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| <b>COURSE CODE:</b> 2CM2010413                                                                                                                                               | <b>COURSE TITLE:</b> Operation Research -1 |
| <b>COURSE TYPE :ELECTIVE COURSE: SPECIALIZATION- STATISTICS</b>                                                                                                              |                                            |
| <b>COURSE OBJECTIVE:</b> To make the students aware about the various techniques like CPM, PERT, Queuing and Sequencing theory and its application in research and commerce. |                                            |

| Teaching Scheme (Hours per week) |        | Evaluation Scheme (Marks) |                          |       |
|----------------------------------|--------|---------------------------|--------------------------|-------|
| Lectures                         | Credit | University Assessment     | Institutional Assessment | Total |
| 4                                | 4      | 60                        | 40                       | 100   |

| Unit | Topic and Contents                                                                                                                                                                                                                                                                                                                                                                                  | Hours | Wt. (%) |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| 1.   | <b>(A) Network Techniques PERT and CPM analysis:</b><br>Concept of network diagram, Objectives of network analysis, definitions connected with network time calculations method, Distinction between PERT and CPM,<br><b>(B) Project Management:</b><br>Definitions, Phases of Project Management, The 7-s of Project Management, The project as a conversion process, 4-C's of Project Management. | 15    | 25%     |
| 2.   | <b>Queuing theory and Sequencing:</b><br>Basic concepts for a queuing system - study of (M/M/I : FIFO) and (MMK : FIFO) queues with simple properties Applications of queuing theory without any mathematical derivations. Problem of sequencing - sequencing of n jobs on two and three machines.                                                                                                  | 15    | 25%     |
| 3.   | <b>Inventory Control Cost associated with inventory :</b><br>Meaning, Classification of inventory system, Economic Order Quantity, lot size models with and without shortages (back order policy only) inventory models under price break and quantity discount deterministic inventory models under given - restrictions - ABC , FSN and VED analysis of inventory                                 | 15    | 25%     |
| 4.   | <b>Marketing Research :</b><br>Definition of Market & marketing research, scope, problem formulation, research design, Data collection, Chi-square, T-test, Z-test, F-Test, univariate and bivariate analytical tools and methods applied research problems including case studies Bayesian approach to problems of market research.                                                                | 15    | 25%     |

**References Books :**

1. Hadley G.S (1974) : Linear programming, Addison-Wesley
2. Harvey Maylor, Project Management, Financial Times, Pitman Publishing, Delhi.
3. Hillier and Lieberman : Operation Research
4. Production and Operation Management, S.A. Chunawala and D.R.Patel, HPH.
5. Sharma J.K. : Introduction to Operation Research
6. Sharma S.D. : Introduction to Operation Research.
7. Taha H.A. : Operation Research - An Introduction