



MJ2443 Heating, Cooling and Indoor Climate 6.0 credits

Värme, kyla och inomhusmiljö

Course syllabus for MJ2443 valid from Autumn 16

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

Grading scale: A, B, C, D, E, FX, F

Education cycle: Second cycle

Main field of study: Mechanical Engineering, Technology and Health

Intended learning outcomes

The aim of the course is give advanced knowledge in handling of different tasks in the areas of heating, cooling and indoor climate. A broad range of energy systems for various types of buildings is treated in lectures, seminars with guest lecturers from industry, study visits, calculation exercises and project work.

After passing the course, the students should be able to:

- â€ Describe the indoor climate requirements for thermal comfort
- â€ Discuss the energy use to achieve thermal comfort in various types of buildings
- â€ Carry out calculations of heating and cooling needs for buildings
- â€ Describe the principles of heat pump technology for heating and cooling in buildings.
- â€ Identify the most important differences between different energy system solutions for buildings.
- â€ Explain the functions of the most important components in heating and cooling system.
- â€ Use known principles and tools to solve and analyse problems within heating and cooling in buildings.
- â€ Design new, highly efficient energy systems for buildings
- â€ Think outside the box and improve the existing and the conventional energy solutions for buildings

Course main content

Main subjects that are treated in the course are:

Various types of buildings and their energy use. Conventional heating and cooling system in buildings. Current and new technology for heat and cold. Concepts and design details for heat pumping technology (steam compression systems). Components for heat pump systems. Simulation tools for cold and heat calculations in buildings. Calculation tools for heating and cooling system. Analysis of energy performance for heating and cooling systems in buildings.

Language of instruction

Language of instruction is specified in the course offering information in the course and programme directory.

Eligibility

Bachelor degree in mechanical engineering. Preferrably with knowledge in applied thermodynamics (example MJ1112, 9 credits) and heat transfer (example MJ1401, 6 credits).

Literature

-Refrigerating Engineering (parts I and II) by Granryd et al.

-Sustainable Energy Utilization by His Havtun and Paulina Bohdanowicz.

The books are available at the reception of the Department, BrinellvÃgen 68.

Examination

- INL1 - Written Assignment, 1.5 credits, grading scale: P, F
- LAB1 - Laboratory Lessons, 1.5 credits, grading scale: P, F
- TEN1 - Written Exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F

-Examination (TEN1; 3.0 cr), (AF)

-Laboratory sessions (LAB1; 1.5 cr), (PF)

-Written assignment (INL1, 1.5 cr), (PF)