

COURSE SYLLABUS

State-of-the-art in SE4AI, 7.5 credits

Spetsforskning i SE4AI, 7.5 högskolepoäng

Course Code:	T2HEAS	Education Cycle:	Second-cycle level
Confirmed:	Sep 01, 2025	Disciplinary domain:	Technology
Valid From:	Aug 30, 2027	Subject group:	Computer Technology
		Specialised in:	A1F Second cycle, has second-cycle course/s as entry requirements
		Main field of study:	Computer Science

Intended Learning Outcomes (ILO)

On completion of the course the student shall:

Knowledge and understanding

- display knowledge of current methods, trends and challenges in research on software engineering (SE), artificial intelligence (AI) and machine learning (ML); focusing on the intersection of these areas
- demonstrate comprehension of how to apply state-of-the-art methods for software engineering, AI and ML
- show familiarity with top conferences and journals in the research area of software engineering, AI and ML

Skills and abilities

- demonstrate the ability to find relevant scientific literature on state-of-the-art research within software engineering, AI and ML
- demonstrate the ability to analyse, present and critically review recent scientific work within software engineering, AI and ML

Judgement and approach

- demonstrate the ability to critically assess scientific papers in relevant areas of software engineering, AI and ML

Content

The course is an advanced course in state-of-the-art research and practice in the field of software engineering, focusing on AI- and ML-enabled systems, covering advanced research and recent trends in the field.

Specifically, the course contains a selection of state-of-the-art research and trends in the field, discusses areas in need of further research, and gives students the opportunity to evaluate and critically examine a subset of the research topics covered.

The course includes the following elements:

- Exploration of recent trends in the field, alternating theory and practice
- Examination of current theories, methods and practices in software engineering for AI and ML
- Analysis of the main research challenges and future research directions in engineering AI-enabled systems

Type of instruction

The course is a seminar-style course designed to enable students to explore research trends, methods and challenges at the intersection of SE and AI/ML. Teaching primarily consists of discussion-based seminars and tutoring. The topics are based on recent research developments in SE, AI, ML and their intersection, and will be presented by instructors, invited guests (e.g., researchers, practitioners) and students.

Language of instruction is English.

Entry requirements

Passed courses at least 90 credits within the major subject computer engineering, computer science, informatics, information systems or information technology, including a minimum of 15 credits in mathematics and at least 30 credits in programming/software development, or alternatively passed courses at least 150 credits from the programme Computer Science and Engineering, and taken Advanced Software Engineering for AI, Developing LLM-enabled Systems, 7.5 credits and Deep Learning, 7.5 credits.

Examination and grades

The course is graded 5, 4, 3 or U.

The examination is based on active participation in the discussion seminars (Seminar), a presentation by the participants on a relevant state-of-the-art topic within SE, AI and ML (Presentation), as well as the completion of a research project (Project) that includes the preparation of a draft paper.

Registration of examination:

Name of the Test	Value	Grading
Project ¹	2.5 credits	5/4/3/U
Seminar	2.5 credits	G/U
Presentation	2.5 credits	G/U

¹Determines the final grade of the course, which is issued only when all course units have been passed.

Course literature

Please note that changes may be made to the reading list up until eight weeks before the start of the course.

Compulsory readings may include books, book chapters or journal/magazine/conference articles.