



Programme syllabus

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

Bachelor's Programme in Information and Communication Technology 180 credits

Kandidatprogram, informations- och kommunikationsteknik

Valid for students admitted to the education from autumn 21 (HT - Autumn term; VT - Spring term).

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

Programme objectives

During the education the student should obtain basic disciplinary knowledge, skills and competencies in the core areas of information and communication technology: mathematics, electronics, computer, communication and software engineering. Students will also be given a good basis for further studies and self-development.

Knowledge and understanding

For the degree of Bachelor of Science from the programme Information and Communication Technology the student shall

- apply mathematics and basic natural sciences within information and communication technology
- generally follow the knowledge development within the field of technology.

Skills and abilities

For the degree of Bachelor of Science from the programme Information and Communication Technology the student shall

- apply creative and critical working methods to solve problems within the area of information and communication technology with modern methods and tools
- analyse technical problems from a systems perspective with an overall view on technical systems and their life cycle from conception, design, implementation, production, operation, maintenance and decommissioning
- adopt a problem-solving perspective based on the need and functionality of the product and service, considering the individuals using the product as well as the technology interplay within the society
- discuss technical problems and present work results in oral and written form, in English, to different target groups, as needed for an international career.

Ability to make judgements and adopt a standpoint

For the degree of Bachelor of Science from the programme Information and Communication Technology the student shall

- demonstrate ability to make assessments with regard to relevant scientific, societal and ethical aspects within information and communication technology
- show insight into the possibilities and limitations of technology, its role in society and people's responsibility for its use, including social and economic aspects as well as environmental and work environment aspects
- by exercise and reflection have developed an ability to work efficiently in groups of different compositions.

Extent and content of the programme

The education comprises three years and 180 credits. Education level is first-cycle. The education is given in English.

Eligibility and selection

General admission requirements and the following special admission requirements must be fulfilled in order to be admitted: Documented knowledge in Mathematics and Physics corresponding to

Mathematics 4 (advanced level of mathematics) and Physics 2 (advanced level of physics) and documented proficiency in English corresponding to English 6. In each of the subjects, applicants must have at least a passing grade.

The selection process is based on final upper secondary (high school) grades and test results on the Swedish Scholastic Aptitude Test. Two-thirds of the seats in the programme are offered based on grade selection and one-third on the Swedish Scholastic Aptitude Test.

For the first (international) application round, fee-paying and non-fee paying applicants are placed in separate selection groups.

Implementation of the education

Structure of the education

Each academic year consists of two semesters which are 20 weeks each, and each semester is further divided into two study periods.

The programme comprises 160,5 credits mandatory courses and 19,5 credits optional courses. Optional courses are preferably selected from the course list (see appendix 1) or from other KTH courses.

The courses should help the student to acquire a solid foundation of mathematics/natural sciences, basic technological sciences and professional skills.

Courses

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

Courses are either compulsory or elective. These are scheduled so that primarily two courses are read and completed in the same period.

In school year two and three a number of elective courses can be chosen. The space for elective courses within the programme can be used to study pre-requisite courses for different master's programmes in case there are such requirements.

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.

The grading scale is found in each course syllabus.

Conditions for participation in the programme

Participation requires admission to courses within the programme and course registration.

For further studies, special admission requirements for the course are to be fulfilled. Special admission requirements are listed in the each course syllabus.

Degree project

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

Degree

The degree is entitled “Teknologie kandidatexamen” - Bachelor of Science. The main field of study, Technology, is stated in the text on the degree certificate. The text on the degree certificate states the educational programme, Information and Communication Technology, completed by the student.

Appendix 1 - Course list

Appendix 2 - Programme syllabus descriptions



Appendix 1: Course list

Bachelor's Programme in Information and Communication Technology (TCOMK)

General courses

Year 1

Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
ID1018	Programming I	7.5 hp	First cycle
IE1204	Digital Design	7.5 hp	First cycle
IE1206	Embedded Electronics	7.5 hp	First cycle
II1306	Introduction to IT	1.5 hp	First cycle
IS1200	Computer Hardware Engineering	7.5 hp	First cycle
SF1610	Discrete Mathematics	7.5 hp	First cycle
SF1684	Algebra and Geometry	7.5 hp	First cycle
SF1685	Calculus in One Variable	7.5 hp	First cycle
SF1690	Basic Course in Mathematics	6.0 hp	First cycle

Year 2

Mandatory courses (51.0 Credits)

Code	Name	Credits	Edu. level
ID1019	Programming II	7.5 hp	First cycle
ID1021	Algorithms and Data Structures <i>Replaces ID1020</i>	7.5 hp	First cycle
II1305	Project in Information and Communication Technology	7.5 hp	First cycle
IK1203	Networks and Communication	7.5 hp	First cycle
IV1303	Modern Software Development	6.0 hp	First cycle
SF1686	Calculus in Several Variable	7.5 hp	First cycle
SK1118	Electromagnetism and Waves	7.5 hp	First cycle

Optional courses

Code	Name	Credits	Edu. level
ID2216	Developing Mobile Applications	7.5 hp	Second cycle
II1303	Signal Processing	7.5 hp	First cycle
II1307	Active Career	1.5 hp	First cycle
LS1419	English for Employment	7.5 hp	First cycle

Supplementary information

9 credits elective courses belongs to year 2.

The listed elective courses are suggested elective courses.

Year 3

Mandatory courses (49.5 Credits)

Code	Name	Credits	Edu. level
AL1523	Digitalisation and Innovation for Sustainable Development	7.5 hp	First cycle
ID1206	Operating Systems	7.5 hp	First cycle
II143X	Degree Project in Information and Communication Technology, First Cycle	15.0 hp	First cycle
IV1013	Introduction to Computer Security	7.5 hp	First cycle
ME1003	Industrial Management, Basic Course	6.0 hp	First cycle
SF1900	Probability Theory and Statistics	6.0 hp	First cycle

Optional courses

Code	Name	Credits	Edu. level
DD2352	Algorithms and Complexity	7.5 hp	Second cycle
DD2372	Automata and Languages	6.0 hp	Second cycle
DD2401	Neuroscience	7.5 hp	Second cycle
IC1007	Human-computer Interaction: Principles and Design	7.5 hp	First cycle
ID1212	Network Programming	7.5 hp	First cycle
ID1214	Artificial Intelligence and Applied Methods	7.5 hp	First cycle
ID1217	Concurrent Programming	7.5 hp	First cycle
ID2202	Compilers and Execution Environments	7.5 hp	Second cycle
ID2216	Developing Mobile Applications	7.5 hp	Second cycle
II1303	Signal Processing	7.5 hp	First cycle
II1307	Active Career	1.5 hp	First cycle
IK1330	Wireless Systems	7.5 hp	First cycle
IK1552	Internetworking	7.5 hp	First cycle
IK2206	Internet Security and Privacy	7.5 hp	Second cycle
IS2202	Computer Systems Architecture	7.5 hp	Second cycle
LS1419	English for Employment	7.5 hp	First cycle
ME2016	Project Management: Leadership and Control	6.0 hp	Second cycle
ME2163	Leading People and Organizations in Different Contexts	6.0 hp	Second cycle
SF1811	Optimization	6.0 hp	First cycle

Supplementary information

10,5 credits elective courses belongs to year 3.

The listed elective courses are suggested elective courses.



Appendix 2: Specialisations

Bachelor's Programme in Information and Communication Technology (TCOMK)

This programme has no specialisations.