GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2025-2026

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	TWO6	lecturer-in-charge

Offered in the following programmes in 2025-2026	crdts	offering
Bachelor of Science in Engineering(main subject Computer Science Engineering)	6	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.