

Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
G261	Operational Research	3	3	0	0	3	5

Prerequisites

Admission Requirements

Language of Instruction Turkish

Course Type Compulsory

Course Level Bachelor Degree

Objective Operations research aims to apply scientific approaches in order to design and manage systems with scarce resources. This course, which is compulsory in the curriculum, enables students to provide the optimal solution to the problems encountered in an organization. The material will prove useful for improving and optimizing the performance of an organization. In this context, the aims of this course are as follows:

- Formulating mathematical models for real world problems.
- Introducing the solution methods for mathematical programming models.
- Examining the validity of the models and interpreting the obtained results.

Content Introduction to linear programming and graphical solution method, Example problems for linear programming, Simplex method, Two-phase simplex method, Special cases for simplex method, Sensitivity analysis, Assignment problem and Hungarian algorithm, Transportation problem and transportation simplex algorithm

References

1. Hillier, F.S., Lieberman, G.J., "Introduction to Mathematical Programming", McGraw-Hill, 1995.
2. Bazaraa, M.S., Jarvis, J.J., Sherali, H.D., "Linear Programming and Network Flows", John Wiley & Sons, 1990.
3. Taha, H.A., "Operations Research: An Introduction", Sixth edition, Prentice-Hall, 1997.

Theory Topics

Week

Weekly Contents

- 1 Introduction to linear programming and graphical solution method
- 2 Example problems for linear programming
- 3 Example problems for linear programming
- 4 Simplex method
- 5 Simplex method
- 6 Two-phase simplex method
- 7 Special cases for simplex method
- 8 Special cases for simplex method
- 9 Midterm
- 10 Sensitivity analysis
- 11 Sensitivity analysis
- 12 Assignment problem and Hungarian algorithm
- 13 Transportation problem and transportation simplex algorithm
- 14 Transportation problem and transportation simplex algorithm