CS Elective Courses

Short Descriptions

DM865 Heuristics and Approximation Algorithms

Teacher: Marco and Lene

ECTS: 10

Teaching: 16 weeks, two double lectures per week (64 hours in total).

Heuristics: Slides, programming exercises

Approximation: Classic advanced algorithmics-style lectures (algorithm descriptions + proofs), blackboard based, a few exercises.

Projects: 2 medium sized programming projects in Python. approx. 2 x 25 hours work expected.

Material: Heuristics: Book and papers (+ slides)

Approximation: Book (+ lecture notes)

Exam: Oral, 24 min without preparation: 3 $\times$ 6 minutes theory and 6 minutes project, 7-grade scale.

Topics:

Problems: TSP, Max Sat, Set Cover, Knapsack, Bin Packing, Scheduling, Vehicle Routing

Techniques: LP-rounding, Primal-Dual, Greedy, dynamic prg., PTAS, randomized + derandomized, Local Search, Metaheuristics