

## Computer Architecture (E034110)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 6.0**

**Study time 180 h**

**Course offerings and teaching methods in academic year 2025-2026**

A (semester 2)

Dutch

Gent

lecture

seminar

practical

**Lecturers in academic year 2025-2026**

De Bosschere, Koen

TW06

lecturer-in-charge

**Offered in the following programmes in 2025-2026**

[Bachelor of Science in Engineering\(main subject Computer Science Engineering\)](#)

**crdts**

6

**offering**

A

[Bachelor of Science in Engineering\(main subject Electrical Engineering\)](#)

6

A

[Bachelor of Science in Computer Science](#)

6

A

[Preparatory Course Master of Science in Bioinformatics\(main subject Engineering\)](#)

6

A

**Teaching languages**

Dutch

**Keywords**

assembly, micro-architecture, computer configurations

**Position of the course**

This course studies the structure and the operation of contemporary computer systems. It is the introduction to the hardware/software interface.

**Contents**

- Architecture and programming model: data representations, machine models, instruction sets, input/output
- Organisation and micro architecture: the data path, the control unit, the memory hierarchy, peripheral equipment, performance evaluation
- Code generation: code properties, optimisation
- The HiPEAC vision

**Initial competences**

Programming in C

**Final competences**

- 1 To understand machine language programs
- 2 To have knowledge about the elementary building blocks of computers
- 3 To understand the operation of a pipelined architecture
- 4 To understand the operation of the memory hierarchy
- 5 To know the contemporary challenges in computer architecture

**Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

**Conditions for exam contract**

This course unit cannot be taken via an exam contract

**Teaching methods**

Seminar, Lecture, Practical

**Extra information on the teaching methods**

Practicals make use of the student's laptop

### **Study material**

Type: Slides

Name: Annotated slides with the computer architecture course  
Indicative price: Free or paid by faculty  
Optional: yes  
Number of Slides : 1016  
Oldest Usable Edition : 2024  
Available on Ufora : Yes  
Online Available : Yes  
Available in the Library : No  
Available through Student Association : Yes

### **References**

- D. Patterson en J. Hennessy, "Computer Organization & Design: the hardware/software Interface", Morgan Kaufman.

### **Course content-related study coaching**

Teaching staff.

### **Assessment moments**

end-of-term and continuous assessment

### **Examination methods in case of periodic assessment during the first examination period**

Written assessment

### **Examination methods in case of periodic assessment during the second examination period**

Oral assessment

### **Examination methods in case of permanent assessment**

Assignment

### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is not possible

### **Extra information on the examination methods**

PE1: written open-book assessment.  
PE2: oral closed-book assessment, written preparation at blackboard.  
NPE: evaluation of practical report.

### **Calculation of the examination mark**

First examination period: the exam counts for 80% and the labs count for 20% of the final score. Absence for the labs is translated into 0 for that sub-score. The final score is the weighted average of the two sub-scores.

Students can only pass this course if they obtain a minimum 10/20 for the exam. If students obtain less than 10/20 for the exam and if the weighted final score would be 10 or more out of 20, it is reduced to the highest unsuccessful final score, i.e. 9/20.

Second examination period: same arrangement with retention of marks for non-period evaluation.

### **Facilities for Working Students**

There is no compulsory presence during the semester.