GHENT UNIVERSITY

Course Specifications

Valid in the academic year 2023-2024

Multidisciplinary Engineering Project (E731021)

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

Credits 3.0 **Study time 90 h**

Course offerings and teaching methods in academic year 2023-2024

A (semester 2)	Dutch	Gent	group work
			practical

Lecturers in academic year 2023-2024

Torfs, Guy	TWO5	lecturer-in-charge
Pollefliet, Leen	TWO5	co-lecturer
Van Kerrebrouck, Joris	TWO5	co-lecturer

Offered in the following programmes in 2023-2024	**crdts**	**offering**
Bachelor of Science in Engineering Technology(main subject Electronics and ICT Engineering Technology)	3	A

Teaching languages

Dutch

Keywords

Teamwork, project, cross-disciplinary, electronic design, CAD, microcontrollers, analog electronics, digital electronics, communication, presentation techniques.

Position of the course

After completing this course, the students should be able to:

- independently test circuits using standard laboratory equipment, such as oscilloscopes, function generators, power supplies and multimeters;
- assess the behaviour of a circuit by means of simulations;
- explain the working principles of circuits with standard electronic components;
- design a printed circuit board using CAD software;
- design and document the mechanical aspects of an electronic device;
- understand the planning of a project as a series of smaller targets and the definition of milestones;
- succesfully complete a project by means of teamwork;
- clearly communicate on the design process, orally as well as in writing, while following the European Code of Ethics in Academic Research .

Contents

- Intelligently employing the lab's test- and measurement equipment.
- Exploring and measuring basic electronic circuits, composed of elements which have been studied in the theory classes.
- Productively using software for simulation and printed circuit-board design.
- Succesfully finishing a multidisciplinary electronics design project by means of teamwork.

- Students learn the skills to give strong presentations: Communication - Module 2.2 - Giving Presentation - Theory plos training.

Initial competences

Courses in Electronics II, Analog Electronics I and Digital Electronics.

Final competences

1 Research and creatively use of information.
2 Be able to realise a project through teamwork.
3 Integrate knowledge of different disciplines.
4 Design, implement and test digital circuits.
5 Design, implement and test analog circuits.
6 Program microcontrollers in C.
7 Report correctly oral and written.

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, Practical

Extra information on the teaching methods

Students work in teams of approximately five people to accomplish a challenging project during the course of one semester.
The necessary and highly intensive permanent guidance and support, concerning the many aspects of the project, is guaranteed by two supervisors.
In the beginning of the semester, introductory presentations provide the student with essential background for the project.
Regular round-table discussions with the teams are held to assess the progress of the project.
The students weekly report this progress.
Halfway the semester, an intermediate peer assessment is organized, followed by the necessary feedback.
Students write an interim report.
Within 'Communication - Module 2.2' students give a short interim presentation. Each presentation and each speaker is discussed in class (peer assessment). The theme of the interim presentation is determined by the supervisors.
The project is finished with a final report and a presentation.

Learning materials and price

Project work:
- Project documentation is available in the digital learning environment.
- Hand-outs of slides on the electronic learning environment.

Communication part (learning path from the first bachelor up to the first master's year)
- Syllabus: 'Communicatie in drie modules' (250 pages, available on via the electronic learning platform), to be used from the first bachelor's year up to the first master's year (and afterwards).
- Handbook: 'Scoren met je scriptie - Het standaardwerk voor verslagen, rapporten en projecten, off- en online' (355 pages + QR codes to instructional videos and interactive language and writing exercises) - Owl Press (https://borgerhoff-lamberigts.be/boeken/scoren-met-je-scriptie, ISBN 9789463937276), student price 30 euros: compulsory handbook for the communication partim on writing (reports, bachelor's thesis, master's dissertations), to be used from the first bachelor up to the first master's year (and afterwards).
- PowerPoint presentations/hand-outs/knowledge clips on writing and presenting available on the electronic learning platform.

References

- Analog Electronics I, Digital Electronics, Electricity, Physics
- Communication partim (learning path from the first bachelor up to the first master's year): 'Bij wijze van spreken – Het standaardwerk voor mondelinge communicatie' (550 pagina's) - Owl Press (https://borgerhoff-lamberigts.be/owlpress, ISBN 9789463934381, student price: 39,90 euros).

Course content-related study coaching

The instructors are permanently available during project hours. Other appointments can also be arranged.
Guidance during the rest of the week is mainly arranged via email.

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

Professional practice, Participation, Peer and/or self 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

Assessment based on the project report, presentation and permanent evaluation.
Peer assessment is used to support the observations of the permanent evaluation.

Calculation of the examination mark

Grading based on the overall results of the project report, presentation and permanent evaluation.
1 mark out of 20 of the exam grades is attributed to participation in the excursions.