COURSE SYLLABUS
Operating Systems, 7.5 credits

Operativsystem, 7,5 högskolepoäng

Course Code:	TOSK18	**Education Cycle:**	First-cycle level
Confirmed by:	Dean Jun 1, 2019	**Disciplinary domain:**	Technology
Revised by:	Director of Education Feb 21, 2024	**Subject group:**	DT1
Valid From:	Aug 1, 2024	**Specialised in:**	G1F
Version:	3	**Main field of study:**	Computer Engineering

Intended Learning Outcomes (ILO)

After a successful course, the student shall

Knowledge and understanding
- Display knowledge of and be able to explain how operating system are constructed and works, especially when it comes to interrupts, processes, threads, and scheduling
- Display knowledge of what characterizes different kinds of real-time systems
- Display knowledge of and be able to explain the interaction between hardware and an operating system
- Display knowledge of and be able to describe some operating systems for embedded systems
- Display knowledge of how interrupts, jitter, and drift etc. affects a real-time system and how they can be minimized
- Display knowledge of how Linux operating systems are built especially regarding architecture, configuration, process handling, and file systems etc.

Skills and abilities
- Demonstrate skills in using programming interfaces in operating systems for creating threads / processes and establishing communication and synchronization between periodic threads / process
- Demonstrate the ability to use an operating system when developing an embedded system.

Judgement and approach
- Demonstrate the ability to use different methods to decide if a scheduling is feasible

Contents

To give basic knowledge of operating systems for real-time and embedded systems and how these can be configured and used by their programming interfaces.

The course covers the following topics:
- Introduction to real-time systems
- Structure of operating systems, especially those with real-time capabilities

- Concurrent programming
- Scheduling of real-time tasks
- Use of operating systems

Type of instruction

Teaching consists of lectures and laboratory exercises.

The teaching is conducted in English.

Prerequisites

Examination and grades

The course is graded 5,4,3 or Fail.

The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

Name of the Test	Value	Grading
Written examination[I]	4 credits	5/4/3/U
Laboratory Work	3.5 credits	U/G

[I] Determines the final grade of the course, which is issued only when all course units have been passed.

Course literature

Literature

The litterature list for the course will be provided one month before the course starts.

Title: Modern Operating Systems
Author: Andrew S. Tanenbaum, Herbert Bos
ISBN: 9781292061429

Title: Hard Real-Time Computing Systems
Author: Giorgio C. Buttazzo
ISBN: 9781461406754