

MBA I
Semester-II
Research Methodology and Operations Research (RM & OR)

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 research designs and methodology aimed at solving business problems.

To help students develop skills in structuring and analyzing various Operations Research (OR) 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 is divided into five modules, out of which three modules are of Research Methodology and two modules of Operations Research. Each module has eight sessions of 75 minutes each.

3. Course Content:

Module No.	Module / Sub-module	Sessions	Marks
I	<p>Introduction to Business Research and Research Design Nature and scope of business research, information based decision making and source of knowledge. The research process; basic approaches and terminologies used in research. Defining research question and framing of hypotheses. Preparing a research plan, qualitative and quantitative research designs. Sources of secondary data. Feedback and review / case analysis.</p>	8	14
II.	<p>Measurement and Scaling, Data Source and Data Collection Field research; primary data collection from observations, surveys and experimentation. Measurement and scaling; commonly used scales in business research, reliability and validity of scales. Designing instrument for data collection; testing the instrument, data collection process. Sampling methods and procedures and sample size decisions. Feed back and review/ Case analysis.</p>	8	14
III.	<p>Data Analysis and Presentation Editing and coding of data, tabulation, graphic presentation of data, cross tabulation. Testing of hypotheses; type I and II errors, one tailed and two tailed tests of significance. Parametric and nonparametric tests for univariate and bivariate data. Tests of association; simple linear regression and other nonparametric tests. Research report writing. Feedback and review/ Case analysis.</p>	8	14

IV	Nature of OR problem, steps in OR problem, Solution of L.P.P. by Graphical Method and Solving through Computer Software like Excel Solver, etc. Formulation of LP problems Duality and its implications, Introduction to sensitivity analysis, Integer AND Goal programming problems (only formulation and solution of two variable case)	8	14
V	Transportation Models, Initial Basic Feasible Solution and Optimal Solution, Assignment Problem and Travelling Salesman Problem. Transshipment problem. Network techniques, Minimum Spanning Tree Problems, Shortest Route and Maximal Flow Technique. Introduction to simulation.	8	14

4. Teaching Methods:

The course will use the following pedagogical tools:

- (a) Case discussion covering a cross section of decision situations.
- (b) Discussions on issues and techniques of business research.
- (c) Projects/ Assignments/ Quizzes/ Class participation etc

5. Evaluation:

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

A	Projects/ Assignments/ Quizzes/ Class participation etc	Weightage 10% (Internal Assessment)
B	Mid-Semester examination	Weightage 20 % (Internal Assessment)
C	End –Semester Examination	Weightage 70% (External Assessment)

6. Basic Textbooks (Latest Edition):

Sr. No.	Author/s	Name of the Book	Publisher	Edition and Year of Publication
T1	Donald R. Cooper and Pamela S. Schindler	Business Research Methods (IX edition)	Tata McGraw Hill Publishing Company Ltd., New Delhi	IX edition
T2	Harmdly TAHA	Operations Research	Pearson Education	8 th Edition or Later edition
T3	D. K. Bhattacharyya	Research Methodology	Excel Books	2 nd Edition
T4	Vohra N. D.	Quantitative Techniques in Management	Tata McGraw Hill	3 rd or Higher Edition

4. Reference Books:

Sr. No.	Author/s	Name of the Book	Publisher	Edition and Year of Publication
R1	Zikmund William	Business Research Methods,	Thompson Learning	(2003) 8 th edition
R2	Bryman Alan	Business Research Methods	Oxford University Press	(2006) 8 th edition
R3	Panneerselvam R,	Research Methods for Business	John Wiley & Sons	(2004) 4 th edition
R4	K. Aswathappa and K. Shridhara Bhat	Research Methodology	Prentice Hall of India	Latest Edition
R5	Alan Bryman, Emma Bell	Business Research Methods	Oxford Press	2 nd Edition,
R6	Fredrick S Hiller, Mark S Hiller	Introduction to Management Science – a Modeling and Case studies approach with spreadsheets	Mark S Hiller	Latest Edition
R7	Hiller and Liebermann	Introduction to Operational Research	Tata McGraw Hill	Latest Edition
R8	J. K. Sharma	Operation Research	MACMILLAN	3 rd Edition
R9	G. Srinivasan	Operation Research	Prentice-Hall India	
R10	Barry Render, Ralph M. Stair, Jr., Michael E. Hanna,	Quantitative Analysis for Management	Pearson	Latest Edition
R11	J. K. Sachdeva	Business Research Methodology	Himalaya Publications	Latest Edition
R12	Adithan Bhujange Rao	Research Methodology for Management and Social Science	Excel Books	Latest Edition
R13	D. Israel	Data Analysis in Business Research	Rasponse Books	Latest Edition
R14	Thomson	Daily Data Analysis with SPSS	Carven Nash	Latest Edition
R15	Beridget Somkekh & Cathy Lewis	Research Methods in Social Sciences	Visttar Publications	Latest Edition
R16	Kultar Singh	Quantitative Social Research Methods	SAGE	Latest Edition

8. List of Journals/Periodicals/ Magazines/ Newspapers etc. : Operation research, Operations Research Quarterly, Vikalpa, Decision, etc.

9. Session Plan:

Research Methodology and Operations Research (RM & OR)

Sessions	Topic
1-3	Nature and scope of business research, information based decision making and source of knowledge. The research process; basic approaches and terminologies used in research.
4-6	Defining research question and framing of hypotheses. Preparing a research plan, qualitative and quantitative research designs.
7-8	Sources of Data, Methods of Collection of Data,
9-12	Field research; primary data collection from observations, surveys and experimentation. Measurement and scaling; commonly used scales in business research, reliability and validity of scales.
13-16	Designing instrument for data collection; testing the instrument, data collection process. Sampling methods and procedures and sample size decisions. Feed back and review/ Case analysis
17-20	Editing and coding of data, tabulation, graphic presentation of data, cross tabulation. Testing of hypotheses; type I and II errors, one tailed and two tailed tests of significance. Parametric and nonparametric tests for Univariate and Bivariate data.
21-24	Tests of association; simple linear regression and other nonparametric tests. Research report writing.
25-27	Nature of OR problem, steps in OR problem, Solution of L.P.P. by Graphical Method and Solving through Computer Software like Excel Solver, etc.
28-30	Formulation of LP problems Duality and its implications, Introduction to sensitivity analysis,
31-32	Integer and Goal programming problems (only formulation and solution of two variable case)
33-36	Transportation Models, Initial Basic Feasible Solution and Optimal Solution, Assignment Problem and Travelling Salesman Problem.
37-40	Transshipment problem. Network techniques, Minimum Spanning Tree Problems, Shortest Route and Maximal Flow Technique. Introduction to simulation

The Instructor/s (Faculty Member/s) will be required to guide the students regarding suggested readings from the Text(s) and references in items 6 and 7 mentioned above.