

Air-Conditioning, Heating, Refrigeration, Ventilation (6017-M)

5 ECTS**Lecturer:** U. StritihLectures: 30h | Tutorials: 10h | Labs: 5h | Project: 15h | Lang. : 

Objectives

The main objective of the subject is to provide student with knowledge in a domain of heating, refrigeration, ventilation and air-conditioning (HVAC) and their applications. With the knowledge obtained from the field of HVAC student will gain:

- basic knowledge and functioning of heating, refrigeration, ventilation and air conditioning devices and systems.
- ability to design heating and cooling systems and systems as well as ventilation and air-conditioning systems and systems.

Programme

1. Physiological, thermodynamic and meteorological basis.
2. Calculation of heat losses (winter transmission).
3. Building heating sources and installations, distribution and other heating equipment, Heat emission devices in buildings, room ventilation.
4. Calculation of heat gains (summer transmission).
5. Cooling units in buildings, air conditioning and elements, preparation and distribution of air, blowing air into a room of buildings, regulation of systems.

Prerequisites

In order to achieve the objectives successfully, the students must have:

- Good knowledge in thermodynamics and heat & mass transfer.

Learning outcomes

After attending this course, the student will have:

- Advanced theoretical, methodological and analytical knowledge in the fields of heating, cooling, ventilation and air conditioning.
- Diagnosis and problem solving in the fields of heating, cooling, ventilation and air conditioning.

Assessment

Theory: from lectures and exercise problems (50%); Project work on HVAC (50%)

Literature

1. Shan K Wang: Handbook of Air conditioning and refrigeration, McGraw-Hill, 2001
2. J. Kreider, P. Curtis, A. Rabl: Heating and cooling of Buildings, 2017
3. ASHRAE Pocket Guide for heating, refrigeration, ventilation, air-conditioning, 2017
4. ASHRAE Handbook — Refrigeration, 2022
5. ASHRAE Handbook — HVAC Applications, 2023
6. ASHRAE Handbook — HVAC System and Equipment, 2024
7. ASHRAE Handbook — Fundamentals, 2025