Module MA-INF 3201	**Network Security**				
Workload 180 h	**Credit points** 6 CP	**Duration** 1 semester	**Frequency** every year		
Module coordinator	Prof. Dr. Peter Martini				
Lecturer(s)	Prof. Dr. Peter Martini, Dr. Jens Tölle				
Classification	**Programme** M. Sc. Computer Science	**Mode** Optional	**Semester** 2. or 3.		
Technical skills	The students learn fundamental concepts of network security. This includes risks and vulnerabilities of today's computer networks, concepts to increase the level of security in these networks, and a real-life oriented introduction to encryption techniques, their applications and their weaknesses.				
Soft skills	Theoretical exercises to support in-depth understanding of lecture topics and to stimulate discussions, practical exercises in teamwork to support time management, targeted organisation of practical work and critical discussion of own and others' results				
Contents	Threats and attack scenarios, organizational aspects, technical aspects: securing networks using different firewall concepts, IDS and IPS (intrusion detection systems and intrusion prevention systems), security protocols for different protocol layers, integrity protection: hash functions and their weaknesses, certificates, privacy protection, encryption.				
Prerequisites	**Recommended:** Bachelor level knowledge of basics of communication systems (e.g. BA-INF 101 "Kommunikation in Verteilten Systemen" (German Bachelor Programme Informatik, English lecture slides available) and/or MA-INF 3105 – Principles of Distributed Systems				
Format	**Teaching format**	**Group size**	**h/week**	**Workload[h]**	**CP**
	Lecture	60	2	30 T / 45 S	2.5
	Exercises	30	2	30 T / 75 S	3.5
	T = face-to-face teaching; S = independent study				
Exam achievements	Oral exam (graded)				
Study achievements	Successful exercise participation (not graded)				
Forms of media					
Literature	• Christoph Busch, Stephen D. Wolthusen: Netzwerksicherheit, Spektrum Akademischer Verlag • Matt Bishop: Introduction to Computer Security, Addison Wesley				