



Programme syllabus

Degree Programme in Civil Engineering and Urban Management Civilingenjörsutbildning i samhällsbyggnad *300.0 credits*

Valid for students admitted to the education from autumn 17 (HT - Autumn term; VT - Spring term).

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

Programme objectives

The information applies to students starting their studies in the academic year 2017-2018. There may be changes in programme content for years 2-5. Always refer to www.kth.se/utbildning for information on the latest approved syllabus.

The Degree Programme in Civil Engineering and Urban Management aims to provide students with prerequisites and the ability to participate in and manage work on how buildings, infrastructure and cities should be designed, built and administered. This also includes how institutions and regulatory systems should be developed to provide a good living environment and good development conditions for private individuals, trade and industry and society at large.

The Programme provides a broad knowledge base within mathematics-natural science subjects and civil engineering and urban management during the initial years and thereafter a specialisation within a specific civil engineering area in Urban Management will follow.

In addition to the objectives which apply for the civil engineering degree in the Higher Education Ordinance, the following specified requirements should also apply to a civil engineering graduate of the Degree Programme in Civil Engineering and Urban Management at KTH:

Knowledge and understanding

- Demonstrate knowledge of the technical and scientific basis for being able to work within a specialism within the technological area of Civil Engineering and Urban Management.
- Demonstrate such breadth and depth of knowledge which is necessary for working independently as a civil engineer within the technological area of Civil Engineering and Urban Management.
- Through supplementary subject knowledge, demonstrate understanding of the significance of technology applications for sustainable urban development as well as how the planning, construction and administrative procedure, the built environment and physical infrastructure can be developed.

Skills and abilities

- Demonstrate the ability to, with a holistic view, formulate and handle complex issues within the technological area of Civil Engineering and Urban Management.
- Demonstrate the ability to follow the development of knowledge in the technological area of Civil Engineering and Urban Management and apply the knowledge in practice.
- Demonstrate the ability to develop products, processes and systems within the technological area of Civil Engineering and Urban Management, taking into account the conditions and needs of human beings and society's goals for economical, social and ecological sustainable development.
- Demonstrate the ability to work independently, and in collaboration with groups with different composition.
- Demonstrate the ability to argue and discuss problems and solutions within the technological area of Civil Engineering and Urban Management in verbal and written reports in Swedish and English with different target groups in both national and international contexts.
- Demonstrate individual and professional skills for working as an engineer in a leading role.

Ability to make judgements and adopt a standpoint

- Demonstrate insight into the opportunities and limitations of urban management, its role in society and the responsibility of human beings for how it is used, including ethical, social, financial as well as environmental and work environment aspects.
- Demonstrate the ability of critical and independent thinking and assessment.

Extent and content of the programme

The Programme covers 300 credits, which corresponds to 5 years of full-time studies. The first three years of the Programme are primarily at first cycle and in Swedish. The two last years are at second cycle and the studies correspond to a Master's programme, as a rule with English as the language of instruction.

During the first two years the courses are compulsory and conditionally elective courses in mathematics-natural science subjects and civil engineering and urban management. Prior to year 3, students are given the opportunity to create a distinct profile towards a specific specialism which prepares for electives for Master's programmes and courses at second cycle. The courses in year 3 are compulsory and conditionally elective courses.

A number of courses in the Programme contain practical and realistic stages such as exercises, seminars, laboratory work, field exercises, study visits and project assignments with a strong connection to tasks which are a part of working life. Engineering skills are accordingly practised in different ways. The professional profile of the Programme is already highlighted during the first term through the course Planning and Building Process.

Studies in years 3, 4 and 5 is done for a specific urban management such as civil and architectural engineering, construction project management, ground and water engineering, town and traffic planning, geographical IT and real estate economics and real estate law.

The last two years of the Programme are studied 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 as well as Transport and Geoinformation Technology.

Certain courses and subjects at second cycle in years 4 and 5 are research preparation.

Eligibility and selection

In accordance with the Higher Education Ordinance, basic eligibility is required for eligibility for KTH's programmes at first/second cycle. In addition, the following specific entry requirements must be fulfilled for KTH's civil engineering programmes:

Corresponding to:
Mathematics 4, Chemistry 1, Physics 2

A pass mark is required as a minimum in each of the subjects.

Selection

Selection will take place if the number of applicants exceeds the number of available places.

- Grade selection is applied to two-thirds of the places
- Swedish scholastic aptitude test selection is applied to one-third of the places

For eligibility requirements and selection principles for the rest, refer to KTH's admission regulations in KTH's regulatory framework, www.kth.se.

Implementation of the education

Structure of the education

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

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

Years 1-3 Studies at first cycle

Courses in year 1 are a mix of mathematics-natural science subjects and subjects specific to civil engineering and urban management, with a focus on the former. Courses in year 2 focus more on civil engineering and urban management and application. The courses in years 1-2 together cover 120 credits. The choice of specialisation for year 3 is made at the end of the spring term in year 2. In year 3, the students take compulsory courses within the chosen specialisation and conditionally elective courses. Together with the degree project, the courses in year 3 cover 60 credits.

The studies in years 1-3 end with a degree project at first cycle of 15 credits within the technological area of Civil Engineering and Urban Management.

Years 4-5 Studies at second cycle

In years 4 and 5, the students study courses within chosen Master's programmes. Compulsory courses, conditionally elective courses and optional courses cover 120 credits together with the degree project.

The studies in years 4 and 5 end with a degree project at second cycle of 30 credits within the technological area of Civil Engineering and Urban Management.

Courses

The programme is course-based. Lists of courses are included in [appendix 1](#).

Course lists for years 1-3 are contained in appendix 1. For course lists for years 4-5, see the syllabus of each 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.

Information regarding the scale found in the curriculum.

Conditions for participation in the programme

It is necessary for students to register for courses and the term for participation in studies at KTH prior to each new term.

Registration is necessary for reporting of the results and is a prerequisite for granted student aid to be paid by CSN.

Registration for the term is conducted by the students themselves in the Personal menu online.

All programme students register for courses on www.antagning.se

Terms and conditions for moving up

For studies in year 2 (first cycle):

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

For studies in year 3 (first cycle):

At least 100 credits from years 1 and 2 must be achieved by the examination period in August. At least 50 credits must be from year 1.

For studies in year 4 (second cycle, year 1 within a Master's programme):

At least 150 credits from years 1, 2 and 3 must be achieved by the examination period in August, of which at least 110 credits from years 1-2. In addition, the degree project at first cycle of 15 credits should be completed.

For studies in year 5 (second cycle, year 2 within a Master's programme):

In addition to that which applies for moving up to year 4, at least 45 credits from year 4 should be completed. Courses corresponding to 240 credits should be completed before the degree project is started.

Individual syllabuses should be prepared for students who do not fulfil the afore-mentioned requirements for moving up prior to studies in years 2-5.

Recognition of previous academic studies

Students have the opportunity to apply for credit transfer of results from courses at another higher education institution/university within or outside the country. The entire KTH policy for credit transfer is included in KTH's regulatory framework, www.kth.se.

For more information, refer to the Programme's study advisory service.

Studies abroad

There is the option of student exchange during the Programme within the framework of existing agreements.

For more information and recommendations of appropriate term for studies abroad, refer to the Programme's international administrator.

Degree project

Degree project at first cycle

Degree project at first cycle within the technological area of Civil Engineering and Urban Management covers 15 credits. At least 120 credits should be earned in the Programme before the work can start, of which 60 credits with successive advanced study at first cycle within the technological area of Civil Engineering and Urban Management. 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 the degree project starts.

Degree project at second cycle

Degree project at second cycle covers 30 credits and is conducted within the chosen Master's programme. It should normally be conducted during the last term of the Programme. In general, a major part of the studies, at least 240 credits, should be earned before the degree project may start. 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 the degree project starts.

The thesis work is graded pass (P) or fail (F).

Degree

In order to be awarded the Degree Programme in Civil Engineering and Urban Management, a pass mark in courses covering 300 credits is required, of which 120 credits may have been taken within one of the five Master's programmes Real Estate and Construction Management, Civil and Architectural Engineering, Sustainable Urban Planning and Design, Environmental Engineering and Sustainable Infrastructure as well as Transport and Geoinformation Technology.

the 300 credits should include:

- 180 credits from first cycle at the Degree Programme in Civil Engineering and Urban Management or equivalent, of which the degree project at first cycle of 15 credits;
- at least 90 credits at second cycle (including the compulsory courses of the Master's programme and 30 credits degree project) within the different courses of the Master's programme;

in addition:

- maximum 30 credits completely optional courses may be included

In the afore-mentioned degree of 300 credits, mathematics-natural science subjects of at least 45 credits should be included.

After the first three years, students have the opportunity to apply for the award of a Bachelor of Science of 180 credits in accordance with the completed academic year syllabus for the years 1, 2 and 3, also refer to KTH's degree regulations <http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examina>.

After completed studies of 300 credits, students also have the opportunity to apply for the award of a Master's degree of 120 credits alongside the civil engineering degree.

Application for the degree

Application for the degree is made through the online service in the personal menu on KTH's website.

[Appendix 1 - Course list](#)

[Appendix 2 - Programme syllabus descriptions](#)



Appendix 1: Course list

Degree Programme in Civil Engineering and Urban Management (CSAMH), Programme syllabus for studies starting in autumn 2017

General courses

Year 1

Mandatory courses (60.0 Credits)

Course code	Course name	Credits	Edu. level
AG1314	GIS and Surveying	7.5 hp	First cycle
AI128	Economics of the Built Environment	7.5 hp	First cycle
AI1527	Introduction to the Planning and Building Process	13.5 hp	First cycle
SF1516	Numerical Methods and Basic Programming	9.0 hp	First cycle
SF1624	Algebra and Geometry	7.5 hp	First cycle
SF1625	Calculus in One Variable	7.5 hp	First cycle
SF1626	Calculus in Several Variable	7.5 hp	First cycle

Recommended courses

Course code	Course name	Credits	Edu. level
SF0003	Introductory Course in Mathematics	1.5 fup	Pre-university level

Year 2

Mandatory courses (45.0 Credits)

Course code	Course name	Credits	Edu. level
AI1525	Legal Framework of the Built Environment	7.5 hp	First cycle
AI1802	Project Management and BIM in the Built Environment	7.5 hp	First cycle
AL1301	Natural Resources Theory	7.5 hp	First cycle
AL1302	Geoscience and Geotechnical Engineering	7.5 hp	First cycle

SF1910	Applied Statistics	7.5 hp	First cycle
SG1117	Engineering Mechanics	7.5 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AF1002	Buildings and Civil Engineering Structures	7.5 hp	First cycle
AH1030	Urban Development and Transport System	7.5 hp	First cycle
SF1676	Differential Equations with Applications	7.5 hp	First cycle

Year 3

Mandatory courses (52.5 Credits)

Course code	Course name	Credits	Edu. level
AE1601	Fluid Mechanics for Architecture and Built Environment	7.5 hp	First cycle
AF1005	Structural Engineering, Basic Course	7.5 hp	First cycle
AF1006	Structural Mechanics, Basic course	7.5 hp	First cycle
AF102X	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle
AF1301	Building Materials, Basic Course	7.5 hp	First cycle
AF1402	Building Physics	7.5 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AI1801	Construction Project Management	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.

Civil Engineering and Construction Project Management (BBP)

Year 3

Mandatory courses (52.5 Credits)

Course code	Course name	Credits	Edu. level
AE1601	Fluid Mechanics for Architecture and Built Environment	7.5 hp	First cycle
AF1005	Structural Engineering, Basic Course	7.5 hp	First cycle
AF1006	Structural Mechanics, Basic course	7.5 hp	First cycle
AF102X	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle
AF1301	Building Materials, Basic Course	7.5 hp	First cycle
AF1402	Building Physics	7.5 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AI1801	Construction Project Management	7.5 hp	First cycle

Real Estate Economics and Real Estate Law (FEFJ)

Year 3

Mandatory courses (60.0 Credits)

Course code	Course name	Credits	Edu. level
AI1108	Investment Analysis	7.5 hp	First cycle
AI1146	Property Management	7.5 hp	First cycle
AI1148	Real Estate Valuation for Civil Engineering and Urban Management	7.5 hp	First cycle
AI1517	Real Estate Law	7.5 hp	First cycle
AI1518	Real Estate Development Legislation	7.5 hp	First cycle
AI151X	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle
AI1524	Land Development	7.5 hp	First cycle

Geographic IT (GIT)

Year 3

Mandatory courses (75.0 Credits)

Course

code	Course name	Credits	Edu. level
AG1323	GIS for the Built Environment	7.5 hp	First cycle
AG1324	Photogrammetry and Remote Sensing	9.0 hp	First cycle
AG134X	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle
AG1817	Map Projections and Reference Systems	6.0 hp	First cycle
AG1818	Geodetic Surveying	6.0 hp	First cycle
AG1819	GPS and Image Based Surveying	6.0 hp	First cycle
AG181X	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
DD1380	Java Programming for Python Programmers	1.5 hp	First cycle

Environmental Engineering and Sustainable Infrastru. (MHI)

Year 3

Mandatory courses (30.0 Credits)

Course code	Course name	Credits	Edu. level
AE1105	Environmental Soil Chemistry	7.5 hp	First cycle
AL1303	Soil and Water	7.5 hp	First cycle
AL130X	Degree Project in Built Environment, First Cycle	15.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AE1501	Environmental System Analysis for Built Environment	7.5 hp	First cycle
AE1601	Fluid Mechanics for Architecture and Built Environment	7.5 hp	First cycle
AF1005	Structural Engineering, Basic Course	7.5 hp	First cycle
AF1006	Structural Mechanics, Basic course	7.5 hp	First cycle
AF1601	Soil Mechanics and Foundation Engineering	7.5 hp	First cycle
AG1137	Planning and Governance of Urban and Regional Development	7.5 hp	First cycle
AG1138	Actors and processes in planning	7.5 hp	First cycle
AH1023	Urban and Traffic Planning, Methods and Applications	7.5 hp	First cycle

Urban and Traffic Planning (STP)

Year 3

Mandatory courses (22.5 Credits)

Course code	Course name	Credits	Edu. level
AG1137	Planning and Governance of Urban and Regional Development	7.5 hp	First cycle
AH1023	Urban and Traffic Planning, Methods and Applications	7.5 hp	First cycle
AH1031	Transport and Society	7.5 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AG1103	Urban and Traffic Planning, Continuation Course	7.5 hp	First cycle
AG111X	Degree Project in the Built Environment, First Cycle	15.0 hp	First cycle
AG1138	Actors and processes in planning	7.5 hp	First cycle
AH101X	Degree Project in Civil Engineering, First Cycle	15.0 hp	First cycle
AH1022	Traffic and Road Engineering, Basic Course	7.5 hp	First cycle
AH1025	Public Transport Systems, Buses and Rail, BC	7.5 hp	First cycle
AI1518	Real Estate Development Legislation	7.5 hp	First cycle



Appendix 2: Specialisations

Degree Programme in Civil Engineering and Urban Management (CSAMH), Programme syllabus for studies starting in autumn 2017

Civil Engineering and Construction Project Management (BBP)

Real Estate Economics and Real Estate Law (FEFJ)

Geographic IT (GIT)

Environmental Engineering and Sustainable Infrastru. (MHI)

Urban and Traffic Planning (STP)