

OPERATIONS RESEARCH

Semester	Subject Code	Category	Lecture		Theory		Practical	Credits
II	21CPMA2E	Elective	Hrs/week	Hrs/Sem	Hrs/week	Hrs/Sem	0	3
			5	75	5	75		

COURSE OBJECTIVES:

The students will be able to

- This course aims to introduce decision theory, PERT, CPM, deterministic and probabilistic inventory systems.
- Introduced Queuing Theory, Replacement and maintenance problems.

COURSE OUTCOMES:

On the successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduce decision theory, essential elements, certainty and uncertainty with problems.	K2
CO2	Apply PERT and CPM techniques for solving real world problems.	K3
CO3	Analyze inventory systems such as deterministic and probabilistic.	K4
CO4	Explain queuing theory and its applications.	K2
CO5	Identify, explain and evaluate the replacement and maintenance problems.	K4

Knowledge Level: K1 – Remember; K2 –Understand; K3 – Apply; K4 – Analyze

MAPPING WITH PROGRAMME OUTCOMES:

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	S	M	M	S	M
CO2	M	S	M	M	S	S
CO3	S	M	S	S	S	S
CO4	S	M	M	S	M	S
CO5	M	S	S	M	S	M

S- Strong; M-Medium; L-Low

UNIT -I - DECISION THEORY AND DECISION TREES**15 Hours**

Introduction –Steps in Decision Theory Approach – Types of Decision Making Environments – Decision Making Under Uncertainty – Decision Making under Risk – Posterior Probabilities and Bayesian Analysis – Decision Tree Analysis.

Chapter 11: 11.1 to 11.7**UNIT - II - PROJECT MANAGEMENT: PERT AND CPM****15 Hours**

Introduction –Basic Differences Between PERT and CPM – Phases of Project Management – PERT / CPM Network Components and Precedence Relationships – Critical Path Analysis – Project scheduling with Uncertain Activity Times – Project Time - Cost Trade-off – Updating of the Project.

Chapter 13: 13.1 to 13.8**UNIT - III - DETERMINISTIC INVENTORY CONTROL MODELS****15 Hours**

Introduction –The Meaning of Inventory control – Functional Role of Inventory – Reasons for Carrying Inventory – Factors Involved in Inventory Problem Analysis – Inventory Model Building – Inventory Control Models without shortages – Inventory Control Models with Shortages.

Chapter 14: 14.1 to 14.8**UNIT – IV - QUEUEING THEORY****15 Hours**

Introduction – Essential Features of a Queuing System – Performance Measures of a Queuing System – Probabilistic Distribution in Queuing Systems – Classification of Queuing Models and Their Solutions – Single-Server Queuing Models – Multi-Server Queuing Models– Finite Calling Population Queuing Models – Probability Distribution of Arrivals and Departures.

Chapter 16: 16.1 to 16.8 and 16.A**UNIT - V - REPLACEMENT AND MAINTENANCE MODELS****15 Hours**

Introduction –Types of Failure – Replacement of Items Whose Efficiency Deteriorates with Time – Replacement of Items that Fail Completely – Other Replacement Problems

Chapter 17: 17.1 to 17.5**DISTRIBUTION OF MARKS: THEORY 50% AND PROBLEMS 50%**

TEXT BOOK:

S.No	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	J.K. Sharma	Operations Research	MacMillan India	2003

REFERENCE BOOKS:

S.No	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	F.S. Hillier and J.Lieberman	Introduction to Operation Research	Tata McGraw Hill Publishing Company	2006
2	Beightler. C, D. Phillips, B. Wilde	Foundations of Optimization	Prentice Hall Pvt Ltd	1979
3	Bazaraa, M.S; J.J.Jarvis, H.D.Sharall	Linear Programming and Network flow	John Wiley and sons	1990
4	Gross, D and C.M. Harris	Fundamentals of Queuing Theory	Wiley and Sons, New York	1998
5	HamdyA.Taha	Operations Research	Prentice-Hall of India Private Limited	2001

WEB SOURCES:

1. <https://www.goodreads.com/shelf/show/operations-research>
2. <https://www.scribd.com/document/337754670/Operations-Research-Problems-and-Solutions-JK-Sharma>

TEACHING METHODOLOGY

1. Class room Teaching
2. Assignments
3. Seminars
4. Discussions
- 5 .PPT Presentations

SYLLABUS DESIGNER:

Mrs. R.Ramya, Assistant Professor of Mathematics.