INTRODUCTION TO OPERATIONS RESEARCH

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Department of Management Studies
IIT Madras

TYPE OF COURSE : Rerun | Elective | UG / PG
COURSE DURATION : 8 weeks (21 Feb' 22 - 15 Apr' 22)
EXAM DATE : 24 Apr 2022

INTENDED AUDIENCE : Any Interested Learners

COURSE OUTLINE :

Operations Research (OR) is a discipline that helps to make better decisions in complex scenarios by the application of a set of advanced analytical methods. It couples theories, results and theorems of mathematics, statistics and probability with its own theories and algorithms for problem solving. Applications of OR techniques spread over various fields in engineering, management and public systems. This course introduces the students to the following topics : Linear Programming, Transportation problems, Assignment problems. Advanced topics on duality. At the end of this course students will be able to understand, formulate linear programming problems and applications.

ABOUT INSTRUCTOR :

Prof. G Srinivasan is a Professor in the Department of Management Studies at IIT Madras. He has more than 25 years of teaching and research experience. His areas of Interest include Operations Research, Supply Chain Management, O.R. Applications. His videos in Operations Research available under NPTEL are popular.

COURSE PLAN :

Week 1 : Linear Programming (LP): Terminology and formulations

Week 2 : Graphical and Algebraic solutions to LP

Week 3 : Simplex Algorithm: Algebraic form, Tabular form, Types of LPs, Matrix method

Week 4 : Duality: Writing the dual of an LP, Primal-Dual relationships

Week 5 : Dual: Basic understanding, significance, interpretation, Dual Simplex algorithm

Week 6 : Transportation Problem

Week 7 : Assignment Problem

Week 8 : Solving LPs using Solver, Sensitivity analysis