

DATA SCIENCE (844)
SYLLABUS OF CLASS XI
SESSION: 2026-27

Theory : 50 Practical : 50

Date / Month	Unit	Chapter/Topics
20 th April to 30 th April	UNIT 1 – ETHICS IN DATA SCIENCE	Data Ecosystem, How data ecosystem is evolving, Why do data scientists need to understand ethics (A few people can do immense amount of harm, lack of consent), Insider and Outsider Threats, sources of insider threats, sources of outsider threat, insiders and outsider often work together (Espionage, CEO Phishing attacks, Misuse of USB drive, password attacks, IP spoofing), Real Life cases of Insider Attacks, Cyber Attacks, Security Checkup, The IT Act 2000-India, Governance, Data Governance, Need of Data Governance, Implementation of Data Governance.
4 th May to 15 th May	UNIT 5 – INTRODUCTION TO R STUDIO	Introducing R Studio, Installing R Studio, Basic Data Types (numeric, Integer, Complex, Character, logical, Raw Type, Basic Arithmetic Operation (Addition, subtraction, multiplication, division, exponentiation, modulus), Script (Input) Panel, Console (Output) Panel, Variable, rules of writing variables, Object in a programming (Vector, List, Matrices, Arrays, Factors, Data Frames)
18 th May to 26 th May	UNIT 6 – PROGRAMMING WITH R	Vector: Types of vector, creating a vector, Operators for vectors, Arithmetics operators for vector, Relational Operators, Logical Operators, Variable Assignments, Multiple Element Vectors, sequence operator, Accessing vector elements (using position, using logical indexing, using negative indexing, using 0/1 indexing
1 st July to 17 th July	UNIT 6 – PROGRAMMING WITH R	List: Naming elements in a list, Accessing list elements, Manipulating elements of list, merging list, transforming list to vectors Matrix: Creating matrix, Creating a matrix taking a vector of numbers as input, Accessing elements of a matrix, Matrix addition and subtraction, matrix multiplication and Division Array: Introduction, naming rows and columns, accessing and manipulation of array elements. Factor in R programming, Creating and accessing. Data Frame, Characteristics, Creating Data Frame, getting structure of data frame, extracting data from data frame.
20 th July to 31 st July	UNIT 7 – CODING FOR DATA SCIENCE VISUALISATION USING R STUDIO	Introduction, Data Visualisation, GGLOT2 package, PIE Chart, Slice percentage and chart legend, Bar Chart and Bar Graph, Labels Title and colours Bar Chart, Horizontal Bar Chart, Stacked Bar Chart, Line Chart, Multiple line chart, Drawing a line chart using the ggplot2, Histograms, Scatterplots, Box Plot, Statistical Analysis in R, Mean, Median, Mode
3 rd August to 14 th August	UNIT 2 – ASSESSING DATA	Introduction, Story vs Facts, Trial assessment, Concept of Correlation and Causation, Positive Correlation, Negative correlation and Zero or No Correlation, Concept of Causation, Meaning of Causation in Statistics and long term, Type of Causation, Cause in Fact, Proximate cause, role of causation in a trial assessment, Perform a trial assessment, Perception of Time assessment.
17 th August	UNIT 3 – FORECASTING ON	Introduction to forecasting, Types of forecasting, Qualitative,

to 28 th August	DATA	Quantitative Forecasting, Forecasting Methods, Time Series Model, Econometric Model, Judgemental Forecasting Model, The Delphi Model, Advantages of Forecasting, Disadvantages of forecasting, What can and cannot be forecasted, Analytic Studies, Experimental studies, observational studies, Principle of observational studies, Examples of observational studies: Chain smoking and lung cancer, Outcome of eating organic diet, Non Examples of observational studies, Why observational study when there is a trial assessment, Qualitative and quantitative observation, types of observational studies: Direct and Indirect observation, Types of observational research and their advantages and disadvantages (controlled, Naturalistic, Participant), advantages of observational study, Disadvantages of observational Study.
Revision for Half Examination		
1 st Oct to 29 th Oct	UNIT 4 – RANDOMISATION	What is Data?, Types of Data: Primary and Secondary Data, Advantages and disadvantages of Primary and Secondary Data, Data Collection Methods, Central Tendency, measurement of central tendency (mean, median, mode) Surveys, Steps of conducting surveys, types of survey methods (online survey, paper survey, telephonic survey, interviews, focus groups, kiosk survey, Survey questions (open ended, close ended questions), strength and weakness of survey method, Sampling, Sampling techniques, simple random sampling, stratified sampling, Systematic Sampling, Convenience Sampling, Quota Sampling, Cluster Sampling, purposive sampling, Sampling Bias, Type of Sampling Bias, Avoiding Sampling Bias, Level of Confidence, Confidence Interval, Automatic Data Collection Via Inbuilt Sensors, Structuring Data Using XML.
2 nd Nov to 13 th Nov.	UNIT 1: COMMUNICATION SKILLS – III	Methods of communication : Verbal, Non-verbal, Visual Communication styles : assertive, aggressive, passiveaggressive,submissive,etc. Writing skills to the following: Sentence , Phrase , Kinds of Sentences , Parts of Sentence, Parts of Speech , Articles , Construction of a Paragraph
16 th Nov to 27 th Nov	UNIT 2: SELF - MANAGEMENT SKILLS – III	Describe the importance of dressing appropriately, looking decent and positive body language , Describe the term grooming , Prepare a personal grooming checklist , Describe the techniques of self-exploration. Describe the important factors that influence in team building, Describe factors influencing team work Meaning and importance of time management – setting and prioritizing goals, creating a schedule, making lists of tasks, balancing work and leisure, using different ptimization tools to break large tasks into smaller tasks.
1 st Dec to 11 th Dec	UNIT 4: ENTREPRENEURIAL SKILLS- III	Values in general and entrepreneurial values , Entrepreneurial value orientation with respect to innovativeness, independence, outstanding performance and respect for work Attitudes in general and entrepreneurial attitudes Using imagination/ intuition Tendency to take moderate risk Enjoying freedom of expression and action Looking for economic opportunities Believing that we can change the environment

		Analyzing situation and planning action Involving in activity
13 th Dec to 31 th Dec	UNIT 5: GREEN SKILLS – III	Main sectors of green economy- Ewaste management, green transportation, renewal energy, green construction, water management, Policy initiatives for greening economy in India. Stakeholders in green economy Role of government and private agencies in greening cities, buildings, tourism, industry, transport, renewable energy, waste management, agriculture, water, forests and fisheries
11 th Jan to 29 th Jan	UNIT 3: INFORMATION AND COMMUNICATION TECHNOLOGY SKILLS – III	1. Introduction to word processing. 2. Software packages for word processing. 3. Opening and exiting the word processor. 4. Creating a document
		Editing text, Wrapping and aligning the text, Font size, type and face, Header and Footer , Auto correct, Numbering and bullet , Creating table , Find and replace, Page numbering , Printing document, Saving a document in various formats.
Revision for Annual Exam in February 2027		