



HÖGSKOLAN I GÄVLE

Building Energy Systems 7.5 cr

Byggnadens energisystem 7,5 hp

Set by Faculty of Engineering and Sustainable Development

Version

Set at

Valid from

5/9/22

HT2023

Level	A1N
Education level	Second cycle
Course identifier	ETA013
Credits	7.5 cr
Main field of study	Energy Systems
Subject group	Energy Technology
Disciplinary domain	Technology 100.0 %

Learning outcomes After completion of the course the student shall be able to

Knowledge and understanding

1. describe various technical installations for air-conditioning of buildings
2. describe the basic concepts of building energy systems
3. describe different principles for the transport of heat, moisture, and air through the building envelope

Competence and skills

4. analyse technical installations for air-conditioning of buildings
5. analyse and design energy-efficient buildings
6. plan and give a written account of work in project form and discuss conclusions and the knowledge and arguments on which they are based

Judgement and approach

7. make assessments with regard to scientific and societal aspects.

Course content

Psychrometrics

Building physics – heat, air, and moisture transport

Energy balance of buildings
Air handling systems of buildings
Introduction to hydronic heating and cooling systems
Internal heat generation
Building energy systems
Energy management of buildings
Building energy calculations

Teaching Lectures, calculation exercises and project work

Prerequisites Completion of Bachelor's degree in technology or natural sciences of at least 180 credits, or equivalent foreign degree with at least 12 credits of which in thermodynamics and fluid mechanics, or equivalent knowledge
English language proficiency equivalent to (the Swedish upper secondary school) English course 6/B

Examination Written examination and project work

0010 Written examination 6 credits examines learning objectives 1-5, 7, grades A-F
0020 Project work 1.5 hp examines learning objectives 4-7, grades Pass, Fail

Grade A, B, C, D, E, Fx, F

Other regulations Degree criteria for final grade will be handed out by the course responsible or examiner latest at the beginning of the course.

Sustainable environment A minor part of the course content deals with sustainable development.

Module

0010	Written examination	6 cr	Grade: AF
0020	Project work	1.5 cr	Grade: UG