SKILL ENHANCEMENT COURSES (3 Credit Each)

Skill Enhancement Courses

Semester	course no.	Title of the paper	Total Credit	Proposed by Department
Third Semester	EC3.SEC1	Methods of Data Analyses**	3	Economics
Fourth Semester	EC4.SEC2	Computer Application in Data Analyses**	3	Economics

***Students have the option to choose SEC from the common pool of courses across disciplines.*

Methods of Data Analyses

[Skill Enhancement Course (SEC)-1]

Course code: EC3.SEC-1
Credit: 3

Course Description

This course introduces the student to collection and presentation of data. It also focuses on how data can be summarized and analyzed for drawing statistical inferences.

Unit- I: Sources of Data
Sources of data, Population Census versus Sample surveys, Random sampling.

Unit- I: Frequencydistributions & measures of central tendency and dispersion
Univariate and Bivariate frequency distributions. Measures of central tendency: mean median and mode; arithmetic, geometric and harmonic mean. Measures of dispersion, skewness and kurtosis.

Unit- III:Correlation and Regression
Correlation and regression, Rank correlation.

Unit- IV: **Probability Theory**
Introduction to probability theory. Notions of random experiment, sample space, event, probability of an event. Conditional probability. Independence of events. Random variables and probability distributions. Binomial and normal distributions.

Unit- V:Index Numbers
Basics of index numbers, price and quantity index numbers.

Reading List:

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

M.R. Spiegel (2003), *Theory and Problems of Probability and Statistics* (Schaum Series).

Computer Application in Data Analyses

[Skill Enhancement Course (SEC)-2]

Course code: EC4.SEC-2
Credit: 3

Course Description:
This is a course on computer application in data analysis. The students will be given hands on training on using statistical and computing software to better visualize and understand data concepts.

Unit- I: Introduction and Overview
Meaning; Scope of statistics; Importance and limitation of statistics Collection of Data; Classification of data: Meaning, methods of classification; Tabulation of data: meaning, role, parts of a table; General rules of tabulation.

Unit-II: Data Management with MS-Excel
Excel Basics, Cell Referencing (Relative, Absolute, Mixed), Cell Formatting, Functions in excel (SUM, AVERAGE, COUNT, MAX, MIN, IF), sorting data, filtering data (Auto and Advanced), Hyper linking. Measures of Central Tendency: Mean, Median and Mode; Geometric and Harmonic means; Measures of Dispersion: Range, interquartile range and quartile deviation, mean deviation, standard deviation, Moments, Skewness and Kurtosis; Partition Values: Software applications using MS-Excel.

Unit-III: Data representation and Visualisation
Presentation of data; Diagrams and graphs: General rules for construction a diagram; Types of diagrams; Types of graphs- line graph, bar graph, pie chart, histogram, scatter plot; Software applications using MS-Excel. MS-power point preparation and presentation

Unit-IV: Correlation and Linear Regression Model
Correlation Analysis: Meaning, types of correlation; Methods of studying correlation: Scatter diagram method, Karl Pearson's coefficient of correlation, Spearman's rank method; Testing the significance of the correlation coefficient; Method of least squares: Introduction, estimation, the standard error of estimate, the coefficient of determination, properties of the OLS estimator. Students will be taught the applications of Software to analyse data using these methods.

The evaluation and mark distribution pattern for this paper will be as follows:
Theory: 40 marks
Practical: 60 marks.

Reading List:
Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., & Cochran, J. J. (2014). *Essentials of Statistics for Business and Economics*. Boston: Cengage Learning.

Englewood Cliffs, N.J., Techniques and Applications, Prentice Hall

Levine, D. M. (2005). *Statistics for Managers Using Microsoft Excel* (5th ed.). New York: Prentice

Rajaraman, V. (1996), Fundamentals of Computers, Prentice Hall of India, New Delhi.

Sanders D.H. (1988), Computers Today, McGram Hill (3rd Edition) Intrilligator, M.D. (1978), Economic Mod