IS1350 Operating Systems 7.5 credits

Operativsystem

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

Establishment

Course syllabus for IS1350 valid from Autumn 2010

Grading scale

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

Education cycle

First cycle

Main field of study

Information Technology, Technology

Specific prerequisites

Required pre-requisits are:

- Basic knowledge of C and assembly programming
- Digital design
- Computer organization and architecture
- Good knowledge and ability to program in high-level languages such as JAVA
- User experience from Unix/Linux and Windows

Language of instruction

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

Intended learning outcomes

The course is offered for students of the bachelor programmes in Computer Engineering and Information and Communication Technology. The course is currently only offered in Swedish. The course gives the student knowledge and practical skills to understand how a modern operating system is designed and implemented. It also enables the student to analyze the operation of an operating system from a system administration and security perspective.

After a completed course the student should be able to:

- understand and explain how modern operating systems are designed and implemented with focus on: processes, threads, scheduling, virtual memory management, file systems, I/O, device drivers and system calls
- understand an explain how different parts of an operating system interacts and how they and their implementation affect applications
- explain how the operating systems UNIX, LINUX and Windows are designed and the design choices made and make relevant comparisons
- know and explain the fundamentals of real-time operating systems and support for soft real-time
- explain the basics of synchronization
- adjust the memory management to fit the demands of different applications
- program simple device drivers and kernel modules for Linux and Windows
- explain basic methods to implement I/O
- configure and install a Linux kernel
- analyze and correct applications with regard to performance problems, erroneus behavior and security issues in Linux and Windows

Course contents

The course consists of lectures and a lab course

Course literature

Modern Operating Systems, Andrew S. Tanenbaum.
Third edition Prentice-Hall, Inc.

Examination

- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F

- LAB1 - Laboratory Work, 4.5 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.

Other requirements for final grade

The labs are performed in groups of one or two persons. The labs are examined and presented orally. All labs should be performed and examined during the academic year when the lab course was started. The lab course is graded depending on the number of higher grade assignments that are passed in addition to the mandatory assignments. The final grade, A-F, is based on the grade of the lab course and the written exam.

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.