

**B. COM. (HONS) NEP
SEMESTER – V (MINOR)
OPERATIONS RESEARCH - II
COURSE CODE – DSC-M-STA-355
CREDIT MARK DISTRIBUTION – 04**

COURSE OBJECTIVES

The course aims at building capabilities in the students for analyzing different situations in the industrial/ business scenario involving limited resources and finding the feasible solution within constraints. The objective of this course is to enable the student to understand and analyze managerial problems to equip him/ her to use the resources such as capitals, materials, production controlling, directing, staffing, and machines more effectively.

PRE – REQUISITE

The world of Operations Research is dynamic and fast paced. It is also the blending of mathematics, optimization, statistics, and computer science, techniques to improve decision making, processes and systems. The learners should have knowledge of mathematics up to higher school level to learn basic contents of Operations Research.

COURSE OUTCOMES

Understanding the basic concept and working of O.R. to solve the Industrial/ Organizational problem in optimum manner. Solve Decision Theory using appropriate technique and interpret the results obtained. Determine feasible strategy for Minimization of Cost of shipping of products from source to Destination using various methods, finding initial basic feasible solution of the Transportation problems. Optimize the allocation of resources to Demand points in the best possible way using various techniques and minimize the cost or time of completion of number of jobs by number of persons as well as maximize the profit or sale.

UNIT	CONTENT	WEIGHTAGE
1	<p>DECISION THEORY</p> <ul style="list-style-type: none"> ➤ Meaning and Importance of Decision Theory ➤ Components of Decision Theory ➤ Different Methods of Taking Decision <ul style="list-style-type: none"> ✓ Maxi – Min Principle ✓ Maxi – Max Principle ✓ Laplace’s Principle ✓ Hurwitz’s Principle ✓ Expected Monetary Value (EMV) ✓ Expected Profit under Perfect Information (EPP) ✓ Expected Value for Perfect Information (EVPI) ➤ Practical Problems relating to the stated Methods 	25%

2	<p>GAME THEORY</p> <ul style="list-style-type: none"> ➤ Meaning of Game ➤ Two Person Zero Sum Game ➤ Strategy and Pay – off matrix for two persons zero sum game ➤ Saddle point ➤ Pure strategy ➤ Value of the Game ➤ Mixed Strategy ➤ Dominance Principle for Solving the Game without Saddle Point ➤ Reduction of m x n pay off matrix into 2 x 2 matrix using dominance principle and solving the Game ➤ Simple Sums of Game Theory – with and without Saddle point using dominance principle only 	25%
3	<p>PERT AND CPM TECHNIQUES</p> <ul style="list-style-type: none"> ➤ Meaning and Characteristics of Path Evaluation Review Technique (PERT) ➤ Explanation of basic terms such as <ul style="list-style-type: none"> ✓ Activity ✓ Event ✓ Dummy Activity ✓ Optimistic Time ✓ Pessimistic Time ✓ Most Likely Time ✓ Expected Time ✓ Fulkerson’s rules for numbering the event ➤ Meaning of Critical Path Method (CPM) ➤ Difference between PERT and CPM ➤ Earliest Start Time (EST) ➤ Earliest Finish Time (EFT) ➤ Latest Start Time (LST) ➤ Latest Finish Time (LFT) ➤ Total Float Time of Activity ➤ Uses and Limitations of PERT and CPM ➤ Simple Examples on the basis of all above 	25%
4	<p>SEQUENCING PROBLEMS</p> <ul style="list-style-type: none"> ➤ Introduction to Sequencing Problems: ➤ Overview of sequencing problems in operations research ➤ Notations, Terminology and Assumptions of Sequencing Problems ➤ Processing n jobs through two machines ➤ Processing n jobs through three machines ➤ Simple examples based on these models 	25%

MODE OF EVALUATION

Evaluation will be divided in two parts.

- **External:** Semester end Examination will be conducted by the Gujarat University of

50 Marks

- **Internal:** Internal Evaluation of 50 marks will be decided by the colleges / Institutes/ University departments as per the instruction given by the University time to time.

FBLD (Flip Blended Learning Design Template)

- Any One Unit from the above syllabus can be discussed by the faculty through online mode.
- Online mode can be SWAYAM MOOC Course or any other suggested by the UGC or Gujarat University.

REFERENCE BOOKS:

1. Operation Research - Kanti Swaroop
2. Operation Research : P. K. Gupta and Man Mohan
3. Operation Research : Dr R. V. S. Prasad
4. Operation Research : Dr. D. Giri
5. Operation Reach – S. D. Sharma and J. K. Sharma
6. Operations research - Models and methods by Chandrasekar Salimath, Bhupendar Parashar.
7. Operations Research – Taha
8. Operations Research – N. D. Vora