

**JYOTI NIVAS COLLEGE AUTONOMOUS
SYLLABUS FOR 2018 BATCH AND THEREAFTER**

Programme: B.C.A

Semester: I

PROBABILITY & STATISTICS

Course Code: 18BCAIT4

No. of Hours: 60

COURSE OBJECTIVES:

- Course aims to provide a basic understanding of statistical tools for data analysis
- Providing a foundation for understanding of probability and statistical analysis

LEARNING OUTCOMES:

- Understanding of basics concepts of Statistics
- Understanding the applications of statistical tools
- Learning the basics of probability theory and its applications

UNIT 1: Introduction and Analysis of Univariate data **12 HRS**

Basic statistical concepts, qualitative and quantitative data, Classification of data, Construction of frequency distribution, stem and leaf display.

Graphical presentation of data -histograms and cumulative frequency curves.

Measure of central tendency—Arithmetic mean, median and mode—their properties

Partition values—quartiles, deciles and percentiles.

Measures of dispersion—Range, quartile deviation and standard deviation and their relative measures. Skewness—concept and measures, Kurtosis—concept

UNIT 2 Analysis of bivariate data **12 HRS**

Correlation—definition, scatter plot, types of correlation, measures—Karl Pearson's correlation coefficient and Spearman's rank correlation coefficient.

Regression---Linear regression and interpretation

UNIT 3 Probability **10 HRS**

Basic terminology-random experiment, sample space, event, mutually exclusive events, equally likely events.

Definition of probability –Classical, empirical and axiomatic approaches.

Addition rule for two events, Independence of events, conditional probability, Multiplication rule for two events.

Bayes' theorem and its applications.

UNIT 4 Random variables and Probability distributions **15 HRS**

Definition of a random variable—discrete and continuous random variables— probability mass function and probability density function. Distribution function and its properties.

Mean and variance of a random variable.

Definition of a bivariate probability distribution and marginal probability functions.

Discrete probability distributions—Binomial and Poisson distributions
Continuous distributions—Normal distribution—computation of probabilities

UNIT 5 Statistical Inference

11 HRS

Statistical hypothesis—null, alternative, simple and composite.

Types of errors, level of significance and power of a test.

Tests of significance—Test for normal mean and equality of means for large samples

Chi square test for independence of attributes and goodness of fit.

REFERENCES:

1. Basic Statistics –Agarwal B.L, New age international, 6th edition, 2013
2. Medhi J – Statistical methods, New age international, Second edition, Reprint 2013
3. Walpole, Myers et al. –Probability and statistics for scientists and engineers., Pearson Education, Ninth edition, 2013
4. Applied Statistics and probability for Engineers, Runger and Montgomery, Wiley, 6th Edition