Program of Studies:	Master Program Bioinformatics
Name of the module:	Software Engineering
Abbreviation:	I-M-10
Subtitle:	Core lecture
Modules:	Lecture 4 h (weekly) Tutorial 2 h (weekly)
Semester:	1st -3rd Semester / At least once every two years
Responsible lecturer:	Prof. Dr. Andreas Zeller
Lecturer:	Prof. Dr. Andreas Zeller
Language:	English
Level of the unit/ Mandatory or not :	Graduate course / mandatory elective
Course type/weekly hours:	Lecture 4 h (weekly) Tutorial 2 h (weekly) Tutorials in groups of up to 20 students
Total workload:	270 h = 90 h of classes and 180 h private study
Credits:	9
Entrance requirements:	For graduate students: none
Aims/Competences to be developed:	- The students know and apply modern software development techniques. - They are aware of systematic elicitation of requirements and how to document them. - They are aware of advanced quality assurance techniques such as test coverage, program analysis, and verification and know about the appropriate standards. - They know modern paradigms of programming and design, and know when to use them. - They know the standards of project management and project organization and can assess the state of given projects as well as suggest consequences to reach specific targets. - They apply these techniques in a project in small teams.

Content:	- Software Processes (Testing process, ISO 9000, maturity model, extreme programming) - Modeling and design (requirements engineering, formal specification, proofs, model checking) - Programming paradigms (aspect-oriented, generative, and component-based programming) - Validation (Testing, Reliability assessment, tools) - Software maintenance (configuration management, reengineering, restructuring) - Project skills (organization, structure, estimations) - Human resources (communication, assessment) Controlling (metrics, change requests, risk and quality managament) - Controlling (metrics, change requests, risk and quality management)
Assessment/Exams:	- Successful project completion (including deliverables such as requirements, design, implementation) - Successful project demonstration - Regular attendance of classes - Passing the final exam
Literature:	Will be announced on the course website.