## Department of Economics

## SEC IV(6th Semester) for B.A. (P)

# Basic Computational Techniques for Data Analysis

**Purpose/Objective of the Paper:**

The main purpose of this Skill Enhancement Course (SEC) is to provide B.A.(P) students with hands-on experience to develop skills in statistical techniques using computer applications.The course would help students to get familiar with data sources on different aspects of the Indian economy, estimate simple relationships between economic variables, and interpret estimation results to write up a project report.

This courseis an extension of the previous semester'sSEC: Data Analysis, which is a prerequisite for taking this course. This course intends to develop computational skills based on the statistics knowledge developed in the last semester. Along with the previous semesters'SEC papers viz. 'Understanding the Economic Survey and Budget','Research Methodology' and 'Data Analysis',the course will equip the students to undertake basic research projects on the Indian economy which would be helpful in a variety of professions.

**Course Outline:**

**Unit-I**

Introduction toExcel (Microsoft Office) / Open Office by Libre or Apache, spreadsheetbasics and inputting of data, word processing and presentation of data with graphs and tables.

**Unit-II**

a. Review of concepts: Measures of central tendency- mean, median and mode; arithmetic, geometric and harmonic mean. Measures of dispersion (standard deviation and variance), skewness and kurtosis.

b. Introduction to calculation of financial formulae: net present value (NPV), internal rate of return, future value, Equated Monthly Installment (EMI), compound growth rate.

c.Using Spreadsheet to perform the above mathematical/statistical/financial functions.

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a. Review of the concepts of correlation and rank correlation.

b. Introduction to the method of Ordinary Least Squares (OLS) in two-variable case (one dependent and one explanatory). Testing of hypothesis related to regression coefficient and goodness of fit ($R^2$). Reporting of the estimation results.

c.UsingExcel/GRETL (Free ware) for above.

**Unit-IV**

Introduction to economic and business data sets available in public domain such as NSE, BSE, RBI, MOSPI etc.

**Unit-V**

Preparation of a project reportbased on data available in public domain,using concepts studied in Units II and III.

**Readings:**

1. Spreadsheet-Microsoft Office/Open Office manual.

2. GRETL-Manual.

3. P.H.Karmel and M. Polasek (1978), *Applied Statistics for Economists*(4th edition), Pitman

4. M. R. Spiegel, L.J. Stephens and N. Kumar (2010), *Statistics* (4th edition) Schaum series, McGraw-Hill.

**Marking Scheme:**

i. Internal Assessment : 25 marks, as distributed below:

a) 5 marks for attendance

b) 10 marks for written test

c) 10 marks for computer-based test

ii. End-semester assessment:75 marks, comprising (a) 25 marks for project based on Unit V, to be submitted before the final exam, and (b)50 marks written final exam,which will include one compulsory question based on interpreting computer output related to OLS. Questions in the final exam will be based on only Units I to IV.

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