Open Elective	STE451: STATISTICAL METHODS	No. of credits: 3

Course Outcomes:

CO1: Describe and discuss the key terminology, concepts tools and techniques used in inferential statistics.

CO2: Conduct basic statistical analysis of data.

CO3: Solve a range of problems using the techniques covered.

CO4: Discuss critically the uses and limitations of statistical analysis

Unit I

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 - Definition and properties. Presentation-tables, diagrammatic and graphical methods. Exploratory Data Analysis using descriptive measures and graphical tools.   (13 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.   (9 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.)

Chairman
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References:

1. R.C. Campbell.(1974) : Statistics for Biologists, Cambridge University Press

2. Christopher Chatfield (1981) : Statistics for Technology, Chapman and Hall

3. Douglas A. Lind, William C. Marchal, Samuel A. Wathen (2012), "Basic Statistics for Business & Economics" McGraw-Hill Education

4. Harry Frank and Steven C. Athoen (1997) : Statistics: Concepts & Applications, Cambridge University Press.

5. J.Medhi (1992): Statistical Methods : An Introductory Text, Wiley Eastern Limited.