Semester III
ECOSEC 201
Data Analysis
Total Credits: 3
Teaching Hours: 45 hours

Course Description:
The principal objective of this course is to apprise the students regarding basic data analysing tools. The course begins with the concepts of data and data collection method. The graphical and diagrammatic analysis of economic data are also included in this course. Further central tendance, measures of dispersion, correlation and regression which are the important tools and techniques in empirical research, have been included in this course structure. Finally, the course ends with empirical estimation of parameters from sample and hypothesis testing.

Course Outcome:
After completion of the course, the students will learn the method of data collection, sampling and organisation of data. The course enables the students to use graphs and diagrams in analysing data. The students would be able to compute descriptive statistics and interpret the descriptives. Further they would also learn the primary techniques of estimation of population parameter and testing of hypothesis.

Unit 1: Sources of Data
Primary and Secondary data, methods of collecting primary data, questionnaire and question schedule, sample vs census, random and non-random sampling, methods of quota sampling, stratified and multistage sampling.

Unit 2: Graphical and Diagrammatic Presentation of Data
Organisation and classification of data, Uses of graphs in analysing data, cumulative frequency distribution, histogram, frequency polygon, advantage of diagram in presenting data, bar diagram, joint bar diagram, pie diagram.

Unit 3: Central Tendency and Measures of Dispersion
Statistical series, Mean, Median and Mode, range, standard deviation, variance, coefficient of variation, Lorenz curve.

Unit 4: Correlation and Regression Analysis
Degree of Correlation, scatter diagram, correlation between two variables, Pearson's simple correlation, Spearman's rank correlation coefficient, two variable linear regression - regression lines, regression coefficient, properties of correlation and regression co-efficient.

Unit 5: Statistical Estimation and Hypothesis Testing
Sampling distribution of a statistic, statistic, parameter, estimator and estimate, concept of biased and standard error, Point and interval estimation, null and alternative hypothesis, concept of type I and type II error, concept of one tailed and two tailed hypothesis testing using Z and t test.

[Project: There will be a project of 30 marks which a student will prepare under the supervision of faculty of the concerned department. The supervisor will finalise the project topic and will guide the students in preparing project report.**]**

Suggested Readings:

1. John E. Freund, Mathematical Statistics, Prentice Hall, 1992
2. William G. Cochran, Sampling Techniques, John Wiley, 2007
3. Gun, Gupta and Dasgupta: Fundamental of Statistics
4. S.C. Gupta: Fundamentals of Statistics, Himalya Publishing House