



FID3022 Blockchain Fundamentals: Technology and Applications 7.5 credits

Grunder i Blockchainteknik: Tekniker och tillämpningar

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

Establishment

The official course syllabus is valid from the spring semester 2026 as decided by the Faculty Board: dnr PA-2026-0008. Decision date: 2026-06-16.

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Enrolled as a doctoral student.

Intended learning outcomes

After the course the student will be able to:

- Demonstrate systematic understanding of Blockchain and capacity to scholarly analyze and criticize interactions between all its components.

- Reflect on the ideas and technologies related to Blockchain with insight on its possibilities and limitations, as well as examine how it is currently used in society and evaluate how it can be used for new purposes and under different application domains.
- Identify the need for further knowledge in improving Blockchain technology with insights from the students own fields of research/interest.

Course contents

This course will provide a comprehensive survey of topics relevant to Blockchain technology and to the ecosystem surrounding it. The course covers the main components that make Blockchain, starting from the basics of cryptography to the related aspects of game theory and economics. A solid understanding of Blockchain fundamentals is established by decomposing Bitcoin and building it from the bottom up, exploring and analyzing ideas behind the organization of its forming components. The course also surveys preceding technologies for digital currency and explains the relationship between crypto-currencies and Blockchains in order to build the full picture of the ecosystem surrounding blockchain technology. Participants in the course will be required to reflect on the arrangement of the different techniques, rules, and guidelines that form Blockchain and suggest possible extensions to the technology from their own research domains. Student presentations with in-depth discussions will be organized around specific topics relevant to Blockchains and their application under different domains.

Examination

- EXA1 - Examination, 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.

P/F

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.