ID1206 Operating Systems 7.5 credits

Operativsystem

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

Establishment

Course syllabus for ID1206 valid from Autumn 2017

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

- ID1018 Programming I
- IS1200 Computer Hardware Engineering
- ID1020 Algorithms and Data Structures
- ID1019 Programming II

Language of instruction

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

Intended learning outcomes

Students should on completion of the course

demonstrate understanding of abstractions and virtualisation of resources such as

- memory
- processor
- persistent storage

be able to describe how an operating system is implemented to offer

- a virtual memory
- several executing threads
- scheduling of processes
- process communication via signals and shared memory
- a file system for persistent storage
- handling of users and rights
- safety and robustness

at implementation of a program be able to use

- the system calls of an operating system
- shared memory in multi-threaded programming
- communicating processes.

Course contents

The course provides knowledge of the principles of and how one can implement

- abstractions of hardware
- virtualisation of resources and scheduling of tasks; mainly as regards execution, memory and persistent storage.

The structure of an operating system is studied to increase the knowledge of these concepts and also give skills in efficient use of the abstraction level that an operating system offers.

Disposition

The course consists of 12-16 lectures to which practical smaller assignments be connected. The practical assignments are intended to give an increased understanding of the concepts that are presented as well as to give the practical skills that is required to satisfy the aim of the course.

The course also has a larger assignment that should be carried out during the course. The assignment should give increased understanding of how an operating system is built in practice and how it functions.

Course literature

The course will be based on:

Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau, "Operating System: Three Easy Pieces", Arpaci-Dusseau Books.

Reference work:

Andrew S. Tanenbaum, "Modern Operating Systems", Prentice-Hall.

Examination

- SEMA - Seminar, 1.5 credits, grading scale: P, F
- TENA - Examination, 6.0 credits, grading scale: A, B, C, D, E, FX, 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.