ST. JOSEPH'S COLLEGE OF COMMERCE

(AUTONOMOUS)

LESSON PLAN

2016-2017 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 6^(TH) 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	• Online Videos • Lecture with the help of power Point presentation • Discussion	To understand the importance of: • 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	• 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	• 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-Simplex & transportation-theory)-Hungarian Method	• 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:	Introduction-service	• Lecture	To understand the	Evaluation

Queuing Theory **6 Hours**	system-components of queing system-queing models-problems on single-server queing model only	• Discussion • Problem solving • Case Study	significance and application of queuing system and models.	through MCQs, group activity and tests
Module-7: Simulation **12 Hours**	basic concepts-steps of simulation process basic probability conceptrandom numbers-problems using Monte Carlo Techniques	• 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**			

Lesson Plan, 2016 - 2017, Even Semester, Operation Research

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	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.	SolutionMethods 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 – feautres and concepts- queing 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- characteristices- steps in simulation process	4	To read and understand the concept simulation	Lecture and PPT	Notes on Simulation
2	Basics probablity concept-random numbers-problems using Monte Carlo Technique	8	Concept on probability	Lecture and Problems	Problems using Monte Carlo Technique

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.*