GUJARAT TECHNOLOGICAL UNIVERSITY

INTEGRATED MASTER OF BUSINESS ADMINISTRATION

Year – 3 (Semester –5) (W.E.F. Academic Year 2017-18)

Subject Name: Advance Production and Operations Management (APOM)
Subject Code: 2557106

1. Learning Outcomes:
At the end of semester students would be able to
(a) Create a better understanding of Operations Research concepts in solving business and commerce related problems.
(b) Acquire the necessary theoretical background and methodological skills to solve organizational decision problems.

2. Course Duration: The course duration is of **40 sessions of 60 minutes** each.

3. Course Contents:

Module No.	Modules with its Contents/Chapters	No. of Sessions	Marks (out of 70)
I	**LINEAR PROGRAMMING PROBLEM (LPP)-I - Formulation and Graphical Solution** -Introduction to LPP, Assumption of Linear programming, General Mathematical Form. -Formulation of LPP, basic definitions and fundamental properties of solutions -Solution of LPP using Graphical method (both maximization and minimization cases). -Special Cases: multiple optimal solution, infeasible solution, unbounded solution, and redundant constraint.	10	17
II	**LINEAR PROGRAMMING PROBLEM (LPP)-II - The Simplex Method and Duality** -Concept of slack and surplus variables. -The Simplex method, conditions of simplex method, Solution of LP using Simplex Method (Maximization case only)-the simplex algorithm. -Special Cases: multiple optimal solution, infeasible solution, unbounded solution using simplex method. -Concept of Primal-Dual, construction of dual from primal, properties of dual LPP. -LPP using Excel	10	18

III	**THE TRANSPORTATION AND ASSIGNMENT PROBLEM** -Introduction, LP formulation of TP, existence of feasible solution -IBF Solution of TP using NWCM, LCM and Vogel's Approximation method - Optimal Solution of TP using Modified Distribution Method -Degeneracy in Transportation Problem -Special Cases-unbalanced TP, multiple optimal solution, and maximization case. -Assignment Problem (AP) - Introduction, LP formulation of AP, Optimal Solution of AP using Hungarian Assignment Method -Special Cases-unbalanced AP, multiple optimal, maximization case	10	17
IV	**THEORY OF GAMES AND QUEUES** -Introduction to game theory , pure and mixed strategies -The two-person zero-sum games and their solution, the saddle point approach -Games without saddle points-mixed strategies -Dominance rule -Theory of Queues (waiting lines) -Introduction to queuing theory, general structure of queuing system -Operating characteristics (OC) of a queuing system, deterministic and probabilistic models, Kendal's notation, distributions of arrivals and service times -M/M/1):(∞/FIFO) model and its various OC.	10	18
V	**Practical:** Use of Excel Solver/TORA software to solve above problems and teaching the above concepts using at least one case in each topic		30 Marks of CEC

4. Teaching Methods:

The course will use the following pedagogical tools:

(a) Discussion on concepts and issues in Operations research.

(b) Case discussion covering a cross functional work within manufacturing or service industry.

(c) Projects/ Assignments/ Quizzes/ Class participation etc.

5. Evaluation:

The evaluation of participants will be on continuous basis comprising of the following Elements:

A	Continuous Evaluation Component comprising of Projects/ Assignments/ Quizzes/ Individual or group Presentation/ Class participation/ Case studies etc	(Internal Assessment- 50 Marks)
B	Mid-Semester examination	(Internal Assessment-30 Marks)
C	End –Semester Examination	(External Assessment-70 Marks)

6. Text / Reference Books:

Sr. No.	Author	Name of the Book	Publisher	Year of Publication
1	V K Kapoor	Operations research – Quantitative Techniques for Management	S Chand & Sons	Latest Edition
2	Vohra N D	Quantitative techniques in management	Tata McGraw Hill	3rd Edition or higher
3	J K Sharma	Operations Research-Theory & Applications	MacMillan	4th Edition
4	Barry Render, Ralph M. Stair, Jr., Michael E. Hanna, T N Badri	Quantitative Analysis for Management	Pearson	Latest Edition
5	G. Srinivasan	Operations Research	Prentice Hall	Latest Edition
6	Hamdy Taha	Operations Research	Pearson	8th or Latest Edition
7	Sharma Anand	Operations research	Himalaya Publishing House	Latest Edition

Note: Wherever the standard books are not available for the topic appropriate print and online resources, journals and books published by different authors may be prescribed.

7. List of Journals/Periodicals/Magazines/Newspapers, etc.

Journals related to Operations Research