

Module title		Abbreviation
Systems Benchmarking		10-I=SB-212-m01
Module coordinator		Module offered by
holder of the Chair of Computer Science II		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	--
Contents		
<p>Benchmarking has become a major discipline in science and technology as a driver of product quality, efficiency, and sustainability. Reliable and fair benchmarks enable educated decisions and play an important role as evaluation tools during system design, development, and maintenance. In research, benchmarks play an integral part in the evaluation and validation of new approaches and methodologies. The course introduces the foundations of benchmarking as a discipline, covering the three fundamental elements of each benchmarking approach: metrics, workloads, and measurement methodology. More specifically the following topics are covered: benchmarking basics, metrics, statistical measurements, experimental design, workloads, measurement tools, operational analysis, basic queueing models, and benchmark standardization. Furthermore, the course covers selected application areas and case studies, such as benchmarking of energy efficiency, virtualization, storage, micro-services, cloud elasticity, performance isolation, resource demand estimation, and software and system security.</p>		
Intended learning outcomes		
<p>Students are able to design and build fair and reliable benchmarks, metrics, and measurement tools. Students can evaluate the quality of existing benchmarking approaches and benchmark results.</p>		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2) + Ü (2)		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
<p>written examination (approx. 60 to 120 minutes). If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate). creditable for bonus Language of assessment: German and/or English</p>		
Allocation of places		
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Additional information		
<p>Focuses available for students of the Master's programme Informatik (Computer Science, 120 ECTS credits): SE,IT,ES,HCI,GE</p>		
Workload		
150 h		
Teaching cycle		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
<p>Master's degree (1 major) Information Systems (2019) Master's degree (1 major) eXtended Artificial Intelligence (xtAI) (2020) Master's degree (1 major) Computer Science (2021)</p>		

Master's degree (1 major) Aerospace Computer Science (2021)
Master's degree (1 major) Information Systems (2022)
Master's degree (1 major) Computer Science (2023)
Master's degree (1 major) Aerospace Computer Science (2023)
Master's degree (1 major) Artificial Intelligence & Extended Reality (2024)
Master's degree (1 major) Artificial Intelligence (2024)
Master's degree (1 major) Information Systems (2024)