



IF1611 Engineering Fundamentals 7.5 credits

Ingenjörsmetodik

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 IF1611 valid from Autumn 2009

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Mathematics and physics from senior high in Sweden.

Language of instruction

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

Intended learning outcomes

1. After the course the student should be able to account for, and effectively use in an engineering context, different levels of model complexity, ranging from estimations to computer based algorithms.
2. The student should be able to derive a model from a problem text e.g. by using dimensional analysis of the relevant parameters.
3. The student should be able to analyze the quality of the modelling result with regard to uncertainty in assumptions and model parameters.
4. The student should be able to use basic statistical concepts, such as standard deviation and error propagation, in the analysis of measurement data.
5. The student should be able to present their modelling results in a structured way with emphasis on graphical presentations (plots) and following guidelines for a general technical report.

Course contents

An introduction to the engineering role, including mathematical modelling and technical computation for problem solving in general technical fields.

Information searching, written presentations and technical reports are other important parts of the course.

Analysis of measurement data, using statistical methods, is introduced by relevant examples.

Efficient problem solving, use estimates is proposed as a suitable approach for many technical applications.

The course outline is thematic and a topical question is iterated in different parts of the course.

The engineering role at the workplace is highlighted by guest researchers from future employers.

The engineering professional and scientific identity and gender issues are critically discussed by the participants.

Course literature

Ingenjörrens Verktyg, Göran Grimvall, Studentlitteratur, 2007, ISBN 978-91-44-04062-2

Introduction to Matlab(Pocket)avEtter, Dolores2010, (ISBN 0136081231)

Equipment

Access to computer capable of handling MATLAB current version

Examination

- LABA - Laboratory work, 1.5 credits, grading scale: P, F
- LABB - Laboratory work, 1.5 credits, grading scale: P, F
- TENA - Examination, 4.5 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.

Other requirements for final grade

Written exam (4.5 hp)

Passed laboratory course (3 hp = 1.5 hp +1.5 hp)

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.