

# Software Engineering I

## Formal Details of the Module

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module no.	location in course of study 2 <sup>nd</sup> year	duration 2 terms	responsibility	language English
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## Teaching Methods

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teaching forms lecture, tutorial, lab work	teaching methods lecture, discussion, group work
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## Forms of Examination

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examination forms program design	exam duration (in minutes)	Grading yes
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## Workload and ECTS Credit Points

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total workload (in hours) 270	of which online 96	of which self-study 174	ECTS 9
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## Qualification Goals and Competences

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### professional competence

Students know the basics of the software development process. They are able to analyse a given problem and design, implement, quality-assure and document computer-aided solutions. They know the methods of the respective project phases and can apply them. They can evaluate proposed solutions for a given problem competitively and make corrective adjustments.

### methodical competence

Students are able to discuss problem analyses and proposed solutions, as well as the interrelationships of the individual phases with experts. They can develop simple software projects autonomously or participate effectively in a team for complex projects. They can present and justify their designs and solutions. In the discussion in the team, they can critically deal with different points of view and evaluate them.

### personal and social competence

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### interdisciplinary competence

Upon completion of the module, students can familiarise themselves with tools independently. They combine the software development process with project management techniques and consider time and cost factors during the project.

## Learning Units and Contents

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teaching and learning units	online	self-study
Basics of Software Engineering	96	174

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- Process models
- Phases of SW engineering and their interrelationships
- Requirements specification and functional specification, use cases
- Analysis and design models (e.g. modelling techniques of UML or SADT)

- Software architecture, interface design
- Code guidelines and code quality: reviewing and test planning, execution and evaluation
- Continuous integration
- Version management
- Operation and maintenance
- Different types of documentation are dealt with on a phase-specific basis
- Implementation of a concrete software development project in project teams of medium size (e.g. a web service / web app, a stand-alone application or a control system)

### Specifics

The individual contents of the course are to be deepened by means of a project. In the individual project phases, the use of suitable methods, documentation and quality assurance should be dealt with. Suitable tools are to be used. In the group-oriented laboratory exercises, extracurricular qualifications are practised and (partial) results are presented. This module also includes up to 24 hours of guided self-study in the form of practice hours, labs or projects. Here the students work on exercises and/or in-depth assignments.

### Prerequisites

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### Literature