Department of Statistics

Value Added Courses

Scheme of Examination

Non-Credit Course

Total of End Sem. Exam - 50

Internal Assessment - Nil

Maximum Marks - 50

Minimum Marks - 20

Examination Question Paper Pattern for Value-Added Course

30 marks Objective/Multiple Choice/One-word type questions.

20 marks Project work/Assignment/ Class test/ Practical/Field work/Project report etc.

Department of Statistics

Value Added Courses

Operation Research

Course Objectives:

The learning objectives include:

- To study various Operational Research Techniques and Models.

Course Learning Outcomes:

After completing this course, students should have developed a clear understanding of:

- The Fundamental Concepts of Operational Research Techniques
- Linear Programming.
- Transportation and assignment problems

Contents:

UNIT I

Introduction to Operations Research (O.R.): Definition and phases of O.R.Model building, various types of O.R. problems. Linear Programming Problem (L.P.P.): Mathematical formulation of the L.P.P, graphical solutions of L.P.P. Simplex method for solving L.P.P. Charne's M-technique for solving L.P.P. involving artificial variables. Special cases of L.P.P. Concept of Duality in L.P.P: Dual simplex method. Economic interpretation of Duality. Post-optimality analysis.

UNIT II

Transportation Problem: Initial solution by North West corner rule, Least cost method and Vogel's approximation method (VAM), MODI's method to find the optimal solution, special cases of transportation problem. Assignment problem: Hungarian method to find optimal assignment, special cases of assignment problem.

SUGGESTED READINGS:

1. Taha, H. A. (2007). Operations Research: An Introduction, 8thEd., Prentice Hall of India.
2. Swarup, K., Gupta, P.K. and Man Mohan (2007). Operations Research, 13th Ed., Sultan Chand and Sons.

Department of Statistics

Value Added Courses

Actuarial Statistics

Course Objectives:

To learn advanced techniques in Actuarial Science with practical applications in daily life.

Course Learning Outcomes:

Tools for applying actuarial methods in phenomena for financial research and insurance. This includes computation of premiums and settlement of claims.

Contents:

UNIT I

Introductory Statistics and Insurance Applications: Discrete, continuous and mixed probability distributions. Insurance applications, sum of random variables. Utility theory: Utility functions, expected utility criterion, types of utility function, insurance and utility theory.

UNIT II

Principles of Premium Calculation: Properties of premium principles, examples of premium principles. Individual risk models: models for individual claims, the sum of independent claims, approximations and their applications.

SUGGESTED READINGS:

1. Atkinson, M.E. and Dickson, D.C.M. (2011). An Introduction to Actuarial Studies, Elgar Publishing.
2. Dickson, C. M. D. (2005). Insurance Risk and Ruin (International Series no.1 Actuarial Science), Cambridge University Press. Bowers, N. L., Gerber, H. U., Hickman.
3. Bowers, N.L., Gerber, H.U., Hickman, J.C., Jones, D.A. and Nesbitt, C.J. (1997). Actuarial Mathematics, Society of Actuaries, Itasca, Illinois, U.S.A.