| III SEMESTER | ST 451: STATISTICAL METHODS | No. of credits: 3 |

(Choice Paper)

Unit I: Brief Introduction:

Statistics: meaning and role as a decision making science, Data-types and scales of measurement.

Descriptive Statistics - measures of central tendency, positional averages, measures of dispersion, skewness and kurtosis. Presentation-tables, diagrammatic and graphical methods. Exploratory Data Analysis using descriptive measures and graphical tools.   (8 hrs.)

Unit II:

Probability theory: random experiment, simple events, sample space - types of events, probability of an event, rules of probability, conditional probability, Bayes' theorem.

Probability distributions: random variables - discrete and continuous type, Bernoulli, Binomial, Poisson and normal distributions - applications.   (10 hrs.)

Unit III:

Sampling methods - population and sample, parameter and statistic, concept of a random sample, simple random sampling, stratified sampling, systematic sampling, sample size determination.

                                              (8 hrs.)

Unit IV:

Correlation: bivariate data, correlation, scatterplot, correlation coefficient and its properties, testing for correlation coefficient, rank correlation.

Regression: linear relationship, linear regression model, simple linear regression, fitting the regression model, coefficient of determination, standard error of the estimated model. Testing regression coefficients.   (10 hrs.)

References:

1. R.C. Campbell.(1974) : Statistics for Biologists, Cambridge University Press
2. Christopher Chatfield (1981) : Statistics for Technology, Chapman and Hall
3. Harry Frank and Steven C. Athoen (1997) : Statistics: Concepts & Applications, Cambridge University Press.

4. J.Medhi (1992): Statistical Methods: An Introductory Text, Wiley Eastern Limited.
5. Douglas A. Lind, William C. Marchal, Samuel A. Wathen (2012), "Basic Statistics for Business & Economics" McGraw-Hill Education