

Module title					Abbreviation
Approximation Algorithms					10-I=APA-102-m01
Module coordinator				Module offered by	
holder	of the (Chair of Computer Scienc	I Institute of Computer Science		
ECTS Method of grading		Only after succ. compl. of module(s)			
5 numerical grade					
Duration		Module level	Other prerequisites		
1 semester		graduate	Where applicable, prerequisites as specified by the lecturer at the begin- ning of the course (e. g. completion of exercises).		
Contents					
The task of finding the optimal solution for a given problem is omnipresent in computer science. Unfortunately, there are many problems without an efficient algorithm for an optimal solution. As a result, in practice, methods are used which do not always give the optimal solution but always give good solutions. This lecture will discuss drafting and analysing techniques for algorithms which have a proven approximation quality. With the help of practical optimisation problems, the lecture will introduce students to important drafting techniques such as greedy, local search, scaling as well as methods based on linear programming.					
Intended learning outcomes					
The students are able to analyse easy approximation methods in terms of their quality. They understand fun- damental drafting techniques such as greedy, local search and scaling as well as methods based on linear pro- gramming and are able to apply these to new problems.					
Courses (type, number of weekly contact hours, language — if other than German)					
V + Ü (no information on SWS (weekly contact hours) and course language available)					
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)					
written examination (approx. 50 to 60 minutes); if announced by the lecturer by four weeks prior to the examina- tion date, the written examination can be replaced by an oral examination of one candidate each or an oral ex- amination in groups (one candidate each: 15 minutes, groups of 2: 20 minutes, groups of 3: 25 minutes) Language of assessment: German, English if agreed upon with the examiner					
Allocation of places					
Additional information					
Workload					
Teaching cycle					
Referred to in LPO I (examination regulations for teaching-degree programmes)					
Module appears in					
Master's degree (1 major) Computer Science (2010) Master's degree (1 major) Mathematics (2012) Master's degree (1 major) Mathematics (2010) Master's degree (1 major) Computational Mathematics (2012) First state examination for the teaching degree Gymnasium Computer Science (2009)					

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