FMF3046 Research Methods in Mechatronics II 3.0 credits

Forskningsmetoder inom mekatronik II

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

The official course syllabus is valid from spring semester 2025 in accordance with the decision by the Faculty Board: M-2024-0018. Date of decision: 2024-10-14.

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

FMF3010 "Research Methods in Mechatronics", or a similar course.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After completing the course, students in the field of Mechatronics and Cyber-Physical Systems must be able to:

- Summarize and discuss at an over view level which research paradigms are relevant within the research fields, related to Mechatronics and Cyber-Physical Systems, in which the student conducts their research.
- Discuss how research questions - and the methods to answer them - are applied in the student's research field, with the aim of being able to apply the methods required to publish in relevant journals.
- Discuss and evaluate the requirements, being explicit about the different aspects of research methods in specific relevant journals, and consider what implications this may have for the validity of a study.
- Assess, discuss and debate about research ethics within the student's research field.

Course contents

In the course, the student writes, presents and opposes a report based on at least five articles from various relevant journals in the student's research field, and another 30-40 articles from one of these journals. The report must contain:

- A summary of the research methodologies that the various journals apply, and a discussion of which research paradigm(s) they belong to and what distinguishes this.
- A discussion of what research methodologies and methods are used, specifically in the journal from which the majority of the articles originate. This should cover a discussion of what is included in the methodologies and methods that are acceptable in that journal, regardless of whether all parts of these are reported explicitly or not.
- A discussion of which aspects of studies do not need to be reported explicitly in the student's specific field of research. Specifically, the student should discuss what impact this may have on the validity of related results, both for an isolated study and the research field at large.
- An analysis to clarify the most critical issues around research ethics based on the application of methodology and method within the paradigm(s) of the student's research field.

Examination

- UPP1 - Written Report, 2.0 credits, grading scale: P, F
- SEM1 - Seminar, 1.0 credits, grading scale: P, F

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.