

Code	<b>IE515</b>
Name	<b>Discrete Optimization</b>
Hour per week	3 (3 + 0)
Credit	3
ECTS	10
Level/Year	Graduate
Semester	Fall or Spring
Type	Elective
Prerequisites	IE511
Content	A thorough introduction to the theory algorithms and applications of combinatorial and integer optimization. Part I presents the fundamentals and modeling aspects. Part II deals with how to solve the resulting relaxations, including the simplex algorithm (and interior point methods like the ellipsoid algorithm if time permits) and selected topics in polyhedral theory. Part III deals with algorithms for integer optimization including both exact methods (enumerative algorithms such as dynamic programming, and branch-and-bound; cutting plane methods, branch-and-cut) and heuristics (GRASP, feasibility pump). Finally, Part IV deals with decomposition approaches like Lagrangian relaxation (and duality results for integer optimization), Benders' decomposition and branch-and-price (delayed column generation).