

Syllabus

Software Engineering and Cloud Computing, 6hp

Issued by the WASP graduate school management group *draft*

Main field of study

Software

Course level

PhD student course

Course offered for

PhD Students in the WASP graduate school

Entry requirements

The students are expected to have a background in computer science, computer engineering, electrical engineering or similar. The students are expected to have basic programming skills.

Intended learning outcomes:

Software engineering:

Have a basic understanding of Software Engineering terminology, in particular the differences between process-, product-, business-, and human-related concerns during software development. Understanding that building and deploying modern software systems, including machine learning (ML) models, is more than finding, creating, and tuning an ML algorithm on relevant data. Have basic knowledge about human factors in software systems development and use. Learn about tools used in software development and be able to apply them in their own projects, e.g. (code) repositories, test design and automation, and refactoring. Understand differences between AI and ML for Software Engineering (AI4SE) and SE for AI/ML (SE4AI), i.e. AI Engineering, and be able to give examples of recent research of each type.

Cloud computing:

Have a basic knowledge of Cloud terminology, infrastructure, and architectures. Understand distributed processing of data on the cloud. Learn about the economic arguments for/against using Cloud. Have basic knowledge of Serverless and Edge computing, as well as performing DevOps in the Cloud. Learn about use of Cloud from an industry perspective.

Course content

- Virtualisation and container technologies
- Serverless computing
- Edge computing
- Cloud orchestration (e.g. Kubernetes)
- Distributed processing
- Cloud economics

- Technical Debt in ML Software Systems
- AI4SE and SE4AI
- Behavioral Software Engineering
- AI/ML Engineering
- Industrial SE; V model, reviews, test automation
- Agile processes

Teaching and working methods

Software engineering:

- Interactive lectures
- Industry keynotes
- Apply software engineering on students' own projects

Cloud computing:

- Interactive lectures
- Industry keynotes
- Practical experience using the Ericsson data center

Examination

Practical Assignments

Grades

Fail or Pass