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**Aktuelle Modulbeschreibung**

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| **Module Number:** | **11892** |
| **Module Title:** | **Software Security** |
|  | Softwaresicherheit |
| **Department:** | Faculty 1 - Mathematics, Computer Science, Physics, Electrical Engineering and Information Technology |
| **Responsible Staff Member:** | * Prof. Dr.-Ing. Helke, Steffen |
| **Language of Teaching / Examination:** | English |
| **Duration:** | 1 semester |
| **Frequency of Offer:** | Each winter semester odd year |
| **Credits:** | 6 |
| **Learning Outcome:** | Students who have successfully finished this module have a good knowledge in security engineering. They are capable to model, design and analyze secure software systems. They know how to implement security requirements using state-of-the-art techniques. Furthermore they will  be able to prepare a self-directed non-trivial topic on security aspects and to give an oral presentations on it. |
| **Contents:** | Security engineering: specifying, analyzing and verifying of security  requirements, protection goals and protection mechanisms, risk management based on threat analyses, security standards, formal models for  computer security, cryptographic foundations and algorithms, specifying and analyzing security protocols, challenges in security engineering |
| **Recommended Prerequisites:** | Knowledge of:   * basics of software engineering * basics in mathematics (logic, algebra, number theory) |
| **Mandatory Prerequisites:** | None |
| **Forms of Teaching and Proportion:** | * Lecture / 2 Hours per Week per Semester * Exercise / 2 Hours per Week per Semester * Self organised studies / 120 Hours |
| **Teaching Materials and Literature:** | **Books in English**   * Ross Anderson: Security Engineering, Wirley, 2001. * Jan Jürjens: Secure Systems Development with UML, 2010. * Bruce Schneier: Applied Cryptography, Wiley, 1996. * Eduardo Fernandez-Buglioni: Security Patterns in Practice: Designing Secure Architectures Using Software Patterns, 2013.   **Books in German**   * Claudia Eckert: IT-Sicherheit, Oldenbourg, 2015. * Andreas Pfitzmann: Sicherheit in Rechnernetzen, Skript, 2000. |
| **Module Examination:** | Prerequisite + Final Module Examination (MAP) |
| **Assessment Mode for Module Examination:** | **Prerequisite:**   * Successful treatment of exercise tasks including successful presentation of results in the exercise courses (75% must be reached)   **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. / Angewandte Mathematik (research-oriented profile) / Prüfungsordnung 2008 * M.Sc. / Cyber Security (research-oriented profile) / Prüfungsordnung 2017 * 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 |
| **Remarks:** | * Study programme Computer Science M. Sc.: Compulsory elective module in complex "Practical Computer Science" (level 400). * Study programme Information and Media Technology M. Sc.: Compulsory elective module in complex "Dependable HW/SW-Systems". * Study programme eBusiness M. Sc.: Compulsory elective module in complex "Development and Deployment of eBusiness Systems". * Study programme Cyber Security M.Sc.: Compulsory elective module in complex "Cyber Security Methods". * Study programme Applied Mathematics M. Sc.: Compulsory elective module in field of application "Computer Science".   If there is no need that the module is taught in English, alternatively the german version 11478 "Softwaresicherheit" may be offered instead. Modules 11892 "Software Security" and 11478 "Softwaresicherheit" can not be combined. |
| **Module Components:** | * Lecture: Software Security * Accompanying exercise * Related examination |
| **Components to be offered in the Current Semester:** | * [120820 Lecture Software 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=74649) * [120821 Exercise Software 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=74707) * [120823 Examination Software Security](https://www.b-tu.de/qisserver3/rds?state=verpublish&status=init&vmfile=no&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung&veranstaltung.veranstid=76118) |