

CS-202

Computer systems

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Cursus	Sem.	Type
Communication systems minor	E	Opt.
Communication systems	BA4	Obl.
Computer science minor	E	Opt.
Computer science	BA4	Obl.
Cyber security minor	E	Opt.
HES - IC	E	Opt.

Language of teaching	English
Credits	8
Session	Summer
Semester	Spring
Exam	Written
Workload	240h
Weeks	14
Hours	8 weekly
Lecture	4 weekly
Exercises	4 weekly
Number of positions	

Summary

This course will teach operating systems and networks in an integrated fashion, emphasising the fundamental concepts and techniques that make their interaction possible/practical. Core lectures will be coupled with C programming lectures and assignments for hands-on experience.

Content

We will communicate these concepts and techniques through examples at different layers of the stack and draw connections/parallels between different aspects of computing systems.

- The role of the Operating System
- File systems
- Virtual memory
- Efficient resource management
- Networked applications
- The Internet
- Transport layer
- Network layer
- Link layer
- Data-centers and cloud systems

Learning Prerequisites**Required courses**

- CS-107 Introduction à la programmation
- CS-108 Pratique de la programmation orientée-objet
- CS-173 Fundamentals of Digital Systems (from 2024-2025)

Important concepts to start the course

- Basic Programming
- Basic computer architecture

Learning Outcomes

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

- Manage key elements of operating systems and networks
- Critique the design of an OS or network protocol
- Design and implement C programs and network applications
- Compare different OS functions and network protocols
- Investigate simple OS and network attacks
- Investigate the correctness of C programs through debugging

Teaching methods

- Ex cathedra
- Hands-on exercise sessions

Expected student activities

- Participate in lectures and exercise sessions
- Answer quizzes
- Submit programming assignments
- Take midterm and final exams

Assessment methods

- Programming assignments (by groups of two)
- Midterm and final exam
- Quizzes

Supervision

Office hours Yes

Resources

Moodle Link

- <https://go.epfl.ch/CS-202>

Prerequisite for

CS-311 The Software Enterprise - from ideas to products
CS-300 Data-Intensive Systems