Engineering Experience 5 - Electronics Engineering (B-KUL-T34EE5)

7 ECTS 🗩 Dutch ⏱ **168** ○ Both terms ⊘ Cannot be taken as part of an examination contract

👤 **Van Loock Gert** (coordinator) | **More**

OC Elektronica-ICT - Campus Groep T Leuven

Aims

EE5 stimulates the creativity of the students to design a newly and innovating embedded product. The students need to analyze this embedded product (requirements, design and architecture) and to build a concept demo of the product. In order to do this, the students require to integrate the knowledge, competences and skills learned in the other bachelor courses. The students learn to solve a technical problem at 'system-level' in an international team.

Learning outcomes

- K1: Basic scientific-disciplinary knowledge and comprehension
- I1: Problem analysis and solving
- I2: Design and / or development
- I3: Application-oriented research
- I5: Entrepreneurship
- G1: Information gathering and processing
- G2: Communication with engineers and non-engineers
- G3: Critical thinking
- G4: Working in a team in different roles
- G5: Professionalism

Explanation

At the end of this course, the student is able to:

- combine and integrate knowledge, skills and experience from the domain of electronics/ICT such as analog and digital electronics, electronic design, microprocessors, system programming and software development [K1];
- analysis and implement a cost-efficient prototype system for a technical problem situated in the field of electronics/ICT [I1, I2, I3, I5];
- critically reflect on the used technologies and evaluate the efficiency of the chosen solution [G3, G5, I3];
- analyse a project assignment, split it into smaller subtasks, and create a task distribution [I1];
- search for, compare and absorb the necessary information [G1, G3];
- function autonomously as a team for a project [G4];
- communicate the results with a report (Wiki-style) [G2];
- present and demonstrate the results to the public [G2].

Previous knowledge

This course integrates skills and competences from all other courses in the bachelor program. Therefore, this course can only be taken after the student has passed at least for all courses in phase 1 and phase 2 of the bacheleor program. It is also strongly recommended that the student follows all engineering courses of the 3rd phase.

Order of Enrolment

Mixed prerequisite:
You may only take this course if you comply with the prerequisites. Prerequisites can be strict or flexible, or can imply simultaneity. A degree level can be also be a prerequisite.
Explanation:
STRICT: You may only take this course if you have passed or applied tolerance for the courses for which this condition is set.
FLEXIBLE: You may only take this course if you have previously taken the courses for which this condition is set.
SIMULTANEOUS: You may only take this course if you also take the courses for which this condition is set (or have taken them previously).
DEGREE: You may only take this course if you have obtained this degree level.

(SIMULTANEOUS(T34AE0) OR SIMULTANEOUS(T34AEE)) AND (SIMULTANEOUS(T34CN0) OR SIMULTANEOUS(T34CNW)) AND (SIMULTANEOUS(T34DWL) OR SIMULTANEOUS(T34DCW)) AND (SIMULTANEOUS(T34SEN) OR SIMULTANEOUS(T34SEE)) AND SIMULTANEOUS(T34DAS) AND (SIMULTANEOUS(T34RT0) OR SIMULTANEOUS(T34RTE)) AND (SIMULTANEOUS(T34DSE) OR SIMULTANEOUS(T34DS0)) AND (SIMULTANEOUS(T34DSP) OR SIMULTANEOUS(T34DPE)) AND (SIMULTANEOUS(T34SP0) OR SIMULTANEOUS(T34SPE)) AND (SIMULTANEOUS(T3MANE) OR SIMULTANEOUS(T3MGME)) AND (SIMULTANEOUS(T34EMA) OR SIMULTANEOUS(T34EME)) AND (SIMULTANEOUS(T34MP0) OR SIMULTANEOUS(T34MPE)) AND STRICT(T2EE4A)

The codes of the course units mentioned above correspond to the following course descriptions:
T2EE4A : Engineering Experience 4 - Electronics Engineering
T34AE0 : Analoge elektronica
T34AEE : Analog Electronics
T34CN0 : Computernetwerken

T34CNW : Computer Networks
T34DWL : Datacommunicatie en WLAN's
T34DCW : Data Communication and WLANs
T34SEN : Sensoren (No longer offered this academic year)
T34SEE : Sensors
T34DAS : Data Science
T34RT0 : Regeltechniek
T34RTE : Control Systems Engineering
T34DSE : Digital Systems
T34DS0 : Digitale systemen (No longer offered this academic year)
T34DSP : Digitale signaalverwerking
T34DPE : Digital Signal Processing
T34SP0 : Systeemprogrammatuur
T34SPE : System Software
T3MANE : Management III: Operations and Project Management (No longer offered this academic year)
T3MGME : Management III: Operations and Project Management
T34EMA : Elektrische motoren en actuatoren
T34EME : Electric Motors and Actuator Systems
T34MP0 : Microcontrollers
T34MPE : Microcontrollers

This course unit is a prerequisite for taking the following course units:
T47UXW : R&D Experience

Is included in these courses of study

Bachelor in de industriële wetenschappen (programma voor studenten gestart vóór 2020-2021) (Leuven) (Afstudeerrichting elektronica-ICT) 180 ects. ③
Bachelor of Engineering Technology (Programme for students started before 2020-2021) (Leuven) (Specialisation: Electronics Engineering) 180 ects. ③
Bachelor of Engineering Technology, 2+2 Module (Programme for students started before 2021-2022) (Leuven) (Specialisation: Electronics Engineering) 180 ects. ③

Activities

7 ects. **EE5 - Design of an Embedded System** (B-KUL-34IEE5) ⌄

7 ECTS   ▭ Dutch   Format: Bachelor's paper   ⏱ **168**   ○ Both terms
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Content

During your student years as well as your entire professional carreer as an engineer, you will be continuously faced with situations and assignments that will remember you with the Enterprising-Communication-Education qualities. The EE5 project helps you to further develop these qualities. You work in an international team of students, and your team designs and implements an innovative embedded product. The target of the development of this product is to challenge your skills in electronics and ICT. The team coaches help you with decisions concerning the feasibility of the product and the complex technologies building the system. The team works mostly self-deployed on a concept demo of the designed product. The team has regular team meetings and the team members share their technical knowledge with each other. The team also reports on the 'enterprising' and the 'engineering' results of the project to other students and to the coaches and other professors. You use SCRUM-techniques during the entire process.

The course is a project on the design and implementation of an embedded system.

The project is realized by an international student team under the supervision of a project coach.

Course material

Students consult information sources on Toledo and mainly the internet to execute their projects.

Evaluation

Evaluation: Engineering Experience 5 - Electronics Engineering (B-KUL-T70332) ⌄

Type : Continuous assessment without exam during the examination period

Description of evaluation : Project/Product, Report, Presentation, Self assessment/Peer assessment, Participation during contact hours, Process evaluation

Learning material : None

Explanation

1. Calculation of the final mark

This course contains only one published component mark. Consequently, this component mark is the final mark.

2. Calculation of the published component marks

The only component mark is a whole number between 0 and 20. It is an evaluation of the student's performance based on the following weighted marks:

- Process (work during year) = 60%. The Scrum sprint methodology must be used during the project execution. With in total 4 sprints.
- A technical report in the format of a wiki = 20%. Each project team has to setup a project wiki where each team member reports regularly on his/her achievements during the project
- Technical results = 20%. The mark on this item is the result of technical reviews during the project execution.

Moreover, a peer assessment counts for a bonus/malus between -2 and 2.

More details, including the deadlines for the different sprints will be announced during the project introductionsession.

Also notice that:

- Each student gets an individual mark (no group result).
- All project deliverables must be available to the course staff before marks will be assigned to all members of the project team. Details on the project deliverables, deadlines and how deliverables have to be made available to the project coaches will be announced at the start and during the project.

3. Absences

Unauthorized absence during four or more project sessions leads to NA as a final mark.

For absences during the teaching weeks, please contact the education ombuds on the first day of your absence. If you missed one or more obligatory sessions, please contact your professor as soon as possible and certainly within a week. For absences within the exam period, please contact the exam ombuds on the first day of your absence.

4. Partial transfers

There is no second examination opportunity for EE5 Design of an embedded system (341EE5)

Component marks of at least 10/20 published in the academic progress file are transferred to the next examination period within the same academic year and to the following academic years, except for temporary marks and marks for intermittent tests.

When needed, additional information on the evaluation activities is provided during the lessons and/or made available on the Toledo pages of the course. Further if the university decides that it is confronted with situations of general force majeure or situations where the safety and health of members of the academic community of KU Leuven may be endangered and changes to the teaching and evaluation activities occur as a result, these changes will be communicated via Toledo

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Information about retaking exams

No 2nd examination opportunity.

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① Required in stage	① Optional in stage	◁ First term	▷ Second term	○ Both terms
⋮ This year	⋮ Next year	∴ Alternating years	♀ External	🗐 Prerequisites
⌂ Taught by	⌐ Language of instruction	⏱ Duration		

INTERNAL TOOLS

OTHER LANGUAGES

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