Course syllabus

Elektroteknik: möjligheter och begränsningar
Electrical Engineering: Possibilities and Limitations

ETIA06, 4 credits, G1 (First Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED E
Date of Decision: 2023-04-11

General Information

Main field: Industrial Design.
Compulsory for: KID3
Language of instruction: The course will be given in English

Aim

The overall goal of the course is to give an understanding to what possibilities and limitations basic knowledge, as well as the rapid development, gives in the areas of electronics and communications. The main part of the course is aimed at giving a qualitative understanding of phenomena related to electronics and data transfer, and how this is related to design considerations. By using the concepts and ideas taught in the course, the students should be able to conduct a constructive discussion with an engineer.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- have knowledge about basic possibilities and limitations within the field of electrical engineering
- have knowledge about basic concepts within the field of electrical engineering
- be able to use principles from the filed of electrical engineering when developing new design concepts

Competences and skills
For a passing grade the student must

- have the ability to use the possibilities of electrical engineering in industrial design work
- have the ability to judge the reasonableness of concepts containing parts from electrical engineering
- have the ability to have constructive communication with an electrical engineer

Judgement and approach
For a passing grade the student must

- feel acquainted with the terminology within the area
- be able to understand novel results within the area and to a certain extent judge their applicability in relation to a given design concept

Contents

The course will present basic concepts important for designs containing electronics and communicating devices. Such concepts are for instance current, voltage, power and frequency. Depending on the desired functionality of a design, the designer has to take various considerations and make different trade-offs. During the course it will be discussed what is possible given a certain set of criteria and what the future might bring. For example, it will be discussed how a design is affected if it is battery operated or connected to a fixed power network.Two important elements in the course are laboratory work, where the student builds basic electronic devices, and a final project where electronics and design concepts are studied together.

Examination details

Grading scale: UG - (U,G) - (Fail, Pass)
Assessment: The student is judged based on active participation in laborations and carrying through and reporting on a project in the area of the course. The reporting consists of a written report, an oral presentation and a video.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts
Code: 0118. **Name:** Project.
Credits: 3. **Grading scale:** UG. **Assessment:** Approved carrying through and report of Project. **Contents:** Oral presentation, written report and a video.
Code: 0218. **Name:** Laboratory Work.
Credits: 1. **Grading scale:** UG. **Assessment:** Approved Laboratory Work.

Admission

The number of participants is limited to: No
The course overlaps following course/s: ETI250, ETIA05

Reading list

- The literature consists of lecture notes in English.
- Circuit Playground Express. Adafruit, 2018. Hardware. Programmable module for laborations and project.

Contact and other information

Course coordinator: Anders J Johansson, anders_j.johansson@eit.lth.se
Course homepage: http://www.eit.lth.se/course/etia06