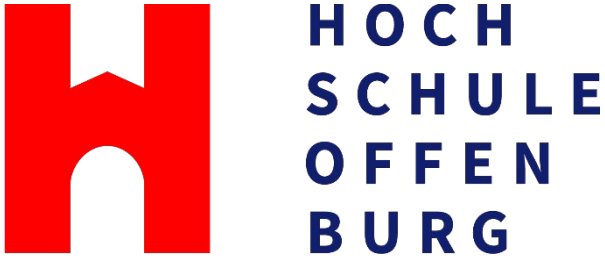

MODULHANDBUCH

Enterprise- and IT-Security (ENITS) (ENITS-M)

Stand: 20.04.2026
Studien- und Prüfungsordnung 20242

Modulhandbuch ENITS-M

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DataMining: Data Mining

Empfohlene Vorkenntnisse	Recommended knowledge and courses: - Statistics and Mathematics (Statistik und Mathematik) - Risk Management (Risikomanagement) - ENITS course Data Analysis for Risk and Security Management	
Lehrform	Vorlesung/Seminar	
Lernziele	LO1 Apply data mining techniques to detect and analyze cyber threats Students will be able to use classification, clustering, anomaly detection, and association analysis to identify suspicious patterns in network traffic, user behavior, and system logs, enabling early detection of cyber risks. LO2 Evaluate cyber risk exposure using data-driven models Students will be able to build and interpret predictive models (e.g., risk scoring, threat likelihood estimation) to assess vulnerabilities and quantify organizational cyber risk based on historical incident data and threat intelligence sources. LO3 Design data mining-supported mitigation strategies for cyber risk Students will be able to translate analytical findings into actionable cyber risk controls, recommending monitoring rules, automated alerts, and strategic mitigation measures grounded in mined data patterns.	
Dauer	1 Semester	
SWS	4 SWS	
Aufwand	Lehrveranstaltung:	60,00 h
	Selbststudium/Gruppenarbeit:	120,00 h
	Workload:	180,00 h
ECTS	6,00 ECTS	
Voraussetzungen für die Vergabe von LP	Lab+Exam(K60)	
Modulverantwortung	Prof. Dr. Dirk Drechsler	
Empfohlenes Semester	1. Semester	
Häufigkeit	jedes 2. Semester	
Verwendbarkeit	Master's Degree Program ENITS	

ENITS-01: Data Analysis for Risk and Security Management

Empfohlene Vorkenntnisse	- Module Algorithms and Data Structures (Algorithmen und Datenstrukturen) or similar - Module Mathematics and Cryptography (Mathematik und Kryptografie) or similar: basic knowledge in symmetric and asymmetric cryptography and related basic principles of number theory	
Lehrform	Vorlesung/Labor	
Lernziele	After successful participation in the course students shall be able to: - understand methods of applied cryptanalysis - apply them to concrete cryptographic systems create implementations on their own or use third-party tools	
Dauer	1 Semester	
SWS	4 SWS	
Aufwand	Lehrveranstaltung:	60,00 h
	Selbststudium/Gruppenarbeit:	120,00 h
	Workload:	180,00 h
ECTS	6,00 ECTS	
Voraussetzungen für die Vergabe von LP	Lab Applied Cryptanalysis: Presentation BE must be passed report (BE, Applied Cryptanalysis Lab) + written exam (K90, Applied Cryptanalysis)	
Modulverantwortung	Prof. Dr. Dirk Drechsler	
Empfohlenes Semester	1. Semester	
Häufigkeit	jedes 2. Semester	
Verwendbarkeit	Master's Degree Program ENITS	

LEHRVERANSTALTUNG: Data Analysis for Risk and Security Management

Art	Vorlesung
Nr.	M1100
SWS	4,00 SWS
Lerninhalt	Ch_A Review of Statistical Concepts Ch_B Regression Analysis Ch_C Time Series Analysis Ch_D Waiting Line Models
Lehrveranstaltungs-sprache	de
Literatur	Albright, S.C./Winston, W.L.; Business Analytics, Data Analysis and Decision Making; Cengage Learning; Actual Edition. Anderson, D.R./Sweeney, D.J./Williams, T.A./Camm, J.D./Cochran, J.J./Fry, M.J./Ohlmann, J.W.; Quantitative Methods for Business; Cengage Learning; Actual Edition. Balakrishnan, N./Koutras, M.V./Politis, K.G.; Introduction to Probability, Models and Applications; Wiley; Actual Edition. Kinney, J.J.; Probability, An Introduction with Statistical Applications; Wiley; Actual Edition.

	Ragsdale, C.T.; Spreadsheet Modeling and Decision Analysis; Cengage Learning; Actual Edition.

ENITS-02: Strategic Risk and Crisis Management

Empfohlene Vorkenntnisse	Requires basic knowledge of data bases, statistics and experience with a modern programming Language	
Lehrform	Vorlesung/Labor	
Lernziele	- Introduction to data mining: overview, CRISP, data pre-processing, concepts of supervised and unsupervised learning, visual analytics - Association rules - Linear regression: simple linear regression, introduction to multiple linear regression - Classification: logistic regression, decision trees, SVM - Ensemble methods: bagging, random forests, boosting - Clustering: K-means, K-medoids, Hierarchical clustering - Evaluation and validation: cross-validation, assessing the statistical significance of data mining results - Ethics and privacy - Selection of advanced topics such as neural networks, outlier detection, relation to big data analysis - In the lab, students apply data mining methods and algorithms to problem sets and develop data mining applications, using tools such as R and RapidMiner	
Dauer	1 Semester	
SWS	4 SWS	
Aufwand	Lehrveranstaltung:	60,00 h
	Selbststudium/Gruppenarbeit:	120,00 h
	Workload:	180,00 h
ECTS	6,00 ECTS	
Voraussetzungen für die Vergabe von LP	Lab Data Mining: Presentation BE must be passed. report (BE) + written exam (K60)	
Modulverantwortung	Prof. Dr. Janis Keuper	
Empfohlenes Semester	1. Semester	
Häufigkeit	jedes 2. Semester	
Verwendbarkeit	Master's Degree Program ENITS	

LEHRVERANSTALTUNG: Strategic Crisis Management

Art	Seminar
Nr.	M1121
SWS	2,00 SWS
Lerninhalt	Case Study Analysis of Crisis and AI Cyber Incidents.
Lehrveranstaltungs-sprache	de
Literatur	COSO; COSO ERM 2017; CPA; 2017 COSO; COSO Compendium of Examples 2017; CPA; 2017 NIST; NIST Cybersecurity Framework 2.0; NIST; 2024. NIST; AI Risk Management Framework; NIST; 2023.

	Set of Case Studies

LEHRVERANSTALTUNG: Strategic Risk Management	
Art	Seminar
Nr.	M1122
SWS	0,00 SWS
Lerninhalt	Case Study Analysis of Risk and Cyber Risk Management Incidents.
Lehrveranstaltungs-sprache	de
Literatur	Blackman, R.; Ethical Machines: Your Concise Guide to TotallyUnbiased, Transparent, and Respectful AI; Harvard Business Press; Actual Edition. Flint, C.; Introduction to Geopolitics. Routledge; Actual Edition. Kliem, R.L.; Political Risk Management for the Global SupplyChain; CRC Press; Actual Edition. Roubini, N.; Megathreats, Ten Dangerous Trends That Imperil OurFuture, And How To Survive Them; Little, Brown and Company; Actual Edition. Rubens, D.; Strategic Risk and Crisis Management: A Handbookfor Modelling and Managing Complex Risks; KoganPage; Actual Edition.

ENITS-03: Ethics and EU-Law

Empfohlene Vorkenntnisse	Ability to work scientifically (Literature study, presentation)	
Lehrform	Vorlesung/Seminar	
Lernziele	After successful participation in the course students shall be able to: - M+I805: - understand and analyse ethical dilemmas in computer science. - derive a qualified judgement on the matter. - defending said judgement in discussions. - M+I806: - understand the respective legal provisions and evaluate the consequences therefrom for companies. - understand what kind of legal measures exist to check the security of IT systems. Participants shall understand the legal requirements in other areas of law that pertain to IT security, especially data protection laws, labor laws and contract laws.	
Dauer	1 Semester	
SWS	4 SWS	
Aufwand	Lehrveranstaltung:	60,00 h
	Selbststudium/Gruppenarbeit:	120,00 h
	Workload:	180,00 h
ECTS	6,00 ECTS	
Voraussetzungen für die Vergabe von LP	Presentation (RE) (1/2) in Ethics and written exam (K60) (1/2) in Law	
Modulverantwortung	Prof. Dr. Dirk Westhoff	
Empfohlenes Semester	1. Semester	
Häufigkeit	jedes 2. Semester	
Verwendbarkeit	Master's Degree Program ENITS	

ENITS-04: Anonymity and Surveillance

Empfohlene Vorkenntnisse	Empfohlene Kenntnisse/Lehrveranstaltungen: Computernetze, Netzwerk Sicherheit, Applied Crypt- Analysis	
Lehrform	Vorlesung/Seminar	
Lernziele	After successful participation in the course students shall be able to: - have knowledge of basic terms and concepts of anonymity and privacy protection in computer networks - to describe attacks on anonymous network communication and the exchange of sensitive data and explain defense mechanisms explain selected anonymization technologies (such as anonymizers, digital mixers, remailer systems and TOR) and their functionality as well as OTR technologies	
Dauer	1 Semester	
SWS	4 SWS	
Aufwand	Lehrveranstaltung:	60,00 h
	Selbststudium/Gruppenarbeit:	120,00 h
	Workload:	180,00 h
ECTS	6,00 ECTS	
Voraussetzungen für die Vergabe von LP	Anonymity and Surveillance: written exam K90 (3/4) Seminar Anonymity and Surveillance: Presentation RE (1/4)	
Modulverantwortung	Prof. Dr. Daniel Hammer	
Empfohlenes Semester	1. Semester	
Häufigkeit	jedes 2. Semester	
Verwendbarkeit	Master's Degree Program ENITS	

ENITS-05: Software Security

Empfohlene Vorkenntnisse	Prior knowledge of Assembly and C is beneficial, but not required. Basic software development skills / Software Engineering Lecture.	
Lehrform	Vorlesung/Labor	
Lernziele	After successful participation in the course students shall have - ability to engineer security requirements - knowledge and application skills with selected tools for "Threat Modelling" - knowledge and application skills with selected tools for "Secure Development & Testing" - familiarity with basic considerations of security for software components and ability to evaluate them Students will understand the impact of security vulnerabilities within software components and achieve competence in mitigating them	
Dauer	1 Semester	
SWS	4 SWS	
Aufwand	Lehrveranstaltung:	60,00 h
	Selbststudium/Gruppenarbeit:	0,00 h
	Workload:	360,00 h
ECTS	6,00 ECTS	
Voraussetzungen für die Vergabe von LP	Software Security: written exam K90 Lab Software Security: written lab reports (pass/no pass) Lab reports (BE, Labor Software Security) + written exam (K90, Software Security)	
Modulverantwortung	Prof. Dr. Andreas Schaad	
Empfohlenes Semester	1. Semester	
Häufigkeit	jedes 2. Semester	
Verwendbarkeit	Master's Degree Program ENITS	

ENITS-06: IT Sec-Laborarbeit

Empfohlene Vorkenntnisse	Recommended knowledge and courses: All ENITS courses of the first semester	
Lehrform	Labor	
Lernziele	mplementation of theoretical knowledge in a challenging project (practical, research-oriented and in a team) deepening of expertise and methodological competence	
Dauer	1 Semester	
SWS	0 SWS	
Aufwand	Lehrveranstaltung:	0,00 h
	Selbststudium/Gruppenarbeit:	360,00 h
	Workload:	360,00 h
ECTS	12,00 ECTS	
Voraussetzungen für die Vergabe von LP	report (HA)	
Modulverantwortung	Prof. Dr. Daniel Hammer	
Empfohlenes Semester	1. Semester	
Häufigkeit	jedes 2. Semester	
Verwendbarkeit	Master's Degree Program ENITS	

LEHRVERANSTALTUNG: Laborarbeit

Art	Labor
Nr.	M1120
SWS	2,00 SWS
Lerninhalt	
Lehrveranstaltungs-sprache	de
Literatur	

ENITS-08: Mobile Security

Empfohlene Vorkenntnisse	Recommended knowledge and courses: - Computer Networks (Computernetze) - Network Security (Netzwerksicherheit) - Applied cryptanalysis	
Lehrform	Vorlesung/Labor	
Lernziele	After successful participation in the course students shall be able to: - understand and assess basic mobile and wireless security aspects - understand selected security protocols and connection to infrastructure services of wireless networks as well as assess the security level provided understand selected system security aspects, and vulnerability of mobile devices as well as assess the security level provided	
Dauer	1 Semester	
SWS	4 SWS	
Aufwand	Lehrveranstaltung:	60,00 h
	Selbststudium/Gruppenarbeit:	120,00 h
	Workload:	180,00 h
ECTS	6,00 ECTS	
Voraussetzungen für die Vergabe von LP	Mobile Security Lab: Report BE must be passed + written exam (K90, Mobile Security)	
Modulverantwortung	Prof. Dr. Dirk Westhoff	
Empfohlenes Semester	1. Semester	
Häufigkeit	jedes 2. Semester	
Verwendbarkeit	Master's Degree Program ENITS	

ENITS-09: Security in Ubiquitous Computing

Empfohlene Vorkenntnisse	- Computer networks / Network security - Cryptography - Application Security - Software Security	
Lehrform	Vorlesung/Labor	
Lernziele	Students will be able to read recent scientific literature and assess currently emerging security technologies.	
Dauer	1 Semester	
SWS	4 SWS	
Aufwand	Lehrveranstaltung:	60,00 h
	Selbststudium/Gruppenarbeit:	120,00 h
	Workload:	180,00 h
ECTS	6,00 ECTS	
Voraussetzungen für die Vergabe von LP	Lab Security in Ubiquitous Computing: Lab reports must be passed Lab Report (BE, Labor Security in Ubiquitous Computing) + written exam (K90, Security in Ubiquitous Computing)	
Modulverantwortung	Prof. Dr. Andreas Schaad	
Empfohlenes Semester	1. Semester	
Häufigkeit	jedes 2. Semester	
Verwendbarkeit	Master's Degree Program ENITS	

LEHRVERANSTALTUNG: Security in Ubiquitous Computing

Art	Vorlesung
Nr.	M1125
SWS	2,00 SWS
Lerninhalt	
Lehrveranstaltungs-sprache	de
Literatur	

LEHRVERANSTALTUNG: Security in Ubiquitous Computing Labor

Art	Labor
Nr.	M1126
SWS	2,00 SWS
Lerninhalt	
Lehrveranstaltungs-sprache	de
Literatur	

ENITS-10: Masterarbeit

Empfohlene Vorkenntnisse	All ENITS courses of the first and second semesters, especially the completed project work (ENITS-06).	
Lehrform	Wissenschaftl. Arbeit/Sem	
Lernziele	After successful participation in the course students shall be able to: - solve a given problem of IT security or organizational security, handle a question or design and implement an IT project independently, comprehensively by using theoretical and practical knowledge acquired during the course of studies - write a scientific report and to defend its chosen procedure and results obtained. Students shall thereby deepen their expert knowledge and methodological competences.	
Dauer	1 Semester	
SWS	0 SWS	
Aufwand	Lehrveranstaltung:	0,00 h
	Selbststudium/Gruppenarbeit:	900,00 h
	Workload:	900,00 h
ECTS	30,00 ECTS	
Voraussetzungen für die Vergabe von LP	Can only be started after successfully passing the IT-Security project and additional 30 credits from the 1st and 2nd semester. Preparation of the scientific report (AA) and presentation/defense (KO)	
Modulverantwortung	Prof. Dr. Dirk Drechsler	
Empfohlenes Semester	1. Semester	
Häufigkeit	jedes 2. Semester	
Verwendbarkeit	Master's degree program ENITS	

2. Semester

3. Semester