MBAH 503: OPERATIONS RESEARCH

Workload : 04 hours per week - Total credits: 4
Examination : 3 hours; 30 marks continuous evaluation & 70 marks final examination.

Objectives :

1. To acquaint with the application of operations research to business and industry.
2. Help them to grasp the significance of analytical techniques in decision making.
3. Manage the projects with limited resources.
4. Know about simulation its business Applications

1. Able to identify the applications of OR in business.
2. Acquire the OR skills to manage business operations.
3. Understand the applications of multiple subjects to manage activities.
4. Understand the difference between real world problems and simulated problems.

Pedagogy : Lectures, assignments, practical exercises, application of operations research techniques to business related problems.

Module 1: Introduction: Nature and scope of Operation Research. Basic concepts and definitions - methodology of OR. Construction, solution and testing of model.

Module 2: Linear Programming (L.P): Concept and formulation of L.P. models – graphical technique, working on simplex algorithm and interpretation of final results, duality problems, Sensitivity Analysis.

Module 3: Transportation and Assignment problems.

Module 4: Network analysis (PERT/CPM): Drawing an arrow network and numbering the events. Estimation of job duration, the concept off slack and float, the concept of critical path analysis and probability considerations, crashing a network and determining project cost trade off.

Module 5: Game Theory: 2-person zero-sum games, solution methods, use of L.P.

Module 6: Waiting line series: Basic structures and components of a queuing system. Design of the queuing system. A single channel, single-phase queuing models, Multi-channel model with business examples.

Module7: Replacement Decisions: Replacement of capital equipment's that deteriorates with time, replacement of items that fail completely.

Module 8: Simulation: Basic concepts, Monte Carlo method, random number generation, some business application of simulation models.

Reference Books:

1. Levin and Kirkpatrik. - Quantitative Approaches to Management - McGraw Hill
2. P.K. Gupta and Man Mohan - Operations Research and Statistical Analysis - Sultan Chand & Co.
3. N. Paul Loomba - Linear Programming - McGraw Hill
4. Handy A. Taha - Operations Research : An introduction - Collin Macmillan
5. Wagner - Principles of Operations Research – Prentice Hall of India
6. Sa Sieni,Yaspan and Friedman - Operations Research- Methods and Problems - John Wiley & Sons.
7. N.D. Vohra- Quantitative Techniques in Management- Tata McGraw Hill
8. J K Sharma - Operations Research: Theory and applications -Macmillan Publishers India Ltd.
9. VeerabhadrappaHavinal - An Introduction to Operations Research- New age International Publishers.
10. R.C. Mishra, and AnkitSandilya - Principles of Operations Research - New Age International Publishers,
11. Pradeep PrabhakarPai - Operations Research: Principles and Practice - OXFORD University Press, Higher Education
12. Anand Sharma - Operations Research – HPH
13. S Kalavathy – Operation Research – Vikas Publishing House.
14. Kothari CR- An Introduction to Operational Research- Vikas Publishing House, New Delhi, 3rd Edn.

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