

Module title		Abbreviation
IT Security		10-I-SEC-191-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	undergraduate	--
Contents		
<p>The course provides a broad sweep through concepts and technologies related to IT security:</p> <ul style="list-style-type: none"> • Theoretical aspects: information-theoretic security, computational security, introduction to cryptography (historical and modern ciphers, hash functions, pseudo-random generators, message authentication codes, public key cryptography) • Network security: protocol security, security of TCP/IP, public key infrastructure, user authentication • Software security: Software vulnerabilities, common programming errors and exploitation techniques, reverse engineering and obfuscation, malware and anti-malware • Platform security: access control models, security policies, operating system security, virtualization, security mechanisms with support in hardware 		
Intended learning outcomes		
<p>Students will be introduced to the main concepts and abstractions of IT security. They learn how to model threats and analyze security of a system critically from the attacker view point. After visiting the lecture students are going to understand the purpose and function of several security technologies, as well as their limitations. The exercises provide some hands-on experience of security flows in software.</p>		
Courses (type, number of weekly contact hours, language – if other than German)		
V (2) + Ü (2) Module taught in: German and/or English		
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). Language of assessment: German and/or English creditable for bonus</p>		
Allocation of places		
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Additional information		
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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>Bachelor' degree (1 major) Computer Science (2019) Module studies (Bachelor) Computer Science (2019)</p>		

Bachelor' degree (1 major) Computer Science und Sustainability (2021)
Bachelor' degree (1 major) Artificial Intelligence and Data Science (2022)
Bachelor' degree (1 major) Artificial Intelligence and Data Science (2023)
Bachelor' degree (1 major) Mathematics (2023)
Bachelor' degree (1 major) Artificial Intelligence and Data Science (2024)