

Branch Name:	B.Sc. Mathematics
Program Code:	SC104
Course Name:	Operations Research -II
Course Code:	2SC1040604
Pre-requisite Course:	

Course Objectives:

1. To understand the concept of transportation models and assignment problem.
2. To understand the concept of sequencing problems.
3. To know about the elements of decision theory.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	--	--	3	70	30	--	--	100

Subject Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1	Transportation Problem- Introduction, general method of a T.P., unbounded T.P. NWCM, Least cost method, VAM methods to find the initial solution, Dual of a T.P. and MODI method, degeneracy in a T.P., variations in T.P. Maximization T.P. and Prohibited routes. Assignment Problem- General model of A.P.(A.P. as a special case of a T.P.) Hungarian Method of solving a A.P., variations in a A.P-maximization, prohibited assignments.	18	34
2	Sequencing Problem: Methods of sequencing, Johnson's Algorithm for a two machine problem, three machine problem and M-machine problem, Processing Two jobs through M-machines.	15	33
3	Elements of Decision Theory: Basic structure of decisions, classical basis of pay-off matrix models. Pay-off matrix under conditions of risk, expected value with minimum-maximum and maximum-minimum, Horwich and Laplace criteria, Expected monetary value (EMV).	15	33

Reference Books:

1. Operations Research, by. J.K.Sharma. Macmillan Publishers India Ltd.
2. Operations Research by Nita Shah, Ravi Gor and Hardik Soni, Prentice Hall of India.
3. Operations Research (Principles and Practice) by Pradeep Prabhakar Pai, Oxford University Press.
4. Business Statistics-2, Sudhir Prakashan, Ahmedabad.

List of Open Source Software/learning website:

1. https://www.youtube.com/watch?v=_RyPH6Uc7OE
2. <https://www.youtube.com/watch?v=B6rY8NDWw1s>
3. <https://www.youtube.com/watch?v=VacEloz6dGs>
4. <https://www.youtube.com/watch?v=ni5IRdP9ZBA>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Describe Transportation Problem.	1 Remembering
CLO2	Discuss the knowledge on Maximization T.P. and Prohibited routes.	2 Understanding
CLO3	Use Hungarian method for solving Assignment problem.	3 Applying
CLO4	Explain Johnson's Algorithm for solving sequencing problem.	4 Analysing, 3 Applying
CLO5	Know the decision theory to Justify Horwich and Laplace criteria, Expected monetary value (EMV).	5 Evaluating
CLO6	Create an example of transportation problem from given data of company.	6 creating

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1		M	L						L	M			M	L		L
CLO2		L	M		L				M	M			L	L		L
CLO3	M	L	L	L					L	L		L	L	M		L
CLO4	M		L	L					M	L		L	L	M		L
CLO5	L			L						L			L			
CLO6		L	M		L				M				L	L		

H: High, M: Medium, L: Low