



MJ2525 Heating, Cooling and Indoor Climate 5.0 credits

Värme, kyla och inomhusmiljö

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

The official course syllabus is valid from the Spring semester 2025 in accordance with the decision by the Head of School: M-2023-2107 Decision date: 2023-10-13

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Additional regulations

Is coordinated with MJ2443 (overlap)

Specific prerequisites

Degree of Bachelor in engineer- or natural sciences.

Language of instruction

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

Intended learning outcomes

To pass the course, the student should be able to:

1. Discuss the energy use to reach thermal comfort in various types of buildings.
2. Carry out heat and refrigeration-load calculations for buildings.
3. Describe the principles of heat pump technology for heating and cooling in buildings.
4. Identify the most important differences between different energy system solutions for buildings.
5. Explain the functions for the main components in heat and cooling system.
6. Solve and analyse basic problems in heating and cooling in buildings by means of given principles and tools

To receive higher grades the student should also be able to:

1. Solve and analyse advanced problems in heating and cooling in buildings by means of given principles and tools.
2. Use ideas and knowledge from this course to design new, highly efficient energy systems for buildings.
3. Improve the existing and conventional energy solutions for buildings.

Course contents

Subjects that mainly are treated in the course are related to different types of buildings, their energy requirement and the energy systems that are used to cover the heat and cooling needs. Conventional and new technologies for heat and cooling system in buildings will be discussed. Concepts and design details for heat pump technology will also be treated in detail. Calculation tool for fridge and heating needs in buildings and for the performance of the power systems will be introduced in the course which will be used to evaluate different system-alternative for buildings.

Examination

- INL1 - Assignment, 2.0 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.

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.