



Course syllabus

Faculty of Technology

Department of Mechanical Engineering

1MT007 Energiteknik I, 7,5 högskolepoäng

Thermodynamics, Fluid Mechanics and Heat Transfer, 7.5 credits

Main field of study

Mechanical Engineering

Subject Group

Mechanical Engineering

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved 2009-12-15

Revised 2017-11-13 by Faculty of Technology. Removal of ECTS-grading scale.

The course syllabus is valid from spring semester 2018

Prerequisites

Basic eligibility and Mathematics corresponding to the course 1MA131 and basic knowledge of Physics corresponding to course 1FY804.

Objectives

The aim of the course is to give the students:

- a broad general orientation in energy education
- knowledge of the function of components and constructions and fundamental theory
- the ability to apply theoretical knowledge in practical calculations, such as calculating main data for components and constructions
- familiarity with energy technology measuring instruments, the theory and use of measuring methods
- in-depth ability to use engineering technology tools as well as the ability to present completed work

Content

The course comprises the following elements:

- Hydromechanics
- Hydrostatics
- Hydrodynamics
- Dynamic forces and the impulse law
- Flow uniformity laws
- Pressure loss in pipes
- Acceleration pressure fall
- Flow technology pipe dimensioning
- Thermology
- Gas compounds
- Heat quantity change. Specific heat capacity
- Work
- The First Law of Thermodynamics for closed systems
- Internal energy
- Enthalpy
- The Second Law of Thermodynamics. Entropy
- Thermodynamic changes in closed systems
- Circuit process
- The First Law of Thermodynamics for open systems
- Steam thermodynamics
- Heat transfer

Type of Instruction

The teaching consists of lectures, laboratory work and exercises. Participation in the course laboratory work is compulsory.

Examination

The course is assessed with the grades U, 3, 4 or 5.

The assessment of student performances normally takes place during special examination periods and is usually written. The assessment may also be based on submitted presentations of laboratory work and exercises. For students who have not passed during a regular examination a re-sit is arranged, usually during special re-examination periods.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: Overlaps entirely with MTB943/1BT005.

Required Reading and Additional Study Material

Required reading

Alvarez, H Energiteknik del 1, Studentlitteratur: Lund

Mörtstedt S-E Data och diagram, Esselte Studium AB