Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Syllabus

KE0038.1 Environmental Impacts of Energy Systems, 9.0 credits

Energisystemens miljöpåverkan

The course is given Energy Systems Engineering Programme (admission before 1 July 2007)
Syllabus discontinued 2 June 2008

Version 1 in Slukurs. Corresponds to version 1 in Ladok

Syllabus approved

30 November 2006

The version applies to students admitted from spring 2008 to spring 2008

The version is not a module version

Subjects

Chemistry/Biology

Education cycle

First cycle

Modules

Title	Code	Credits
Single module	0101	9.0

Advanced study in the main field

Grading scale

Pass / Failed
The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

Language

Swedish

Prior knowledge

Knowledge comparable to 13,5 ECTS basic chemistry, and 7,5 ECTS biology.

Objectives

After passing the course the student shall
- have knowledge about the environmental impacts of different energy systems, and understand the background to these environmental impacts
- shall be able to measure and judge the environmental impacts of the different energy systems, and be able to propose possible actions to mitigate those impacts
- have good knowledge about the chemistry of the atmosphere, aquatic and terrestrial ecology, as well as soil sciences

Content

The course consists of different parts linked together containing
- description of the atmosphere, the formation and depletion of the ozone layer, the chemistry of the troposphere, gaseous and aerosol contaminants related to energy production or usage, and acid rain
- the physical-chemical reasons for the greenhouse effect, and description of the most important greenhouse gases
- description of the environmental effects which may occur at due to the production of fossil fuels, mining of minerals for nuclear power plants, and waste products obtained at or after energy production, with special emphasis on air, soil and water
- the basic chemical, biological and physical properties of soils, and the input and the turnover of carbon and other nutrients
- description of anthropogenic and biological acidification of soils, and the transport of contaminants
- ecosystem analysis, the concept of ecosystems, stable and unstable systems, complex relationships in flora and fauna
- the global circulation for C, N, P and S: principles and quantities, the impact of combustion related to environmental effects
- description of the impact of different energy systems on populations, composition of biological species and biodiversity, and of methods to determine and judge the impact of long-distance and local air-contamination on the environment
- description of the effects of water level regulation in power station reservoirs on

aquatic systems, and the output of compounds with acidic and eutrophic properties - examples of the possibilities to solve the problems which different energy systems may create for the environment

Implementation

Lectures: 50 hours
Exercises: 30 hours (mandatory)

Examination

Requirements for examination

Every part will contain one or several knowledge tests, which may be in different forms as written examination, home examination, hand-in exercises or writing a memorandum.

Passed knowledge tests on every part, and presence at mandatory exercises.

- If the student fails a test, the examiner may give the student a supplementary assignment, provided this is possible and there is reason to do so.
- If the student has been granted special educational support because of a disability, the examiner has the right to offer the student an adapted test, or provide an alternative assessment.
- If changes are made to this course syllabus, or if the course is closed, SLU shall decide on transitional rules for examination of students admitted under this syllabus but who have not yet passed the course.
- For the examination of a degree project (independent project), the examiner may also allow the student to add supplemental information after the deadline. For more information on this, please refer to the regulations for education at Bachelor's and Master's level.

Additional information

- The right to take part in teaching and/or supervision only applies to the course date to which the student has been admitted and registered on.
- If there are special reasons, the student may take part in course components that require compulsory attendance at a later date. For more information on this, please refer to the regulations for education at Bachelor's and Master's level.

Responsible department

Department of Molecular Sciences
Cooperating departments:
Department of Aquatic Sciences and Assessment
Department of Soil and Environment

Supplementary Information

Finalized by: Programutskottet för teknikutbildningarna
Biology Area: Ecology
Replacement course: (KE0024) KE0034