Master of Business Administration
MBA Semester II
Core Course

202: Management Science

Marks:100 **Duration: 60 Hrs.**

CREDITS: 4

Objective: The objectives of this Course are to introduce the participants of MBA programme to the Quantitative School of management. This is a general course not a specialized one. The important tools, techniques and methods of Quantitative will be discussed with their business application. The mathematical rigor of the course will be comparatively low.

Course Outcomes: The successful completion of this course shall enable the student to:

CO1: Understand the concept and models of operation research for selection of decision alternatives.

CO2: Apply tools of management science for effective and efficient operations

CO3: Evaluate the operations of different firms to achieve optimal efficiency

CO4: Use latest technology to solve operations related problems

Contents:

UNIT	Content	Hours
I	Executive problems, Scope for Quantification. Translating Business Problems into Mathematics, Concept of Limits, Graphical and tabular representation – Concept of a Function, Role of Functional Analysis in Business, Inequalities and their representation on Graphs. Concept of Interrelation – Continuous functions.	11
II	History, Development of Operations research. Characteristics of Operation Research, Systems thinking and O.R. Methods of operation Research Model Formulation and Types of Model. Prototype Problems of operation Research.	10
III	Linear Programming – Concept, Importance, assumptions and application, Problem Formulation , Graphical Method , Simplex Methods (Solving maximization problem with less than equal to constraints).Concept of Primal and Dual in Linear Programming	11
IV	Transportation problem-Importance, Assumptions and its practical applications, NWCM, LCM , VAM, Optimum solution for Transportation-MODI , Assignment problem- managerial applications , Solving maximization and minimization problem	10
V	Competitive Strategies – Theory of Games, Application, Assumption and limitation of game theory, Duopoly Two Person Zero Sum game, Pure and Mixed Strategies, Criteria of Choosing strategies and simple numerical problems based on these.	10

	Small group learning exercise involving discussion, case studies role-play, presentations by students	8
	TOTAL	**60**

Readings (Unit Wise)

Unit-I

1. Anand Sharma (2019) Operations Research, Himalaya Publishing House
2. Bedi, K. (2014). Production and Operations Management (3rd ed.). Oxford University Press, New Delhi

Unit-II

1. Anand Sharma (2019) Operations Research, Himalaya Publishing House
2. Bedi, K. (2014). Production and Operations Management (3rd ed.). Oxford University Press, New Delhi

Unit-III

1. Anand Sharma (2019) Operations Research, Himalaya Publishing House
2. Bedi, K. (2014). Production and Operations Management (3rd ed.). Oxford University Press, New Delhi

Unit-IV

1. Anand Sharma (2019) Operations Research, Himalaya Publishing House
2. Bedi, K. (2014). Production and Operations Management (3rd ed.). Oxford University Press, New Delhi

Unit-V

1. Anand Sharma (2019) Operations Research, Himalaya Publishing House
2. Bedi, K. (2014). Production and Operations Management (3rd ed.). Oxford University Press, New Delhi

Additional Readings

1. Anderson, D., Sweeney, D., Williams, T., Martin, R.K. (2012). An introduction to management science: quantitative approaches to decision making (13th ed.). Cengage Learning.
2. Balakrishnan, N., Render, B., Stair, R. M., & Munson, C. (2017). Managerial decision modeling. Upper Saddle River, Pearson Education.
3. Hillier, F.& Lieberman, G.J. (2014). Introduction to operations research (10th ed.).McGraw-Hill Education.

Pedagogy:

- ICT enabled Classroom teaching
- Case study
- Practical / live assignment
- Interactive classroom discussions
- Flipped classroom

Teaching Plan:

At the beginning of each semester faculty teaching the course will provide (i) Teaching Plan, (ii) updated reading list, and (iii) the list of case studies for uploading on Department website.

Facilitating the achievement of Course Learning Outcomes

Unit No.	Course Learning Outcomes	Teaching and Learning Activity	Assessment Tasks
I	Ability to understand the benefits of data driven decision making; Learn the model building approach of management science in improving managerial decision making	Lecture/Video/ Case/ Presentation/Role Play	Class participation, Presentation, Viva/ test, Analysis of Case Study
II	Ability to understand the historical background of operations research and models of OR	Lecture/Video/ Case/ Presentation/Role Play	Class participation, Presentation, Viva/ test, Analysis of Case Study
III	Ability to understand linear programming and learning about formulation and solution of LPP	Lecture/Video/ Case/ Presentation/Role Play	Class participation, Presentation, Viva/ test, Analysis of Case Study
IV	Ability to learnabout various methods to solve transportation and assignment problems	Lecture/Video/ Case/ Presentation/Role Play	Class participation, Presentation, Viva/ test, Analysis of Case Study
V	Ability to understand game theory, solving problems related to pure and mixed strategies	Lecture/Video/ Case/ Presentation/Role Play	Class participation, Presentation, Viva/ test, Analysis of Case Study