BACHELORS WITH ECONOMICS AS MAJOR
6th SEMESTER
ECO622J3: ECONOMICS _ STATISTICAL METHODS FOR ECONOMICS

CREDITS: 4 + 2 = 6

COURSE DESCRIPTION: *This is a core course of 06 credits (04 units of 01 Credit each and Tutorials of 2 credits). The course starts with some basic concepts required for understanding the essence of subject, followed by Theory of Probability, Concept of Random Variable along with the various types of Discrete and Continuous Random Variable Distribution. The course concludes with the Concept, and Measurement of Correlation and Index Numbers. Over all focus of the course is to foster intuition and capacity to analyze Statistics in everyday life.*

COURSE OBJECTIVES: *The course is designed to introduce the students with basic concepts and terminology that are fundamental to Statistical Analysis and Inference. It sets a necessary foundation for the Econometrics courses within the programme.*

LEARNING OUTCOMES: *After completing this course, the student is expected to:*

L01*: Develop the basic understanding of role and types of data in day-to-day life along with the concept and use of Methods of Sampling.*

L02*: Exhibit a broader understanding of Concept of Probability and be in a position to apply these concepts in everyday life.*

L03*: Acquire the skills that are fundamental to the Statistical Analysis and Inference.*

L04*: Acquire the skills required to extract information from Descriptive Data.*

UNIT I: DESCRIPTIVE STATISTICS AND SAMPLING (1 CREDIT)

Data Sets in Economics, Measures of Central Tendency; Measures of Dispersion: Absolute and Relative Measures of Dispersion. Population and Sample; Sampling Methods: Probability &Non- Probability Sampling Methods.

UNIT II: ELEMENTARY PROBABILITY THEORY (1 CREDIT)

Probability: Definitions of Probability – Classical, Statistical, and Axiomatic. Conditional Probability, Laws of Addition and Multiplication, Independent Events, Theorem of Total Probability, Bayes' Theorem and Its Applications. Random Variables: Discrete and Continuous Random Variables.

UNIT III: PROBABILITY DISTRIBUTIONS (1 CREDIT)

Bernoulli, Binomial, Poisson, Normal and Standard Normal along With Their Properties and Limiting/Approximation Cases**.**

UNIT IV: CORRELATION AND INDEX NUMBERS (1 CREDIT)

Correlation – Meaning and Scope; Karl Pearson's Coefficient of Correlation; Rank Correlation; Partial and Multiple Correlation. Index Numbers: Concept and Uses. Types of Index Numbers- Price, Quantity and Value Index Numbers. Methods of Constructing Index Numbers: Simple Aggregate Method and Weighted Aggregate Method, Time Reversal &Factor Reversal Tests; Fischer's Ideal Index Number.

TUTORIALS (2 CREDITS*)*

- Problem Sets on Different Measures of Central Tendency.
- Problem Sets on Different Measures of Central Dispersion.
- Working Problems on Probability and Conditional Probability.
- Working Problems on Bayes Theorem.
- Problem Set on Area Under Curve Property of Standard Normal Curve.
- Problem Sets on Different Measures of Correlation.
- Problem on Laspeyre, Paasche and Fisher Quantity Index Number Using Real Time Data from RBI and CSO.
- Problem on Laspeyres, Paasche and Fisher Price Index Number Using Real Time Data from RBI and CSO.

BASIC READINGS

1. Hogg R. V. & A. T. Craig Hogg. (1970). Introduction to Mathematical Statistics. Macmillan Publishing & Co.: New York.
2. Lee, C. F., Lee, J. C., & Lee, A. C. (2000). Statistics for business and financial economics. Singapore: World Scientific.
3. Gupta, S.C and V.K. Kapoor: Fundamentals of Applied Statistics, Sultan Chand & sons
4. Elhance, D.N, Elhance, V., and Aggarwal, B.M: Fundamentals of Statistics, Generic, 2011 edition.
5. Richard J. Larsen and Morris L. Marx, *An Introduction to Mathematical Statistics and its Applications,* Prentice Hall, 2011.

ADDITIONAL READINGS

1. Floyd J. E. (2010). Statistics for Economists: A Beginning. University of Toronto.
2. John E. Freund, *Mathematical Statistics*, Prentice Hall, 1992.
3. Miller, I., Miller, M. (2017). *J. Freund's mathematical statistics with applications, 8th ed.* Pearson.
4. Nagar and Das: Basic statistics. Oxford University Press.

****Further Readings shall be as per the suggestions of the concerned teacher.***