

# FUTURE VISION BIE

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Future Vision

By K B Hemanth Raj

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<b>OPERATIONS RESEARCH</b> <b>[As per Choice Based Credit System (CBCS) scheme]</b> <b>(Effective from the academic year 2017 - 2018)</b> <b>SEMESTER – VI</b>			
Subject Code	17CS653	IA Marks	40
Number of Lecture Hours/Week	3	Exam Marks	60
Total Number of Lecture Hours	40	Exam Hours	03
<b>CREDITS – 03</b>			
<b>Module – 1</b>			<b>Teaching Hours</b>
<b>Introduction, Linear Programming:</b> Introduction: The origin, nature and impact of OR; Defining the problem and gathering data; Formulating a mathematical model; Deriving solutions from the model; Testing the model; Preparing to apply the model; Implementation . <b>Introduction to Linear Programming Problem (LPP):</b> Prototype example, Assumptions of LPP, Formulation of LPP and Graphical method various examples.			<b>8 Hours</b>
<b>Module – 2</b>			
<b>Simplex Method – 1:</b> The essence of the simplex method; Setting up the simplex method; Types of variables, Algebra of the simplex method; the simplex method in tabular form; Tie breaking in the simplex method, Big M method, Two phase method.			<b>8 Hours</b>
<b>Module – 3</b>			
<b>Simplex Method – 2: Duality Theory -</b> The essence of duality theory, Primal dual relationship, conversion of primal to dual problem and vice versa. The dual simplex method.			<b>8 Hours</b>
<b>Module – 4</b>			
<b>Transportation and Assignment Problems:</b> The transportation problem, Initial Basic Feasible Solution (IBFS) by North West Corner Rule method, Matrix Minima Method, Vogel's Approximation Method. Optimal solution by Modified Distribution Method (MODI). The Assignment problem; A Hungarian algorithm for the assignment problem. Minimization and Maximization varieties in transportation and assignment problems.			<b>8 Hours</b>
<b>Module – 5</b>			
<b>Game Theory:</b> Game Theory: The formulation of two persons, zero sum games; saddle point, maximin and minimax principle, Solving simple games- a prototype example; Games with mixed strategies; Graphical solution procedure. <b>Metaheuristics:</b> The nature of Metaheuristics, Tabu Search, Simulated Annealing, Genetic Algorithms.			<b>8 Hours</b>
<b>Course outcomes:</b> The students should be able to:			
<ul style="list-style-type: none"> <li>• Explain optimization techniques for various problems.</li> <li>• Understand the given problem as transportation and assignment problem and solve.</li> <li>• Illustrate game theory for decision support system.</li> </ul>			
<b>Question paper pattern:</b> The question paper will have TEN questions. There will be TWO questions from each module. Each question will have questions covering all the topics under a module.			

The students will have to answer FIVE full questions, selecting ONE full question from each module.

**Text Books:**

1. D.S. Hira and P.K. Gupta, Operations Research, (Revised Edition), Published by S. Chand & Company Ltd, 2014

**Reference Books:**

1. S Kalavathy, Operation Research, Vikas Publishing House Pvt Limited, 01-Aug-2002
2. S D Sharma, Operation Research, KedarNath Ram Nath Publishers.