MJ2460 Green Building - Concept, Design, Construction and Operation 6.0 credits

Uthålliga byggnader - design, bygg och drift

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 MJ2460 valid from Autumn 2008

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

Sustainable Energy Utilization, MJ2407 or equivalent expertise (to be evaluated by the course coordinator)

Language of instruction

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

Intended learning outcomes

Upon successfully completing this course the student should be able to:

- Understand and actively participate in the overall iterative and multidisciplinary process of conceptualizing and designing an environmentally friendly building (low-emissions, low resource-consumption, small environmental footprint),
- Choose and size building components, as well as energy and environmental systems suitable for different categories of buildings, and different climate zones, such as to achieve the smallest feasible life-time environmental impact,
- Utilize a variety of tools and methodologies suitable for evaluating the resource consumption and overall environmental performance (environmental footprint) of buildings in different stages of their life cycles, as well as actively contribute to refining those tools and methodologies,
- Evaluate the economic performance of buildings (operating & maintenance costs, real estate value), as related to their resource-consumption and environmental performance,
- Have a good understanding of key regulatory tools, including building codes, design guidelines, as well as relevant legislation governing the consumption of resources and emission of environmental pollutants by buildings, and be able to actively contribute to the refining of those tools.

Course contents

Green, sustainable building starts with site planning and evaluation, and proceeds through construction, commissioning, operation and demolition. This course deals in detail with the tools, methodologies, processes, and multidisciplinary stakeholder collaboration required for designing, building and operating sustainable buildings, as well as for evaluating their resource-related, environmental and economic performance in various stages of their operation and life.

Lectures given by experts from a number of related disciplines (energy technology, architecture, building physics, environmental management systems, real-estate economy) present the essential elements of integrated green building design and provide a framework for further in-depth study via a group project. Field trips include visits to a number of energy-efficient and environmentally friendly buildings.

Examination

- PRO1 - Project, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Written exam, 1.5 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.

Other requirements for final grade

Group project (4.5 hp) Conceptual design of an energy efficient, low-environmental-impact building (apartment, office, or commercial building, school, hotel or other) located in a specific climate zone. One grade (A-F) assigned per group.

Final exam (1.5) Tests knowledge of subjects presented at lectures. One grade (A-F) assigned per individual. Individual grades ranging from A-F will be assigned based on the weighted contribution of the above.

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.