations for different types of datasets and analytical goals	BTL5

Course Outcomes: U24CD302 –Exploratory Data Analysis (EDA)

CO. No.	Description	Bloom's Taxonomy Level
C232.1	Understand basic concepts and importance of Exploratory Data Analysis (EDA).	BTL2
C232.2	Apply Python libraries like Pandas for effective data manipulation and cleaning.	BTL3
C232.3	Analyze single-variable data using statistical and visualization techniques.	BTL4
C232.4	Achieves correlation and regression methods to explore relationships between two variables.	BTL4
C232.5	Create and interpret data visualizations for meaningful insights.	BTL5-6

Course Outcomes: U24EC304 –Digital Electronics and Computer Organizations

CO. No.	Description	Bloom's Taxonomy Level
C233.1	Demonstrate the number system conversions and simplify Boolean functions.	BTL3
C233.2	Analyze and simplify Boolean expressions using Karnaugh-maps, tabulation method and design combinational circuits.	BTL4
C233.3	Analyze and design various Sequential circuits.	BTL4
C233.4	To illustrate the operation of digital computer and to understand its organization.	BTL3
C233.5	Understand the various memory types.	BTL2

Course Code: U24IT301- Database Management Systems

CO. No.	Description	Bloom's Taxonomy Level
C234.1	Demonstrate ER models to represent simple database application	BTL2
C234.2	scenarios and construct database queries using SQL	BTL4
C234.3	Write Database queries using relational algebra and Calculus	BTL4
C234.4	Apply and analyze the concept of normalization and functional	BTL3
C234.5	dependency in database design	BTL3

Course code: U24CS302-Data Structures

CO. No.	Description	Bloom's Taxonomy Level
C235.1	Classify data structures & algorithms and work with performance analysis.	BTL3
C235.2	Develop stack and Queue ADT and work on their applications.	BTL3
C235.3	Work with SLL and DLL and implement real world applications.	BTL3
C235.4	Create non-linear data structures and analyze traversal techniques of trees and graphs.	BTL4
C235.5	Analyze and implement Searching, Sorting and Hashing Techniques.	BTL4

Course code: U23CD4L1-R LAB DATA SCIENCE

CO. No.	Description	Bloom's Taxonomy Level
C236.1	After completing this course, the student will be able to:	BTL2
C236.2	Work with Data Science using R Programming environment	BTL3
C236.3	Implement various statistical concept like linear and logistic regression	BTL3
C236.4	Perform Classification and Clustering using appropriate dataset	BTL4

Course code: U24CS3L1- Data Structures Lab

CO. No.	Description	Bloom's Taxonomy Level
C237.1	Perform Sorting and Searching and be able to justify which sorting and searching techniques is suitable	BTL5
C237.2	Apply stacks and queues in solving problems	BTL3
C237.3	Evaluate binary trees, general tree structures, advanced search trees, heaps, graphs.	BTL5
C237.4	Apply hash functions and handle collisions.	BTL3
C237.5	Implement various kinds of sorting techniques and apply appropriate techniques for solving a given problem.	BTL3

Course Code: U24DT301-Design Thinking Lab

Course Outcomes (CO's)	Description	Bloom's Taxonomy Level
C238.1	Listen and interpret spoken language productively, Understand and apply the design thinking process.	BTL1
C238.2	Conduct field research and empathize with user needs and define clear and relevant problem statements.	BTL2
C238.3	Generate and evaluate innovative ideas collaboratively.	BTL3
C238.4	Create and test functional prototypes and gather feedback and refine solutions iteratively.	BTL4
C238.5	Communicate project outcomes through storyboards and pitches And contribute to community development through ethical, sustainable design.	BTL5

Note: Bloom's Taxonomy Levels

BTL1-Remember	BTL2 – Understand	BTL3 –Apply
BTL4-Analyze	BTL5 –Evaluate	BTL6–Create

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Course Outcomes: U23CD504 – Software Engineering

Student will be able to

CO. No.	Description	Bloom's Taxonomy Level
C351.1	Describe and compare alternative approaches and techniques used across various phases of the software development lifecycle	BTL2
C351.2	Develop a complete software project independently by applying appropriate design principles, tools, and methodologies.	BTL6
C351.3	Identify and analyze the real-world challenges involved in developing large-scale software systems.	BTL4
C351.4	Design and construct software architecture independently or in a team by recognizing recurring problems and applying relevant design patterns.	BTL6
C351.5	Evaluate software product quality using appropriate metrics while addressing practical development challenges.	BTL5

Course Outcomes: U23CD504 – Full Stack Web Development

CO. No.	Description	Bloom's Taxonomy Level
C352.1	Describe the architecture and functioning of the World Wide Web including the role of web browsers and servers.	BTL2
C352.2	Design responsive and structured web pages using HTML, CSS, Flexbox, and Grid.	BTL3
C352.3	Implement interactive web functionalities using JavaScript including form validation and DOM manipulation.	BTL3
C352.4	Create dynamic web applications using server-side scripts with Python or Ruby.	BTL6
C352.5	Integrate databases into web applications to manage and display dynamic content effectively.	BTL4

Course Code: U21CD501- Artificial Intelligence

Course Outcomes (CO's)	Description	Bloom's Taxonomy Level
C353.1	Recall the basic principles of AI related to problem-solving, search, and inference.	BTL 1
C353.2	Identify the steps involved in building intelligent agents, expert systems, and Bayesian networks.	BTL 2
C353.3	Apply different learning paradigms to relevant applications of AI.	BTL 3
C353.4	Differentiate between expert systems and analyze their utilization in practical scenarios.	BTL 4
C353.5	Evaluate AI applications of machine learning and its types in real-world contexts.	BTL 5

Course Outcomes: U23CD504 –Computer Networks

CO. No.	Description	Bloom's Taxonomy Level
C354.1	Describe and interpret standard reference models such as OSI and CP/IP, and distinguish between various network architectures.	BTL2
C354.2	Recognize and list the roles of essential network devices and multiple access protocols used in data communication	BTL1
C354.3	Design IP addressing schemes and apply routing techniques to interconnect and manage heterogeneous network systems	BTL3
C354.4	Explain the principles, features, and operational differences of transport layer protocols including TCP and UDP	BTL2
C354.5	Utilize and configure application layer protocols such as HTTP, DNS, SMTP, and FTP in practical networking environments.	BTL3

Course Code: U21MB501- Managerial Communication

Course Outcomes (CO's)	Description	Bloom's Taxonomy Level
C355.1	The importance of Communication in Business.	BTL 1
C355.2	To develop writing skills and presentations.	BTL 2
C355.3	Writing business proposals and letters.	BTL 3
C355.4	Application of business communication in the self-development process.	BTL 4
C355.5	Infuse the relational management with various stakeholders	BTL 5

Course Outcomes: U23CD5L2 – Full Stack Web Development Lab

CO. No.	Description	Bloom's Taxonomy Level
C356.1	Develop structured HTML web pages incorporating embedded CSS for basic design.	BTL3
C356.2	Apply diverse CSS properties to construct responsive and visually engaging layouts.	BTL4
C356.3	Implement JavaScript code to introduce dynamic behaviours in web pages.	BTL3
C356.4	Validate HTML forms using client-side JavaScript and manage user input effectively.	BTL5
C356.5	Design and deploy complete web applications, demonstrating full-stack web development capabilities.	BTL6

Course Outcomes: U21CD5L1 Artificial Intelligence Lab

CO. No.	Description	Bloom's Taxonomy Level
C357.1	Use AI for problem-solving: Apply AI principles to solve problems creatively.	BTL2
C357.2	Build intelligent systems: Create systems that can learn and adapt.	BTL3
C357.3	Choose the right learning method: Select the best approach for different tasks.	BTL2
C357.4	Use expert systems: Apply AI to make informed decisions.	BTL4
C357.5	Apply machine learning: Use AI to analyze data and make predictions.	BTL5

Course Code: U21CD5P1- Internship

Course Outcomes (CO's)	Description	Bloom's Taxonomy Level
C358.1	Identify and describe the fundamental principles of algorithm design and their applications.	BTL 1
C358.2	Understand and evaluate the efficiency and complexity of various algorithms.	BTL 2
C358.3	Apply data structures like stacks and queues to solve algorithmic problems.	BTL 3
C358.4	Analyze different techniques to solve a given problem and choose the most efficient solution.	BTL 4
C358.5	Evaluate and compare multiple algorithmic approaches for solving complex problems using mathematical and engineering principles.	BTL 5

Note: Bloom's Taxonomy Levels

BTL1-Remember	BTL2 – Understand	BTL3 –Apply
BTL4-Analyze	BTL5 –Evaluate	BTL6–Create

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Course Outcomes: U21CS701– DISTRIBUTED SYSTEMS

Students will be able to

CO. No.	Description	Bloom's Taxonomy Level
C471.1	Understand the list of principles of distributed systems and describe the problems and challenges associated with these principles.	BTL2
C471.2	Knowledge about interposes communication and remote communication.	BTL3
C471.3	Understand Distributed Computing techniques, Synchronous and Processes.	BTL2
C471.4	Understand Distributed File Systems Apply Distributed web-based system. Understand the importance of security in distributed systems	BTL2
C471.5	Student will acquire the knowledge about distributed service-oriented architecture.	BTL4
C471.6	To know about emerging trends in distributed computing.	BTL6

Course Outcomes: U21CD701 –Data Handling and Data Visualization

CO. No.	Description	Bloom's Taxonomy Level
C472.1	Apply appropriate techniques to handle missing data in real-world datasets using statistical and programming methods.	BTL3
C472.2	Interpret and summarize dataset characteristics using basic statistical measures, and construct visual representations using graphs and plots.	BTL3
C472.3	Analyze data distributions to identify and differentiate outliers using statistical and visual methods.	BTL4

C472.4	Analyze high-dimensional data and design appropriate dimensionality reduction techniques to visualize objects in different dimensions for effective data presentation.	BTL4
C472.5	Implement virtualization techniques and develop interactive visual platforms to support data exploration in research projects.	BTL5-6

Course Outcomes: U21CD709 –Software Project Management

CO. No.	Description	Bloom's Taxonomy Level
C473.1	Analyze various project environments and propose suitable management strategies.	BTL4
C473.2	Apply ethical principles to ensure responsible and professional software development.	BTL3
C473.3	Explain and differentiate the major phases of the software project management life cycle.	BTL2
C473.4	Evaluate the business context and scope to select an appropriate project management approach.	BTL5
C473.5	Understand the concept of risk and construct critical questions that support decision-making.	BTL2

Course Outcomes: U21CD803 –INTERNET OF THINGS

CO. No.	Description	Bloom's Taxonomy Level
C474.1	Able to understand the application areas of IOT	BTL2
C474.2	Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks	BTL2
C474.3	Able to understand building blocks of Internet of Things and characteristics	BTL2
C474.4	Design an IoT device to work with a Cloud Computing infrastructure.	BTL6
C474.5	Transfer IoT data to the cloud and in between cloud providers and Define the infrastructure for supporting IoT deployment	BTL4

Course Outcomes: (U21CS7L1) Distributed Systems Lab

CO. No.	Description	Bloom's Taxonomy Level
C475.1	Develop programs to enable data communication between two hosts and configure Network File System (NFS).	**BTL3**
C475.2	Implement solutions for inter-process and remote communication using appropriate technologies	**BTL3**
C475.3	Utilize distributed data processing frameworks and mobile development toolkits for application development	**BTL4**
C475.4	Design and implement a Remote Procedure Call (RPC) based service for processing date or similar data	**BTL6**
C475.5	Construct an application following the three-tier architecture model	**BTL6**

Course Outcomes: U21CD7L1 –Data Handling & Data Visualization Lab

CO. No.	Description	Bloom's Taxonomy Level
C476.1	**Identify** various data types and select suitable visualization methods for geospatial and tabular data.	BTL1
C476.2	**Apply** visualization techniques using R/Python to explore large datasets effectively.	BTL3
C476.3	Design IP addressing schemes and apply routing techniques to interconnect and manage heterogeneous network systems	BTL4
C476.4	**Analyse** data attributes and relationships through graphical representations.	BTL5
C476.5	**Interpret** visualizations to draw actionable insights and support decision-making.	BTL6

Course Code: U21CD7P1 -Mini Project

Course Outcomes (CO's)	Description	Bloom's Taxonomy Level
C477.1	Recall and demonstrate the ability to synthesize and apply knowledge and skills acquired during the academic program to address real-world problems.	1
C477.2	Understand and evaluate different solutions based on their economic and technical feasibility.	2
C477.3	Effectively plan a project by applying principles of project management across all phases.	3
C477.4	Analyze, develop, and test the proposed solution to ensure its functionality and effectiveness.	4
C477.5	Evaluate and demonstrate effective coding practices, written documentation, and presentation skills through oral and visual communication.	5

Note: Bloom's Taxonomy Levels

BTL1-Remember	BTL2 – Understand	BTL3 –Apply
BTL4-Analyze	BTL5 –Evaluate	BTL6–Create

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