

FOUNDATIONS OF OPERATIONS RESEARCH

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Website: <http://home.deib.polimi.it/amaldi/FOR-19-20.shtml>



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The focus is on some of the fundamental optimization models and methods to tackle complex decision-making problems.

Course objectives

- Learn how to analyze a decision-making problem, build an optimization model, identify an appropriate algorithm and interpret the output.
- Understand some of the main optimization methods (e.g. graph optimization and project planning algorithms, simplex method, branch and bound method).
- Learn how to use a modeling language (AMPL) and a state-of-the-art optimization solver (CPLEX).

Prerequisites

- Basic concepts from Calculus, Geometry, Linear algebra and algorithm complexity analysis.

Schedule

- Tuesday 10.15 - 12.15 Room D.0.3
- Wednesday 10.15 - 12.15 Room B.2.4 (including exercises)
- Friday 8.15 - 14.15 Room L.26.14

Computer laboratory sessions: 3 teams, only 2 two-hour meetings, first meeting TBA, and 3 assignments for home.

A couple of topics (e.g. LP sensitivity analysis) will be assigned for independent study prior to exercises or computer laboratory activities.

Instructors

- Lectures and exercises:
 - ▶ Edoardo Amaldi `edoardo.amaldi@polimi.it`
- Computer labs:
 - ▶ Riccardo Cantoni `riccardo.cantoni@polimi.it`
 - ▶ Tommaso Schettini `tommaso.schettini@polimi.it`

Teaching material

- Slides of the lectures and material for the exercise/computer lab sessions available from the course webpage.
- F. Hillier, G.J. Lieberman, Introduction to Operations Research, Ninth edition, McGraw-Hill, 2010.

Evaluation

A written exam which covers all the material presented in the lectures, exercise and computer laboratory sessions.