

Software Engineering

Welcome to the Software Engineering course. This course is for B.Sc. Information Systems students, as well as anyone else, interested in modern software engineering principles and practices. Through a series of lectures and labs, you will gain both theoretical foundations and practical skills for engineering software products in today's world of cloud computing, agile development, and DevOps.

Learning Goals

This course introduces you to the principles, methods, and tools used in modern software engineering. You will learn how software products are conceived, designed, developed, tested, and maintained, with a focus on current industry practices.

You will understand the full lifecycle of software products, from requirements engineering and agile development to software architecture, cloud-based deployment, and DevOps. The course covers both product-oriented and process-oriented perspectives, equipping you with the knowledge to work effectively in software development teams.

Through practical labs and hands-on exercises, you will apply what you learn in lectures to concrete software engineering problems, reinforcing your understanding of topics such as requirements, architecture, testing, security, and deployment.

Course Structure

This course consists of:

- 14 lectures
- 7 Labs

The course is held twice per week. Make sure to have a look at ILIAS to see what is being offered and when.

The lectures cover:

1. Software Products
2. Software Processes
3. Requirements Engineering
4. Agile Software Engineering
5. Features, Scenarios, and Stories
6. Software Architecture

7. Cloud-Based Software
 8. Microservices Architecture
 9. Security and Privacy
 10. Reliable Programming
 11. Software Testing
 12. DevOps and Code Management
 13. Product and System Engineering Processes
 14. Exam preparation
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Prerequisites

As this is a mandatory course, the content will assume that you have already learned the content provided by the following mandatory BSc IS modules:

- Grundlagen der Informatik
 - Einführung in die Programmierung
 - Softwareentwurf & Java
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Course Materials

No book purchase is needed. Attending lectures and labs and studying from the slides covers all that is needed.

The course is based on contents derived from the following two important books on software engineering education:

- Sommerville, I. (2019). Engineering software products an introduction to modern software engineering. Harlow, England London New York Pearson.
 - Sommerville, I. (2015). Software engineering (10th ed.). Pearson Education.
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Course Evaluation

The evaluation for this course is based on a final written exam.

Contact Information

The course is held by:

- Prof. Dr. Daniel Graziotin, lecturer, examiner, and responsible for the module

- M.Sc. Verena Ebert, lab instructor

We look forward to meeting you!