Course Specifications

Valid in the academic year 2023-2024

Computer Hardware (E702100)

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 2023-2024

A (semester 1)	Dutch	Gent	lecture
			seminar

Lecturers in academic year 2023-2024

Van Den Breen, Wim		TWO5	lecturer-in-charge

Offered in the following programmes in 2023-2024	**crdts**	**offering**
Bachelor of Science in Engineering Technology(main subject Electronics and ICT Engineering Technology)	6	A
Bachelor of Science in Engineering Technology(main subject Information Engineering Technology)	6	A
Linking Course Master of Science in Electronics and ICT Engineering Technology(main subject Electronics Engineering)	6	A
Linking Course Master of Science in Electronics and ICT Engineering Technology(main subject Embedded Systems)	6	A
Linking Course Master of Science in Electronics and ICT Engineering Technology(main subject ICT)	6	A
Linking Course Master of Science in Information Engineering Technology	6	A
Preparatory Course Master of Science in Electronics and ICT Engineering Technology(main subject Electronics Engineering)	6	A
Preparatory Course Master of Science in Electronics and ICT Engineering Technology(main subject Embedded Systems)	6	A
Preparatory Course Master of Science in Electronics and ICT Engineering Technology(main subject ICT)	6	A
Preparatory Course Master of Science in Information Engineering Technology	6	A

Teaching languages

Dutch

Keywords

Digital electronics, microprocessors, microcontrollers, computer, assembly language, computer technology.

Position of the course

Digital electronics, microprocessors, microcontrollers, computer, assembly language, computer technology.

Contents

Part I
- Architecture of a microprocessor: data path, registers, ALU, timing, pipelining, stack machines, cache memories.
- Instruction set architecture (opcodes, adressing modes, RISC vs. CISC).
- Overview of the various memory types.
- Operartion of various computer peripherals (hard disks, graphical adapters).
- computer interfacing.

Part II
- Study of the 8051 microcontroller: Architecture, addressing modes, instruction set, I/O-ports, interrupts, timers/counters, serial communication (UART).
- Study of the 80x86 CPU
- compiling and linking of C-programs in a Unix environment.

Initial competences

Basic knowledge of digital electronics, programming in C.

Final competences

1 Being able to describe the operation of a microprocessor
2 Being able explain the operation of some I/O devices such as hard disks and graphical adapters
3 Determining the function of small assembly written programs
4 Understand the full memory architecture of the 8051microcontroller
5 To be able to develop small/medium assembly programs for the 80x86 CPU

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

Extra information on the teaching methods

attendance required at seminar

Learning materials and price

- Part I: English syllabus Structured computer organisation (Andrew S. Tanenbaum). The cost of a new syllabus is about € 65.
- Part II: additional notes

References

A.S. Tanenbaum, structured computer organization, Prentice Hall (Pearson)

Course content-related study coaching

The student can always make an appointment with the teacher.

Assessment moments

end-of-term assessment

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

Skills test, Written assessment with open-ended questions

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

Skills test, Written assessment with open-ended questions

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

- **Part I:** Lecture: Written examination with open questions.
- **Part II:** Seminar: examination with exercises on computer.

Calculation of the examination mark

Periodic evaluation (50% exam, 50% exercises).