



# EP120U Computer Systems 7.5 credits

Datorsystem

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

## Establishment

On 06/01/2020, the Head of the EECS School has decided to establish this official course syllabus to apply from autumn semester 2020, registration number: J-2020-1003.

## Grading scale

P, F

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

## 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 should be able to

- give an account of and discuss basic concepts for machine and software development of computers from logic to operating system
- design a computer from the ground based on given parts and models
- use program tools to test a given design
- give an account of the tasks that operating system carries out and be able to implement chosen parts of it

in order to carry out continued education against computer security.

## Course contents

The course gives an introduction to computer system from digital design, the main components of a computer and its architecture to the abstraction of a virtual machine with compiler and operating system.

Basic computer knowledge

- Construction of logical components, composition of the processor and the hardware and machine code of the computer and assembler.
- Virtual machine with a stack abstraction and compilation from VM to assembler.
- Compilation from high-level language to virtual machine.
- Fundamentals of operating system.
- Commonly occurring architectures with instruction set, cache structures and process kernels, and speculative execution.

Specialisation in selected aspects of operating system

- Implementation of a command interpreter for a UNIX system.
- Reverse compilation
- The Linux kernel
- Signals, Pipes

## Examination

- PRO1 - Project assignment, 5.0 credits, grading scale: P, F
- KON1 - Partial exam, 2.5 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.