DEPARTMENT OF INDUSTRIAL ENGINEERING AND MANAGEMENT
MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO

Title of subject	:	**Operations Management INM-710 (03+00)**
Program	:	Industrial Engineering and Management
Semester	:	(3rd Semester 2nd Year)
Effective	:	**21S-** Batch and onwards
Credit Hours	:	Th= 03 & Pr=00
Marks	:	Th: 100 & Pr=00
Minimum Credit Hours	:	**42** (For Theory)

Aim: To learn optimization techniques to solve complex business problems

Objectives: After completing this course, the student will be able to:

- Design mathematical models for business problems in industrial engineering
- Apply linear programming and multi objective optimization techniques to solve business problems
- Resolve business optimization problem such transportation, human resource, and maximum flow problems
- Solve optimization problem using Excel, QM for Window and Lingo software

CONTENTS:

Optimization Approaches and problem Solving
Steps involved in Problem solving: Observation, Problem Definition, Model Construction, Model Solution, and Implementation, Linear Mathematical Programming Techniques, Probabilistic Techniques, Network Techniques, and Multi Criteria decision making.

Linear and Integer Linear Programming Modeling and Solution
Linear Programing Model formulation and solution, product mix problem, Facility location problem, Make or Buy decisions, Production Scheduling, solve linear problem case studies using Excel and Lingo software

Distribution and Network Models
Transportation problem, Assignment problem, Transshipment problems, Shortest-route problem, Maximal flow problem,

Time Series Analysis and Forecasting
Forecasting introduction, Time series patterns, Moving Averages, Weighted Moving Averages, Exponential Smoothing, Seasonality Without Trend, Seasonality and Trend.

Multicriteria Decision models
Goal programming formulation and solution, analytic hierarchy process (AHP), establishing priorities using AHP.

Books Recommended:
1. Bernard W. Taylor III, *Introduction to Management Science*, Pearson, Latest Edition
2. Wayne L. Winston, *Operations Research: Applications and Algorithms*, Duxbury Press, Latest Edition
3. Cliff Ragsdale, *Spreadsheet Modeling and Decision Analysis: A Practical Introduction to Business Analytics*, South-Western College Pub, Latest Edition.
4. Anderson, David R., Dennis J. Sweeney, Thomas A. Williams, Jeffrey D. Camm, and James J. Cochran. *An Introduction to Management Science: Quantitative Approaches to Decision Making*. Cengage learning, Latest Edition

Approval:	Board of Studies:	Res. No. 3.1	Dated: 27.08.2019
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	Academic Council	Res. No. _____	Dated: _____