

Large Technical Systems and the Environment

Programme course

6 credits

Large Technical Systems and the Environment

TKMJ14

Valid from: 2017 Spring semester

Determined by

Board of Studies for Mechanical Engineering
and Design

Date determined

2017-01-25

Main field of study

Energy and Environmental Engineering, Mechanical Engineering

Course level

Second cycle

Advancement level

A1X

Course offered for

- Industrial Engineering and Management, Master's Programme
- Mechanical Engineering, Master's Programme
- Sustainability Engineering and Management, Master's Programme

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

Environmental science and a general knowledge of industry and large technical systems are beneficial

Intended learning outcomes

In this course, the student will develop knowledge of modern environmental engineering. Emphasis is on new and established proactive solutions of environmental problems related to large technical systems. After the course, the student will be able to;

- explain how large technical systems influence the environment and discuss technical, economic and political implications in re-developing such systems.
- outline common mitigating measures used to minimise pollution of air and water and describe the role of such end-of-pipe technologies in modern environmental

- engineering.
- describe and, on a general level, reflect upon how different proactive strategies can contribute in limiting environmental impacts of the society's use of materials and energy.
- together with other peer students gain a deeper insight in a current topic in the field of modern environmental technology, search for information on the topic and present it in writing.

Course content

The course covers different themes such as the emergence of environmental problems, environmental history, technical, organisational and environmental aspects of large technical systems with special emphasis on energy and waste management systems, traditional end-of-pipe technologies, system thinking and life cycle approaches in solving environmental problems.

Teaching and working methods

The course is based on lectures, seminars, assignments and study visits. A minor project work is part of the course as well.

Examination

TEN2 Written examination	U, 3, 4, 5	4 credits
UPG2 Active participation in seminars, assignments and study visit	U, G	2 credits

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

Supplementary courses: Building energy Systems, Energy systems analysis, Industrial ecology, Industrial energy systems, Management systems and sustainability, Resource efficient products, Environmental systems analysis-project course.

Department

Institutionen för ekonomisk och industriell utveckling

Director of Studies or equivalent

Niclas Svensson

Examiner

Joakim Krook

Course website and other links

Education components

Preliminary scheduled hours: 44 h

Recommended self-study hours: 116 h

Course literature

Kurskompendium bestående av utvalda vetenskapliga artiklar och bokkapitel.

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.