ED1100 Engineering Science 7.5 credits

Ingenjörsvetenskap

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 ED1100 valid from Autumn 2007

Grading scale

P, F

Education cycle

First cycle

Main field of study

Electrical Engineering,Technology

Specific prerequisites

Language of instruction

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

Intended learning outcomes

Technology does not exist in Nature - all of technology is created by man. While natural science is focused on laws and phenomena of Nature, the science of technology is more concerned with man's methods for using objects. Engineering science expands the science of technology to the fields of mathematical modelling, history of science, and the professional role of the engineer. The purpose of the course is that the student should acquire basic knowledge and skills within these areas.

The course objectives are examined. Thus the student should be able to:

- create mathematical models for a given process in the steps: problem identification, assumptions, solution, interpretation, verification, and implementation
- make estimations and carry out dimensional analysis of deduced relations
- use Maple and Excel as support for problem solving
- give an account of major breakthroughs in the evolution of technology
- reflect over the roles of male and female engineers in society with a perspective relating to the course material

and show

- basic skills in written and oral communication of technology and science

Course contents

The evolution of technology and the natural sciences. Understanding nature and making dynamical models of natural phenomena.

Quantities and units. Methodology for development of mathematical models. Estimations. Proportionalitet. Model fitting. Dimensional analysis. Simulation.

The computer tools Maple and Excel.

The roles of the engineer in society.

Basic skills in oral and written presentation techniques.

Course literature

B. Sundin, Den kupade handen, Carlssons, 1998.

F. R. Giordano and M. D. Weir, A first course in

mathematical modeling. Brooks/Cole.

G. Grimvall, Basic facts and skills in physics.

Fysikinst., KTH.

Literature on issues of gender for engineers, handouts.

Examination

- ANNA - Assignments, 4.5 credits, grading scale: P, F
- ANNB - Assignments, 1.5 credits, grading scale: P, F
- ANNC - Assignments, 1.5 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.

Other requirements for final grade

Home assignments 4.5 hp.
Participation in seminars and lectures 1.5 hp.
Oral presentation 1.5 hp.
The course is based on learning oriented pedagogics.
Lectures are goal oriented and class sessions are partially
carried out as group work.

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.