DD2585 Programmable Society with Blockchains and Smart Contracts 7.5 credits

Programmerbart samhälle med blockkedjor och smarta kontrakt

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

The official course syllabus is valid from the autumn semester 2025 in accordance with the decision by the Faculty Board: J-2024-2361.Date of decision: 2024-10-08

Grading scale

P, F

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

Knowledge and skills in programming, 6 credits, equivalent to completed course DD1337/DD1310-DD1319/DD1321/DD1331/DD100N/ID1018.

Knowledge in algorithms and data structures, at least
6 higher education credits, equivalent to completed course
DD1338/DD1320/DD1325/DD1328/DD1338/DD2325/ID1020/ID1021.

Knowledge in modern software development technology at second-cycle, 7.5 higher education credits, equivalent to completed course DD2480/ID2207.

Knowledge in at least one of the following fields:

• cryptography, 7.5 higher education credits, equivalent to completed course DD2520/DD2448

or

• distributed systems, 7.5 higher education credits, equivalent to completed course ID2201/DD2443

or

• computer security, 6 higher education credits, equivalent to completed course DD2395/DD2391/IV1013/IK2206.

Active participation in a second-cycle course offering where the final examination is not yet reported in LADOK is considered equivalent to completion of the course. Being registered for a course counts as active participation. The term 'final examination' encompasses both the regular examination and the first re-examination.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After passing the course, the student shall be able to

- design, develop and run blockchain protocols and nodes
- use current programming languages for smart contracts
- use and improve software engineering for smart contracts (testing, deployment, continuous integration/delivery)
- explain technology for distributed ledgers (DLT) and smart contracts in different implementation domains (decentralised finance, reporting, law, control with distributed autonomous organisations, digital art)

in order to

- obtain the necessary skills of a blockchain engineer,

smart contract engineer, web3 engineer or digital artist

- be able to exercise lifelong learning in fast changeable technology.

Course contents

- technology for distributed data (DLT, Distributed Ledger Technology), especially blockchains
- programming with smart contracts
- software development for the programmable society
- current research about **distributed ledger technology** and smart contracts

Examination

- PRO1 - Project Work, 7.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Project-based assessment, both oral and written

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.