



GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Integrated MSc, 7th Semester
Branch: Computer Science
Subject Name: Statistics and Exploratory Data Analysis
Subject Code: 1370307

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE(E)	PA (M)	PA (I)	ESE (V)		
3	0	2	4	70	30	20	30	150

Content:

Sr. No.	Content	Teaching Hours	Module Weightage
1.	Introduction: DATA-Variables, and Observations, Scales of Measurement, Categorical and Quantitative Data, Cross-Sectional and Time Series Data Descriptive Statistics, Statistical Inference	4	10%
2.	Data Collection and Analysis: Collection and presentation of data in terms of tables, graphs, raw data, frequency distributions, histogram etc. Measures of central tendency and location, Partition values, Comparison of various measures of central tendencies and dispersion.	6	14%
3.	Probability Distribution & Statistics: Introduction of Probability, sample, space & events, Basic rules of probability, permutation & combinations, conditional probability, Bayes' theorem.	8	19%
4.	Correlation And Regression Analysis: Curve fitting, correlation and regression analysis, Autocorrelation, Multiple regression, statistical Inference & estimation applied to Industrial problems	8	19%
5.	Understanding Data for Exploratory Analysis: Exploratory data analysis and data visualization, Perception, Continuous variables, Discrete variables, Dependency relationships, Multivariate categorical variables, Temporal data, Spatial data Data Science Pipeline: Collect, Import, Clean, Transform, Visualize, Model, Communicate	10	24%
6.	Statistical Tests and Testing of Hypothesis: Elementary theory and practice of sampling, standard error or means and variance, tests of significance, T test, F test, Z test and chi-square test	6	14%

Reference Books:

1. Quantitative Techniques for Managerial Decision by U. K. Srivastava, G. V. Shenoy and S. C. Sharma New Age International Publishers
2. Probability & Statistics for Engineers by Rao SCITECH
3. Introductory Statistics Fourth Edition Sheldon M. Ross, Academic Press Elsevier
4. Statistics for Business and Economics, Eleventh Edition David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, CENGAGE Learning
5. Applied Statistics and Probability for Engineers 3rd edition, Douglas C. Montgomery, George C. Runger John Wiley & Sons, Inc
6. Think Stats Exploratory Data Analysis in Python Allen B. Downey Green Tea Press



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Course Outcome:

CO-1	Recognize the goals of statistical analysis.
CO-2	Apply techniques for gathering and examining data.
CO-3	Make use of correlation and regression analysis to understand data
CO-4	Visualize the data to get the insights from it further for decision making process
CO-5	Apply various hypothesis testing techniques