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| **BBA 401: Operations Research** |
| **Teaching Scheme** | **Examination Scheme** |
| Lectures: 3 hrs/Week | Class Test -12Marks |
| Tutorials: 1 hr/Week | Teachers Assessment - 6MarksAttendance – 12 Marks |
|  Credits: 4 | End Semester Exam – 70 marks |

# Course Objectives:

# Course Outcomes:

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| CO1 | To explain the basic use of quantitative techniques in the management of business, industrial and organizational operations and projects. |
| CO 2 | To identify appropriate linear programming techniques for decision making problem and interpret the results obtained. |
| CO 3 | To formulate and solve decision making problems as networks and graphs. |
| CO4 | To set up decision models and use some solution methods for linear programming problems |
| CO5 | Understand variety of optimization problems such as transportation problem, project management, game theory, replacement of items that fails suddenly and sequencing of jobs in such a way so that they should give the best sequence for a set of activities |
| CO6 | Implement the learning |

**Course Content -**

**Unit-1**

Nature, Definition & characteristics of operations research, Methodology of OR, Models in OR;OR & managerial Decision making, OR techniques.

**Unit-2**

Linear programming: Introduction, Advantages of Linear Programming, Applications areas of Linear Programming. LPP-problem formulation, Graphic Method.

**Unit-3**

Transportation-North West Corner Rule, matrix Minima & VAM Methods, Degenerating.

**Unit-4**

Game Theory: Two Person Zero Sum Games, Pure & Mixed Strategies, The Maximin & Minimax Principle, Solution of Games using Arithmetic & Graphical Methods

**Unit-5**

PERT & CPM-Introduction, Network Analysis, Time Estimates in Network Analysis, CriticalPath Method; Programme Evaluation & Review Technique.(only basic no crashing).

**Unit-6**

Replacement Problems: Replacement of asset that deteriorates gradually, (only keeping time come constant), Replacement of Equipments that fails suddenly Sequencing Problem: Meaning, Processing n Jobs through two Machines, Johnson’s Rule.

**Text and Reference Books-**

1. Operations Research:KantiSwarup, ManMohan,S.Chand& Sons 2005
2. Optimization Theory & Applications: Rao,S.S.,Wiley Eastern Ltd.2008
3. Introduction to Operations Research: Hiller,F.S. ,Lieberman,Holden-Day.2006
4. Operations Research : Sharma S.D.,KedarNath& sons,1997
5. Operations Research: Heera& Gupta,S.Chand & sons,2000
6. Operation Research by J.K.Sharma, Pearson
7. Operation Research by Handy A. Taha, Prentice Hall India
8. Quantitative methods for business by Anderson, Sweeney and Williams, Thomson Publications.