

## Course Syllabus

### Low-Energy HVAC Systems 5 Credits\*, Second Cycle

#### Learning Outcomes

After completing the course, the student shall be able to:

- Estimate heating demands for buildings in cold climates and relate to Swedish building energy requirements (BBR).
- Describe the design, function and application of heating, ventilation and air-conditioning systems for low-energy buildings in cold climates.
- Analyse and describe the interaction between different technical HVAC systems and the building itself.

#### Course Content

The course aims to explore the basic function of heating, ventilation and cooling systems (HVAC), and to introduce innovative concepts for low energy and renewable energy buildings. Ventilation strategies (such as natural ventilation, mechanically assisted ventilation, demand controlled ventilation, and mixed mode ventilation) and methods for heating and cooling will be discussed, as will the way in which building regulations in Sweden influence choices. The importance of considering the dynamic operation conditions for HVAC systems in buildings will be emphasised. In the final part of the course, the focus will be on analysing the performance and interaction of HVAC systems and the building.

#### Assessment

Written examination (4 credits) and written assignment with presentation (1 credit).

#### Forms of Study

Lectures, exercises.

#### Grades

The Swedish grades U, 3, 4, 5.

Written assignment U-G.

#### Prerequisites

Bachelor of Science degree from building-, energy technology or civil engineering related fields of at least 180 credits and English 6



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**Subject:**

Construction

**Group of Subjects:**

Building Technology

**Disciplinary Domain:**

Technology, 100%

**This course can be included in the following main field(s) of study:**

1. Energy Technology

**Progression Indicator within (each) main field of study:**

1. A1N

**Approved:**

Approved 21 February 2019

Valid from 17 April 2019