

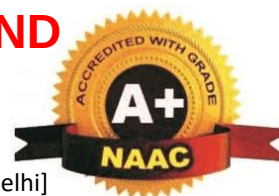


VIGNAN'S INSTITUTE OF MANAGEMENT AND TECHNOLOGY FOR WOMEN

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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

DS501PC: ALGORITHMS DESIGN AND ANALYSIS

At the end of the course, the student will be able to

CO. No.	COURSE OUTCOMES	BT Level
CO1	Analyze the performance of algorithms Understand the choice of data structures and the algorithm design methods.	4
CO2	Choose appropriate data structures and algorithm design methods for a specified application.	5
CO3	Understand the choice of data structures and the algorithm design methods.	2
CO4	Implement tree and graph traversal techniques and identify graph components.	3
CO5	Classify problems as NP-Hard or NP-Complete and explain computational complexity concepts	4

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	3	2	1	-	-	-	-	-	1	3	3	1
CO2	3	3	3	3	2	-	-	-	1	-	1	3	3	2
CO3	3	3	3	3	2	1	-	1	2	-	2	3	3	2
CO4	3	3	3	3	3	1	1	2	2	1	2	3	3	3
CO5	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

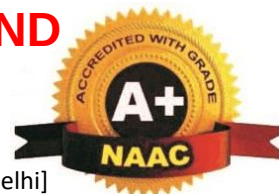


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CS502PC: COMPUTER NETWORKS

At the end of the course, the student will be able to

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand basic computer network concepts and architectures.	2
CO2	Explain the functions of OSI and TCP/IP layers.	2
CO3	Apply sub netting, routing, and congestion control techniques.	3
CO4	Use essential network protocols in design and implementation.	3
CO5	Analyze application-layer services like DNS, HTTP, and email.	4

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	2	2	1	1	2	2	1	3	2	3	2
CO2	3	3	3	2	3	1	2	2	2	1	3	3	3	2
CO3	3	3	3	3	3	1	2	3	3	2	3	3	3	3
CO4	3	3	3	3	3	1	2	3	2	2	3	3	3	2
CO5	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

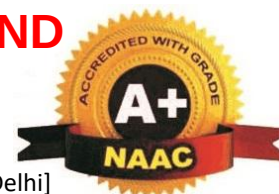


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DS503PC: INTRODUCTION TO DATA SCIENCE

At the end of the course, the student will be able to

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand statistical modeling, data types, and data science concepts.	2
CO2	Implement R programming basics, vectors, matrices, lists, and data frames.	3
CO3	Apply conditionals, loops, and functions for data manipulation in R.	3
CO4	Visualize data using charts, graphs, and exploratory techniques.	3
CO5	Perform predictive analysis using linear and multiple regression models	4

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	1	-	-	-	-	-	-	3	2	-
CO2	2	2	2	-	3	-	-	-	-	-	-	3	3	1
CO3	2	3	2	-	3	-	-	-	-	-	-	3	3	1
CO4	2	2	3	1	3	-	-	-	-	1	-	3	3	2
CO5	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

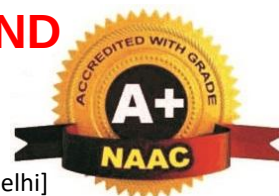


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PROFESSIONAL ELECTIVE – I

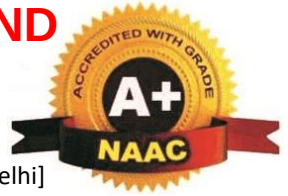
DS511PE – DATA WAREHOUSING AND BUSINESS INTELLIGENCE

At the end of the course, the student will be able to

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand architecture of data warehouse and OLAP operations.	2
CO2	Understand fundamental concepts of Business Intelligence.	2
CO3	Apply BI key performance indicators.	3
CO4	Utilize advanced BI tools and their implementation.	3
CO5	Implement BI techniques and BI ethics.	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	2	-	2	-	-	-	-	-	-	3	2	2
CO2	2	2	1	-	1	-	-	-	-	-	-	3	2	-
CO3	2	3	2	1	2	-	-	-	-	-	-	3	3	2
CO4	2	2	2	-	3	-	-	-	-	-	1	3	3	3
CO5	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



DS512PE – ARTIFICIAL INTELLIGENCE

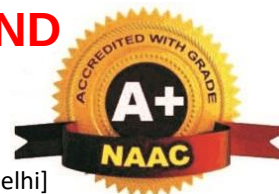


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DS513PE – WEB PROGRAMMING

At the end of the course, the student will be able to

CO. No.	COURSE OUTCOMES	BT Level
C01	Design web pages.	3
C02	Use technologies of web programming.	3
C03	Apply object-oriented aspects to scripting.	3
C04	Create databases with connectivity using JDBC.	3
C05	Build web-based applications using sockets.	3

MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
C01	2	1	2	-	2	-	-	-	-	-	-	1	2	-
C02	2	1	2	-	3	-	-	-	-	-	-	1	2	-
C03	2	2	2	-	2	-	-	-	-	-	-	2	2	-
C04	2	2	2	1	2	-	-	-	-	-	-	2	2	2
C05	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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
C01	3	2	1	-	-	-	-	-	-	-	-	2	2	-
C02	3	3	2	1	1	-	-	-	-	-	-	2	2	-
C03	3	3	2	2	2	-	-	-	-	-	-	2	3	-
C04	3	3	3	2	2	-	-	-	-	-	-	2	3	1
C05	3	2	2	-	1	-	-	-	-	-	-	2	2	-
Average	3	2.6	2	1.67	1.5	-	-	-	-	-	-	2	2.4	1

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
C01	2	1	1	-	-	-	-	-	-	-	-	1	2	-
C02	3	3	2	1	1	-	-	-	-	-	-	2	2	-
C03	2	2	2	-	-	-	-	-	-	-	-	2	2	-
C04	3	3	2	1	1	-	-	-	-	-	-	2	3	-
C05	3	3	3	2	1	-	-	-	-	-	-	2	3	1
Average	2.6	2.4	2	1.33	1	-	-	-	-	-	-	1.8	2.4	1

PROFESSIONAL ELECTIVE – II

DS521PE – SPATIAL AND MULTIMEDIA DATABASES

At the end of the course, the student will be able to

CO.No.	COURSE OUTCOMES	BT Level
CO1	Understand spatial data models and spatial database design.	2
CO2	Analyze spatial indexing and multidimensional data structures.	4
CO3	Represent and retrieve image databases using R-trees.	3
CO4	Store and retrieve text, audio, video, and multimedia data.	3
CO5	Understand distributed multimedia presentations and media servers.	2

MAPPING:

[illegible]

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
C01	3	2	2	-	1	-	-	-	-	-	-	3	2	-
C02	3	3	2	1	-	-	-	-	-	-	-	3	2	-
C03	3	3	2	2	-	-	-	-	-	-	-	3	2	-
C04	3	2	3	-	2	-	-	-	-	-	-	3	3	1
C05	2	2	2	-	1	-	-	-	-	-	-	3	2	-
Average	2.8	2.4	2.2	1.5	1.33	-	-	-	-	-	-	3	2.2	1

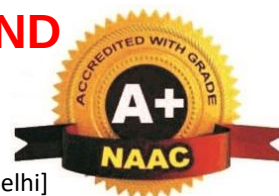


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DS523PE – SOFTWARE PROJECT MANAGEMENT

At the end of the course, the student will be able to

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand software economics and their impact on software development performance.	2
CO2	Examine software life cycle phases, artifacts, workflows, and process checkpoints.	4
CO3	Demonstrate knowledge of software management process framework and architectures.	2
CO4	Analyze software project planning, organization, automation, and management disciplines.	4
CO5	Apply software metrics, project control techniques, and process tailoring methods.	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	1	-	-	-	1	-	-	-	-	3	-	2	-
CO2	2	2	1	-	-	-	-	-	-	-	3	-	2	-
CO3	2	2	2	-	-	-	-	-	-	-	3	-	2	-
CO4	2	3	2	1	-	-	-	-	1	-	3	-	2	-
CO5	2	2	2	-	1	-	-	-	-	-	3	-	2	-
Average	2	2	1.75	1	1	1	-	-	1	-	3	-	2	-

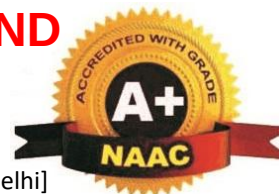


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DS524PE – DEVOPS

At the end of the course, the student will be able to

CO. No	COURSE OUTCOMES	BT Level
CO1	Understand DevOps concepts and environment.	2
CO2	Identify DevOps development models and architectures.	3
CO3	Use version control and project management tools.	3
CO4	Apply continuous integration and build tools.	3
CO5	Select testing and deployment tools for DevOps projects.	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	1	-	-	2	-	-	-	-	-	-	-	2	1
CO2	2	2	2	-	2	-	-	-	-	-	-	-	2	-
CO3	2	1	2	-	3	-	-	-	-	-	1	-	2	1
CO4	2	2	2	-	3	-	-	-	-	-	-	-	3	1
CO5	2	2	2	2	3	-	-	-	-	-	-	-	3	2
Average	2	1.6	2	2	2.6	-	-	-	-	-	1	-	2.4	1.25

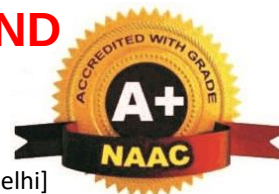


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DS525PE – COMPUTER VISION AND ROBOTICS

At the end of the course, the student will be able to

CO. No.	COURSE OUTCOMES	BT Level
CO1	Implement fundamental image processing techniques required for computer vision.	3
CO2	Implement boundary tracking techniques.	3
CO3	Apply chain codes, region descriptors, and Hough Transform for line, circle, and ellipse detection.	3
CO4	Apply 3D vision techniques and implement motion-related techniques.	3
CO5	Develop applications using computer vision techniques.	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	2	-	2	-	-	-	-	-	-	2	3	-
CO2	3	3	2	1	2	-	-	-	-	-	-	2	3	-
CO3	3	3	2	2	2	-	-	-	-	-	-	2	3	-
CO4	3	3	3	2	2	-	-	-	-	-	-	2	3	1
CO5	3	3	3	2	3	-	-	-	-	-	1	2	3	2
Average	3	2.8	2.4	1.75	2.2	-	-	-	-	-	1	2	3	1.5

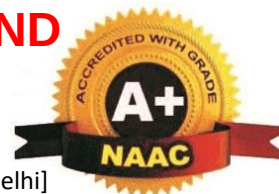


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LABORATORY & MANDATORY COURSES

DS504PC: R PROGRAMMING LAB

At the end of the course, the student will be able to

CO. No.	COURSE OUTCOMES	BT Level
CO1	Setup and configure R environment and packages.	3
CO2	Understand and use R data types and structures.	2
CO3	Develop programming logic using R.	3
CO4	Visualize and analyze data with R plots and EDA.	4
CO5	Apply statistical methods like regression on datasets.	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	1	-	-	3	-	-	-	-	-	-	3	2	-
CO2	2	2	1	-	3	-	-	-	-	-	-	3	3	-
CO3	2	2	2	-	3	-	-	-	-	-	-	3	3	1
CO4	2	3	2	1	3	-	-	-	-	1	-	3	3	2
CO5	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

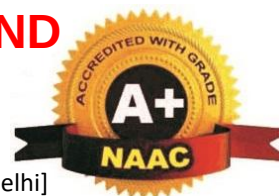


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CS505PC: COMPUTER NETWORKS LAB

At the end of the course, the student will be able to

CO.No.	COURSE OUTCOMES	BT Level
CO1	Implement data link layer framing methods.	3
CO2	Analyze error detection and error correction codes.	4
CO3	Implement and analyze routing and congestion issues in network design.	4
CO4	Implement Encoding and Decoding techniques used in presentation layer	3
CO5	To be able to work with different network tools	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	2	3	3	-	1	2	1	-	2	2	3	1
CO2	3	3	3	3	3	-	1	2	2	1	2	2	3	2
CO3	3	3	3	3	3	-	1	2	2	-	2	3	3	2
CO4	3	3	3	3	3	-	1	3	2	1	3	3	3	2
CO5	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

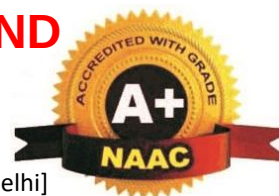


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EN506BS: ADVANCED ENGLISH COMMUNICATION SKILLS LAB

At the end of the course, the student will be able to

CO.No.	COURSE OUTCOMES	BT Level
CO1	Comprehend and interpret English effectively.	2
CO2	Write formal letters, reports, and emails correctly.	3
CO3	Communicate ideas clearly through presentations.	3
CO4	Participate confidently in group discussions and debates.	3
CO5	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
CO1	1	1	-	-	-	-	-	-	2	3	-	-	-	-
CO2	-	-	1	-	-	-	-	-	2	3	-	-	-	-
CO3	-	-	2	-	-	-	-	-	3	3	-	-	-	-
CO4	-	1	1	-	-	-	-	1	3	3	-	-	-	-
CO5	-	1	2	-	-	-	-	1	3	3	1	-	-	-
Average	1.0	1.0	1.5	-	-	-	-	1.0	2.6	3.0	1.0	-	-	-

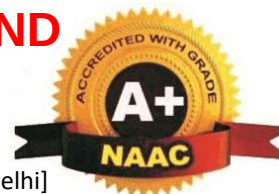


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DS507PC – ETL – KAFKA/TALEND

At the end of the course, the student will be able to

CO. No.	COURSE OUTCOMES	BT Level
CO1	Install and configure Apache Kafka in single-node and multi-broker environments.	3
CO2	Create and manage Kafka topics, producers, and consumers using command-line tools and Java programs.	3
CO3	Implement synchronous and asynchronous message production and consume messages efficiently.	3
CO4	Design and deploy fault-tolerant Kafka clusters, ensuring data integrity and availability.	4
CO5	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
CO1	2	1	1	-	3	-	-	-	-	-	-	2	1	3
CO2	2	2	2	-	3	-	-	-	-	-	-	2	2	3
CO3	2	2	2	1	3	-	-	-	-	-	-	2	2	3
CO4	3	3	3	2	3	-	-	-	-	-	1	3	2	3
CO5	2	2	2	1	3	-	-	-	-	-	-	2	2	3
Average	2.2	2	2	1.33	3	-	-	-	-	-	1	2.2	1.8	3

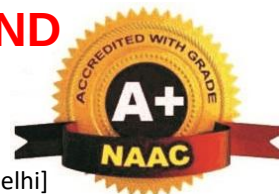


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MC508BS – INTELLECTUAL PROPERTY RIGHTS

At the end of the course, the student will be able to

CO. No.	COURSE OUTCOMES	BT Level
CO1	Explain the concepts, types, and importance of Intellectual Property Rights and related international bodies.	2
CO2	Analyze trademark selection, protection, and registration processes.	4
CO3	Explain the fundamentals of copyright and patent laws, including ownership and protection mechanisms.	2
CO4	Apply trade secret and unfair competition laws to real-world situations.	3
CO5	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
CO1	1	-	-	-	-	2	-	2	-	-	1	-	-	-
CO2	1	1	-	-	-	2	-	2	-	-	1	-	-	-
CO3	1	-	-	-	-	2	-	2	-	-	1	-	-	-
CO4	1	1	-	-	-	3	1	3	-	-	1	-	-	-
CO5	1	2	-	-	-	3	1	2	-	-	2	-	-	-
Average	1	1.33	-	-	-	2.4	1	2.2	-	-	1.2	-	-	-