

Course syllabus

Mekatronik, industriell produktframtagning Mechatronics, Industrial Product Design

EIEN70, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED E

Date of Decision: 2023-04-11

General Information

Elective for: D4, E4-ra, F4, M4-me, MD4

Language of instruction: The course will be given in English on demand

Aim

The course aims at giving the student knowledge, skills and experience from taking part in an industrially based mechatronic development project, which is conducted up to a working prototype. The principal design of the product has been formed in the course Applied Mechatronics. It is essential that the work is done in a team with competences from various fields.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

be able to

- analyze the various parts in a product specification and freely define and evaluate a number of solution concepts according to the principles of product development,

- identify the best solution concept according to selection criteria
- identify constructive components in the given product concept with adequate electronic, mechanical, thermal, and magnetic characteristics,
- define production methods for the selected construction materials,
- describe the principles for real time programming and communication for the integrated control system in the product concept and calculate its data,
- calculate the data for the control electronics and the power electronic and electromagnetic energy converters of the product.

Competences and skills

For a passing grade the student must

be able to

- use applicable methods for product development in a mechatronic team,
- make a specification for suitable materials, production methods, control electronics, and the power electronic and electromagnetic energy converters of a certain product,
- implement a mechatronic concept all the way to a working prototype for industrial application,
- test and evaluate the prototype.

Judgement and approach

For a passing grade the student must

- be able to work and cooperate with all relevant competences represented in a mechatronic team
- have the understanding and judgment to respect and demand all the various competences that are necessary for mechatronic constructive design.

Contents

The project is done during two study periods. The course participants should develop the mechatronic parts of those projects or other purely mechatronic products.

The development process starts with extensive information search, brain storming, and evaluation, activities which often encompass 30-40% of the total work load. This has been done in the course EIEN65 Applied Mechatronics. Then follows in this course selection of concept, constructive design of the product idea, ordering of components, building, testing, and adjustments.

The course concludes with the official presentation of the designed products, where representatives from industry, course leaders, and the press take part.

Examination details

Grading scale: UG - (U,G) - (Fail, Pass)

Assessment: Approved project presentation and written report.

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.

Admission

Assumed prior knowledge: Applied Mechatronics.

The number of participants is limited to: No

The course overlaps following course/s: EIEN01

Reading list

- W. Bolton: Mechatronics – Electronic control systems in Mechanical and Electrical Engineering. – optional as a reference.

Contact and other information

Course coordinator: Associate Professor Gunnar Lindstedt,
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Course homepage: <https://www.lth.se/iea/utbildning/valfria-kurser-i-lund/mekatronik-industriell-produktframtagning/>