Course Contents:

Module	Details	Contact Hours
I	**Introduction and Analysis of Univariate data:** Basic statistical concepts, qualitative and quantitative data, Classification of data, Construction of frequency distribution. Graphical presentation of data -histograms and cumulative frequency curves. Measure of central tendency— Arithmetic mean, geometric mean, harmonic mean, median and mode. Measures of dispersion—Range, mean deviation, variance and standard deviation.	9
II	**Analysis of bivariate data:** Correlation—definition, scatter plot, types of correlation, measures—Karl Pearson's correlation coefficient and Spearman's rank correlation coefficient. **Statistical Inference**: Introduction, Parameter Estimation, Hypothesis testing.	9
III	**Introduction to Probability:** Basic terminology-random experiment, sample space, event, mutually exclusive events, equally likely events. Definition of probability and basic problems.	9
IV	**Probability:** Addition rule for two events, Independence of events, conditional probability, Multiplication rule for two events. Bayes' theorem and its applications.	9
V	**Random variable:** Random variable -discrete and continuous, probability mass function (pmf) and probability density function (pdf)-properties and examples, cumulative Distribution function and its properties.	9

Text Books (TB):

TB-1	V. K. Rohadgi, An Introduction to Probability Theory and Mathematical Statistics, Wiley Eastern.
TB-2	S.C.Gupta and V. K. Kappor, Fundamentals of Mathematical Statistics, Sultan Chand and Sons

Reference Books (RB):

RB-1	P.G. Hoel, S.C. Port and C.J. Stone, Introduction to Probability theory, Universal book stall.
RB-2	J.L. Devore, Probability and Statistics for engineering and the sciences, Cengage Learning.
RB-3	Athanasios Papoulis S. Unnikrishnan Pillai, Probability, Random variables and Stochastic processes, 4th edition.