



# MF2072 Research Methodology in Machine Design 6.0 credits

Forskningsmetodik i maskinkonstruktion

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

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

## Establishment

Course syllabus for MF2072 valid from Autumn 2017

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Mechanical Engineering

## Specific prerequisites

A Bachelor's degree in mechanical engineering or the equivalent.

MF2024 Robust and Probabilistic Design or equivalent.

## Language of instruction

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

## Intended learning outcomes

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

- Summarise and at a general level discuss important challenges and trends in the area of Machine Design.
- Discuss and evaluate different research methods.
- Evaluate, discuss and reason around ethical research and product development aspects.
- Carry out a scientific study.
- Write a scientific article in within a specific field that is related to research and development of high-performance machine elements or systems.
- Review and give constructive criticism on another student's scientific article.

## Course contents

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. Further exercises on reading scientific articles and understanding their structure, and writing an own research article. Important innovation aspects to meet societal and industrial challenges are also treated.

## Disposition

The course is given in the form of classes and lectures by our own and external researchers and/or individuals active within industrial research and development, and seminars. Each student writes and presents a scientific article, and reviewing and giving constructive criticism on another student's article.

8 teaching sessions

8 seminars

4 group assignments

Written examination (give the final grade)

## Course literature

The reading list is decided no later than a month before the start of the course.

## Examination

- INL1 - Hand in Task, 4.5 credits, grading scale: P, F
- TEN1 - Written examination, 1.5 credits, grading scale: A, B, C, D, E, FX, 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.

INL1, 4.5 credits, grading scale P/F:

1. Group report for an engineering/research-ethical case.
2. Group presentation of an implemented research project.
3. Group presentations at four seminars.
4. Writing a scientific article.
5. Review of an article written by another student.

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

## 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.