



# Programme syllabus

[An accessible version of the syllabus can be found in the Course and programme directory.](#)

## Degree Programme in Constructional Engineering and Design 180 credits

Högskoleingenjörsutbildning i byggt teknik och design

*Valid for students admitted to the education from autumn 08 (HT - Autumn term; VT - Spring term).*

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

### Programme objectives

The degree programme Bachelor of Science in Engineering in Construction Engineering educates the student for work within the construction area as well as project management, production or administration. The programme will provide the student with fundamental knowledge within the subject area and good orientation in the central elements, such as: project management, production and management of buildings and construction. Furthermore, the programme aims to provide the student with awareness about how construction affects society with regards to human needs and conditions, and of society's goals regarding resource sustainability, economy and environment. In order to be able to follow the ever faster technical development and the changes it results in, the student must acquire the ability to delve into a new technical area and be given a good basis for continuous personal development and "life-long learning" both within the main area and new subject areas. *After the programme, the student should:*

- have the ability to apply basic knowledge within natural science subject such as mathematics and mechanics
- be able to apply fundamental technical specialised knowledge within, for example, construction engineering, production, and computer-based engineering tools such as CAD.
- have the ability to understand connections between construction engineering and architecture (understanding for the builder and architect's work) be able to independently solve minor technical problems within the construction engineering area
- have the skills to communicate orally and in writing, in English, and the ability to work effectively in projects
- have awareness about Swedish build and environment legislation such as plan and construction laws, building regulations and energy legislation. · have knowledge about the players and work forms of the business
- have fundamental knowledge within industrial business
- have awareness about effects of work for humans and environments

## Knowledge and understanding

## Skills and abilities

## Ability to make judgements and adopt a standpoint

## Extent and content of the programme

The regular study time is 3 years, which comprises 180 higher education credits and the courses are on the first level.

## Eligibility and selection

For eligibility to the programme, basic eligibility and special eligibility are required in Mathematics course D, Physics course B, Chemistry course A. In each and every of these subjects, the lowest accepted grade is passed or 3. Selection based on grades is used in two-thirds of the places in the programme. The places are divided proportionally, based on the eligible applicants, into two groups. Selection based on national university aptitude tests is used on one-third of the places in the programme.

# Implementation of the education

## Structure of the education

Structure of the education Most of the courses in the programme comprise 7.5 higher education credits, which are graded on a scale of A-E, F and Fx. The study year is normally divided into 4 study periods and, normally, two courses are taken in parallel every study period. The lectures, as well as the examination form vary from course to course. Normally, a portion of the course is constituted of lectures, which give first contact with concepts and theories. Exercises and labs strengthen the understanding of the theoretical connections. In accordance with the model from industry, project work plays an essential role in the education. Training is given to be able to, in a group, work with reality-related assignments in an engineering-related manner. In order to strengthen the programme, collaboration between courses as well as between study years is stressed. The programme is concluded during the last term with a degree project which is often carried out at an employer outside of the school. The programme's first year is mainly devoted to courses within mathematics and fundamental construction engineering and mechanics. During the second year, the construction engineering subjects dominate. All of the courses during the first two years are obligatory. During the third year, the student chooses optional courses within the programme. In addition, there is a possibility to freely choose courses worth a total of 15 higher education credits under the conditions that these courses are relevant to the programme's objectives.

### Study year 1

An introduction course in project work methodology provides the foundation for the project works which are an essential part of the programme and, at the same time, the course gives the student the chance to get to know each other. The mathematics courses are designed to be better adapted to the application areas. Courses within construction engineering, field measurements, construction physics, and construction materials and a project course within construction engineering with CAD is the core of the basic courses within engineering which belong to the first year. As a portion in the first project course, lectures about architecture work and lesser design drawing assignments are included. In study year 1, there is also the possibility to take an optional course consisting of 3 higher education credits, in design drawing with CAD as a specialisation in the project course within construction engineering. These elements give the student an introduction to and an understanding of the connection between architecture and construction engineering.

### Study year 2

In study year 2, courses in Production engineering, Fluid mechanics, social planning, geology and geo engineering are taken. In addition, the courses Economy and organisation and Environmental and work science which aim to prepare the student for the coming profession are included. In the courses Production engineering and Environmental and work science, a common project which is carried out in groups at different construction sites is given. The course construction engineering builds further on the courses in construction mechanics and the knowledge is applied in the most

common construction materials in connection with Swedish norms and loads. In the course construction and design, the student attains deeper knowledge in construction design's affect on character.

### Study year 3

During the last year, the student can create a profile for him/herself through either deepening or broadening their knowledge. Only one course in study year 3 is obligatory, Competence and development. The course focuses on non-subject specific areas such as personal and professional development, and reflection over the coming professional role. Other courses are optional courses (optional within the programme), completely free optional courses and a degree project of 15 higher education credits. The requirement for the degree is at least 22.5 of 37.5 optional higher education must be within the programme, the rest are freely eligible under the conditions that they are relevant to the programme's objectives. This provides a good opportunity to create a programme with an individual profile. The depth of study can be carried out within architecture, building production, or within project management in infrastructure. The course packet "architecture" gives a deeper understanding for the architect's way of working and tools. The student also gets an insight into installation and energy questions and learns to use CAD in a rational way. The specialisation "building production" aims to give you knowledge about entrepreneur's/contractor's work assignments in the construction process. You also receive insight into installation and energy questions and which quality requirements and laws control construction in Sweden. "Project management in infrastructure" means that many of the courses are within the construction area, also called infrastructure. If you choose this course packet, you will, beyond good basic knowledge in dimensioning with different materials, also learn to use CAD as well as GIS in a rational way.

## Courses

The programme is course-based. Lists of courses are included in appendix 1.

## Grading system

Courses in the first and the second cycle are graded on a scale from A to F. A-E are passing grades, A is the highest grade. The grades pass (P) and fail (F) are used for courses under certain circumstances.

## Conditions for participation in the programme

For studies in study year 2, at least 37.5 higher education credits from study year 1 must be completed before study year 2 starts. For students which have not fulfilled this requirement, an individual study plan must be created with the study guidance.

For studies in study year 3, at least 90 higher education credits from study years 1 and 2 must be completed before study year 3. For students who have not fulfilled this requirement, an individual study plan must be created with the study guidance.

Term enrolment and selection of courses

The student must complete term enrolment prior to each term, via Mina Sidor, at the latest November 15th, and May 15th, respectively. The term enrolment lays the foundation for term registration. This makes it possible to register grades and provide student aid from CSN. The student who does not fulfil the conditions for being promoted to the next level must contact the study leadership.

Before the fall and spring terms in study year 3, a course selection may occur.

## **Course registration**

Every student must, at the first scheduled lecture, sign a course registration's list. A student who has registered themselves in a course and has thereafter decided not to continue with the courses, must contact the course responsible teacher as soon as possible.

It is the student's responsibility to ensure that possible course prerequisites are fulfilled before the start of a new course. Information about prerequisites can be found in the respective course plans.

### Temporary postponement

Temporary postponement means that the student does not participate in lectures during at least one term.

Granted temporary postponement gives the student the right to return to the studies at a predetermined point in time. During the temporary postponement, the student may complement incomplete courses, or participate in examinations from earlier started courses.

The application for temporary postponement is submitted to the study guidance, which approves or rejects the application. When the student decides to return to the studies, a new application must be submitted according to the above.

If the student, after the temporary postponement period, does not enrol in the term or submit an application for continued temporary postponement, an interruption of studies is registered.

## **Recognition of previous academic studies**

The student has the right to receive credit for education from another higher education institution /university within Sweden or abroad. The condition is that the course(s) are of such a nature and have such content that they correspond to the learning outcome goals which apply for the programme. Recognition of an entire course is approved by the GA. Elements of a course can be approved by the examiner.

## **Studies abroad**

Students at the School of Technology and Health (STH) have the possibility to allocate one study year to studies abroad at a foreign institute with which KTH collaborates without having to pay the

normal study fee which is possibly required by native students. Exchange studies can be done during the third study year. It is also possible to carry out the degree project abroad. Information about studies abroad is provided by supervisor for internationalisation who also informs about application deadlines. Application forms can be found at the study guidance office. Studies abroad can, after evaluation, be counted as a portion of the Bachelor of Science in Engineering programme. The student must, together with the school, build a so-called "Learning Agreement" which entails approval of the exchange studies in advance. The studies are normally instructed in the language which is spoken in the region or country. There are possibilities for one whom is accepted to the exchange programme in German, French, Spanish, and Italian speaking countries to take a prepared language course before the regular term starts.

## Degree project

In the programme, a degree project comprising 15 higher education credits is included. This corresponds to about 10 weeks of full-time studies. See more, Guidelines for the degree project, The School for Technology and Health.

*For the degree project, the following apply:*

- Det får påbörjas tidigast efter uppnådda 120 hp samt då slutbetyg föreligger i relevanta kurser, som berör examensarbetets innehåll.
- It may be started at the earliest after 120 higher education credits are completed, and when courses relevant to the degree project's content are completed.
- It may be started after the assignment is approved by the examiner.
- It is based in the knowledge which has been acquired during the time of study and must normally be carried out during term 6.
- It must show proof of an independent work comprising theoretical and/or experimental work, including a relevant written report and oral presentation.
- The instructor is appointed by the specialisation leader.

## Degree

In order to complete the Degree of Bachelor of Science in Engineering, Degree Programme, in Construction Engineering successfully, passing grades in all courses which are in the student's study plan must be achieved. The study plan consists of the obligatory courses, the optional courses the student has chosen and the degree project work. The study plan must comprise at least 180 higher education credits.

In order to receive the degree, the student must apply for it on a special form and attach the receipt for the paid student union fee.

Courses which, content-wise, overlap other courses in the programme may not be counted towards the 180 higher education credits which comprise the degree

Appendix 1 - Course list  
Appendix 2 - Programme syllabus descriptions



# Appendix 1: Course list

## Degree Programme in Constructional Engineering and Design (TIBYH)

### General courses

#### Year 1

#### Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">HF1004</a>	Mathematics and Statistics	7.5 hp	First cycle
<a href="#">HF1900</a>	Engineering and Information Skills	7.5 hp	First cycle
<a href="#">HF1901</a>	Mathematics I	7.5 hp	First cycle
<a href="#">HS1000</a>	Engineering project	7.5 hp	First cycle
<a href="#">HS1002</a>	Building Physics	7.5 hp	First cycle
<a href="#">HS1003</a>	Structural Mechanics 1	7.5 hp	First cycle
<a href="#">HS1004</a>	Structural Mechanics 2	7.5 hp	First cycle
<a href="#">HS1005</a>	Surveying and Mathematical Statistics	7.5 hp	First cycle



## Year 2

### Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">AF1720</a>	Environmental Science and Work Science	7.5 hp	First cycle
<a href="#">AF1730</a>	Building Information Modeling	7.5 hp	First cycle
<a href="#">HH1900</a>	Business Economics and Organizational Behaviour	7.5 hp	First cycle
<a href="#">HS1006</a>	The Building Process	7.5 hp	First cycle
<a href="#">HS1007</a>	Fluid Mechanics	7.5 hp	First cycle
<a href="#">HS1008</a>	Structural Design in Civil Engineering	7.5 hp	First cycle
<a href="#">HS1009</a>	Urban Planning	7.5 hp	First cycle
<a href="#">HS1029</a>	Geology and Soil Mechanics	7.5 hp	First cycle

## Year 3

### Mandatory courses (15.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">HS1001</a>	Structure and Design	7.5 hp	First cycle
<a href="#">HS1013</a>	Building Services and Energy	7.5 hp	First cycle

## Conditionally elective courses

Code	Name	Credits	Edu. level
<a href="#">AF1714</a>	Indoor Surveying	7.5 hp	First cycle
<a href="#">AF210V</a>	Chemistry of Importance for the Building Sector	7.5 hp	Second cycle
<a href="#">HS100X</a>	Degree Project in Building Design, First Cycle	15.0 hp	First cycle
<a href="#">HS1014</a>	Design of Civil Engineering Constructions	7.5 hp	First cycle
<a href="#">HS1015</a>	Construction Management	7.5 hp	First cycle
<a href="#">HS1019</a>	Planning of a Construction Project	7.5 hp	First cycle
<a href="#">HS101X</a>	Degree Project in Constructional Engineering and Design, First Cycle	15.0 hp	First cycle
<a href="#">HS1020</a>	Moisture Related Damages	7.5 hp	First cycle
<a href="#">HS1021</a>	Steel- and Timber Structures	7.5 hp	First cycle
<a href="#">HS1022</a>	Economic and Technical Real Estate Management	7.5 hp	First cycle
<a href="#">HS1023</a>	Structural Design of a House Project	7.5 hp	First cycle
<a href="#">HS1024</a>	Structural Design of a Infra Structural Project	7.5 hp	First cycle
<a href="#">HS1025</a>	Architecture, the Sketch process	7.5 hp	First cycle
<a href="#">HS1026</a>	Architecture and Building Techniques	7.5 hp	First cycle
<a href="#">HS1027</a>	Light, Acoustics and Design	7.5 hp	First cycle
<a href="#">HS103X</a>	Degree Project in Real Estate Management, First Cycle	15.0 hp	First cycle
<a href="#">HS104X</a>	Degree Project in Building Services Engineering and Energy, First Cycle	15.0 hp	First cycle
<a href="#">HS105X</a>	Degree Project in Structural Engineering, First Cycle	15.0 hp	First cycle
<a href="#">HS106X</a>	Degree Project in Facilities for Infrastructure, First Cycle	15.0 hp	First cycle
<a href="#">HS107X</a>	Degree Project in Building Technology, First Cycle	15.0 hp	First cycle
<a href="#">HS108X</a>	Degree Project in Civil Engineering Management, First Cycle	15.0 hp	First cycle
<a href="#">HS1735</a>	Project Building and Installations	7.5 hp	First cycle



# Appendix 2: Specialisations

## Degree Programme in Constructional Engineering and Design (TIBYH)

This programme has no specialisations.