



# Programme syllabus

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

## Degree Programme in Civil Engineering and Urban Management 300 credits

Civilingenjörsutbildning i samhällsbyggnad

*Valid for students admitted to the education from autumn 12 (HT - Autumn term; VT - Spring term).*

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

### Programme objectives

The course programme was validated by the head of the school of Architecture and the Built Environment on 01/10/2011.

The information applies to students who start their studies in the academic year 2012-2013. There may be changes in programme content for years 1-5. See [www.kth.se/utbildning](http://www.kth.se/utbildning) for information about the latest validated course programme.

The degree programme in Civil Engineering and Urban Management is designed to give students the qualifications and ability to participate in and lead work on the design and construction of buildings,

infrastructure and towns. It includes how institutions and regulatory systems should be developed to provide a good living environment and good development conditions for individuals, trade and industry, and society in general.

The programme provides a broad knowledge base within the mathematics/natural science subjects and urban construction technology during the first years, followed by in-depth work in a specific urban construction area such as domestic buildings and civil engineering, construction project management, soil and water engineering, urban and traffic planning, geographic IT, construction and real estate economics, and land and real estate law.

In addition to the objectives specified in the Higher Education Ordinance, a graduate engineer from the degree programme in Civil Engineering and Urban Management at KTH must achieve the goals set out below:

## Knowledge and understanding

- Have the technical/scientific grounding necessary to work in a specialized technological area within Civil Engineering and Urban Management. This may apply to building construction and civil engineering issues, planning or property development.
- Demonstrate sufficient knowledge to work independently as a graduate engineer within the technological area of Civil Engineering and Urban Management.
- Have such supplementary knowledge of the subject required to demonstrate an understanding of the technological applications relevant to sustainable urban development as well as how the construction and planning process, the built environment and physical infrastructure can be developed.

## Skills and abilities

- A good ability to communicate, orally and in writing, with different target groups in Swedish and English.
- Demonstrate the ability to argue and discuss conclusions from oral and written reports in Swedish and English.
- The ability to follow and apply the development of knowledge in the technological area of Civil Engineering and Urban Management.
- Good ability to translate knowledge into practice, both independently and in groups.
- Ability to analyse problems and develop new technologies and new methods in the technological area.
- Ability to lead different kinds of projects in different types of organization in the technological area of Civil Engineering and Urban Management.

## Ability to make judgements and adopt a standpoint

- Awareness of how technology affects society, taking into account people's abilities and needs, and the sustainable development of society.
- Development of critical and independent thinking.

## Extent and content of the programme

The programme covers 300 ECTS credits, equivalent to 5 years of full-time studies. The first three years of the programme are essentially at the basic level and are in Swedish. The last two years are at the advanced level and the programme coincides with an international master's programme, usually with English as the language of tuition.

During the first two years the courses are fundamental, compulsory courses in mathematics / natural science subjects and civil engineering and urban management technology. Prior to year 3 students are given the opportunity of specializing in a specific area that will prepare them for the choice of master's programmes and courses at the advanced level. The courses in year 3 are compulsory.

A number of courses on the programme contain practical and realistic elements such as exercises, seminars, laboratory work, field work, study visits and project assignments with a strong connection to common duties in the professional sphere. Engineering skills are thus trained in different ways. The professional profile of the programme is clear from the first term in the course Introduction to the Planning and Building Process.

Some courses and elements at advanced level in years 4 and 5 are preparatory for research.

The areas of specialization/in-depth work that students can choose prior to year 3 are:

- Real estate economics and real estate law
- Construction project management
- Geographic IT
- Civil and architectural engineering
- Soil and water technology
- Urban planning
- Traffic engineering

During the last two years, subjects are read within the framework of one of the master's programmes: Real estate development and financial services, Civil and architectural engineering, Sustainable urban planning and design, Environmental engineering and sustainable infrastructure and Transport and geoinformation technology.

# Eligibility and selection

Basic eligibility for higher education studies are required to study at KTH. Basic eligibility can be fulfilled in a number of ways; for more details refer to the Swedish Agency for Higher Education Services ([www.vhs.se](http://www.vhs.se)). In addition, the following specific eligibility requirements must be fulfilled for the KTH graduate engineering courses:

Equivalent:

Mathematics E, Physics B, Chemistry A

In each of the subjects the minimum grade required is Pass or 3.

In other respects, please refer to the KTH admissions ordinance in the KTH regulations, [www.kth.se](http://www.kth.se).

# Implementation of the education

## Structure of the education

The academic year comprises 40 weeks and is divided into two terms, autumn and spring. Each term includes two study periods.

For information about the scope, examination and re-examination periods of the academic year, please refer to <http://www.kth.se/student/schema>.

### Years 1-3 Studies at basic level

Courses in year 1 are a mix of mathematics/natural science subjects and those more specific to urban management, with an emphasis on the former. Courses during year 2 are more specialized towards urban management and are more applied. In year 2 the first choice of course is made prior to period 4, when students can choose between Mechanics and Economic geography. The choice depends on which specialization is selected in year 3. The choice of subjects for year 3 is made at the end of the spring term in year 2. During year 3 students will read the compulsory courses for the area of specialization and any recommended courses to achieve a study plan which, together with a thesis, comprises 60 ECTS. Some courses are common to several different areas of specialization.

The initial three years are concluded with a thesis at the basic level of 15 ECTS within the technology area of Civil Engineering and Urban Management.

### Years 4-5 In-depth work at advanced level

During years 4 and 5 students read courses in the selected master's programme on Civil Engineering and Urban Management.

The programme ends with a thesis at advanced level comprising 30 ECTS.

# Courses

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

Course lists for years 1-3 are in Appendix 1. Course lists for years 4-5 are in the programme plans for the relevant master's programme.

## 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

One condition for participation in studies at KTH is that prior to each new term students file a course application and a registration for the term.

Registration on the course requires the selection of a course in Ladok. Course selection is either made through the course selection procedure on the internet or through the student's education office. Registration on the course is made by the department that provides the course. In the event of interrupted studies, the student must notify the department that provides the course.

Conditions for moving up

For studies in year 2:

At least 45 ECTS from year 1 must be achieved by the examination period in August.

For studies in year 3:

At least 90 ECTS from years 1 and 2 must be achieved by the examination period in August. At least 50 ECTS must be from year 1.

For studies in year 4:

At least 150 ECTS from years 1, 2 and 3 must be achieved by the examination period in August, of which at least 110 ECTS from years 1-2. In addition, the thesis at the basic level of 15 ECTS must be completed. In addition, there are special eligibility requirements for each master's programme.

For studies in year 5:

In addition to those required for moving up to year 4, at least 45 ECTS from year 4 must be completed. Courses equivalent to 240 ECTS must be completed on the programme before thesis work is started.

For students who do not meet the above requirements for moving up prior to studies in years 2-5, individual study plans must be drawn up.

## Recognition of previous academic studies

Students have the possibility of applying for accreditation from course(s) at another college /university within or outside Sweden. The KTH policy for accreditation is available in full in the KTH regulations, [www.kth.se](http://www.kth.se).

## Studies abroad

The opportunity of exchange studies is offered during the programme. In order to be eligible for exchange studies within the framework of an exchange agreement with foreign universities, students must be enrolled at KTH, have completed at least two years of university studies and be up to date with their studies.

Selection is based on the weighted average grades on compulsory courses.

For more information, refer to the KTH regulations at <http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/utbytesstudier>.

## Degree project

### Thesis at basic level

Thesis work at basic level in the technology area of Civil Engineering and Urban Management counts for 15 ECTS. At least 120 ECTS points must be completed on the programme before dissertation work may commence, of which 60 ECTS with successive specialization in the area of technology at basic level. It is up to the examiner to determine and verify that the student has the in-depth studies required and that the student has completed the main part of the studies before dissertation work begins.

### Thesis at advanced level

The thesis work at advanced level comprises 30 ECTS and is written within the chosen master's programme. It will normally be carried out during final term of the programme. In general, the main part of the studies, at least 240 ECTS, must be completed before thesis work may commence. It is up to the examiner to determine and verify that the student has the in-depth studies required and that the student has completed the main part of the studies before thesis work begins.

## Degree

In order to obtain a degree in engineering in Civil Engineering and Urban Management, pass grades are required in courses covering 300 ECTS, of which 120 ECTS may have been read in any of the

five master's programmes: Real estate development and financial services, Civil and architectural engineering, Sustainable urban planning and design (either Urban and Regional Planning URP or Environment and Planning EP), Environmental engineering and sustainable infrastructure, Transport and geoinformation technology.

In the 300 ECTS must be included:

- 180 ECTS from the basic level of engineering programme in the Civil Engineering and Urban Management or the equivalent, of which the thesis at basic level provides 15 ECTS;
- at least 90 ECTS at advanced level (including 30 ECTS from the thesis) within any of the five different master's programmes' recommended courses/course sequences and at least 15 ECTS from any area of technology;
- at most 15 ECTS from entirely elective courses;
- the above must include mathematics/natural science subjects of at least 45 ECTS.

After the first three years, the student has the possibility of gaining a bachelor's degree in technology of 180 ECTS in accordance with the completion of the study year plans for years 1, 2 and 3. Refer also to the KTH examination regulations <http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examina>

Application for a degree

The application for a degree is submitted to Education Office S (study guidance).

Information on processing and which documents must be submitted for the application is available under the link: <http://www.kth.se/student/examen>.

Appendix 1 - Course list

Appendix 2 - Programme syllabus descriptions



# Appendix 1: Course list

## Degree Programme in Civil Engineering and Urban Management (CSAMH)

### General courses

#### Year 1

#### Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">AI1137</a>	Introduction to the Planning and Building Process	15.0 hp	First cycle
<a href="#">DD1310</a>	Programming Techniques	6.0 hp	First cycle
<a href="#">SF1624</a>	Algebra and Geometry	7.5 hp	First cycle
<a href="#">SF1625</a>	Calculus in One Variable	7.5 hp	First cycle
<a href="#">SF1626</a>	Calculus in Several Variables	7.5 hp	First cycle
<a href="#">SF1633</a>	Differential Equations I	6.0 hp	First cycle
<a href="#">SF1660</a>	Project in Mathematics I	1.5 hp	First cycle
<a href="#">SH1010</a>	Physics for the Built Environment	9.0 hp	First cycle

#### Recommended courses

Code	Name	Credits	Edu. level
<a href="#">SF1611</a>	Introductory Course in Mathematics I	1.5 hp	First cycle



## Year 2

### Mandatory courses (52.5 Credits)

Code	Name	Credits	Edu. level
<a href="#">AE1101</a>	Natural Resources Theory	6.0 hp	First cycle
<a href="#">AE1102</a>	Geology and Geotechnical Engineering	6.0 hp	First cycle
<a href="#">AF1002</a>	Buildings and Civil Engineering Structures	7.5 hp	First cycle
<a href="#">AG1311</a>	Graphic Information Systems	7.5 hp	First cycle
<a href="#">AI1128</a>	Economics of the Built Environment	7.5 hp	First cycle
<a href="#">AI1501</a>	Planning, Building and Environmental Law	6.0 hp	First cycle
<a href="#">SF1514</a>	Numerical Methods, Basic Course	6.0 hp	First cycle
<a href="#">SF1901</a>	Probability Theory and Statistics	6.0 hp	First cycle

### Conditionally elective courses

Code	Name	Credits	Edu. level
<a href="#">AG1102</a>	Economic Geography	7.5 hp	First cycle
<a href="#">SG1107</a>	Mechanics	7.5 hp	First cycle

## Year 4

### Supplementary information

During the last two years, subjects are read within the framework of one of the master's programmes: Real estate and Construction Management, Civil and architectural engineering, Sustainable urban planning and design, Environmental engineering and sustainable infrastructure and Transport and geoinformation technology.

For courses in year 4, see courses within your selected master programme.

# Construction Project Management (BPR)

Year 3

## Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">AE1601</a>	Fluid Mechanics for Architecture and Built Environment	7.5 hp	First cycle
<a href="#">AF1005</a>	Structural Engineering, Basic Course	7.5 hp	First cycle
<a href="#">AF101X</a>	Degree Project in Build Environment, First Cycle	15.0 hp	First cycle
<a href="#">AF1301</a>	Building Materials, Basic Course	7.5 hp	First cycle
<a href="#">AF1402</a>	Building Physics	7.5 hp	First cycle
<a href="#">AI1801</a>	Construction Project Management	7.5 hp	First cycle
<a href="#">SG1801</a>	Structural Mechanics, Basic Course	7.5 hp	First cycle

# Real Estate Economics and Real Estate Law (FEFJ)

Year 3

## Mandatory courses (75.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">AI101X</a>	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle
<a href="#">AI1108</a>	Investment Analysis	7.5 hp	First cycle
<a href="#">AI1146</a>	Property Management	7.5 hp	First cycle
<a href="#">AI1148</a>	Real Estate Valuation for Civil Engineering and Urban Management	7.5 hp	First cycle
<a href="#">AI150X</a>	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle
<a href="#">AI1515</a>	Introduction to Swedish law, basic course	7.5 hp	First cycle
<a href="#">AI1517</a>	Real Estate Law	7.5 hp	First cycle
<a href="#">AI1518</a>	Real Estate Development Legislation	7.5 hp	First cycle

# Geographic IT (GIT)

Year 3

## Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">AG1323</a>	GIS for the Built Environment	7.5 hp	First cycle
<a href="#">AG1324</a>	Photogrammetry and Remote Sensing	9.0 hp	First cycle
<a href="#">AG132X</a>	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle
<a href="#">AG1817</a>	Map Projections and Reference Systems	6.0 hp	First cycle
<a href="#">AH1815</a>	Introduction to GPS	7.5 hp	First cycle
<a href="#">AH1816</a>	Geodetic Surveying II	9.0 hp	First cycle
<a href="#">DD1320</a>	Applied Computer Science	6.0 hp	First cycle

## Supplementary information

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# Civil and Architectural Engineering (HBAT)

Year 3

## Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">AE1601</a>	Fluid Mechanics for Architecture and Built Environment	7.5 hp	First cycle
<a href="#">AF1005</a>	Structural Engineering, Basic Course	7.5 hp	First cycle
<a href="#">AF101X</a>	Degree Project in Build Environment, First Cycle	15.0 hp	First cycle
<a href="#">AF1301</a>	Building Materials, Basic Course	7.5 hp	First cycle
<a href="#">AF1402</a>	Building Physics	7.5 hp	First cycle
<a href="#">AF1601</a>	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
<a href="#">SG1801</a>	Structural Mechanics, Basic Course	7.5 hp	First cycle

# Land and Water Resources Engineering (MVTK)

Year 3

## Mandatory courses (52.5 Credits)

Code	Name	Credits	Edu. level
<a href="#">AE100X</a>	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle
<a href="#">AE1105</a>	Environmental Soil Chemistry	7.5 hp	First cycle
<a href="#">AE1501</a>	Environmental System Analysis for Built Environment	7.5 hp	First cycle
<a href="#">AE1601</a>	Fluid Mechanics for Architecture and Built Environment	7.5 hp	First cycle
<a href="#">AE1602</a>	Hydrology	7.5 hp	First cycle
<a href="#">AF1601</a>	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle

## Conditionally elective courses

Code	Name	Credits	Edu. level
<a href="#">AE1104</a>	Geoscience Engineering	7.5 hp	First cycle
<a href="#">SG1801</a>	Structural Mechanics, Basic Course	7.5 hp	First cycle

## Urban Planning (SPL)

### Year 3

### Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">AG1103</a>	Urban and Traffic Planning, Continuation Course	7.5 hp	First cycle
<a href="#">AG1104</a>	Planning Theory, Basic Course	7.5 hp	First cycle
<a href="#">AG110X</a>	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle
<a href="#">AG1132</a>	Functions and Interactions in Sustainable Cities	7.5 hp	First cycle
<a href="#">AH1021</a>	Urban and Traffic Planning, Basic Course	7.5 hp	First cycle
<a href="#">AH1023</a>	Urban and Traffic Planning, Methods and Applications	7.5 hp	First cycle
<a href="#">AI1518</a>	Real Estate Development Legislation	7.5 hp	First cycle

# Traffic Engineering (TTK)

Year 3

## Mandatory courses (67.5 Credits)

Code	Name	Credits	Edu. level
<a href="#">AG1104</a>	Planning Theory, Basic Course	7.5 hp	First cycle
<a href="#">AG1132</a>	Functions and Interactions in Sustainable Cities	7.5 hp	First cycle
<a href="#">AH1021</a>	Urban and Traffic Planning, Basic Course	7.5 hp	First cycle
<a href="#">AH1022</a>	Traffic and Road Engineering, Basic Course	7.5 hp	First cycle
<a href="#">AH1023</a>	Urban and Traffic Planning, Methods and Applications	7.5 hp	First cycle
<a href="#">AH1024</a>	Traffic Management and Operation	7.5 hp	First cycle
<a href="#">AH1025</a>	Public Transport Systems, Buses and Rail, BC	7.5 hp	First cycle
<a href="#">AH103X</a>	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle



# Appendix 2: Specialisations

Degree Programme in Civil Engineering and  
Urban Management (CSAMH)

Construction Project Management (BPR)

No information entered.

Real Estate Economics and Real Estate Law  
(FEFJ)

No information entered.

Geographic IT (GIT)

No information entered.

Civil and Architectural Engineering (HBAT)

No information entered.

Land and Water Resources Engineering (MVTK)

No information entered.



# Urban Planning (SPL)

No information entered.

# Traffic Engineering (TTK)

No information entered.