

Integer Programming and Lattices

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Timetable: 12 hrs. First lecture on November 21st, 2016, 14:00 (dates already fixed see calendar), Torre Archimede, Room 2BC/30 and Meeting Room IV and VII floor.

Course requirements: basic Linear Algebra.

Examination and grading: to be discussed with students.

SSD: MAT/09 Operations Research.

Aim: Introducing Lattice Theory and its connections with discrete optimization, in particular Integer Programming.

Course contents: Lattice Theory is pervasive in Integer Programming. The following topics will be discussed:

- Fundamental concepts in Lattice Theory
- Minkowski's convex body theorem
- Orthogonality defect and the LLL algorithm
- Shortest vector problem
- Löwner-John ellipsoids and lattice width
- Integer Programming in fixed dimension