

Grading criteria for Algorithms, Data structures and Complexity

learning outcome <i>develop algorithms with data structures</i>	E	for simple problems given an algorithmic technique	D	for non-trivial problems with a given hint	C	for non-trivial problems	B	[A criterion] with a given hint	A	for harder problems using the best method
	assessed using labs (for level E), master's test 1 and oral exam									
<i>implement algorithms with data structures</i>	following a functional specification and a detailed algorithmic specification, taking efficiency into account									
	assessed using labs									
<i>analyze algorithms with respect to efficiency</i>	explain the principles, analyze simple algorithms		analyze harder algorithms with a given hint		analyze harder algorithms					
	assessed using labs and theory exam (for level E), master's test 1 and oral exam									
<i>analyze algorithms with respect to correctness</i>	explain the principles, explain a given proof of correctness		produce a basic idea for the proof of correctness of an algorithm		produce a basic idea and given a hint carry out a complete proof of correctness		[A criterion] with a given hint		carry out complete proofs of correctness using invariants	
	assessed using master's test and oral exam									
<i>compare alternative algorithms and data structures with respect to efficiency and reliability</i>										
assessed using labs, theory exam and master's test 1										
<i>define and translate the concepts P, NP, NP-completeness and undecidability</i>										
assessed using theory exam and master's test 2										
<i>compare problems with respect to complexity using reductions</i>	explain the principles, carry out simple reductions between given problems		show NP-completeness or undecidability with a given hint		show NP-completeness or undecidability		[A-criterion] with a given hint		design constructive reductions	
	assessed using lab 4 and theory exam (for level E), master's test 2 and oral exam									
<i>explain how problems of high complexity can be handled</i>	explain the need		explain the principles		design simple heuristics or exhaustive search algorithms		[A criterion] with a given hint		design and analyze approximation algorithms or heuristics, or show lower approximability bounds	
	assessed using theory exam (for levels E-C) and oral exam or an extra lab (for levels B-A)									