GHENT UNIVERSITY

Course Specifications

Valid as from the academic year 2024-2025

Engineering Project (E099111)

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

Credits 3.0 **Study time 90 h**

Course offerings in academic year 2025-2026

A (semester 2) Dutch Gent

Lecturers in academic year 2025-2026

wyffels, Francis TW06 lecturer-in-charge

Offered in the following programmes in 2025-2026	crdts	offering
Bachelor of Science in Engineering(main subject Computer Science Engineering)	3	A

Teaching languages

Dutch

Keywords

Project, microcontroller, emulator

Position of the course

This computer science project is situated in the stage where the transition is made from the basic science courses to the courses that deal with doamin specific knowledge.
Hence, at this stage, the student cannot be expected to possess a great deal of knowledge in the field of computer science. This project course is therefore aimed at contributing to the acquisition of part of this knowledge as well as the creative deployment of the knowledge the student might dispose of at this stage.

Contents

- The project requires the students, organised in small groups, to actually develop and implement a simple application on a simple, microcontroller based application platform.
- This application could pose some specific requirements, such as real-time behavior, or specific user interface requirements.
- The goals invariably imply pursuing quality, efficiency, and optimality.
- The project could contain a competitive component.
- Such a project brings the student in close contact with a simple processor architecture and learns how to observe such a system (using equipment such as in-circuit emulators etc).
- He/she experiences how high-level programs are implemented on simple architectures and how such architectures interact.
- In this way, besides contributing to autonomous acivity and creativity, the project contributes to the mastering of much more complex concepts that are addressed later in the programme.

Initial competences

Basic computer science, Electrical networks and Circuits

Final competences

1 Be acquainted with the architecture of a simple processor
2 Be acquainted with the way in which programs are represented and executed on simple computer systems
3 Have some feeling for the real-time behavior of a simple architecture and its interactions with other system components such as memory and I/O
4 Be able to analyse simple problems and implement their solution on a

microcontroller based platform
5 Be able to handle simple simulation software or measurement equipment such as emulators
6 Be able to use softare development aids such as compilers, debuggers and software versioning control systems

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

Group work, Lecture, Practical

Extra information on the teaching methods

First four weeks: theory and practical sessions. The students can complete the theory and practical sessions at home (following the flipped classroom principle). On-campus guidance is available, and we recommend students to attend these on-campus sessions.
The last 8 weeks focus on the project. The project can only be completed on-campus. During the sessions, assistance is available.

Study material

Type: Software

Name: vscode
Indicative price: Free or paid by faculty
Optional: no

Type: Audiovisual Material

Name: Microcontrollers: course notes and clips
Indicative price: Free or paid by faculty
Optional: no

Type: Lab Material

Name: Dwenguino microcontroller platform
Indicative price: Free or paid by faculty
Optional: no

References

Course content-related study coaching

Direct supervision in project room during 1 hour per week. Support through personal contact with assistants. Support through the electronic learning platform

Assessment moments

continuous assessment

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

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

Examination methods in case of permanent assessment

Oral assessment, Peer and/or self assessment, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible in modified form

Extra information on the examination methods

During semester: graded project report; graded oral presentation, graded code, graded project demonstration.

Calculation of the examination mark

1 mark out of 20 of the exam grades is attributed to participation in the excursions. You need to obtain a score of at least 9/20 on each part (code, project demonstration, report and presentation) in order to obtain a credit. Students who do not fulfill this condition but for whom the calculated score would be 9/20 or more, will receive a score of 8/20 (i.e., the largest score that is smaller than 9/20).