Operations Research I: Linear Programming

Description

This course introduces the students to the concept of linear programming problems and the diverse methods to solve them. The idea is to dive deeper in the topic of this class of problems in order to understand the simplex method which is an important way to solve them and on which other important variants are based.

Learning Objectives and Outcomes

- Understand what a linear program is
- Know how to model a linear problem
- Understand why the simplex method works
- Be able to use the simplex method to solve a linear problem
- Know when you are in a simplex method special case

Course Schedule and Contents

Session#1	▪ Definition of linear programming ▪ Real life examples of linear programming problems ▪ Connection between optimization and linear programming ▪ Modelization of a linear problem ▪ Decision variables, objective functions, vertices, feasible solution
Session #2	▪ Simplex method: explanation and exercises
Session #3	▪ Simplex method: explanation and exercises
Session #4	▪ Special cases (degeneracy, unbounded solutions …) ▪ Simplex method practice ▪ Python library for linear programming ▪ Assignment/exam

Grading

Course assignment/exam: 100%

Policies

- I expect you to submit your assignment on time to receive proper credit/grade.
- Any work submitted must be your own.
- I expect everyone to contribute equally to group assignments
- Attendance in every class is expected and class participation and discussion are strongly encouraged.
- Late work will not be accepted unless prior arrangements have been made directly with me.
- Cases will be decided on an individual basis.

Good Luck!