

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



**LESSON PLAN
2018-2019 EVEN SEMESTER
BACHELOR OF COMMERCE (TT)
OPERATIONS RESEARCH**

PREPARED BY:

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

**TEACHING LESSON PLAN B.Com 6TH Semester
OPERATIONS RESEARCH**

OBJECTIVE:

- To provide a good foundation in the basics of Operation Research and appreciation of its potential application in the travel industry for decision making
- To enable student to grasp the importance of conversion of business problems into mathematical problems and its application in tourism 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-limitations-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: Transportation Problem 16 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-4: 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-5: Queuing Theory	Introduction-service system-components of queuing	<ul style="list-style-type: none"> ● Lecture ● Discussion 	To understand the significance and	Evaluation through MCQs, group

6 Hours	system-queing models-problems on single-server queing model only	<ul style="list-style-type: none">● Problem solving● Case Study	application of queuing system and models.	activity and tests
Module-7: Simulation 12 Hours	basic concepts-steps of simulation process basic probability conceptrandom numbers-problems using Monte Carlo Techniques	<ul style="list-style-type: none">● Lecture● Discussion● Problem solving	To understand the use of simulation and its process. To understand probability concepts and it application.	Evaluation through 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	Transportation	16			
1.	Definition of the Transportation model – the Transportation Method- Linear Programming Formulation of the Transportation Problem	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

	Transshipment model and Methods of calculating IBFS				
2.	North west corner rule	2	To write about transshipment model	Lecture and Problems	Problems on NWCR
3.	Least cost method	3	To study the different methods of IBFS	Lecture and Problems	Problems on LCM
4.	Vogel's approximation method	4	To conduct a comparative study on the methods of IBFS	Lecture and Problems	Problems on VAM
5.	Testing for optimality and improvement of solution	5	To read about MODI method	Lecture and Problems	Problems on MODI method
Module 4	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 5	Queuing Theory	6			
1.	Introduction – features and concepts- queuing models	2	To read and write about Queuing Theory	Presentation	To make notes on the various concepts covered.
2.	Problems on single-server queuing model	4	-----	Problems	Problems on single-server queuing model
Module 6	Simulation	12			
1	Basic concepts- characteristics- steps in simulation process	4	To read and understand the concept simulation	Lecture and PPT	Notes on Simulation

2	Basics probability concept-random numbers-problems using Monte Carlo Technique	8	Concept on probability	Lecture and Problems	Problems using Monte Carlo Technique
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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.