Linnæus University

Jnr: 2019/2706-3.1.2.2

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 2019-09-12 by Faculty of Technology. Examination, Cours Evaluation and assessment methods are revised.
The course syllabus is valid from spring semester 2020

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 examination consists of two parts, the report of the laboratory work and a written examination. The report of the laboratory work (1 credit) is assessed as failed or passed. The written examination (6,5 credits) is assessed with the grades U, 3, 4 or 5. Both parts must be approved before the course is passed. The final grade is then given by the grade of the written examination.

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.

If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customised exam or to have the student conduct the exam in an alternative way.

Course Evaluation
During the implementation of the course or in close conjunction with the course, a course evaluation is to be carried out. Results and analysis of the course evaluation are to be promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is to be carried out anonymously.

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