



Faculty of Health, Science and Technology
Environmental and Energy Systems

Syllabus

Building Services Engineering

Course Code:	EMGB12
Course Title:	Building Services Engineering <i>Installationsteknik</i>
Credits:	15
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has less than 60 credits in first-cycle course/s as entry requirements (G1F)

Major Field of Study:
MEI (Environmental and Energy Systems)

Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2017-09-14, and is valid from the Spring semester 2018 at Karlstad University.

Prerequisites

MSc engineering programme:

EMGA76 Thermal Fluid Sciences 7.5 ECTS cr, EMGA77 Applied Thermodynamics 7.5 ECTS cr, EMGB17 Heat and Mass Transfer 7.5 ECTS cr, EMGB16 Energy Systems 7.5 ECTS cr., or equivalent

BSc engineering students:

EMG11 Introduction to Energy Systems 7.5 ECTS cr, EMG141 Energy Engineering Systems 7.5 ECTS cr, EMGA13 Fluid Mechanics 7.5 ECTS cr, EMG211 Sustainable Energy Engineering 30 ECTS cr., or equivalent

Learning Outcomes

Upon completion of the course, students should be able to:

- identify the factors that have an effect on and determine the indoor climate of a building.
- estimate the need of ventilation-, heating-, and cooling systems with the help of energy and mass balances,
- calculate dimensions of a system, including system components, for ventilation, heating and cooling,
- analyse the function of a ventilation-, heating-, and cooling system, especially in terms of flow control and energy needs, and
- present a task in the form of a technical report.

Content

Course elements covered include:

- Thermal comfort and heating and cooling systems
- Air quality and ventilation systems
- Heat balance in buildings
- Heating, cooling and ventilation systems components
- Fluid mechanics applied to pipe branching; flow distribution, adjustment, flow regulation
- Moist air and energy and mass transfer in heating, cooling and ventilation components
- Regulation functions in heating, cooling and ventilation systems
- Energy analysis of heating, cooling and ventilation systems

Students carry out a project which is reported in writing.

Reading List

See separate document.

Examination

Assessment is based on a written exam, and a written presentation of an individual project. carry out a project in the course area which is reported in writing.

Grades

One of the grades Fail, 3 (Pass), 4 (Some Distinction), or 5 (Distinction) is awarded in the examination of the course.

Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional information

The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.