

# GIMAS8AE ADVANCED DISCRETE OPTIMIZATION

GIMAS8AE		ECTS Credits: 2		Semester: S8	
Advanced Discrete Optimization		Duration: 21 hours			
Person(s) in charge:					
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Keywords: Discrete optimization					
Prerequisites: course SG134: Discrete Optimization					
Objective:					
Advanced techniques in discrete optimization					
Program and contents					
Objectives					
<p>First, we present different approaches to constructing exact and approximated methods for difficult optimisation problems. These approaches will be illustrated on different examples already modeled in the course SG 134. The approximation methods can be constructed with guaranteed performance in comparison with the optimal solution. The second part of this course will be dedicated to generic methods for combinatorial problems such as meta-heuristics, evolutionist algorithms (genetic algorithms) as well as constraint programming. In last part, we present other analysis techniques when we are in the presence of problems with several criteria.</p>					
Content					
<ul style="list-style-type: none"><li>• Exact Methods such as branch and bound</li><li>• Relaxation and approximation of optimization problems</li><li>• Meta-heuristics and genetic algorithms</li><li>• Constraint programming</li><li>• Multi-criteria analysis of optimization problems.</li></ul>					
Abilities:					
Levels		Description and operational verbs			
Know					
Understand					
Apply					
Analyze					
Summarise					
Assess					
Evaluation:					
<input checked="" type="checkbox"/> Written test		<input type="checkbox"/> Continuous Control		<input type="checkbox"/> Oral report	
				<input checked="" type="checkbox"/> Project	
				<input type="checkbox"/> Written report	