Module:	***Dependability of Computer Systems***
Lecturer:	*Prof. Dr.-Ing. habil. Peter Sobe*
Language:	*English*
Teaching Method:	*Lecture, practical demonstration and tutorial*
Credit Points:	*1 ECTS*
Attendance requirements:	*Basics in combinatorics, calculation of probabilities, computer architecture*
Goals / Skill:	*This lecture introduces common dependability problems of computer hardware, distributed systems and software. The students obtain an overview of techniques to improve the reliability of systems (e.g. fault and failure detection, reconfiguration, use of stand-by resources). A selection of mathematical models is introduced for system evaluation w.r.t. reliable operation. A result of the lecture should be an intensified attention on dependability problems, the ability to assess risks and to interpret measures, and the ability to model systems and their structural and operational variants.*
Detailed Content:	*1: Measures and their interpretation: reliability, failure probability, availability, mean time to failure* *2. Dependability concepts: common systems and dependable systems (e.g. fault-tolerant systems), overview on dependability techniques* *2: Structural system view, fault-trees, reliability-block-diagrams, calculation of reliabilities based on component reliabilities and on the system structure* *3: Reliability of systems with repair/reconfiguration. Modelling of the structure and the repair/reconfiguration of a system by Markov models, simulative analysis of Markov models, Interpretation of the results*
Media Used:	*Electronic Presentation, Blackboard Illustrations, Practical Demonstrations*
Literature:	*Written material will be provided during summer school.* Selected for further reading: *A.L. Reibman and M. Veeraraghavan: Reliability Modeling: An Overview for System Designers. In: Advances in Ultra-Dependable Systems, N. Suri ; C.J. Walter; M M. Hugue (Eds.), IEEE Computer Society Press, 1995* *M. Walter ; W. Schneeweiss: The modeling world of reliability/safety engineering. Hagen : LiLoLe, 2005.*