



Masters of Business Administration (MBA) – Semester - 3

Course Teaching Plan

Course Title: Management Science and Optimization

Course Code: 340039310

Course Credit: 4

1. Course Introduction

Right decision is the key to achieving competitive advantage for organizations. There has been a competition for resources as resources are always scarce. Hence, decision making situations involving resource optimization have always attracted the attention of business enterprises, manufacturing organizations and research establishments. Resource optimization has got a wide scope which increases every day and it is a multi-disciplinary subject of interest. Managers and decision makers get idea for optimizing and approximating industrial problems. They not only strive to devise appropriate measures for problem solving but also apply scientific techniques to monitor the organizations ongoing activities such as profit maximization and cost minimization by production mix, waiting line, assignment and networking.

2. Course Objectives:

- Identify some of the widely used operations research techniques and their use for managerial decision making.
- Apply theoretical background and methodological skills to solve organizational decision problems.
- Formulate practical situations into equations and solve these equations to optimize the objectives.

3. Course Learning Outcome:

- CLO1: Formulate, analyse and apply the linear programming techniques
- CLO2: Understand the concept and applications of integer programming and goal programming
- CLO3: Demonstrate the knowledge of waiting line theory and its utilities
- CLO4: Develop critical thinking skills to apply concepts of assignment and networking

4. CLO –PO Mapping Matrix

	PO1	PO2	PO3	PO4	PO5
CLO1: Formulate, analyse and apply the linear programming techniques	3	3	2	1	3
CLO2: Understand the concept and applications of integer programming and goal programming	3	3	2	1	3
CLO3: Demonstrate the knowledge of waiting line theory and its utilities	3	3	2	1	3
CLO4: Develop critical thinking skills to apply concepts of assignment and networking	3	3	2	1	3

Correlation levels: 3= 'High', 2='Medium', 1='Low' and '-' = No correlation

5. Course Contents and Session Plan:

Session No	Syllabus Content
UNIT I: LPP	
1-2	Linear Programming Problems.
3-7	Excel Lab: Applications of Linear Programming
8-9	Interactive Group Exercise
UNIT II- Integer Programming& Goal Programming	
10-15	Integer Programming, Goal programming & Non-Linear Programming
16-17	Interactive Group Exercise
UNIT III – Waiting Line Theory	
18-21	Waiting Line Theory - Models and its applications
22-23	Interactive Group Exercise
UNIT IV – Assignment and Networking	
24-27	Assignment- Hungarian Assignment Method
28-32	Networking Techniques
33-35	Group Exercise
36-40	Capstone Project

6. Assessment Scheme:

Specific assessment method	% Weightage	Theory	Practical
Exam	50%	√	

Interactive Group Exercise/Case Analysis	20%	√	√
Capstone Project	10%	√	√
Quiz	10%	√	
Class Participation	10%	√	

- *Please tick the appropriate cell in CLO matrix*
- *Use continuous assessment methods of your choice*

7. Educational Resources

Educational Resources	Description
i. Text Book	Quantitative Analysis for Management by Barry Render, Ralph M. Stair, Michael E. Hanna, Trevor S. Hale, Pearson Publication, 12 th Edition
ii. Reference Book	1. Introduction to Management Science – A Modelling and Case Studies Approach with Spreadsheets by Frederick S. Hiller, and Mark S. Hiller, McGraw-Hill Publication, 4th Edition 2. Operations Research – Theory and Applications by J. K. Sharma, Macmillan India Ltd., 4th Edition
iii. Journals/ Magazine/periodicals	1. International Journal of Scientific & Engineering Research Saxena, R. (2017), “Application of Operation Research in the Pharmaceutical Industry”, International Journal of Scientific & Engineering Research, 8 (10), 419-434 2. Journal of Critical Reviews Jain, A., Saxena, H., Bhardwaj, R., Rao, G., & Nanda, S. (2020), “Application of Linear Programming for Profit Maximization Of APharma Company”, Journal of Critical Reviews, 7 (12), 1118-1123
iv. Video lecture (NPTEL, MOOC, you tube lecture)	MOOC on Operations Research offered by UDEMY: https://www.udemy.com/course/operations-research-intro
v. Course related important Web link for small Indian case studies	1. https://www.slideshare.net/FelicityMcLeister/all-case-studies

	2. https://www.springer.com/gp/book/9781493910069
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