



MF2072
Research Methodology in
Machine Design (6 credits)

Course PM

November 2021 – January 2022

Version 2020-10-08

Canvas activity: *MF2072 HT21-1 Research Methodology in Machine Design*

Background

The course gives an overview over present-day scientific and industrial development trends in the area of machine design. Scientific research methods and tools, and ethical aspects are treated, both at a general and a concrete level, in the context of research and development (R&D) of mechanical products, high-performance machine elements and understanding of physical phenomena.

Objectives

Intended learning outcomes

On completion of the course, the student should be able to:

- Apply common concepts and language within the topic.
- Evaluate, discuss and reason around ethical research aspects.
- Carry out a scientific study.
- Give constructive criticism on a scientific article.

Main content

The course is given in the form of classes and lectures by internal and external researchers and/or individuals active within industrial research and development.

8 lectures

1 seminar

6 supervision activities

4 group assignments

1 feedback activity

Examination and grading

INL1, 4.5 credits, grading scale P/F:

1. Review of scientific articles
2. Review of an ethic case study
3. Statistical analysis and measurement uncertainty
4. Writing a scientific article.
5. Review of an article written by another student group.
6. Presenting at seminar.

TEN1, Written examination, 1.5 credits, grading scale A, B, C, D, E, FX, F

The results from the written examination defines the final grade

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.

Pre requisit

MF2024 Robust and probabilistic design or equivalent knowledge

Course literature

- 1 - Ö Andersson, Experiment – planning, Implementing and Interpreting, Wiley 2012.
- 2 - D B Resnik, the ethics of science Chapter 5 Routledge 1998
- 3 - D B Resnik, Philosophical foundations of scientific ethics 1994
- 4 - S Bell , A beginners gudie to uncertainty of measurements, NPL, Issue 2.
- 5 - Handouts

Course responsible

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