MJ2652 Environmental Effects from Technical Systems and Processes 6.0 credits

Miljökonsekvenser av tekniska system och processer

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for MJ2652 valid from Autumn 2009

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Specific prerequisites

At least 120 academic credits (ECTS) in a program of engineering or natural science or course MJ1502 (3c1330) or corresponding knowledge.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The whole society is built up by different technology systems and processes. This course will provide deep knowledge about natural resources and environmental consequences from technology systems, technology processes and human behaving in the society.

After passed course the student should be able to:

- Describe and explain basic concepts of ecology; e.g. energy and material flow in an ecosystem, ecological services, carrying capacity
- Describe and explain impact from air emissions (substances, sources, distribution) to ecosystem and human health.
- Describe and explain impact from water emissions (substances, sources, distribution) to ecosystems and health.
- Describe and explain todays important environmental threats as e.g. climate change, acidification, eutrophication, ozone depletion, climate change, biological diversity and changes in of important ecosystems and nature resources as e.g. decreasing rainforests and lacking water resources.
- Describe and explain impact from toxic substances (sources, substances, distribution) on ecosystems and health. E.g. (DDT, PCB,)
- Describe and analyze environmental impacts from different form of energy production
- Analyse and propose solutions or strategies to an environmental effect problem from system analytic approach

Course contents

- Concepts of ecology; eg. material and energy flow in a ecosystem, ecology services, Carrying capacity.
- Emissions to air (substances, sources, distribution)
- Impact to ecosystem and health from air emissions. Climate change, acidification, eutrophication, ozone depletion etc.
- Metals – emissions, sources, distribution – impact to ecosystems and health.
- Emissions to water (substances, sources and distribution) Impact to ecosystem and health e.g. eutrophication
- Environmental impact of different energy production.
- Ecotoxicology, Distribution of toxic substances (DDT, PCB, etc) and impact to ecosystem and health.
- Nature resources and Biodiversity, species and ecosystems. Changes of important ecosystems as rainforests, coral reefs etc.
- How to evaluate Human Carrying capacity? Ecological footprint – evaluation of eco services.

- System analytic approach on environmental effect problem

Course literature

Will be announced at the start of the course.

Examination

- SEM1 - Project, 1.5 credits, grading scale: P, F
- FÄL1 - Exkursion, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.