Mathematics and Statistics

Semester III	Subject Code: BC31604	Lectures: 60

Objectives:

The syllabus aims in equipping students with,

- The concept of Probability, Probability Distributions and Simulations in business world and decision making
- Balanced knowledge of theory as well as practical aspects of the subject.
- Knowledge in Operations Research
- A culture of informed decision making using statistical models

Unit 1: Theoretical Distribution	10

- Discrete Probability Distribution - Poisson Distribution, Important Properties
- Continuous Probability Distribution - Concept, Probability Density Function, Expectation, Mean and Variance of Continuous Distribution
- Uniform Distribution (Continuous), Normal Distribution – Area under Normal Curve, Properties and Importance of Normal Distribution
- Numerical Problems

Unit 2: Sampling Theory and Test of Significance	14

- Concept and Types of Sampling, Sampling Distribution, Statistic and Parameter
- Two Important Sampling Distribution (Large Sample) – (i) Sampling Distribution of Sample Mean (ii) Sampling Distribution of Sample Proportion;
- Standard Error, Concept, Standard Error of Sample Mean and Sample Proportion
- Distribution used in Sampling Theory (i) Standard Normal Distribution (ii) Chi-Square Distribution (iii) Student's t Distribution (iv) Snedecor's F Distribution
- Test of Significance – Statistical Hypothesis, Null and Alternative Hypothesis, Level of Significance, Critical Region, Two Tailed and One Tailed tests, Large Sample Tests (a) Using Normal Distribution (b) Using Chi – Square Distribution
- Numerical Problems

Unit 3: Linear Programming Problem	8
• Introduction, Formulation of an LPP, General Linear Programming Problem • Graphical Method of solution of LPP, Areas of Applications of LPP • Numerical Problems	

Unit 4: Transportation Problem	8
• Introduction, The Transportation type problems in Standard Linear Programming Form • A Set of Basic Feasible Solutions, Initial Basic Feasible Solution (a) North – West Corner Method (b)Matrix – Minima Method (c) Vogel's Approximation Method • Variations in Transportation Problem • Numerical Problems	

Unit 5: Assignment Problems	8
• Assignment Problems, Mathematical Formulation of the Problem • Solution of the Assignment Problem, Computational Procedure, Variations in Assignment Problems • Numerical Problems	

***Contact hours – 12 hours**

Recommended Text Book:

1. *Statistical Methods,* S.P.Gupta, Sultan Chand,2005
2. *Statistics for Management,* Richard I Levin and David S Rubin, Prentice Hall of India,1997
3. *Business Statistics,* S.P.Gupta and M.P.Gupta, Sultan Chand,2008
4. *Statistical and Quantitative Methods,,*RanjeetChitale, Nirali Prakashan,2009
5. *Operations Research , Theory and Applications,* J K Sharma, Macmillan Publishers,2009

Reference Books:

1. Gupta & Kapoor Sultan Chand, *Advanced Statistics,* 1987
2. Goon , Gupta, Dasgupta , *Fundamentals of Statistics Volume-I & II* , World Press, Calcutta; 1986
3. Hamdy A Taha, *Operations Research, An Introduction,* Pearson; 2004
4. S.D.Sharma , Kedar Nath Ram, *Operations Research,* Nath& Co Publishers; 2003