



# A42H4B Sustainable Design - Studio 4:4 12.0 credits

## Hållbar gestaltning - Studio 4:4

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

## Establishment

Course syllabus for A42H4B valid from Autumn 2009

## Grading scale

P, F

## Education cycle

Second cycle

## Main field of study

Architecture

## Specific prerequisites

Bachelor's Degree, or an equivalent level, within the field of Architecture.

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

# Intended learning outcomes

## **Generality/Individuality: b) Individuality**

Architecture in an extreme climate

### **Overall goals**

The project is part of the Sustainable Design Studio.

Studio Description: In order to develop new strategies for designing a sustainable society, this Studio emphasizes economy, ecology, energy and new technology in relation to architecture and urban design.

2. The course/project goal is to increase the student's knowledge in this area/field and skills/knowledge in the field of architecture in general. The students will enter the project with varying degrees of knowledge/skills and will subsequently end up at different levels at the end of the course/project.

3. The individual student must show an increase in the particular skills/knowledge offered in the studio and in the field of architecture in general.

### **Course goals**

In order to develop new strategies for designing a sustainable society, This studio emphasizes economy, ecology, energy and new technology in relation to architecture and urban design:

The environmental impact of buildings are eroding the quality of life. The built environment stands for 40% of the energy consumption and about the same amount of the CO<sub>2</sub> emissions in the world, and about 40% of the landfill material as a result of construction waste. Sustainability has been defined by the Brundtland report 1987 as "meeting the needs of the present generation, without compromising with the ability of future generations to meet their own needs". As architects, we must form an opinion about climate change. With the ongoing urbanization and growth of metropolitan regions in our country and around the world, issues of sustainability are stalls, in terms of technical, economical, social and ecological aspects.

The main aim of the Sustainable Design Studio; Generality/Individuality is to examine the relationship between architectural form, structure, materiality and environmental performance, and how these should evolve in response to climate change and changing programmatic requirements in urban environments. The overall goal is to find new strategies for a society characterized by long term sustainability and to acquire knowledge and insights about architecture in a lifecycle perspective; the relationship between architectural organization and the ability to change over time and how local climate affects the design. A sustainable approach to ecology will be weighed against economic and social sustainability.

### **This project**

Environmental goals for the design:

Adapt to place - Use a strategy from local conditions and strive for diversity. Analyse the urban and climatic pre-requisites, and how they change during the day and the seasons. Sun, wind, snow- and rainwater, flooding, temperature etc.

Waste nothing - Design for a long-term use, and consider how to renew or recycle the material used in the building when it is replaced in the future.

Use "free" resources - Use renewable energy and material resources and integrate them with the design. Use materials available locally. Optimize rather than maximize - Seek synergistic solutions

# Course contents

Task: A public building with a positive ecological footprint.

During the Generality / Individuality The overall goal is to acquire knowledge and insights about how architectural form relates to local climate and how sustainable technical solutions affects and integrates with the design. The aim is to use the climatic conditions as pre-requisites in the design and integrate it with the urban and architectural ideas in a project with a positive ecological footprint.

We will examine how architecture can be transformed and meet different needs during the day and the seasons. We will also study Biomimicry theories to be inspired to solve architectural problems in a sustainable way.

# Course literature

Course literature: A literature list will be given out at the start of the course

# Examination

- PRO1 - Project part 1, 9.0 credits, grading scale: P, F
- PRO2 - Project part 2, 3.0 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

The course consists of two parts; a fulfilled and delivered project work (9 credits) and a passed final assessment (3 credits). There is at least one intermediate assessment during the course.

# Other requirements for final grade

## a) Presentation requirements

Students must:

Submit DESIGN task according to specifications

Submit RESEARCH task according to specifications

Participation in study trip or alternate activity

## b) Examination

80% attendance. Active participation in lectures, tutorials, and seminars etc. Passed intermediate and final assessments. Compulsory attendance during the assessment reviews.

Completion: The project work shall be delivered and, if necessary, reworked within the set time limit. See general directions.

(Overall principle: Autumn term projects must be approved during the following Spring term: Spring term projects must be approved before the start of the following Autumn term. The reworked projects must be delivered at least one week before the time limit.)

The project work is to be documented in a portfolio, including drawings, analysis and models. The work process shall be legible.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.