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**Aktuelle Modulbeschreibung**

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| **Module Number:** | **11886** |
| **Module Title:** | **Dependability and Fault Tolerance** |
|  | Zuverlässigkeit und Fehlertoleranz |
| **Department:** | Faculty 1 - Mathematics, Computer Science, Physics, Electrical Engineering and Information Technology |
| **Responsible Staff Member:** | * Prof. Dr.-Ing. habil. Hübner, Michael |
| **Language of Teaching / Examination:** | English |
| **Duration:** | 1 semester |
| **Frequency of Offer:** | Every winter semester |
| **Credits:** | 6 |
| **Learning Outcome:** | Students learn to regard and to analyze digital circuits and systems with respect to their reliability and dependability. They also learn how to implement mechanism for a fault tolerant behaviour into digital circuits and systems. |
| **Contents:** | Introduction: Problems of system reliability and dependability.  Chapter 1: Faults and fault mechanisms in digital circuits and systems.  Chapter 2: Technologies for IC production testing.  Chapter 3: Methods for built-in self test (off-line).  Chapter 4: Methods and Architectures for on-line fault detection and compensation.  Chapter 5: Basic architectures for reconfigurable and self-repairing circuits and systems |
| **Recommended Prerequisites:** | Basic knowledge in digital design, electrical engineering and integrated electronics. |
| **Mandatory Prerequisites:** | No successful participation in module *12476 Zuverlässigkeit und Fehlertoleranz*. |
| **Forms of Teaching and Proportion:** | * Lecture / 2 Hours per Week per Semester * Laboratory training / 2 Hours per Week per Semester * Self organised studies / 120 Hours |
| **Teaching Materials and Literature:** | Script and presentations available for downloading. List of references is presented at the beginning of the course. Problems for exercises and instructions for lab experiments can be downloaded. |
| **Module Examination:** | Prerequisite + Final Module Examination (MAP) |
| **Assessment Mode for Module Examination:** | **Prerequisite:**   * Successful completion of exercises and presentation of results in course   **Final module examination:**   * Oral examination, 30-45 min. |
| **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 * Ph.D. / Dependable Systems / Prüfungsordnung 2012 * Abschluss im Ausland / Environmental and Resource Management / keine Prüfungsordnung * M.Sc. / Informatik (research-oriented profile) / Prüfungsordnung 2008 - 2. SÄ 2017 * M.Sc. / Physik (research-oriented profile) / Prüfungsordnung 2008 * Abschluss im Ausland / Power Engineering / keine Prüfungsordnung |
| **Remarks:** | * 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 "Computer Based Systems". * Study programme Cyber Security M.Sc.: Compulsory elective module in complex "Computer Science". * Study programme Physics M. Sc.: Compulsory elective module in physical subsidiary subject "Computer Science" (good knowledge of electronics required). |
| **Module Components:** | * Lecture: Dependability and Fault Tolerance * Accompanying laboratory * Related examination |
| **Components to be offered in the Current Semester:** | * [120440 Lecture Dependability and Fault Tolerance - 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=74744) * [120441 Practical training Dependability and Fault Tolerance - 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=74745) * [120443 Examination Dependability and Fault Tolerance](https://www.b-tu.de/qisserver3/rds?state=verpublish&status=init&vmfile=no&moduleCall=webInfo&publishConfFile=webInfo&publishSubDir=veranstaltung&veranstaltung.veranstid=75535) |