Module title: Test Oriented Development

Module ID	Workload	Credits	Semester	Frequency of Offering	Duration
MI23	150 h	5	2	yearly	1 semester

Workload	Attendance	Preparation and Follow-Up	Private Study	Preparation for Exam and Exam	Total
S	30 h / 2 SWS	15 h	5 h	40 h	
P	30 h / 2 SWS	30 h			
Total	60 h / 4 SWS	45 h	5 h	40 h	**150 h**

1	**Scheduled Group Size:** SU: 35 students, P: 15 students
2	**Subject Knowledge / Skills** *The students know various testing methodologies, how they are used in different product development processes (traditional V-model and agile software development) and which soft skills are needed for including test activities successfully in the product development cycle. Upon completion of the course they can evaluate the different testing methodologies, use them and explain their effects for increasing the system/software quality.*
3	**Content / Syllabus** *The success of software development projects depends upon choosing an adequate methodology for creating the software and to ensure a high quality by static and dynamic testing of the software code, the models (in model driven environments) and the usability of the HCI. This course concentrates on the testing methodologies needed in traditional (heavy-weight) development environments with test levels (form unit to acceptance test) and agile development environments with continuous integration.* • *Basic principles and concepts (according to the International Software Testing Qualifications Board - ISTQB)* • *Test Driven Development (TDD)* • *Functional and non-functional testing* • *Cost efficient definition of test strategies* • *Evaluating of test strategies with CMMI (Capability Maturity Model Integration), SPICE (Software Process Improvement and Capability Determination) and TPI (Test Process Improvement)*
4	**Teaching Format** *Lecture with integrated exercises and accompanying practical work in a laboratory*
5	**Prerequisites** *None*
6	**Recommended Qualifications for the Participation** *Programming skills in C (mandatory), basic knowledge of software engineering*

7	**Assessment** *Written assignments which are presented orally*
8	**Prerequisites for Granting ECTS Credits** *Exam passed*
9	**Usage of this Module in Other Degree Courses** *None*
10	**Contribution to Final Score** 5,56 %
11	**Convenor** Professor of Computer Science
12	**Language of Instruction** *English*
13	**Reading List** • *Black, R; et al.: Software Test Foundations of Software Testing: ISTQB certification, Cengage Learning EMEA, 3 edition, January 6, 2012.* • *Beck, K.: Test-Driven Development – By Example, Addison Wesley, 8. November 2002* • *Binder, R.: Testing Object-Oriented Systems, Patterns, and Tools (ARP/AOD), Addison-Wesley Professional, 1 edition, November 7, 1999.* • *De Vries, G.; et al.: TPI Next: Business Driven Test Process Improvement, UTN Publishers, 2009.* • *Sangwan, R; et al.: Global Software Development Handbook, Auerbach Publications, September 29, 2006.* • *Hetzel, W.; et al.: The complete Guide to Software Testing, second edition, Addison Wesley, 8. November 2002.* • *http://www.istqb.org/downloads/glossary.html* *Further up-to-date references will be provided in class.*