



**LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY**  
(UGC Autonomous)

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

**Department of CSE-Data Science**

**Academic Year:2024-2025**

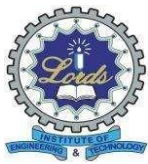
**II Year**

**III Semester**

**Students Will Be Able To**

CO. No.	Description
	<b>U23EC304 –Digital Electronics and Computer Organization (DE&amp;CO)</b>
<b>C31.1</b>	Demonstrate the number system and simplify the Boolean functions using algebraic method, map method and tabular method
<b>C31.2</b>	Design and realize the combinational logic circuits
<b>C31.3</b>	Design and realize the combinational logic circuits
<b>C31.4</b>	Demonstrate the architecture of computer and its organization
<b>C31.5</b>	Illustrate memory organization of computer

CO. No.	Description
	<b>U23CD301 –Operating Systems</b>
<b>C32.1</b>	Compare the fundamental concepts and Functions of operating system and it is a pre-requisite of further units.
<b>C32.2</b>	Analyze scheduling algorithms and will be to design scheduling algorithms.
<b>C32.3</b>	Implement deadlock, prevention and avoidance algorithms.
<b>C32.4</b>	Compare and contrast memory management schemes.
<b>C32.5</b>	Design the functionality of file systems and perform administrative tasks on Linux Servers



**LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY**  
(UGC Autonomous)

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

**Department of CSE-Data Science**

**Students Will Be Able To**

CO. No.	Description
	<b>U23CS302 – DATA STRUCTURES</b>
<b>C33.1</b>	Identify and define data structures, arrays and linked lists.
<b>C33.2</b>	Explain the principles of Abstract Data Types (ADTs) and their significance in stacks and queues.
<b>C33.3</b>	Implement data structures using arrays and linked lists, as well as stacks and queues in practical scenarios.
<b>C33.4</b>	Distinguish between tree structures (binary trees, heaps, etc.) and assess their appropriate use cases.
<b>C33.5</b>	Create hash functions and effectively manage collisions.

CO. No.	Description
	<b>U23CD302 -Database Management System</b>
<b>C34.1</b>	Master the essential concepts of databases, including data models, database schemas, and data manipulation.
<b>C34.2</b>	Improve competency in designing databases, including creating Entity-Relationship (ER) diagrams and translating them into relational schemas.
<b>C34.3</b>	Write and execute complex SQL queries for data retrieval, manipulation, and management.
<b>C34.4</b>	Delve into about concurrency control and techniques for managing multiple transactions simultaneously.
<b>C34.5</b>	Build expertise in using DBMS tools and software to build and manage databases effectively.



**LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY**  
(UGC Autonomous)

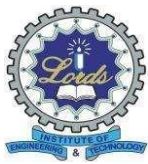
Approved by AICTE | Affiliated to Osmania University | Estd.2003.

**Department of CSE-Data Science**

**Students Will Be Able To**

CO. No.	Description
	<b>U23CM301 -Python Programming</b>
<b>C35.1</b>	Examine essential programming skills in Python syntax and semantics and be fluent in the use of Python flow control and Functions.
<b>C35.2</b>	Apply the concepts of programming in the Python language. Using Core Data structures like Lists, Dictionaries and use of Strings Handling methods.
<b>C35.3</b>	Interpret the concepts of object-oriented programming using Python.
<b>C35.4</b>	Implement exemplary applications related to Databases in Python.
<b>C35.5</b>	Comprehend the core principles of Python for data analysis.

CO. No.	Description
	<b>U23CS3L1- DATA STRUCTURES LAB</b>
<b>C36.1</b>	Design and build software using arrays and linked lists to handle and process information.
<b>C36.2</b>	Develop and implement Abstract Data Types (ADTs) for Stacks and Queues, encompassing essential operations and applications.
<b>C36.3</b>	Analyze and compare the efficiency and complexity of different structures, highlighting their applications in everyday situations.
<b>C36.4</b>	Implement hash functions and collision resolution techniques
<b>C36.5</b>	Design, implement, and analyze sorting algorithms (e.g., Bubble Sort, Selection Sort, Insertion Sort, Merge Sort, Quick Sort) and apply appropriate techniques to solve problems,



Students Will Be Able To

CO. No.	Description
	<b>U23CD3L1 –Data Base Management Systems Lab</b>
C37.1	Develop a database schema for a specific application and apply normalization techniques.
C37.2	Master SQL for the purpose of defining and handling data.
C37.3	Showcase the creation and utilization of views and stored procedures through SQL.
C37.4	Design solutions for database-driven applications using procedures, cursors, and triggers.
C37.5	Construct a basic database system and demonstrate expertise in modelling, designing, and implementing a DBMS.

CO. No.	Description
	<b>U23CM3L1 – Python Programming Lab</b>
C38.1	Present a comprehensive overview of the fundamental principles and concepts that form the basis of Python programming, emphasizing its syntax and key features.
C38.2	Create a comprehensive outline of control statements and functions in Python by writing an illustrative program that demonstrates their practical application.
C38.3	Demonstrate file handling operations, including reading from and writing to files, while also showcasing the use of relevant packages to enhance functionality.
C38.4	Interpret and explain the principles of object-oriented programming in Python.
C38.5	Apply the most suitable libraries in Python to effectively solve simple programming challenges, showcasing how these libraries can streamline the development process.



**LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY**  
(UGC Autonomous)

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

**Department of CSE-Data Science**

**Academic Year:2024-2025**

III Year

V Semester

Students Will Be Able To

CO. No.	Description
	<b>U21CS501 – Design and Analysis of Algorithms</b>
<b>C51.1</b>	Identify an asymptotic notations and basic efficiency classes.
<b>C51.2</b>	Evaluate and analyze problems, applying techniques, greedy algorithms and divide-and-conquer.
<b>C51.3</b>	Use algorithms such as TSP, Floyd's, and others to solve real-world problems effectively.
<b>C51.4</b>	Comprehend the concepts of P and NP classes and their significance in computational complexity.
<b>C51.5</b>	Develop and design algorithmic solutions for complex problems like the n-Queens problem, Subset-Sum Problem, Assignment Problem, and Knapsack Problem

CO. No.	Description
	<b>U21CD501- Artificial Intelligence</b>
<b>C52.1</b>	Use AI for problem-solving Apply AI principles to solve problems creatively.
<b>C52.2</b>	Build intelligent systems Create systems that can learn and adapt.
<b>C52.3</b>	Choose the right learning method Select the best approach for different tasks.
<b>C52.4</b>	Use expert systems Apply AI to make informed decisions.
<b>C52.5</b>	Apply machine learning Use AI to analyze data and make predictions.



**LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY**  
(UGC Autonomous)

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

**Department of CSE-Data Science**

**Students Will Be Able To**

<b>CO. No.</b>	<b>Description</b>
	<b>U21CD502-Discrete Mathematics</b>
<b>C53.1</b>	Utilize Propositional and Predicate logic to address problems across different domains.
<b>C53.2</b>	Comprehend and implement Set Theory, Venn Diagrams, relations, and functions in real-world applications.
<b>C53.3</b>	Examine and solve real-world issues using Generating Functions and Recurrence Relations.
<b>C53.4</b>	Employ the fundamental properties of graphs and trees to model basic applications
<b>C53.5</b>	Explore lattices as partially ordered sets for practical applications.

<b>CO. No.</b>	<b>Description</b>
	<b>U21CD507-Web Technologies</b>
<b>C54.1</b>	Comprehend how HTML and CSS are used to define the layout and appearance of web pages.
<b>C54.2</b>	Apply JavaScript to develop interactive features in web applications.
<b>C54.3</b>	Analyze and implement PHP as a server-side scripting language for web development.
<b>C54.4</b>	Create responsive and interactive web applications using Bootstrap framework.
<b>C54.5</b>	Evaluate and apply database connectivity techniques for dynamic web applications.



**LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY**  
(UGC Autonomous)

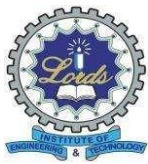
Approved by AICTE | Affiliated to Osmania University | Estd.2003.

**Department of CSE-Data Science**

**Students Will Be Able To**

CO. No.	Description
	<b>U21MB502 – Managerial Communication</b>
C55.1	Appreciate the importance of Communication in Business
C55.2	Develop writing skills and presentation
C55.3	Write business proposals and letters
C55.4	Apply business communication in the self-development process.
C55.5	Infuse the relational management with various stakeholders

CO. No.	Description
	<b>U21CD5L1- Artificial Intelligence Lab</b>
C56.1	Use AI for problem-solving Apply AI principles to solve problems creatively.
C56.2	Build intelligent systems Create systems that can learn and adapt.
C56.3	Choose the right learning method Select the best approach for different tasks.
C56.4	Use expert systems Apply AI to make informed decisions.
C56.5	Apply machine learning Use AI to analyze data and make predictions.

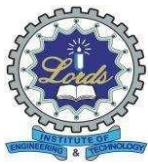


Students Will Be Able To

CO. No.	Description
	<b>U21CS5L1-Design and Analysis of Algorithm Lab</b>
<b>C57.1</b>	Apply appropriate algorithms to solve computational problems
<b>C57.2</b>	Analyze the efficiency of algorithms using time and space complexity metrics.
<b>C57.3</b>	Use stack and queue data structures to implement solutions for complex problems
<b>C57.4</b>	Create programs that solve problems using multiple algorithmic approaches, evaluating their trade-offs
<b>C57.5</b>	Solve sophisticated algorithmic problems by utilizing mathematical and computer science theories.

CO. No.	Description
	<b>U21CD5P1 – Internship</b>
<b>C58.1</b>	Design and develop small-scale IoT products using hardware and software.
<b>C58.2</b>	Accomplish specific tasks or predefined targets by managing limited scope projects effectively.
<b>C58.3</b>	Identify alternative solutions for a given problem and evaluate them against pre-specified criteria.
<b>C58.4</b>	Implement selected solutions and document the development process comprehensively.
<b>C58.5</b>	Construct clear and comprehensive documentation for IoT project development.





# LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY

(UGC Autonomous)

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

**Department of CSE-Data Science**

**Academic Year:2024-2025**

IV Year

VII Semester

Students Will Be Able To

CO. No.	Description
	<b>U21CD803 Internet of Things</b>
<b>C71.1</b>	Comprehend the application areas of IOT
<b>C71.2</b>	Realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
<b>C71.3</b>	Comprehend building blocks of Internet of Things and characteristics
<b>C71.4</b>	Design an IoT device to work with a Cloud Computing infrastructure.
<b>C71.5</b>	Transfer IoT data to the cloud and in between cloud providers and Define the infrastructure for supporting IoT deployment

CO. No.	Description
	<b>U21CS701-Distributed Systems</b>
<b>C72.1</b>	Identify the principles and challenges of distributed systems and articulate the associated problems.
<b>C72.2</b>	Explain the role of inter process communication and remote communication in distributed systems.
<b>C72.3</b>	Describe distributed computing techniques, synchronization, and processes.
<b>C72.4</b>	Implement and assess distributed web-based systems with a focus on security and transaction management.
<b>C72.5</b>	Develop service-oriented architectures in distributed systems.



**LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY**  
(UGC Autonomous)

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

**Department of CSE-Data Science**

**Students Will Be Able To**

CO. No.	Description
	<b>U21CDC708 –Web &amp; Social Media Analytics</b>
<b>C73.1</b>	Analyze social network data to identify key social actors, subgroups (clusters), and network characteristics on platforms like Twitter, Facebook, and YouTube.
<b>C73.2</b>	Apply ethical guidelines in the utilization of web and social media data.
<b>C73.3</b>	Identify core research communities, publications, and conferences focused on web and social media analytics, along with the research questions they address.
<b>C73.4</b>	Evaluate how web and social media analysis can be used to explore original research questions in information technology and social science fields.
<b>C73.5</b>	Discuss how concepts, theories, and visual-analytic methods from social networks are utilized to map, measure, understand, and design a variety of phenomena

CO. No.	Description
	<b>U21CD0704-Business Intelligence and Analytics</b>
<b>C74.1</b>	Comprehend and effectively implement the principles and techniques of business analytics.
<b>C74.2</b>	Recognize, formulate, and resolve decision-making problems across various contexts.
<b>C74.3</b>	Analyze results/solutions and determine suitable actions for a managerial scenario, whether addressing a problem or seizing an opportunity.
<b>C74.4</b>	Develop effective solutions to decision-making challenges.
<b>C74.5</b>	Comprehend and develop the technological framework that supports Business Intelligence (BI) systems.



**LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY**  
(UGC Autonomous)

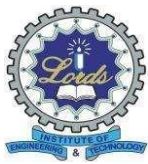
Approved by AICTE | Affiliated to Osmania University | Estd.2003.

**Department of CSE-Data Science**

**Students Will Be Able To**

CO. No.	Description
	<b>U21CD701- Data Handling and Visualization</b>
<b>C75.1</b>	Comprehend significance of data visualization and the method of summarizing data through statistical analysis.
<b>C75.2</b>	Apply basic statistics to summarize data and use visualization techniques such as graphs and plots for effective representation.
<b>C75.3</b>	Identify and evaluate outliers in data sets and choose appropriate methods to handle missing data in real-world scenarios.
<b>C75.4</b>	Analyze data sets to detect outliers and prepare the data for effective visualization.
<b>C75.5</b>	Design and prepare data for visualization across different dimensions and implement visualization techniques for research projects.

CO. No.	Description
	<b>U21CS7L1- Distributed Systems Lab</b>
<b>C76.1</b>	Write programs that communicate data between two hosts Configure NFS.
<b>C76.2</b>	Implement inter process communication and remote communication
<b>C76.3</b>	Use distributed data processing frameworks and mobile application tool kits
<b>C76.4</b>	Write program to implement date service using RPC.
<b>C76.5</b>	Develop an application using three -tier architectures



**LORDS INSTITUTE OF ENGINEERING & TECHNOLOGY**  
(UGC Autonomous)

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

**Department of CSE-Data Science**

**Students Will Be Able To**

CO. No.	Description
	<b>U21CD7L1 – Data Handling and Data Visualization Lab</b>
<b>C77.1</b>	Recognize data types and visualization techniques to extract insights.
<b>C77.2</b>	Relate visualizations to problems based on datasets to derive valuable insights from large datasets.
<b>C77.3</b>	Demonstrate the analysis of large datasets using visualization tools and techniques.
<b>C77.4</b>	Demonstrate the analysis of large datasets using visualization tools and techniques.
<b>C77.5</b>	Create and interpret diverse plots using R or Python, enhancing the communication of data insights.

CO. No.	Description
	<b>U21CD7P1 – Mini Project</b>
<b>C78.1</b>	Exhibit the ability to combine and apply the knowledge and skills learned during the academic program to solve real-world issues.
<b>C78.2</b>	Assess solutions by considering both their economic viability and technical feasibility.
<b>C78.3</b>	Successfully organize a project and competently execute all phases of project management.
<b>C78.4</b>	Design and evaluate the solution through development and testing.
<b>C78.5</b>	Show proficiency in coding, written communication, presentation, and verbal skills.