

**ST. JOSEPH'S COLLEGE OF COMMERCE
(AUTONOMOUS)**



LESSON PLAN

2018-2019 ODD SEMESTER

BACHELOR OF BUSINESS ADMINISTRATION

M1 15 MC 503

QUANTITATIVE TECHNIQUES

PREPARED BY:

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**ST. JOSEPH'S COLLEGE OF COMMERCE (AUTONOMOUS)
DEPARTMENT OF BUSINESS ADMINISTRATION
TEACHING LESSON PLAN BBA 5TH Semester
QUANTITATIVE TECHNIQUES**

M1 15 MC 503

OBJECTIVE:

- To provide a good foundation in the mathematics of operation research and appreciation of its potential application
- To enable student to grasp the importance of conversion of business problems into mathematical problems and its application in business.

LESSON PLAN

UNIT/ SESSION/ HOURS (TIME REQUIRED)	TOPICS FOR STUDENT PREPARATION (INPUT)	PROCEDURE (PROCESS)	LEARNING OUTCOME (OUTPUT)	ASSESSMENT
Module – 1 : Introduction to OR 4 hours	Definitions-Scope-OR models-Nature-limitat ions-Applications	<ul style="list-style-type: none"> ● Online Videos ● Lecture with the help of power Point presentation ● Discussion 	To understand the importance of: <ul style="list-style-type: none"> ● Origin of OR and its functions. ● Scope and decision making 	Evaluation through MCQs
Module-2: Introduction to Linear Programming 12 Hours	Concepts-construction of LP model-Problems on formulation-graphical method-simple problems	<ul style="list-style-type: none"> ● Lecture ● Case Study ● Discussion ● Problem solving 	To understand the significance of LPP to the firm and to formulate business problems and model making:	Evaluation through tests and MS excel
Module-3: Simplex Method 12 Hours	Introduction-simplex method-maximization and minimization-Big M-Duality	<ul style="list-style-type: none"> ● Lecture ● Discussion ● Problem solving 	To formulate and solve LPP through iterative process and converting primal problem to dual	Evaluation through tests

Module-4: Transportation Problem 10 Hours	Introduction-methods of IBFS and testing for optimality-MODI method	<ul style="list-style-type: none"> ● Lecture ● Case Study ● Discussion ● Problem solving 	To understand the significance and application of transportation model in different areas of business	Evaluation through tests and MS Excel
Module-5: Assignment Problem 10 Hours	Introduction-Methods -(enumeration-Simple x & transportation-theory)-Hungarian Method	<ul style="list-style-type: none"> ● Lecture ● Discussion ● Case study ● Problem solving 	To understand the significance and application of assignment model in business.	Evaluation through tests and MS Excel
Module-6: Network Analysis 12 Hours	Introduction-network analysis-construction of network diagram-developing project network-PERT-CPM	<ul style="list-style-type: none"> ● Lecture ● Discussion ● Problem solving ● Case Study 	To understand the significance and application of network techniques in project network and reduction of cost and time	Evaluation through MCQs, group activity and tests

UNIT WISE BREAK UP

LECTURE HOURS: 60

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Module Number	Topic	No. of Lecture Hours	Pre- class activity	Pedagogy (in class)	Out of class assignment
Module 1 :	Introduction to OR	4			
1.	– Definition and evaluation of OR	2	-----	Lecture and Discussion	To make short notes on the features ,scope applications of OR
2.	Characteristics and Scope of OR – Management Applications of OR.	2	To go online and view videos on scope of operation research	Lecture , Discussion And video	
Module 2	Introduction to Linear Programming	12			
1	Introduction and areas of application of LPP	2	To read about problems on linear programming	Lecture and Illustrations	To write about the meaning definition and scope of LPP
2	Formulation of LPP	4	To learn the steps in formulating an LPP	Illustrations and Work sheet	Short case studies
3	Graphical method of solving LPP	6	To plot single line graphs	Illustrations and Work sheet	LPP Graph problems
Module 3	Simplex	12			
1	Simplex method of solving LPP including Big M method	8	To watch videos on scope of simplex	Illustrations and Work sheet	Simplex problems

2	Concept of Duality	4	To read on the concept of duality	Illustrations and Work sheet	Duality problems
Module 4	Transportation	10			
1.	Definition of the Transportation model – the Transportation Method- Linear Programming Formulation of the Transportation Problem Transshipment model and Methods of calculating IBFS	2	To read and write about transportation model in OR	Lecture through power point presentation	Collection of actual transportation data and a study on IBFS
2.	North west corner rule	1	To write about transshipment model	Lecture and Problems	Problems on NWCR
3.	Least cost method	1	To study the different methods of IBFS	Lecture and Problems	Problems on LCM
4.	Vogel's approximation method	2	To conduct a comparative study on the methods of IBFS	Lecture and Problems	Problems on VAM
5.	Testing for optimality and improvement of solution	4	To read about MODI method	Lecture and Problems	Problems on MODI method
Module 5	Assignment Problems	10			
1.	Introduction – Mathematical Statement of the problem	2	Nature and scope of assignment	Lecture	Problems on assignment
2.	on Methods of Assignment Problem – Enumeration – Transportation & Hungarian Method-	4	-----	Lecture and Problems	Problems on assignment
3.	Maximization in an Assignment problems	2	Areas of application	Lecture and Problems	Problems on assignment
4.	Special cases in an Assignment problems	2	Problems on assignment	Lecture and Problems/case study	Problems on assignment
Module 6	Network Analysis	12			

1.	Definition of Projects, Drawing of Diagram	2	Nature and steps in network analysis	Presentation	Network diagrams
2.	CPM	5	Concept of LS/LF – ES/EF and Floats	Problems	Problems on CPM
3.	PERT	5	Assignments on project crashing	Problems	Problems on PERT

BOOKS FOR REFERENCE:

1. *Anderson Sweeney Williams: An Introduction to Management Science Quantitative Approaches to Decision*, Thomson.
2. *Chacko, George K: Applied Operations Research/Systems Analysis in Hierarchical Decision Making*, North Holland Publishing Co.
3. *Taha, Hamdy A: Operations Research*, Prentice Hall, India.
4. *Hiller/Lieberman: Introduction to Operations Research*, Tata McGraw Hill.
5. *Sharma S D: Operations Research*, Kedarnath Ramnath & Co.