

Valid for 2024.FS

<b>Module Name: IT-Security</b>		
Module Code	w.BA.XX.3ITSe-WIN.XX	
Module Description	This course provides the necessary basic knowledge on information and cyber security topics. Initially, this also includes a sound introduction to computer networks. Starting with communication in switched Ethernet networks and the various protocols and layers (TCP/IP), we also look at basic services and architectures of the internet. Equipped with these basics, we work together to develop an understanding of real threats and vulnerabilities in modern IT infrastructures, learn how to assess them, and evaluate suitable protection concepts. In addition to concepts for protection, the necessary knowledge about the detection of incidents and the handling of attacks that have already occurred is also taught. In parallel to the lectures, practical exercises are held in which all topics are then applied. We work mainly with virtualized/simulated environments.	
Program and Specialization	§ Business Information Technology - Specialization in Business Information Systems § Business Information Technology - Specialization in Data Science	
Legal Framework	Academic Regulations BSc dated 29.01.2009, for the degree programs in Business Administration, International Management, Business Information Technology, Business Law, Business Law and Applied Law, first adopted on 12.05.2009	
Module Category	<b>Module Type:</b> Compulsory	<b>Program Phase:</b> First-Year Studies
ECTS	6	
Organizational Unit	W Institut für Wirtschaftsinformatik	
Module Coordinator	Peter Heinrich (heip)	
Deputy Module Coordinator	Christian Weber (weei)	
Prerequisite Knowledge	-	
Contribution to Program Learning Goals (Affected by Module)	§ Professional Competence § Methodological Competence § Social Competence § Self-Competence	
Contribution to Program Learning Objectives	Professional Competence § Knowing and Understanding Content of Theoretical and Practical Relevance § Apply, Analyze, and Synthesize Content of Theoretical and Practical Relevance § Evaluate Content of Theoretical and Practical Relevance Methodological Competence § Problem-Solving & Critical Thinking § Work Methods, Techniques, and Procedures § Information Literacy § Creativity & Innovation Social Competence § Written Communication § Oral Communication § Teamwork & Conflict Management § Intercultural Insight & Ability to Change Perspective Self-Competence § Self-Management & Self-Reflection § Ethical & Social Responsibility § Learning & Change	
Module Learning Objectives	Students... § understand computer networks and communication concepts. § configure secure small networks (home network or small SMEs). § conceptually understand internet services (HTTP, DNS, SMTP), typical infrastructure services (DHCP/BootP), and protocols like ARP, IP, TCP, and UDP. § implement simple routing and firewall rules with the Linux netfilter. § learn about important threats, protection, and recovery strategies. § gain entry level knowledge of cryptographic protocols, forensics, and data recovery procedures.	

Module Content	§ OSI- TCP/IP-Model / Layer_1_2_PHY_MAC_Gigabit_Switched_Ethernet § Layer_3_Network_IPv4_IPv6_Addressing_Routing_CIDR § Layer_4_Transport_TCP_UDP_(ICMP) § Layer_5-7_Applications_DNS_DHCP_HTTP_SMTP § Computer network security fundamentals § Security threats/vulnerabilities/hackers § Security assessment, analysis, and assurance § Disaster management § Cryptography § Access Control, authorization, and authentication § Firewalling § Intrusion detection/forensics/virus & content filtering		
Links to other modules	-		
Methods of Instruction	§ Lecture § Interactive Instruction § Exercises § Explorative Learning	<b>Social Settings Used:</b> § Individual Work § Pair Work	
Digital Resources	§ Teaching Materials § Multiple Choice Tests		
Type of Instruction	<b>Classroom Instruction</b>	<b>Guided Self-Study</b>	<b>Autonomous Self-Study</b>
Large Class	28 h	12 h	
Small Class	28 h	56 h	
Group Instruction	-	-	
Practical Work	-	-	
Seminar	-	-	
<b>Total</b>	<b>56 h</b>	<b>68 h</b>	<b>56 h</b>
Performance Assessment			
<b>End-of-module exam</b>	<b>Form</b>	<b>Length (min.)</b>	<b>Weighting</b>
Written exam	Open book	90	100,00 %
<b>Permitted Resources</b>	Free choice of calculator	With dictionary	
<b>Others</b>	<b>Assessment</b>	<b>Length (min.)</b>	<b>Weighting</b>
10 Moodle tests (during the semester)	Pass/Fail	5	-
Classroom Attendance Requirement	Mandatory Attendance: None		
Language of Instruction/Examination	English		
Compulsory Reading	§ Computer Networks / Computernetze Bilingual Edition: English – German / Zweisprachige Ausgabe: Englisch – Deutsch <a href="https://link.springer.com/book/10.1007/978-3-658-26356-0">https://link.springer.com/book/10.1007/978-3-658-26356-0</a> § Guide to Computer Network Security, <a href="https://link.springer.com/book/10.1007/978-3-030-38141-7">https://link.springer.com/book/10.1007/978-3-030-38141-7</a>		
Recommended Reading	-		
Comments	-		