



# HÖGSKOLAN I GÄVLE

## Sustainable Cities 6 cr

*Hållbara städer 6 hp*

Set by Faculty of Engineering and Sustainable Development

### Version

**Set at**

**Valid from**

10/15/14

**HT2015**

<b>Level</b>	A1F
<b>Education level</b>	Second cycle
<b>Course identifier</b>	ETA319
<b>Credits</b>	6 cr
<b>Main field of study</b>	Energy Systems
<b>Subject group</b>	Energy Technology
<b>Disciplinary domain</b>	Technology 100.0 %

### Learning outcomes

After completion of the course the student shall be able to  
Knowledge and understanding

1. describe and explain basic concepts of sustainable society and sustainable cities
2. present various methods for the design and evaluation of sustainable cities
3. present technical solutions and system integration of sustainable and renewable energy
4. present the effects of the local climate, large-scale climate and climate change on the design of buildings and control of indoor environment
5. describe the importance of latitude and urban geometry on the sunlight and daylight
6. describe how urban boundary layers are formed during both day and night, and their impact on ventilation of the cities.

### Course content

Sustainable construction, sustainable transport, and technical installations  
Energy efficiency in buildings and infrastructure systems  
Technical solutions and system integration of sustainable and renewable energy  
Climate, climate change, and the built environment  
Innovation, design, and sustainable technology  
Urban boundary layers  
Air velocity and flow visualization in city models  
Heat island effects

Solar energy in urban areas  
The effect of traffic on air quality  
Biodiversity in urban areas  
Air quality  
Project work  
Laboratory work

<b>Teaching</b>	Lectures, project work, laboratory work, and seminars
<b>Prerequisites</b>	English language proficiency equivalent to (the Swedish upper secondary school) English course 6/B. Energy Systems 6 credits and Heat and Power Generation Systems 6 credits, or equivalent.
<b>Examination</b>	Examination Written examination, project work, and laboratory work
<b>Grade</b>	A, B, C, D, E, Fx, F
<b>Other regulations</b>	Criteria for final grades are announced by the co-ordinator or examiner at the start of the course.
<b>Sustainable environment</b>	The majority of the course content deals with sustainable development..

<b>Module</b>				
	0010	Written examination	2.5 cr	Grade: AF
	0020	Project work	1.5 cr	Grade: UV
	0030	Laboratory work	2 cr	Grade: UV