Concurrent Programming and Operating Systems

Programme course

6 credits

Processprogrammering och operativsystem

TDDB68

Valid from: 2017 Spring semester

Determined by
Board of Studies for Computer Science
and Media Technology

Date determined
2017-01-25

Offered for the last time
Spring semester 2023

Replaced by
TDDE68

Main field of study

Computer Science and Engineering, Computer Science

Course level

First cycle

Advancement level

G2X

Course offered for

- Computer Science and Engineering, M Sc in Engineering
- Computer Science and Software Engineering, M Sc in Engineering
- Industrial Engineering and Management - International, M Sc in Engineering
- Industrial Engineering and Management, M Sc in Engineering
- Computer Science, Master's programme
- Mathematics, Master's programme

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

Programming courses both at a basic and advanced level. Data structures and algorithms, Computer hardware, Programming in C.

Intended learning outcomes

The course presents fundamental concepts of operating systems. The first part elaborates on concurrent processes and threads, with communication, synchronisation and scheduling, and shows how these are supported in current operating systems. The second part of the course presents the construction and functionality of modern operating systems.

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Course content

Concurrent programming: processes, threads, semaphores, monitors, message passing, deadlock. Operating systems: implementation of processes, file systems, process scheduling, memory management, secondary storage, input/output, security.
Examples are taken from contemporary operating systems such as Unix, Solaris, Linux, Mac-OS and Windows.

Teaching and working methods

A series of lectures presents the theory. Laboratory assignments complement the theory. Lessons prepare for the lab sessions.

Examination

UPG1	Voluntary lab assignment	0 credits	U, 3, 4, 5
LAB1	Laboratory Work	3 credits	U, G
TEN1	Written examination	3 credits	U, 3, 4, 5

UPG1 is marked as passed if the lab course is passed within the announced deadline and the participant is first-time registered on the course in the current year.
The questions in the written exam check how well the student has fulfilled the learning goals of the course. For passing the exam, deficits in fulfilling certain partial goals can be balanced by a better fulfilling of other partial goals.

Grades

Alternative-grade scale, LiU, U, 3, 4, 5

Other information

Supplementary courses:
Programming parallel computers - methods and tools, Multicore and GPU Programming, Real-time systems, Distributed systems, Computer networks, Computer architecture.

Department

Institutionen för datavetenskap

Director of Studies or equivalent

Ahmed Rezine

Examiner

Christoph Kessler

Course website and other links

http://www.ida.liu.se/~TDDB68

Education components

Preliminary scheduled hours: 60 h
Recommended self-study hours: 100 h

Course literature

Silberschatz, Galvin, Gagne: "Operating Systems Concepts", 7th edition, Wiley, 2005, eller en nyare edition. Laborationsmaterial på kursens hemsida.

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.

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