

Polyhedral methods for Integer Linear Programming

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Timetable: 20 hrs. Class meets every Tuesday and Friday from 12:00 to 14:00. First lecture on Friday, March 23, 2012. Room DEI/201 (Dept. of Information Engineering, DEI/A Building, Via Gradenigo 6/a).

Course requirements: Basics courses on linear algebra and graphs.

Examination and grading: Grading is based on a project assigned by the Instructor.

Aim: The purpose of this Course is to introduce polyhedral methods for Integer Linear Programs and to enable the students to develop sound polyhedral (branch-and-cut) solution methods.

Course contents:

- Basic Linear and Integer Programming
- The branch-and-cut paradigm
- Linear Programming geometry: polyhedra, dimension, vertices, faces, and facets
- Proving the facet-defining property: direct and indirect methods
- Polyhedral structure of the Asymmetric Travelling Salesman Problem
- Design of a branch-and-cut algorithm for the Asymmetric Travelling Salesman Problem

References: Notes will be available with further references.