

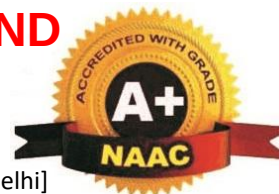


VIGNAN'S INSTITUTE OF MANAGEMENT AND TECHNOLOGY FOR WOMEN

(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 II Semester : Course Outcomes & CO-PO/PSO Mapping

ML601PC: MACHINE LEARNING

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand supervised, unsupervised, and semi-supervised learning.	2
CO2	Apply classifiers for linear and non-linear data.	3
CO3	Use ensemble methods to improve accuracy.	3
CO4	Apply dimensionality reduction and evolutionary algorithms.	3
CO5	Understand reinforcement and probabilistic learning models.	2

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	2	2	2	2	1	2	2	2	3	3	2
CO2	3	3	3	3	3	2	2	2	2	2	2	3	3	2
CO3	3	3	3	3	3	2	2	2	2	2	2	3	3	2
CO4	3	3	3	3	3	2	2	2	2	2	3	3	3	2
CO5	3	3	3	3	3	3	3	2	2	2	3	3	3	3
Average	3	3	2.8	2.8	2.8	2.2	2.2	1.8	2	2	2.4	3	3	2.2

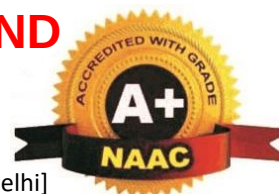


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IT602PC: AUTOMATA THEORY AND COMPILER DESIGN

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Able to employ finite state machines for modeling and solving computing problems.	3
CO2	Able to design context free grammars for formal languages.	6
CO3	Able to distinguish between decidability and undesirability.	4
CO4	Demonstrate the knowledge of patterns, tokens & regular expressions for lexical analysis.	2
CO5	Acquire skills in using lex tool and design LR parsers	6

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	2	2	2	-	1	2	2	1	3	3	3	2
CO2	3	3	3	2	3	1	1	2	2	1	3	3	3	2
CO3	3	3	3	2	3	1	1	2	2	1	3	3	3	2
CO4	3	3	2	3	2	1	2	2	2	1	3	2	3	2
CO5	3	3	3	3	2	1	2	3	3	2	3	3	3	3
Average	3	3	2.6	2.4	2.4	1	1.4	2.2	2.2	1.2	3	2.8	3	2.2

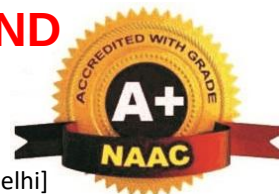


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DS603PC: BIG DATA ANALYTICS

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand the importance of big data analytics and its types	2
CO2	Perform analytics on big data	3
CO3	Proficiency in big data storage and processing in Hadoop	3
CO4	Data analytics through MongoDB	3
CO5	Data analytics through R	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	2	-	-	-	-	-	-	3	2	-
CO2	3	3	2	2	3	-	-	-	-	-	-	3	3	2
CO3	3	2	2	2	3	-	-	-	-	-	-	3	3	2
CO4	3	3	2	1	3	-	-	-	-	-	-	3	3	2
CO5	3	3	2	1	3	-	-	-	-	-	-	3	3	3
Average	3.0	2.6	2.0	1.5	2.8	-	-	-	-	-	-	3.0	2.8	2.3

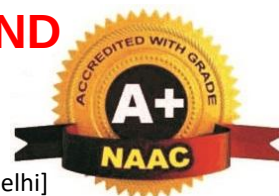


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(Professional Elective – III)

DS631PE: SOFTWARE TESTING METHODOLOGIES

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand purpose of testing and path testing	2
CO2	Understand strategies in data flow testing and domain testing	2
CO3	Develop logic-based test strategies	6
CO4	Understand graph matrices and its applications	2
CO5	Implement test cases using any testing automation tool	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	1	-	-	-	-	-	-	-	3	2	-
CO2	3	2	-	2	-	-	-	-	-	-	-	3	2	-
CO3	3	3	3	2	1	-	-	-	-	-	-	3	3	1
CO4	2	2	-	2	-	-	-	-	-	-	-	2	2	-
CO5	3	2	2	1	3	-	-	-	-	-	-	3	3	2
Average	2.8	2.2	2.5	1.6	2.0	-	-	-	-	-	-	2.8	2.4	1.5

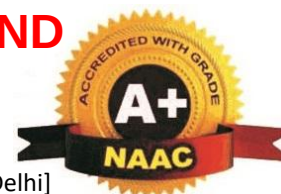


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(Professional Elective – III)

DS632PE: DATA VISUALIZATION TECHNIQUES

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Identify the different data types, visualization types to bring out the insight.	2
CO2	Relate the visualization towards the problem based on the dataset to analyze and bring out valuable insight on a large dataset.	4
CO3	Demonstrate the analysis of a large dataset using various visualization techniques and tools.	3
CO4	Identify the different attributes and showcasing them in plots. Identify and create various	3
CO5	Visualizations for geospatial and table data. Ability to create and interpret plots using R/Python	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	2	-	-	-	-	-	-	3	2	-
CO2	3	3	2	2	2	-	-	-	-	-	-	3	3	2
CO3	3	3	2	2	3	-	-	-	-	-	-	3	3	2
CO4	3	2	2	1	3	-	-	-	-	-	-	3	3	2
CO5	3	2	2	1	3	-	-	-	-	-	-	3	3	3
Average	3.0	2.4	2.0	1.5	2.6	-	-	-	-	-	-	3.0	2.8	2.3

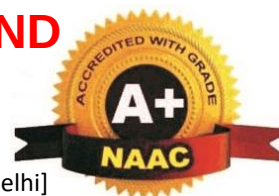


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(Professional Elective – III)

DS633PE: SCRIPTING LANGUAGES

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand the differences between scripting and programming languages.	2
CO2	Gain programming skills in Ruby for problem-solving and data handling.	3
CO3	Implement TCL scripts for file, list, and numerical operations.	3
CO4	Develop Perl scripts for text, file, and data manipulation tasks.	6
CO5	Apply scripting skills to automate tasks and solve computational problems.	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	3	2	1	2	-	-	-	-	-	-	3	3	2
CO3	3	2	2	1	3	-	-	-	-	-	-	3	3	2
CO4	3	3	3	1	3	-	-	-	-	-	-	3	3	2
CO5	3	3	2	2	3	-	-	-	-	-	-	3	3	3
Average	3.0	2.6	2.25	1.25	2.75	-	-	-	-	-	-	3.0	2.8	2.25

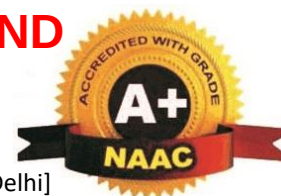


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(Professional Elective – III)

DS634PE: MOBILE APPLICATION DEVELOPMENT

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand and work with the Android OS and application lifecycle.	2
CO2	Design and develop Android user interfaces using layouts and UI components.	6
CO3	Handle events, intents, and broadcast receivers in Android applications.	3
CO4	Implement persistent storage using files and shared preferences.	3
CO5	Use SQLite and content providers for database-driven Android apps.	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	2	-	-	-	-	-	-	3	2	-
CO2	3	3	3	1	3	-	-	-	-	-	-	3	3	3
CO3	3	2	2	1	3	-	-	-	-	-	-	3	3	2
CO4	3	2	2	1	3	-	-	-	-	-	-	3	3	2
CO5	3	3	2	2	3	-	-	-	-	-	-	3	3	3
Average	3.0	2.4	2.25	1.25	2.8	-	-	-	-	-	-	3.0	2.8	2.5

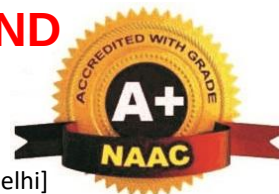


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(Professional Elective – III)

DS635PE: CRYPTOGRAPHY AND NETWORK SECURITY

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand cryptography and security principles.	2
CO2	Apply symmetric and asymmetric encryption.	3
CO3	Use hash functions, digital signatures, and key management.	3
CO4	Implement network and wireless security protocols.	3
CO5	Analyze email, IP security, and real-world applications.	4

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	2	-	-	-	-	-	-	3	2	-
CO2	3	2	3	-	3	-	-	-	-	-	-	3	3	-
CO3	3	2	3	-	3	-	-	-	-	-	-	3	3	2
CO4	2	3	3	2	3	-	-	-	-	-	-	3	3	2
CO5	2	3	-	3	2	-	-	-	-	-	-	2	3	3
Average	2.6	2.4	3.0	2.5	2.6	-	-	-	-	-	-	2.8	2.8	2.3

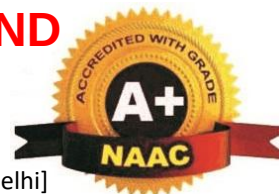


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(Open Elective – I) DS641OE: FUNDAMENTALS OF DATA SCIENCE

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

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

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	2	-	-	-	-	-	-	2	2	-
CO2	3	2	3	-	3	-	-	-	-	-	-	3	2	-
CO3	2	3	3	2	3	-	-	-	-	-	-	3	3	-
CO4	2	2	3	2	3	-	-	-	-	-	-	2	3	2
CO5	2	3	-	3	2	-	-	-	-	-	-	2	3	3
Average	2.4	2.4	3.0	2.3	2.6	-	-	-	-	-	-	2.4	2.6	2.5

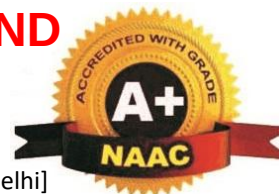


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(Open Elective – I) DS504PC: R PROGRAMMING

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand to use and program in the programming language R	2
CO2	Understand to use R to solve statistical problems	3
CO3	Implement and describe Monte Carlo the technology	3
CO4	Implement minimize and maximize functions using R	3
CO5	Utilize R elements for data visualization and prediction	4

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	3	-	-	-	-	-	-	3	2	-
CO2	3	3	2	-	3	-	-	-	-	-	-	3	3	-
CO3	2	3	3	2	3	-	-	-	-	-	-	3	3	2
CO4	2	3	3	2	3	-	-	-	-	-	-	3	3	2
CO5	3	3	2	3	3	-	-	-	-	-	-	3	3	3
Average	2.6	2.8	2.5	2.3	3.0	-	-	-	-	-	-	3.0	2.8	2.3

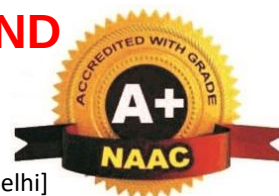


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LABORATORY

ML604PC: MACHINE LEARNING LAB

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand predictive data analysis concepts and trends.	2
CO2	Apply Python libraries for statistical computation and data handling.	3
CO3	Implement machine learning algorithms like regression, KNN, and decision trees.	3
CO4	Perform clustering and classification using Python.	3
CO5	Build predictive models and evaluate their performance on real datasets.	5

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	-	-	-	2	1	-
CO2	2	-	-	-	3	-	-	-	-	-	-	3	2	-
CO3	3	2	3	2	3	-	-	-	-	-	-	3	3	1
CO4	2	3	2	2	3	-	-	-	-	-	-	3	3	1
CO5	3	3	3	3	3	-	-	-	-	-	-	3	3	2
Average	2.6	2.0	2.7	2.3	3.0	-	-	-	-	-	-	2.8	2.4	1.3

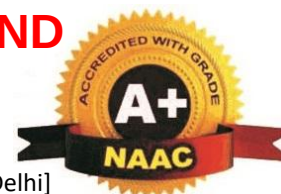


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DS605PC: BIG DATA ANALYTICS LAB

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Use Excel for data analysis and visualization.	3
CO2	Program and execute Hadoop Map Reduce jobs.	3
CO3	Process and analyze big data using HBase and Pig.	4
CO4	Perform data analytics using MongoDB.	3
CO5	Apply machine learning techniques in R for big data analysis.	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	2	-	1	3	-	-	-	-	-	-	3	2	-
CO2	2	2	2	2	3	-	-	-	1	-	-	3	3	-
CO3	2	3	2	3	3	-	-	-	-	-	-	3	3	2
CO4	2	3	2	2	3	-	-	-	-	-	-	3	3	2
CO5	2	3	3	3	3	-	-	-	-	-	-	3	3	3
Average	2.0	2.6	2.3	2.2	3.0	-	-	-	1.0	-	-	3.0	2.8	2.3

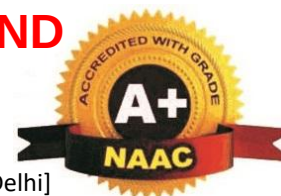


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DS606PC: UI Design - Flutter Lab

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Implements Flutter Widgets and Layouts	3
CO2	Responsive UI Design and with Navigation in Flutter	3
CO3	Create custom widgets for specific UI elements and also Apply styling using themes and custom styles.	6
CO4	Design a form with various input fields, along with validation and error handling	6
CO5	Fetches data and write code for unit Test for UI components and also animation	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	2	2	—	3	—	—	—	—	—	—	3	2	—
CO2	2	2	3	1	3	—	—	—	1	1	—	3	3	—
CO3	2	2	3	2	3	—	—	—	1	1	—	3	3	2
CO4	2	3	3	2	3	—	—	—	—	1	—	3	3	2
CO5	2	3	2	3	3	—	—	—	1	1	—	3	3	3
Average	2.0	2.4	2.6	2.0	3.0	—	—	—	1.0	1.0	—	3.0	2.8	2.3

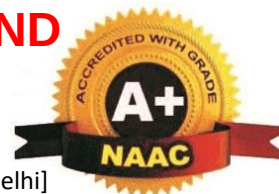


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MC607BS: ENVIRONMENTAL SCIENCE

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development	6

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	2	-	-	-	2	3	-	-	-	-	1	-	-
CO2	2	2	1	-	-	2	3	-	-	-	-	1	-	-
CO3	2	2	2	-	-	2	3	-	-	-	-	1	1	-
CO4	2	2	2	1	1	2	3	-	-	-	-	1	1	1
CO5	2	2	3	1	1	2	3	1	-	-	-	1	1	1
Average	2.0	2.0	2.0	1.0	1.0	2.0	3.0	1.0	-	-	-	1.0	1.0	1.0

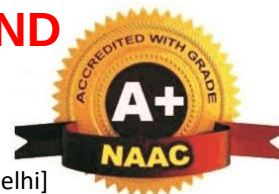


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DS611PE: SOFTWARE TESTING METHODOLOGIES LAB

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Design and develop the best test strategies in accordance with the development model.	6
CO2	Design and develop GUI.	6
CO3	Design Bitmap and database checkpoints.	6
CO4	Develop database checkpoints for different checks.	6
CO5	Perform batch testing with and without parameter passing.	3

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	3	3	2	3	-	-	-	1	1	-	3	2	2
CO2	2	2	3	1	3	-	-	-	1	1	-	3	3	2
CO3	2	2	3	2	3	-	-	-	1	1	-	3	3	2
CO4	2	2	3	2	3	-	-	-	1	1	-	3	3	2
CO5	2	2	2	2	3	-	-	-	1	1	-	3	2	2
Average	2.0	2.2	2.8	1.8	3.0	-	-	-	1.0	1.0	-	3.0	2.6	2.0

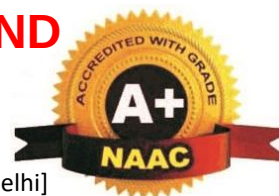


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DS612PE: DATA VISUALIZATION TECHNIQUES LAB (Professional Elective – III)

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Identify the different data types, visualization types to bring out the insight.	2
CO2	Relate the visualization towards the problem based on the dataset to analyze and bring out valuable insight on a large dataset.	4
CO3	Demonstrate the analysis of a large dataset using various visualization techniques and tools.	4
CO4	Identify the different attributes and showcasing them in plots. Identify and create various visualizations for geospatial and table data.	6
CO5	Ability to create and interpret plots using R/Python.	6

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	2	1	1	2	-	-	-	-	-	-	2	3	2
CO2	2	3	2	3	2	-	-	-	-	-	-	2	3	3
CO3	2	3	2	3	3	-	-	-	-	-	-	2	3	3
CO4	2	2	3	2	3	-	-	-	-	-	-	3	3	3
CO5	2	2	3	2	3	-	-	-	-	-	-	3	3	3
Average	2.0	2.4	2.2	2.2	2.6	-	-	-	-	-	-	2.4	3.0	2.8

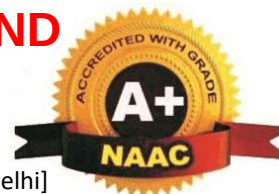


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DS613PE: SCRIPTING LANGUAGES LAB

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Identify the different data types, visualization types to bring out the insight.	2
CO2	Relate the visualization towards the problem based on the dataset to analyze and bring out valuable insight on a large dataset.	4
CO3	Demonstrate the analysis of a large dataset using various visualization techniques and tools.	4
CO4	Identify the different attributes and showcasing them in plots. Identify and create various visualizations for geospatial and table data.	6
CO5	Ability to create and interpret plots using R/Python.	6

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	2	1	1	2	-	-	-	-	-	-	2	3	2
CO2	2	3	2	3	2	-	-	-	-	-	-	2	3	3
CO3	2	3	2	3	3	-	-	-	-	-	-	2	3	3
CO4	2	2	3	2	3	-	-	-	-	-	-	3	3	3
CO5	2	2	3	2	3	-	-	-	-	-	-	3	3	3
Average	2.0	2.4	2.2	2.2	2.6	-	-	-	-	-	-	2.4	3.0	2.8

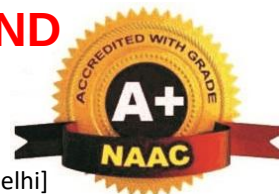


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DS614PE: MOBILE APPLICATION DEVELOPMENT LAB

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand the working of Android OS Practically.	2
CO2	Develop user interfaces.	6
CO3	Develop, deploy and maintain the Android Applications.	6
CO4	Implement data storage, networking, and API integration in Android apps.	3
CO5	Test, debug, and optimize Android applications for performance and usability.	5

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	2	2	1	1	2	-	-	-	-	-	-	2	3	2
CO2	2	2	3	1	3	-	-	-	1	1	-	3	3	2
CO3	2	2	3	2	3	-	-	-	1	1	-	3	3	3
CO4	2	3	3	2	3	-	-	-	1	1	-	3	3	3
CO5	2	3	3	3	3	-	-	-	1	1	-	3	3	3
Average	2.0	2.4	2.6	1.8	2.8	-	-	-	1.0	1.0	-	2.8	3.0	2.6

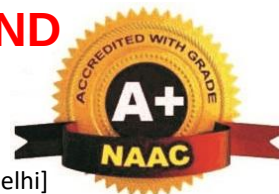


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DS615PE: CRYPTOGRAPHY AND NETWORK SECURITY LAB

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

CO. No.	COURSE OUTCOMES	BT Level
CO1	Understand basic cryptographic algorithms, message and web authentication and security issues.	2
CO2	Identify information system requirements for both of them such as client and server.	2
CO3	Understand the current legal issues towards information security.	2
CO4	Apply cryptographic algorithms and security protocols to secure data and communications.	3
CO5	Analyze security threats and implement appropriate countermeasures in information systems.	4

MAPPING:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	-	-	2	1	-	1	-	-	-	3	2	2
CO2	2	3	1	1	2	1	-	-	-	-	-	3	2	2
CO3	1	1	-	-	-	2	-	3	-	-	-	1	1	1
CO4	3	3	2	1	3	1	-	1	-	-	-	3	3	2
CO5	3	3	2	3	3	1	-	1	-	-	-	3	3	3
Average	2.4	2.4	1.7	1.7	2.5	1.2	-	1.5	-	-	-	2.6	2.2	2.0