

CS-200

Computer architecture

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Cursus	Sem.	Type
Communication systems	BA3	Opt.
Computer science minor	H	Opt.
Computer science	BA3	Obl.
Cyber security minor	H	Opt.
HES - IC	H	Opt.

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

Summary

This course completes the overview of computer architecture started at the first year.

Content

- Complex digital systems in VHDL
- Basic components of a computer
- Instruction Set Architectures
- Memory Hierarchy
- IOs and Exceptions
- Instruction Level Parallelism
- Multiprocessors and Cache Coherence

Learning Prerequisites**Required courses**

CS-173 Digital System Design

Recommended courses

None

Important concepts to start the course

- Digital logic (combinational and sequential circuits, FSMs)
- Basic notions of processors and assembly

Learning Outcomes

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

- Structure nontrivial assembly language programs
- Add interrupt handling logic in a processor and write simple exception handlers in assembler
- Understand the design principles of a modern memory hierarchy
- Understand the interaction mechanisms of system software with hardware

- Design pipelined digital circuits at Register Transfer Level
- Optimize the performance of a processor pipeline by reordering instructions

Teaching methods

- Ex cathedra
- Exercises
- Projects

Expected student activities

- Attending the course and exercise/lab sessions
- Completing the exercises and lab assignments
- Participating in the discussion on the forum

Assessment methods

- Graded lab assignments
- Midterm exam
- Written exam

Supervision

Office hours	Yes
Assistants	Yes

Resources

Moodle Link

- <https://go.epfl.ch/CS-200>

Prerequisite for

Computer Systems