FMJ3410 Theory and Methodology of Science for Energy Research 6.0 credits

Teori och vetenskapsmetodik för energiforskning

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

Establishment

On 12/07/2019, the Dean of School of ITM has decided to establish this official course syllabus to apply from spring term 2020 (registration number M-2019-1473).

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Students who are researchers at KTH in the earlier stages of their doctoral programme (first or second year).

Degree of Master or the equivalent from a major university in fields such as science, technology, energy or related fields. Documented proficiency in English B or the equivalent

Language of instruction

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

Intended learning outcomes

The aim of the course is to introduce theory and methods of science to doctoral students who are in early stage of their research career, and support them if the preparation of their research plans and research documents, and strengthen their scientific research knowledge. After passing the course, the students should be able to:

- understand, describe and compare basic concepts in theory and methodology for science and relate them to energy research problems and own research subject
- identify and propose application of specific methods to analyse energy problems and research subjects in their domain
- critically review theories and methods that are used in scientific papers and reports and their relevance for research on different thematic fields of energy,
- clearly understand the requirements of a publishable research paper for a highly ranked journal
- be able to understand and deal with sustainability dimensions in design and development of energy research projects.

Course contents

The course introduces basic concepts and understanding of methodological and underlying philosophical problems that arise in science and invites to reflection on research questions in the student's own field of study. The course functions as a scientific introduction to applied research in energy-related subjects in particular. The course also introduces critical assessment of methods and results of research that can help students to evaluate and analyse research material and proofs.

Examination

- SEM1 - Seminars, 0.5 credits, grading scale: P, F
- SEM2 - Seminars, 0.5 credits, grading scale: P, F
- SEM3 - Seminars, 0.5 credits, grading scale: P, F
- INL1 - Assignments, 1.0 credits, grading scale: P, F
- INL2 - Assignments, 1.5 credits, grading scale: P, F
- INL3 - Assignments, 2.0 credits, grading scale: P, 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.

Other requirements for final grade

Participation in the seminars and at least 60% of the lectures is required.

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.