



Programme syllabus

Master's Programme, Transport and Geoinformation Technology, 120 credits

Masterprogram, transport och geoinformatik
120.0 credits

Valid for students admitted to the education from autumn 18 (HT - Autumn term; VT - Spring term).

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

Programme objectives

The information is valid for students who started the programme academic year 2018/2019. Later decisions may affect year 2 in the programme. Please look at www.kth.se/studies?l=en_UK for further information.

The aim of the programme is to provide students with advanced knowledge in areas of transportation science and geoinformatics and prepare them for further education and research. Students will be trained to work independently, take initiative and create new ideas for a sustainable society. Students will gain knowledge, skills and abilities to plan and maintain sustainable transport systems and to collect, visualize and analyze geographic data. In addition to the objectives specified in the Higher Education are the specific objectives of this programme.

Knowledge and understanding

After completing the programme the students will:

- Have knowledge about collecting, structuring, storing, analysing and visualisation of geospatial and transport data.
- Have knowledge about analysis, planning, assessment, and operations of transport systems and other urban and regional phenomena at different spatial levels regarding the biological, sociological and economic sustainability.

Skills and abilities

After completing the programme, the students will acquire practical skills to:

- Be able to formulate and analyze the role of technology for sustainable development
- Process the measured data using appropriate mathematical tools

- Structure and visualize geospatial data using information technology
- Model transport or geospatial phenomena using appropriate decision support tools
- Solve complex problems and present decision support for policy-makers and the general public.

The programme also aims to help students develop capability to conduct independent, scientific research through critical analysis and synthesis. Students will receive training in scientific communication and presentation, both oral and in written form. Students will also learn how to work in project form and work in groups.

Ability to make judgements and adopt a standpoint

After completing the programme, the students will be able to:

- Choose proper method for data collection and analysis according to the requirements of given problem
- Assess the possibilities and limitations of decision support tools and their applications in different scientific and technological branches
- Identify the needs for new or the further development of existing methods, technologies and algorithms used in the process of collection, storing, analysing and visualisation of geospatial and transport data
- Apply a systems view of thinking and critically analyse the subject area's tools of analysis and modelling.

Extent and content of the programme

The duration of the programme is two years; three semesters of course work (90 ECTS credits) and one semester (30 ECTS credits) of a Degree Project.

The education is at the advanced level (second cycle). Language of instructions is English.

Eligibility and selection

The general admission requirement for masters programmes at KTH is a completed Bachelor's degree, equivalent to a Swedish Bachelor's degree (180 ECTS credits), or equivalent academic qualifications from an internationally recognised university. English language proficiency equivalent to (the Swedish upper secondary school) English course B/6. In addition, students have to meet following specific requirements:

A bachelor's degree, equivalent to 180 ECTS credits, in civil engineering, urban planning, environmental science, geodesy, geographic information systems, computer science or another field with a clear relevance to the programme. At least 60 ECTS credits in transport engineering and planning, geomatics, physics, computer science, statistics, and/or mathematics are required. A minimum of 3 ECTS credits per course should be in:

- Computer programming
- Linear algebra
- Geographic information systems or database technology, or geodetic surveying
- Mathematical statistics
- Single-variable calculus

For further information see admission regulations in the KTH regulatory framework, www.kth.se

Selection

The selection process is based on the following selection criteria: University, previous studies (for instance GPA, grades in specific subjects and English). The evaluation scale is 1-75.

Specific documents for the master's programme in Transport and Geoinformation Technology are:

- Letter of motivation or degree project proposal
- Curriculum Vitae indicating relevant work experience and computer skills
- One Letter of recommendation
- Completed summary sheet

Implementation of the education

Structure of the education

The academic year is 40 weeks and is divided into two semesters, autumn and spring. Each semester consists of two study periods.

For information on the extent of the school year, the exam period and the re-exam period see <http://www.kth.se/student/schema>.

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.

Information regarding the scale found in the curriculum.

Conditions for participation in the programme

Participation requires admission to courses within the programme and course registration. Course registration is done via the personal menu at www.kth.se

For students starting their education from the autumn semester 2018, previous promotion requirements have been replaced with special admission requirements to each course. Admission requirements are specified in the course syllabus.

Recognition of previous academic studies

Students are able to apply for credit transfer for courses taken at another university, in Sweden or abroad.

For more information please refer to KTH's regulations at [ww.KTH.se](http://www.KTH.se) and the Education office.

Studies abroad

Students have the opportunity to spend one semester at one of KTH's partner universities abroad.

For more information and recommendation on the appropriate semester for exchange studies refer to the International coordinators.

Degree project

The Degree Project (30 ECTS credits) is compulsory in order to complete a Master Degree at KTH.

The degree project is the final part of the education. The project work may begin when special admission requirements for the course are fulfilled.

För deltagande krävs antagning till kurs inom programmet samt registrering på kurs. Kursregistrering görs via den personliga menyn på www.kth.se

För studenter som påbörjar utbildning från och med höstterminen 2018 ersätts tidigare uppflyttningskrav med krav på särskild behörighet till kurs. Krav på särskild behörighet specificeras i kursplanen.

Students can choose between the Master's Projects listed in Appendix 1. If a student intends to undertake a degree in another subject area, it must be approved by the Director of undergraduate and Master studies.

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

Degree

Title: Master of Science with a Major in the Built Environment, 120 credits

To obtain master's degree students must have passed courses of at least 120 higher education credits, of which the following must be included:

- at least 60 ECTS credits at advanced level including mandatory and conditionally elective courses
- 30 ECTS credits degree project within the master programme
- a maximum of 30 ECTS credits of entirely elective courses

When the master's programme is a final part of the degree programme in Civil Engineering and Urban Management, there may be additional requirements according to the corresponding study programmes. For example, a master of science degree in the above degree programmes should include mathematics and natural science subjects for a minimum of 45 higher education credits.

Application for Degree

The application for degree certificate is done through the personal menu at www.KTH.se.

[Appendix 1 - Course list](#)

[Appendix 2 - Programme syllabus descriptions](#)



Appendix 1: Course list

Master's Programme, Transport and Geoinformation Technology, 120 credits (TTGTM), Programme syllabus for studies starting in autumn 2018

Programme syllabus

Established Programme syllabus as PDF:

- [Valid for studies starting in autumn 2018](#)

General courses

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AG2411	GIS Architecture and Algorithms	7.5 hp	Second cycle
AG2412	Geovisualisation	7.5 hp	Second cycle
AG2413	Digital Image Processing and Applications	7.5 hp	Second cycle
AG2414	Spatial Analysis	7.5 hp	Second cycle
AG2425	Spatial Databases	7.5 hp	Second cycle
AG2926	Map Projections and Reference Systems	7.5 hp	Second cycle
AH2026	Railway Traffic - Market and Planning, Basic Course	7.5 hp	Second cycle
AH2170	Transport Data collection and Analysis	7.5 hp	Second cycle
AH2171	Traffic Engineering and Management	7.5 hp	Second cycle
AH2173	Public Transport	7.5 hp	Second cycle
AH2301	Transport Policy and Evaluation	7.5 hp	Second cycle
AH2303	Transport and Sustainable Development	7.5 hp	Second cycle
AH2307	Urban Modeling and Decision Support	7.5 hp	Second cycle
AH2923	Global Navigation Satellite Systems (GNSS)	7.5 hp	Second cycle

Year 2

Mandatory courses (7.5 Credits)

Course code	Course name	Credits	Edu. level
AH2178	Research Methodology and Communication Skills	7.5 hp	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AG2417	Web and Mobile GIS	7.5 hp	Second cycle
AG2421	A GIS Project	7.5 hp	Second cycle
AG243X	Degree Project in Geoinformatics, Second Cycle	30.0 hp	Second cycle
AG2927	Geodata Quality and Adjustment Theory	7.5 hp	Second cycle
AG293X	Degree Project in Geodesy, Second Cycle	30.0 hp	Second cycle
AH2029	Railway Signalling System	7.5 hp	Second cycle
AH203X	Degree Project in Transport Science, Second Cycle	30.0 hp	Second cycle
AH204X	Degree Project in Railway and Rail Traffic, Second Cycle	30.0 hp	Second cycle
AH2102	Logistics and Transportation	7.5 hp	Second cycle
AH2174	Traffic Simulation Modelling and Applications	7.5 hp	Second cycle
AH222X	Degree Project in Systems Analysis and Economics, Second Cycle	30.0 hp	Second cycle
AH2314	Individual Choice Modeling and Market Analysis	7.5 hp	Second cycle
AH2915	Laser Scanning Technology	7.5 hp	Second cycle
AK2038	Theory and Methodology of Science with Applications (Social Science)	7.5 hp	Second cycle



Appendix 2: Specialisations

Master's Programme, Transport and Geoinformation Technology, 120 credits (TTGTM), Programme syllabus for studies starting in autumn 2018

Programme syllabus

Established Programme syllabus as PDF:

- [Valid for studies starting in autumn 2018](#)

This programme has no specialisations.