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**Aktuelle Modulbeschreibung**

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| **Module Number:** | **11889** |
| **Module Title:** | **Introduction into Cyber Security** |
|  | Einführung in die IT-Sicherheit |
| **Department:** | Faculty 1 - Mathematics, Computer Science, Physics, Electrical Engineering and Information Technology |
| **Responsible Staff Member:** | * Prof. Dr.-Ing. Panchenko, Andriy |
| **Language of Teaching / Examination:** | English |
| **Duration:** | 1 semester |
| **Frequency of Offer:** | Every winter semester |
| **Credits:** | 8 |
| **Learning Outcome:** | * Learning basic knowledge on IT security which enables the participants to study advanced IT security concepts resp. to aquire relevant skills by themselves. * Knowing technical terms to understand current publications and relevant systems. * Ability to apply aquired knowledge on real-world problems. |
| **Contents:** | Introductory definition of technical terms; protection objectives; security risks and threats; Malware; Attack techniques; security functions and services; Access control; basic cryptographic functions: symmetric crypto systems (stream and block ciphers, DES, AES)h public key cryptography (RSA, El-Gamal, ECC), Subject and object authentication (cryptographic hash values, message authentication codes), digital signatures, key management; cryptographic protocols (Diffie-Hellmann, Kerberos, Needham-Schröder, and others); protection of IT infrastructures, firewalls, intrusion detection; honeypots; |
| **Recommended Prerequisites:** | None |
| **Mandatory Prerequisites:** | None |
| **Forms of Teaching and Proportion:** | * Lecture / 4 Hours per Week per Semester * Practical training / 2 Hours per Week per Semester * Self organised studies / 150 Hours |
| **Teaching Materials and Literature:** | Provided on the homepage of the chair. |
| **Module Examination:** | Prerequisite + Final Module Examination (MAP) |
| **Assessment Mode for Module Examination:** | **Prerequisite:**   * Successful treatment of all assigned project tasks including successful presentation of the results in the laboratory course   **Final module examination:**   * Written examination, 90 min. **OR** * Oral examination, 30-45 min. (with small number of participants)   In the first lecture it will be anounced, if the examination will be offered in written or oral form. |
| **Evaluation of Module Examination:** | Performance Verification – graded |
| **Limited Number of Participants:** | None |
| **Part of the Study Programme:** | * M.Sc. / Cyber Security (research-oriented profile) / Prüfungsordnung 2017 * M.Sc. / eBusiness (research-oriented profile) / Prüfungsordnung 2007 * Abschluss im Ausland / Environmental and Resource Management / keine Prüfungsordnung * Abschluss im Ausland / Informatik / keine Prüfungsordnung * M.Sc. / Informatik (research-oriented profile) / Prüfungsordnung 2008 - 2. SÄ 2017 * M.Sc. / Informations- und Medientechnik (research-oriented profile) / Prüfungsordnung 2017 * Abschluss im Ausland / Power Engineering / keine Prüfungsordnung * M.Sc. / Wirtschaftsingenieurwesen (research-oriented profile) / Prüfungsordnung 2008 |
| **Remarks:** | * Study programme Cyber Security M.Sc.: Mandatory module * Study programme Computer Science M. Sc.: Compulsory elective module in complex "Applied and Technical Computer Science" (level 400). * Study programme Information and Media Technology M. Sc.: Compulsory elective module in "Dependable HW/SW-Systems". |
| **Module Components:** | * Lecture: Introduction into Cyber Security * Accompanying laboratory * Related examination |
| **Components to be offered in the Current Semester:** | * [120510 Lecture Introduction into Cyber Security - 4 Hours per Week per Semester](https://www.b-tu.de/qisserver3/rds?state=verpublish&status=init&vmfile=no&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung&veranstaltung.veranstid=74690) * [120511 Exercise Introcuction into Cyber Security - 2 Hours per Week per Semester](https://www.b-tu.de/qisserver3/rds?state=verpublish&status=init&vmfile=no&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung&veranstaltung.veranstid=74691) * [120514 Examination Introduction into Cyber Security](https://www.b-tu.de/qisserver3/rds?state=verpublish&status=init&vmfile=no&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung&veranstaltung.veranstid=77743) |
| **Phase-out Module:** | Follow-up Module since: 28.11.2016   * [12513 IT-Sicherheit](https://www.b-tu.de/qisserver3/rds?state=modulBeschrDetailInfo&moduleParameter=modDescr&struct=auswahlBaum&nextdir=qispos/modulBeschr/bearbeiter&next=redTree.vm&createInfoTree=Y&create=blobs&expand=1&nodeID=auswahlBaum|modul:pordnr=7085&lastState=modulBeschrBearbeiter&rest=A&objLanguage=de&pord.pordnr=7085&purge=y&topitem=modules&subitem=&asi=) |