



DD249U Project course in System Security 7.5 credits

Projektkurs i systemsäkerhet

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

Establishment

Course syllabus for DD2497 valid from Autumn 2022

Grading scale

P, F

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

Language of instruction

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

Intended learning outcomes

Having passed the course, the student should be able to:

- identify vulnerability of systems, exploit them and evaluate their impact
- compare the efficacy of different countermeasures
- design and implement security mechanisms for computer systems
- document their arguments and results

in order to be able to evaluate and improve the security of computer systems.

Course contents

The course includes several technologies for security of system software. The technologies are based on memory isolation, monitoring, static analysis and diversification to prevent, discover or mitigate illegal behaviour.

- Part I. Trends in system security: buffer overflow, code injection, control flow manipulation, side channel attack, error injection
- Part II. Design of system software
- Part III. Mechanisms for system security: memory inspection, remote control, memory address randomization, reliable start, isolation of error in software

The main assignment in the course are to design, implement and evaluate. The work is carried out in groups as a project.

We base our experiments on an existing operating system.

Examination

- INL1 - Project documentation, 1.0 credits, grading scale: P, F
- PRO1 - Project work, 6.5 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.

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.