

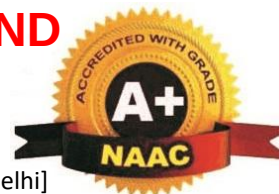


VIGNAN'S INSTITUTE OF MANAGEMENT AND TECHNOLOGY FOR WOMEN

(An Autonomous Institution)

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Kondapur (V), Ghatkesar (M), Medchal - Malkajgiri (D) - 501 301. Phone: 96529 10002/3



COMPUTER SCIENCE & ENGINEERING (DATA SCIENCE)

VR24 – III B.Tech I Semester : Course Outcomes & CO-PO/PSO Mapping

ALGORITHMS DESIGN AND ANALYSIS

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
DS501PC.1	Analyze the performance of algorithms Understand the choice of data structures and the algorithm design methods.	4
DS501PC.2	Choose appropriate data structures and algorithm design methods for a specified application.	5
DS501PC.3	Understand the choice of data structures and the algorithm design methods.	2
DS501PC.4	Implement tree and graph traversal techniques and identify graph components.	3
DS501PC.5	Classify problems as NP-Hard or NP-Complete and explain computational complexity concepts	4

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS501PC.1	3	3	3	2	1	-	-	-	-	-	1	3	3	1
DS501PC.2	3	3	3	3	2	-	-	-	1	-	1	3	3	2
DS501PC.3	3	3	3	3	2	1	-	1	2	-	2	3	3	2
DS501PC.4	3	3	3	3	3	1	1	2	2	1	2	3	3	3
DS501PC.5	3	3	3	3	2	1	1	2	2	1	2	3	3	3
Average	3	3	3	2.8	2	1	1	1.67	1.75	1	1.6	3	3	2.2

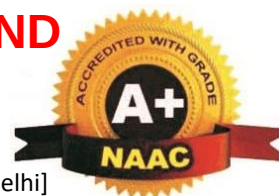


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COMPUTER NETWORKS

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
CS502PC.1	Understand basic computer network concepts and architectures.	2
CS502PC.2	Explain the functions of OSI and TCP/IP layers.	2
CS502PC.3	Apply sub netting, routing, and congestion control techniques.	3
CS502PC.4	Use essential network protocols in design and implementation.	3
CS502PC.5	Analyze application-layer services like DNS, HTTP, and email.	4

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CS502PC.1	3	3	2	2	2	1	1	2	2	1	3	2	3	2
CS502PC.2	3	3	3	2	3	1	2	2	2	1	3	3	3	2
CS502PC.3	3	3	3	3	3	1	2	3	3	2	3	3	3	3
CS502PC.4	3	3	3	3	3	1	2	3	2	2	3	3	3	2
CS502PC.5	3	3	3	2	3	2	3	3	3	2	3	3	3	3
Average	3	3	2.8	2.4	2.8	1.2	2	2.6	2.4	1.6	3	2.8	3	2.4

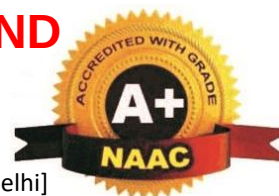


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INTRODUCTION TO DATA SCIENCE

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
DS503PC.1	Understand statistical modeling, data types, and data science concepts.	2
DS503PC.2	Implement R programming basics, vectors, matrices, lists, and data frames.	3
DS503PC.3	Apply conditionals, loops, and functions for data manipulation in R.	3
DS503PC.4	Visualize data using charts, graphs, and exploratory techniques.	3
DS503PC.5	Perform predictive analysis using linear and multiple regression models	4

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS503PC.1	3	2	-	-	1	-	-	-	-	-	-	3	2	-
DS503PC.2	2	2	2	-	3	-	-	-	-	-	-	3	3	1
DS503PC.3	2	3	2	-	3	-	-	-	-	-	-	3	3	1
DS503PC.4	2	2	3	1	3	-	-	-	-	1	-	3	3	2
DS503PC.5	3	3	2	2	3	-	-	-	-	1	-	3	3	2
Average	2.4	2.4	2.3	1.5	2.6	-	-	-	-	1.0	-	3.0	2.8	1.5

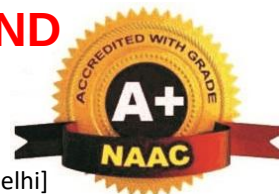


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PROFESSIONAL ELECTIVE – I

DS511PE – DATA WAREHOUSING AND BUSINESS INTELLIGENCE

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
DS511PE.1	Understand architecture of data warehouse and OLAP operations.	2
DS511PE.2	Understand fundamental concepts of Business Intelligence.	2
DS511PE.3	Apply BI key performance indicators.	3
DS511PE.4	Utilize advanced BI tools and their implementation.	3
DS511PE.5	Implement BI techniques and BI ethics.	3

MAPPING:

CO.No	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PSO 1	PSO 2	PSO 3
DS511P E.1	3	2	2	-	2	-	-	-	-	-	-	3	2	2
DS511P E.2	2	2	1	-	1	-	-	-	-	-	-	3	2	-
DS511P E.3	2	3	2	1	2	-	-	-	-	-	-	3	3	2
DS511P E.4	2	2	2	-	3	-	-	-	-	-	1	3	3	3
DS511P E.5	2	2	2	1	2	1	-	2	-	-	-	3	3	2
Average	2.2	2.2	1.8	1	2	1	-	2	-	-	1	3	2.6	2.25

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS512PE.1	3	2	1	-	1	-	-	-	-	-	-	3	2	-
DS512PE.2	3	3	2	2	2	-	-	-	-	-	-	3	2	1
DS512PE.3	3	3	2	2	1	-	-	-	-	-	-	3	2	1
DS512PE.4	3	3	2	1	-	-	-	-	-	-	-	3	2	-
DS512PE.5	3	3	3	2	2	-	-	-	-	-	-	3	3	2
Average	3	2.8	2	1.75	1.5	-	-	-	-	-	-	3	2.2	1.33

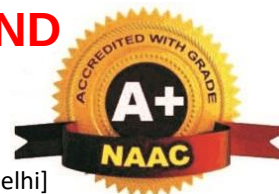


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DS513PE – WEB PROGRAMMING

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
DS513PE.1	Design web pages.	3
DS513PE.2	Use technologies of web programming.	3
DS513PE.3	Apply object-oriented aspects to scripting.	3
DS513PE.4	Create databases with connectivity using JDBC.	3
DS513PE.5	Build web-based applications using sockets.	3

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS513PE.1	2	1	2	-	2	-	-	-	-	-	-	1	2	-
DS513PE.2	2	1	2	-	3	-	-	-	-	-	-	1	2	-
DS513PE.3	2	2	2	-	2	-	-	-	-	-	-	2	2	-
DS513PE.4	2	2	2	1	2	-	-	-	-	-	-	2	2	2
DS513PE.5	3	2	3	1	3	-	-	-	-	-	1	2	3	2
Average	2.2	1.6	2.2	1	2.4	-	-	-	-	-	1	1.6	2.2	2

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
EC514PE.1	3	2	1	-	-	-	-	-	-	-	-	2	2	-
EC514PE.2	3	3	2	1	1	-	-	-	-	-	-	2	2	-
EC514PE.3	3	3	2	2	2	-	-	-	-	-	-	2	3	-
EC514PE.4	3	3	3	2	2	-	-	-	-	-	-	2	3	1
EC514PE.5	3	2	2	-	1	-	-	-	-	-	-	2	2	-
Average	3	2.6	2	1.67	1.5	-	-	-	-	-	-	2	2.4	1

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS515PE.1	2	1	1	-	-	-	-	-	-	-	-	1	2	-
DS515PE.2	3	3	2	1	1	-	-	-	-	-	-	2	2	-
DS515PE.3	2	2	2	-	-	-	-	-	-	-	-	2	2	-
DS515PE.4	3	3	2	1	1	-	-	-	-	-	-	2	3	-
DS515PE.5	3	3	3	2	1	-	-	-	-	-	-	2	3	1
Average	2.6	2.4	2	1.33	1	-	-	-	-	-	-	1.8	2.4	1

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS521PE.1	3	2	2	-	-	-	-	-	-	-	-	2	2	3
DS521PE.2	3	3	2	1	-	-	-	-	-	-	-	2	2	3
DS521PE.3	2	2	2	-	1	-	-	-	-	-	-	2	2	3
DS521PE.4	2	2	2	-	1	-	-	-	-	-	-	2	2	3
DS521PE.5	2	2	2	-	-	-	-	-	-	-	-	2	2	3
Average	2.4	2.2	2	1	1	-	-	-	-	-	-	2	2	3

DS522PE – INFORMATION RETRIEVAL SYSTEMS

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
DS522PE.1	Apply IR principles to retrieve relevant information.	3
DS522PE.2	Design and apply indexing techniques for retrieval systems.	3
DS522PE.3	Design document and term clustering algorithms.	3
DS522PE.4	Implement information retrieval systems for web search.	3
DS522PE.5	Apply text and multimedia information retrieval techniques.	3

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS522PE.1	3	2	2	-	1	-	-	-	-	-	-	3	2	-
DS522PE.2	3	3	2	1	-	-	-	-	-	-	-	3	2	-
DS522PE.3	3	3	2	2	-	-	-	-	-	-	-	3	2	-
DS522PE.4	3	2	3	-	2	-	-	-	-	-	-	3	3	1
DS522PE.5	2	2	2	-	1	-	-	-	-	-	-	3	2	-
Average	2.8	2.4	2.2	1.5	1.33	-	-	-	-	-	-	3	2.2	1

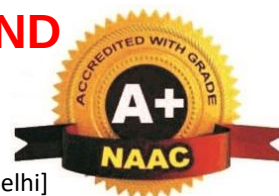


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DS523PE – SOFTWARE PROJECT MANAGEMENT

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
DS523PE.1	Understand software economics and their impact on software development performance.	2
DS523PE.2	Examine software life cycle phases, artifacts, workflows, and process checkpoints.	4
DS523PE.3	Demonstrate knowledge of software management process framework and architectures.	2
DS523PE.4	Analyze software project planning, organization, automation, and management disciplines.	4
DS523PE.5	Apply software metrics, project control techniques, and process tailoring methods.	3

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS523PE.1	2	1	-	-	-	1	-	-	-	-	3	-	2	-
DS523PE.2	2	2	1	-	-	-	-	-	-	-	3	-	2	-
DS523PE.3	2	2	2	-	-	-	-	-	-	-	3	-	2	-
DS523PE.4	2	3	2	1	-	-	-	-	1	-	3	-	2	-
DS523PE.5	2	2	2	-	1	-	-	-	-	-	3	-	2	-
Average	2	2	1.75	1	1	1	-	-	1	-	3	-	2	-

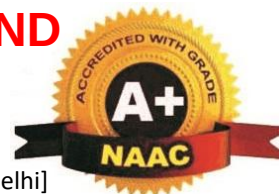


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DS524PE – DEVOPS

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
DS524PE.1	Understand DevOps concepts and environment.	2
DS524PE.2	Identify DevOps development models and architectures.	3
DS524PE.3	Use version control and project management tools.	3
DS524PE.4	Apply continuous integration and build tools.	3
DS524PE.5	Select testing and deployment tools for DevOps projects.	3

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS524PE.1	2	1	-	-	2	-	-	-	-	-	-	-	2	1
DS524PE.2	2	2	2	-	2	-	-	-	-	-	-	-	2	-
DS524PE.3	2	1	2	-	3	-	-	-	-	-	1	-	2	1
DS524PE.4	2	2	2	-	3	-	-	-	-	-	-	-	3	1
DS524PE.5	2	2	2	2	3	-	-	-	-	-	-	-	3	2
Average	2	1.6	2	2	2.6	-	-	-	-	-	1	-	2.4	1.25

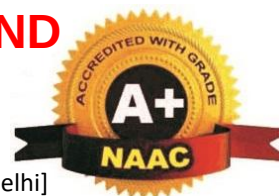


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DS525PE – COMPUTER VISION AND ROBOTICS

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
DS525PE.1	Implement fundamental image processing techniques required for computer vision.	3
DS525PE.2	Implement boundary tracking techniques.	3
DS525PE.3	Apply chain codes, region descriptors, and Hough Transform for line, circle, and ellipse detection.	3
DS525PE.4	Apply 3D vision techniques and implement motion-related techniques.	3
DS525PE.5	Develop applications using computer vision techniques.	3

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS525PE.1	3	2	2	-	2	-	-	-	-	-	-	2	3	-
DS525PE.2	3	3	2	1	2	-	-	-	-	-	-	2	3	-
DS525PE.3	3	3	2	2	2	-	-	-	-	-	-	2	3	-
DS525PE.4	3	3	3	2	2	-	-	-	-	-	-	2	3	1
DS525PE.5	3	3	3	2	3	-	-	-	-	-	1	2	3	2
Average	3	2.8	2.4	1.75	2.2	-	-	-	-	-	1	2	3	1.5

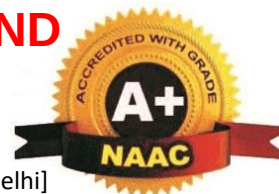


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LABORATORY & MANDATORY COURSES

R PROGRAMMING LAB

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
DS504PC.1	Setup and configure R environment and packages.	3
DS504PC.2	Understand and use R data types and structures.	2
DS504PC.3	Develop programming logic using R.	3
DS504PC.4	Visualize and analyze data with R plots and EDA.	4
DS504PC.5	Apply statistical methods like regression on datasets.	3

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS504PC.1	2	1	-	-	3	-	-	-	-	-	-	3	2	-
DS504PC.2	2	2	1	-	3	-	-	-	-	-	-	3	3	-
DS504PC.3	2	2	2	-	3	-	-	-	-	-	-	3	3	1
DS504PC.4	2	3	2	1	3	-	-	-	-	1	-	3	3	2
DS504PC.5	3	3	2	2	3	-	-	-	-	1	-	3	3	2
Average	2.2	2.2	1.8	1.5	3.0	-	-	-	-	1.0	-	3.0	2.8	1.7

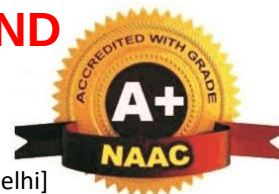


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COMPUTER NETWORKS LAB

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
CS505PC.1	Implement data link layer framing methods.	3
CS505PC.2	Analyze error detection and error correction codes.	4
CS505PC.3	Implement and analyze routing and congestion issues in network design.	4
CS505PC.4	Implement Encoding and Decoding techniques used in presentation layer	3
CS505PC.5	To be able to work with different network tools	3

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CS505PC.1	3	2	2	3	3	-	1	2	1	-	2	2	3	1
CS505PC.2	3	3	3	3	3	-	1	2	2	1	2	2	3	2
CS505PC.3	3	3	3	3	3	-	1	2	2	-	2	3	3	2
CS505PC.4	3	3	3	3	3	-	1	3	2	1	3	3	3	2
CS505PC.5	3	3	3	2	3	1	3	3	3	2	2	3	3	3
Average	3	2.8	2.8	2.8	3	1	1.4	2.4	2	1.33	2.2	2.6	3	2

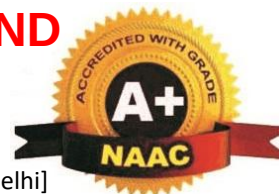


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ADVANCED ENGLISH COMMUNICATION SKILLS LAB

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
EN506BS.1	Comprehend and interpret English effectively.	2
EN506BS.2	Write formal letters, reports, and emails correctly.	3
EN506BS.3	Communicate ideas clearly through presentations.	3
EN506BS.4	Participate confidently in group discussions and debates.	3
EN506BS.5	Perform well in interviews and professional communication.	3

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
EN506BS.1	1	1	-	-	-	-	-	-	2	3	-	-	-	-
EN506BS.2	-	-	1	-	-	-	-	-	2	3	-	-	-	-
EN506BS.3	-	-	2	-	-	-	-	-	3	3	-	-	-	-
EN506BS.4	-	1	1	-	-	-	-	1	3	3	-	-	-	-
EN506BS.5	-	1	2	-	-	-	-	1	3	3	1	-	-	-
Average	1.0	1.0	1.5	-	-	-	-	1.0	2.6	3.0	1.0	-	-	-

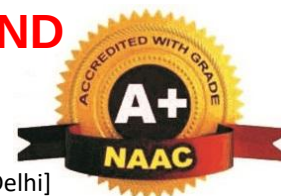


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DS507PC – ETL – KAFKA/TALEND

COURSE OUTCOME:

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
DS507PC.1	Install and configure Apache Kafka in single-node and multi-broker environments.	3
DS507PC.2	Create and manage Kafka topics, producers, and consumers using command-line tools and Java programs.	3
DS507PC.3	Implement synchronous and asynchronous message production and consume messages efficiently.	3
DS507PC.4	Design and deploy fault-tolerant Kafka clusters, ensuring data integrity and availability.	4
DS507PC.5	Gain practical experience in cluster management, topic creation, and basic operations.	3

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
DS507PC.1	2	1	1	-	3	-	-	-	-	-	-	2	1	3
DS507PC.2	2	2	2	-	3	-	-	-	-	-	-	2	2	3
DS507PC.3	2	2	2	1	3	-	-	-	-	-	-	2	2	3
DS507PC.4	3	3	3	2	3	-	-	-	-	-	1	3	2	3
DS507PC.5	2	2	2	1	3	-	-	-	-	-	-	2	2	3
Average	2.2	2	2	1.33	3	-	-	-	-	-	1	2.2	1.8	3

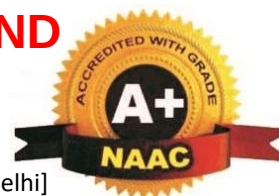


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MC508BS – INTELLECTUAL PROPERTY RIGHTS

COURSE OUTCOME:

CO.No.	COURSE OUTCOMES	BT Level
MC508BS.1	Explain the concepts, types, and importance of Intellectual Property Rights and related international bodies.	2
MC508BS.2	Analyze trademark selection, protection, and registration processes.	4
MC508BS.3	Explain the fundamentals of copyright and patent laws, including ownership and protection mechanisms.	2
MC508BS.4	Apply trade secret and unfair competition laws to real-world situations.	3
MC508BS.5	Examine recent national and international developments in IPR and perform basic IP audits.	4

MAPPING:

CO.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
MC508BS.1	1	-	-	-	-	2	-	2	-	-	1	-	-	-
MC508BS.2	1	1	-	-	-	2	-	2	-	-	1	-	-	-
MC508BS.3	1	-	-	-	-	2	-	2	-	-	1	-	-	-
MC508BS.4	1	1	-	-	-	3	1	3	-	-	1	-	-	-
MC508BS.5	1	2	-	-	-	3	1	2	-	-	2	-	-	-
Average	1	1.33	-	-	-	2.4	1	2.2	-	-	1.2	-	-	-