

CS-209

**Computer architecture II**

Ienne Paolo

<b>Cursus</b>	<b>Sem.</b>	<b>Type</b>
Communication systems	BA4	Opt.
Computer science	BA4	Obl.
Electrical and Electronical Engineering	MA2, MA4	Opt.

Language of teaching	English
Credits	4
Session	Summer
Semester	Spring
Exam	Written
Workload	120h
Weeks	14
<b>Hours</b>	<b>4 weekly</b>
Courses	2 weekly
TP	2 weekly
<b>Number of positions</b>	

**Summary**

The course completes the introduction to computer architecture.

**Content**

- Inputs/Outputs and Interrupts
- Exceptions
- Computer Performance
- Pipelining
- Dynamic Scheduling
- Superscalar and VLIW Processors
- Multiprocessors and Cache Coherence

**Keywords**

Computer Architecture, Processor, CPU, ILP, Multiprocessors, Coherence

**Learning Prerequisites****Required courses**

- CS-173 (Digital System Design)
- CS-208 (Computer Architecture I)

**Learning Outcomes**

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

- Design a simple exception handler in assembler
- Design pipelined digital circuits at Register Transfer Level
- Optimize the performance of a processor pipeline by reordering instructions
- Explain possible solutions to the cache coherence problem

**Teaching methods**

Ex-cathedra courses and labs on an FPGA board.

**Assessment methods**

- Lab I (13%)
- Pipeline simulation (4%)
- Lab II (13%)
- Final exam (70%)

**Supervision**

Office hours	No
Assistants	Yes
Forum	Yes

**Resources****Virtual desktop infrastructure (VDI)**

No

**Bibliography**

David A. Patterson and John L. Hennessy, Computer Organization and Design: The Hardware/Software Interface, Morgan Kaufman, 5th edition, 2013.

**Ressources en bibliothèque**

- [Computer organization and design](#)

**Moodle Link**

- <https://moodle.epfl.ch/course/view.php?id=14153>

**Prerequisite for**

- CS-470 (Advanced Computer Architecture)