CS-323

Introduction to operating systems

Kashyap Sanidhya

Cursus	Sem.	Type
Communication systems	BA5	Opt.
Computer science minor	H	Opt.
Computer science	BA5	Obl.

Language of teaching	English
Credits	5
Session	Winter
Semester	Fall
Exam	Written
Workload	150h
Weeks	14
Hours	**5 weekly**
Courses	2 weekly
Exercises	1 weekly
TP	2 weekly
Number of positions	

Remark

This course will be last given in autumn 2023

Summary

Introduction to basic concepts of operating systems.

Content

The purpose of this course is to discuss the basics of operating systems, it's concepts with a hand-on approach. Topics we will cover include operating system organization, system programming, and storage systems. Most of the time will be spent on multi-process systems (processes, interprocess communication, and synchronization), memory organization(paging), resource allocation and scheduling, file systems, and I/O. To benefit from the course, low-level programming skills (e.g., C) and preliminary knowledge on computer system and architecture. You will be asked to design and implement representative concepts, taught in the class, through labs, and assignments.

Keywords

Operating systems

Learning Prerequisites

Required courses

- CS-206 Parallelisme and concurrency
- CS-207 Programmation orientée système
- CS-212 Projet programmation système

Learning Outcomes

By the end of the course, the student must be able to:

- Manage key components of operating systems
- Interpret virtualization of resources
- Analyze persistence policies
- Manage concurrency between tasks

- Specify security aspects of operating systems
- Choose the right set of design choices for system software
- Critique the design of an OS

Transversal skills

- Communicate effectively with professionals from other disciplines.

Teaching methods

Lectures, labs, and exercises.

Expected student activities

- Attend lectures
- Participate in exercise hours
- Attend labs
- Submit solutions to labs
- Take final exam

Assessment methods

- Practical assessments through several programming labs during the semester.
- Theoretical assessments in the form of a midterm and final exams, and weekly homeworks.

Supervision

Office hours	Yes
Assistants	Yes
Forum	Yes

Resources

Virtual desktop infrastructure (VDI)

No

Bibliography

- Slides available on Moodle.
- (optional) Operating Systems: Three Easy Pieces, Andrea Arpaci-Dusseau, Remzi Arpaci-Dusseau

Ressources en bibliothèque

- Operating Systems : Three Easy Pieces / Arpaci-Dusseau

Moodle Link

- https://go.epfl.ch/CS-323