



# **MJ2462 Achieving Energy Efficiency in Existing Buildings 6.0 credits**

**Energieffektivisering i befintliga byggnader**

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

## **Establishment**

Course syllabus for MJ2462 valid from Autumn 2019

## **Grading scale**

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

## **Education cycle**

Second cycle

## **Main field of study**

Mechanical Engineering

## **Specific prerequisites**

MJ1112 Applied thermodynamics 9hp,  
MJ1401 Heat Transfer 6hp,  
MJ2407 Sustainable Energy Utilisation 9hp,  
SG1220 Fluid Mechanics for Engineers, 6hp,  
MJ2422 Thermal Comfort and Indoor Climate 6hp, or equivalent

The student should have an overall knowledge of energy technology and the energy systems of buildings.

## Language of instruction

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

## Intended learning outcomes

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

1. Make a plan and perform an energy audit in buildings according to the degree of detail needed
2. Understand how to evaluate energy using systems in buildings in terms of energy efficiency
3. Be able to analyze and process historical energy data for buildings
4. Disaggregate and assign energy use between the different sub systems
5. Identify possibilities and tailor energy saving measures that will result in a reduced energy demand

## Course contents

The course will give a fundamental understanding on how energy technology can be applied to reduce energy demand of buildings. Thermodynamics, heat transfer, thermal indoor climate, measurement technology, building simulation software and problem solving will be applied in surveys to find the possibilities to increase the energy performance of buildings.

The course is divided in two parts; one theoretical part that consists of a series of lectures and one practical part where the student will work with surveys of real energy systems in buildings. The course focuses on typical buildings in the Swedish building stock, but the knowledge attained in this course can be adapted to any building and energy system in the world.

## Examination

- PRO2 - Project, 2.0 credits, grading scale: P, F
- PRO1 - Project, 1.0 credits, grading scale: P, F
- TEN1 - Written exam, 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.

In the exam, student can bring books that does not contain handwritten notes and other material approved by the course responsible.

## **Other requirements for final grade**

The final grade of the course is a combination of the projects (PRO1 and PRO2), control checkpoints (KS1 and KS2) and possibly the exam (TEN1). The grade E is given if the projects and control checkpoints are awarded a Passing grade.

## **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.