

GUJARAT TECHNOLOGICAL UNIVERSITY

MASTER OF BUSINESS ADMINISTRATION (GTU'S Global Program)

Year – I (Semester – II) (W.E.F. January 2014)

Subject Name: Quantitative Analysis – II (QA-II)

Subject Code: 2820007

1. Course Objective:

- To familiarize students with the types of business problems often faced by corporate entities and to help them develop insights about basic concepts of operations research and methodology aimed at solving business problems.
- To help students develop skills in structuring and analyzing various Operations Research problems for managerial decision making by using basic OR tools and techniques.
- To learn to implement various management science software packages.

2. Course Duration: The course duration is of 36 sessions of 75 minutes each i.e. 45 hours.

3. Course Contents:

Module No:	Module Content	No. of Sessions	Marks (70 External exam)
I	Introduction to Quantitative Analysis: Basic concepts and its role in decision making, Nature of OR problem, steps in OR problem, Formulation of LP problems, Solution of L.P.P. by Graphical Method, Computer Output	7	17
II	Duality and its implications, Sensitivity analysis (Computer Output Analysis), Introduction to Integer programming, Goal programming problems (Only formulation and solution of two variable cases)	7	17
III	Transportation Models, Initial Basic Feasible Solution and Optimal Solution, Assignment Problem and Travelling Salesman Problem, Network Models: minimum Spanning Tree Problems, Shortest Route and Maximal Flow Technique	7	18
IV	Queuing theory: Single Channel Queuing Model with Poisson arrivals and Exponential Service Times (M/M/1), Simulation Modeling, Markov Analysis	7	18

V	Practical Module: Use of Excel Solver/TORA software to solve above problems and teaching the above concepts using at least one case in each topic	8	(20 Marks of CEC Internal Evaluation)
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4. Teaching Methods:

The course will use the following pedagogical tools:

- Discussion on concepts and issues in Operations research.
- Case discussion covering a cross functional work within manufacturing or service industry.
- Projects/ Assignments/ Quizzes/ Class participation etc.

5. Evaluation:

A	Projects/ Assignments/ Quizzes/ Individual or group Presentation/ Class participation/ Case studies etc	Weightage 50 marks (Internal Assessment)
B	Mid-Semester Examination	Weightage 30 marks (Internal Assessment)
C	End –Semester Examination	Weightage 70 marks (External Assessment)

6. Basic Text Books:

Sr. No.	Author	Name of the Book	Publisher	Edition
T1	Barry Render, Ralph M. Stair, Jr., Michael E. Hanna, T N Badri	Quantitative Analysis for Management	Pearson	Latest Edition (eleventh)
T2	Vohra N. D.	Quantitative Techniques in Management	Tata McGraw Hill	3rd or Higher Edition
T3	J. K. Sharma	Operation Research – Theory & Applications	MACMILLAN	4th 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. Reference Books:

Sr. No.	Author	Name of the Book	Publisher	Edition
R1	Hamdy TAHA	Operations Research	Pearson Education	8th Edition or Later edition
R2	Hiller and Liebermann	Introduction to Operational Research	Tata McGraw Hill	Latest Edition
R3	G. Srinivasan	Operations Research	Prentice-Hall	Latest
R4	Ravindran, Phillips, Solberg	Operations Research	Wiley-India Edition	Latest Edition
R5	Sharma Anand	Operations Research	Himalaya Publishing House	Latest Edition

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

Journals related to Operations Research.

9. Session Plan:

Session Nos.	Topic
1-2	Introduction to Quantitative Analysis: Basic concepts and its role in decision making.
3-5	Nature of OR problem, steps in OR problem, Formulation of LP problems
6-7	Solution of L.P.P. by Graphical Method, Computer Output
8-11	Duality and its implications, Sensitivity analysis (Computer Output Analysis)
12-14	Introduction to Integer programming, Goal programming problems (Only formulation and solution of two variable case)
15-17	Transportation Models, Initial Basic Feasible Solution and Optimal Solution,
18-19	Assignment Problem and Travelling Salesman Problem
20 -21	Network Models: Minimum Spanning Tree Problems, Shortest Route and Maximal Flow Technique.
22-23	Queuing theory: Single Channel Queuing Model with Poisson arrivals and Exponential Service Times (M/M/1)
24-26	Simulation Modeling
27-28	Introduction to Markov Analysis
29-36	Practical Module: Use of Excel Solver/TORA software to solve above problems and teaching the above concepts using at least one case in each topic