



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Energiförsörjning

Energy Supply Systems

MVKN15, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED M

Date of Decision: 2023-04-11

General Information

Elective Compulsory for: W3

Elective for: F4, I4, M4-en, W4-es

Language of instruction: The course will be given in Swedish

Aim

Energy supply may be subdivided into supply of primary energy, conversion and distribution of energy. Energy supply consists mainly of fossil and nuclear fuel, renewables, and heat/cooling from the air and the ground. The main focus of this course is the primary energy supply, but conversion and distribution will also be touched upon.

The aim of the course is to provide knowledge on the technical, economical and environmental aspects of energy supply systems.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to describe various energy supply systems in important dimensions such as primary energy demand, capacity adjustment, economic aspects, environmental characteristics, etc.
- be able to relate contemporary national and international energy supply systems to the historic development of society

Competences and skills

For a passing grade the student must

- be able to construct a basic supply system on national or regional level.
- be able to critically examine engineering/academic reports on energy supply systems

Judgement and approach

For a passing grade the student must

- be able to actively participate in discussions on various energy supply system themes
- be able to independently carry out analyses and arguments for relevant system solutions

Contents

The study course will give knowledge about energy supply systems, their build-up and function in relation to the development of the energy demand. Knowledge and application skills in analyzing resource sustaining, environmental, financial etc. aspects on the erection, organization and operation of these systems, mainly on the local and regional level. System build-up, capacity adjustment, system security. Infrastructure and environmental effects of energy supply systems. Technologies for energy transformation and development trends.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Both individual examination and examination based upon group performance. Compulsory assignments are presented and discussed in group seminars. The same applies to the compulsory industrial study tour. Participation in an applied energy supply system exercise is compulsory as well as knowledge tests based upon the study course literature. Approved tests, seminars and exercises are sufficient for final grade 3 "pass". For higher grades a written examination is required. If required, a student with a permanent disability is given an equivalent examination option to a student without a disability. The examiner can, after consultation with the university's department for pedagogical support, decide on an alternative form of examination for the student concerned.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Admission requirements:

- FMIF01 Environmental System Studies: Management for Sustainable Development or FMIF05 Environmental Management or FMIF35 Sustainable Development from an Electro-technological Perspective or FMIF55 Sustainable Development or MVKF01 Energy and the Environment in Sustainable Development

Assumed prior knowledge: MMVF01 Thermodynamics and Fluid Mechanics or FAFA35 Physics - Thermodynamics and Atomic Physics or equivalent course.

The number of participants is limited to: No

The course overlaps following course/s: MVK071

Reading list

- The study course literature is continuously updated and is normally without charge accessible for the students from the Internet or the homepage (Canvas) of the course.

Contact and other information

Examinator: Jens Klingmann, jens.klingmann@energy.lth.se

Course coordinator: Jens Klingmann, jens.klingmann@energy.lth.se

Course coordinator: Marcus Lundgren, marcus.lundgren@energy.lth.se

Course homepage: <https://www.energy.lth.se/english/education/>

Further information: The course is based on lectures, seminars, studies, reports and analysis as group exercises, industrial visits, and tests on compulsory readings with subsequent review and correction. Participation at the course introduction is mandatory, to ensure that all students are included in the construction of mandatory student groups.