

PSE-802 Optimization and Decision Analysis

Credit Hours: 3

Pre-requisites: Nil

Course Objectives:

- To give the students an understanding of the tools and theories by finding the optimal solutions of industrial problems.
- Students will be able to demonstrate optimization and decision-making skills in managing industrial projects/ assignments.

Course Contents:

This course covers material of the following topics

- Linear Programming
- Simplex Algorithm
- Sensitivity analysis
- Transportation model
- Goal programming
- Dynamic Programming
- Decision analysis
- Game theory
- Queuing systems
- Applications in science and engineering

Course Outcomes:

- Students will develop problem modeling and solving skills and learn how to make intelligent decisions from the optimization point of view.
- Students are expected to apply the knowledge of optimization and decision analysis on different industrial case studies.

Recommended Reading (including Textbooks and Reference books)

- M. Doumpos, C. Zopounidis, and E. Grigoroudis, Robustness Analysis in Decision Aiding, Optimization, and Analytics: Springer International Publishing, 2016.
- H. A. Taha, Operations Research: An Introduction: Prentice Hall PTR, 2016.
- J. Varela and S. Acuña, Handbook of Optimization Theory: Decision Analysis and Application: Nova Science Publishers, 2011.
- F. S. Hillier and G. J. Lieberman, Introduction to Operations Research: McGraw-Hill Higher Education, 2005