RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Artificial Intelligence and Data Science, III-Semester

AD302 Probability and Statistics for Data Science

Unit-I
Data Science: Introduction, Data Science Life Cycle
Statistics: Descriptive and Inferential Statistics, Measures of central tendency: Arithmetic Mean, Median and Mode. Geometric mean, Harmonic Mean and Partition values.
Measures of dispersion: Dispersion, Range, Quartile Deviation, Mean deviation, Standard Deviation, Variance and Coefficient of Dispersion.

Unit –II
Skewness, Kurtosis, Moments, Measure of skewness and kurtosis.
Theory of probability: Introduction and definition of Probability, Event, Sample Space, Law of addition and multiplication of Probabilities and Conditional Probability. Independent and Dependent events, Bayes' theorem, Mathematical Expectations and Moment generating functions.

Unit -III
Theoretical Distribution: Discrete Distribution- Binomial Distribution and Poisson Distribution. Continuous Distribution –Rectangular and Normal distribution.
Curve fitting: Curve fitting and Methods of Least square, fitting a Straight line and a Parabola.

Unit -IV
Correlation and Regression: Correlation, Coefficient of Correlation, Rank Correlation, Lines of Regression. Multiple and Partial Correlation.

Unit -V
Testing of hypothesis: Null and Alternative hypothesis, two types of errors, level of significance and power of the test.
Tests of significance: Chi-square distribution, test of popular variance and test of goodness of fit. t, F ,Z distribution and tests based on them.

Text Book(s) :
1. S.C.Gupta, V.K.Kapoor "Fundamentals of Mathematical Statistics",10th Edition, Publisher: Sultan Chand, 2000.ISBN: 8170147913, 9788170147916

Reference Books :
1. D.N.Elhance.-'Fundamentals of Mathematical Statistics' Kitab Mahal, Allahabad.
2. A.M.Goon, M.K.Gupta & B. Dasgupta (1980): An outline of Statistical theory, Vol. I, 6th revised edition, World Press.