Module:	**Software Reliability:** **Runtime Verification and Runtime Reflection**
Lecturer:	Prof. Dr. rer. nat. Martin Leucker
Language:	English
Teaching Method:	Lecture and practical exercise
Credit Points:	1 ECTS
Attendance requirements:	Basics in computer science and mathematics, especially logic, to the extent which is characteristic for a third term student in computer science
Goals / Skill:	The student will learn about techniques for monitoring systems at runtime and to build automatic means for healing systems in case of unforeseen behaviour. He or she will study monitor synthesis approaches as wells basics of controller synthesis to reconfigure systems at runtime. The **focus** of the module is on understanding the concepts and mechanisms of runtime verification and runtime reflection. The **goal** is to enable the student to apply runtime verification techniques to enrich the reliability of systems.
Detailed Content:	- Specification of correctness properties. - Monitor synthesis algorithms. - Diagnosis and Reconfiguration. - Code manipulation. - jUnitRV
Media Used:	Electronic Presentation, Blackboard Illustrations, Practical Demonstrations
Literature:	Martin Leucker: Teaching Runtime Verification, RV 2011, Springer, 2012
Assigned Tutorials:	Tutorial 3: Observation, Analytics and Anonymity Techniques • Understand the tracking and observation techniques, to provide knowledge on countermeasures and to sensitize to possible use and misuse. Tutorial 4: Cracking • Learning the possibilities with penetration test tools to gather security relevant information of a dedicated server system.
Suggested Reading before the start of the summer school:	A text on model checking could be helpful. For example: Baier and Katoen: Principles of Model Checking, The MIT Press, 2010.