MJ2659 Technology and Ecosystems, Larger Course 7.5 credits

Teknik och ekosystem, större kurs

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

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

Establishment

Course syllabus for MJ2659 valid from Autumn 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Environmental Engineering,Mechanical Engineering

Specific prerequisites

Open to KTHs degree programme students with at least 150 credits or a Degree of Bachelor for the other applicant.

Language of instruction

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

Intended learning outcomes

The overall aim of the course is to study the connection between ecosystems and socio-technical systems; how the socio-technical systems are dependant on functioning ecosystems at the same time as human use of natural resources influences structures and processes in the ecosystems.

On completion of the course, the student should be able to:

- Account for central concepts in ecosystem ecology.
- Describe and explain the most important global and regional environmental problems of today, different actors' contributions to the problems as well as the development of the problems over time.
- Given a global or regional environmental problem, identify and assess possible measures for improvement.
- Discuss consequences for the interpretation of sustainable development based on the concept ecological carrying capacity.
- Define a socio-technical system with relevant system boundaries as well as identify and analyse the environmental impact associated with the system and potential improvement measures.
- In writing and orally present literature and project assignment according to established scientific methodology as well as compare scientific and popular science written communication in the environmental context.

Course contents

o Concepts such as ecosystems, ecosystem services, ecological carrying capacity and planetary boundaries as well as their relation to technical development, population growth, welfare and sustainable development.

o The most important global and regional environmental problems of today such as global warming, acidification, eutrophication, ozone layer depletion, environmental pollutants, biodiversity, freshwater scarcity and deforestation.

o Trends and changes around the use of natural resources such as forest, soil and drinking water.

o Analysis of a socio-technical system- e g production and use of energy, transports, foods, electronics and textiles and its dependence as well as influence on ecosystems.

o Which role societal actors at different levels e g individuals, companies, organisations and public authorities, play in relation to regional and global environmental problems and possible solutions.

Disposition

The course consists of lectures, literature assignment, project assignment and written examination. Literature assignment and project assignment require submission of analysis/reports as well as active participation in seminars. The literature assignment is individual and consists of a written book analysis and formulation of questions for discussion. The project work, that is divided into an individual part and a groupwork part, is based on the concept of planetary boundaries that are studied in relation to a specific socio-technical system.

Course literature

Will be announced at the beginning of the course

Examination

- LIT1 - Literature Assignment, 1.0 credits, grading scale: P, F
- PRO1 - Project 1, 2.0 credits, grading scale: P, F
- PRO2 - Project 2, 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.

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.