|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Name:** | | | | | | | | | Bachelor of Computer Applications | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | |  | | |
|  | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | |  | | |
| **Subject Name:** | | | | | | | | | Optimization Techniques | | | | | | | | | | | | | | | | | | | | | | | | | **Subject Code:** | | | | | | | | | TBC-503 | | |
|  | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | |  | | | | |
| **1** | **Contact Hours:** | | | | | | | | | | 42 | | | | |  | | | | | | | | | | | | | | | | | | | **L** | | 3 | | | **T** | |  | | **P** | 0 | |
|  |  | | | | | | | | | |  | | | | |  | | | | | | | | | | | | | | | | | | |  | |  | | |  | |  | |  |  | |
| **2** | **Examination Duration(Hrs):** | | | | | | | | | | | | | | | | | | | | |  | **Theory** | | | | | 0 | 3 |  | **Practical** | | | | | 0 | | 0 | |  | | | | | |
|  |  | | | | | | | | | | | | | | | | | | | | |  |  | | | | |  |  |  |  | | | | |  | |  | |  | | | | | |
| **3** | **Relative Weightage:** | | | | | | | | | | | | |  | | | | | **CWE:** | | | | | | | 25 | | **MTE:** | | | 25 | | **ETE:** | | | | 50 | | | |  | | | | |
|  |  | | | | | | | | | | | | |  | | | | |  | | | | | |  | | |  | | |  | |  | | | |  | | | |  | | | | |
| **4** | **Credits:** | | | | | | 0 | | | 3 |  | | | | | | | | | | | | | |  | | |  | | |  | |  | | | |  | | | |  | | | | |
|  |  | | | | | |  | | |  |  | | | | | | | | | | | | | |  | | |  | | |  | |  | | | |  | | | |  | | | | |
| **5** | **Semester:** | | | | | | | **🗸** | | |  | | | |  | | |  | | |  | | |  | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | | | **Autumn** | | | | | | **Spring** | | | | | | | | **Both** | | | | | | |  | | | | | | | | | | | | | | | | | | |
|  |  | | | | |  | | | | | |  | | | | | | | |  | | | | | | |  | | | | | | | | | | | | | | | | | | |
| **6** | **Pre-Requisite:** | | | | | | | | | | | | Knowledge of graphs and algorithms. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **7** | **Subject Area:** | | | | | | | | | | | | Mathematics | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **8** | **Objective:** | | | | | | | | | | | | To familiarize students with the Optimization of the resources through mathematical models. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **9** | **Course Outcome:** | | | | | | | | | | | | A student who successfully fulfills the course requirements will be able to- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **a.** | | | | Ability to formulate a wide range of management problems that can be solved to optimality by classical combinatorial optimization techniques. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **b.** | | | | The knowledge of alternative solution approaches such as metaheuristics that can find nearly optimal solutions. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **c.** | | | | Understand the concept of game theory | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **d.** | | | | Understand the concept of PERT and CPM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | **e.** | | | | Understand the time Estimation in critical path analysis. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  |  | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **10** | | **Details of the Course:** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Unit No.** | | | | **CONTENT** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **CONTACT HOURS** | | | | | | |
| **1** | | | | Meaning, Significance and scope of Operation Research, Management Applications of Operations research, Features of Operation Research, Quantitative technique of Operation Research, Role of Computers in Operation Research. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8 | | | | | | |
| **2** | | | | Formulation of Linear programming problems, Graphical Solution of LP problems, Simplex Method, Two phase method, Big M method, Transportation, Assignment, and Travelling-Salesman problems. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8 | | | | | | |
| **3** | | | | **Theory Of Games**: Types of games, Pure Strategy and mixed strategy. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | | |
| **4** | | | | **Sequencing**: Processing n jobs through 2 machines, Processing n jobs through 3 machines, Processing 2 jobs through n machines, Processing n jobs through m machines. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 9 | | | | | | |
| **5** | | | | **PERT and CPM**: Application of PERT/CPM Techniques, Basic steps in PERT/CPM techniques, Network diagram representation, Time Estimates in critical path analysis, Project time cost trade off, Updating of project, resource allocation, project monitoring. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 8 | | | | | | |
|  | | | | **TOTAL** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **42** | | | | | | |
|  | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | |
|  | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | |
| **11** | | **Suggested Books:** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | |
| **Sl. NO.** | | | **NAME OF AUTHERS/BOOKS/PUBLISHERS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | **YEAR OF PUBLICATION** | | | | | |
| **1** | | | S.D. Sharma, Operation Research, Kedar Nath Ram Nath | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2001 | | | | | |
| **2** | | | Ravinder Philips and solberg, Operation Research Principles and Practice John Willy & Sons. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2003 | | | | | |
| **3** | | | H.A. Taha, Operation Research, prentice Hall of India | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2004 | | | | | |
| **4** | | | Rounetran , Phillips,solberg: Operation Research: Willy DreamTech India Pvt Ltd. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2002 | | | | | |