



# MJ153X Degree Project in Energy and Environment, First Cycle

## 15.0 credits

Examensarbete i energi och miljö, grundnivå

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

### Establishment

Course syllabus for MJ153X valid from Spring 2013

### Grading scale

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

### Education cycle

First cycle

### Main field of study

Technology

### Specific prerequisites

At least 120 cr within the Programme of Energy and Environment as well as mandatory courses for the chosen profile.

### Language of instruction

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

## Intended learning outcomes

The work aims at developing the students' ability to, under realistic conditions, independently identify, formulate, plan and structure the realization of a defined assignment within the area of Sustainable Development in a scientific manner, and present this work orally and in a written report. The student is trained to independently work within a project framework producing written and oral presentations as deliverables.

After the examination the student should be able to:

### **Theoretical part:**

- Describe and analyse concepts and theories in the area of Sustainable Development from ecological, social and economic perspectives.
- Suggest and justify strategies and measures for reducing problems in sustainable development from a system and socio-technical perspective
- Indicate and describe means of control and tools used within industry and society for reduction of strains from a sustainability point of view, from a product or an activity
- Reflect on the role of the engineer for a sustainable development.

### **Academic work:**

- Show ability in team work and co-operation
- Analyse the need for scientific information, search for information and evaluate the obtained information
- Present the work in a written report with demands on content, structure and language
- Refer in a report, to sources, figures, tables and formulas in a correct way
- Write an English abstract with proper use of the terminology in the subject
- Perform an oral presentation with demands for time keeping, clarity of language, performance and illustrations

### **Practical part:**

- Formulate problems and apply methodologies in the area of sustainable development in order to seek for and evaluate solutions
- Apply knowledge and skills acquired during the earlier parts of the programme, on issues connected to sustainable development
- Plan their own work so that given part time goals are reached
- Demonstrate ability to integrate and reflect on sustainable development in their chosen technical profile
- Fulfilling objectives put on the project by the chosen technical profile
- Perform a qualitative and/or quantitative sensitivity analysis of their results

## Course contents

The thesis which is common to all technology profiles in the engineering programme, Energy and environment, reflects the programme's holistic approach and provides an application of the concept of sustainable development in the chosen technology profile. To achieve integration within the programme the thesis work will contain a common theoretical part and profile specific project part.

The theoretical part is common for all students in the programme. This part will provide definitions, concepts and scientific methodology for the student to be able to implement and integrate the concept of sustainable development in their work as engineers.

The practical part is an implementation in a technical project specific for the chosen technical profile. An important part of the project work is the integration of sustainability aspects. This integration must be made clear both in the project plan and by the student writing a reflection document about the integration of sustainable development. The integration shall also be visualized in the description of the thesis work. The project can be connected to industry or society but the performance is done mainly at KTH. The practical part is managed and done at the school responsible for the chosen profile. The supervisor for the project is appointed by the school respectively. An oral presentation is performed at a for the programme joint seminar and is an important part of the programme affiliation

## Course literature

Hållbar utveckling - en introduktion för ingenjörer och andra problemlösare, Fredrik Gröndahl och Magdalena Svensson 2010.

PM och dokument som stöder det akademiska arbetssättet

Eventuellt tillkommer kurslitteratur som speglar behov i den praktiska tillämpningen.

## Examination

- XUPP - Examination, 15.0 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.