



Programme syllabus

Master's Programme, ICT Innovation, 120 credits

Masterprogram, ICT Innovation

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 ICT Innovation master's programme main subjects Computer Science and Electrical Engineering. The programme aims at combining advanced technical education in information and communication technology (90.0 credits) with business-oriented courses focusing on innovation and entrepreneurship (30.0 credits).

Objectives for the business-oriented parts are a basic understanding of, as well as application of each in a stepwise business development process from idea to product:

- Marketing and market analysis
- Business Formation, Management and HR work
- Project work and management
- Finance

Objectives of the technical specializations:

Human Computer Interaction and Design focuses on the study, design, development and evaluation of innovative user interfaces and interactive systems with regard to both human aspects (social, cognitive and sensor levels) as well as technical and economic aspects.

Digital Media Technology focuses on basic techniques of digital media systems including techniques for the generation of digital media, processing and encoding of the media, the storage of media content as well as wired and wireless transmission media.

Internet technologies and architectures focuses on communications systems design, modern network respectively. Internet technology, mobile and wireless technologies, properties of complex communications systems and user aspects.

Embedded Systems focuses on models, methods and platforms for embedded systems, embedded hardware, respectively. software and communications aspects, energy saving and communication aspects.

Data Science focuses on a wide range of advanced topics in data-intensive computing platforms, i.e., existing frameworks to store and process Big Data as well as the basics of stream processing, data analysis, data mining, and algorithms, techniques and tools for machine learning to analyze very large amounts of data.

Cloud Computing and Services focuses on distributed systems, advance network methods, service oriented technologies for both stationary and mobile systems, distributed information and data processing as well as with methods and techniques for cloud computing.

Autonomous Systems focus on artificial intelligence (AI) in particular robotics, computer vision (image analysis), speech technology, distributed AI, machine learning and control technology, sensor networks and distributed systems.

Knowledge and understanding

For a master's degree in ICT Innovation the student shall:

- be able to design and evaluate the characteristics of a specific system
- have good knowledge of current research and development and trends in the industry
- have good knowledge of the processes, methods and tools used for the development of the specific technology
- be able to apply science and engineering in a relevant way
- implement a business development process from idea to product.

Skills and abilities

For a master's degree in ICT Innovation the student shall:

- demonstrate the ability to create technical solutions that meet human and societal needs
- demonstrate the ability to identify, define, formulate and manage complex problems in the area
- demonstrate the ability to integrate knowledge in the field, analyze the commercial potential of a technical solution and plan the implementation of a commercial exploitation
- demonstrate the ability to critically and systematically integrate knowledge and to analyze, assess and deal with complex phenomena, issues and situations, even with limited information
- demonstrate the ability to critically, independently and creatively identify and formulate issues and to plan and use appropriate methods, carry out advanced tasks within specified time frames, thereby contributing to the development of knowledge and to evaluate this work
- demonstrate the ability to, national and international, orally and in writing, explain and discuss their conclusions and the knowledge and arguments behind them, in dialogue with different groups demonstrate the skills required
- demonstrate the ability to participate in research and development work or to work independently in other advanced contexts.
- demonstrate the ability to develop and design products, processes and systems with regard to people's conditions and needs and society's goals for economic, social and ecological sustainable development.

Ability to make judgements and adopt a standpoint

For a master's degree in ICT Innovation the student shall:

- critical reading/reviewing of technical reports, design documents and business plans
- evaluate documents strengths and weaknesses and formulate evaluation of concrete and constructive terms
- show ability to make assessments taking into account relevant scientific, societal and ethic aspects as well as show awareness of ethical aspects of research and development work
- show insight into the possibilities and limitations of science, its role in society and the responsibility of humans for its use
- show ability to identify her/his need for additional knowledge and take responsibility for the development of his /her own knowledge.
- demonstrate insight into possibilities and limitations of technology, its role in society and people's responsibility for how it works and is used, including social and economic aspects as well as environmental and work environment aspects.

Extent and content of the programme

Extent: 2 years (120 credits)

Level of education: Advanced

Language of education: English

The program has a unified structure that combines 30 ECTS of "business" oriented classes (Innovation and Entrepreneurship ie I&E) with 90 ECTS with specific technical focus. The business-oriented part is fully standardized and joint across all technical specializations.

Eligibility and selection

A completed Bachelor's degree, equivalent to a Swedish Bachelor's degree (180 hp), from a university recognized by government or accredited by other recognized organization. A Bachelor's degree in Science or Engineering is required for most programs (please see the relevant program description).

Applicants admitted to longer technical study programs and who have completed courses equivalent to an amount of 180 hp, will be considered on a case-by-case basis.

Language requirements

Applicants must provide proof of their English language proficiency, which is generally established through an internationally recognized test. For all specialisations the following are accepted:

- TOEFL Internet-based test, iBT (www.toefl.org). A total score of at least 92 (with writing section 22) is required.
- IELTS Academic Training test (www.ielts.org). An overall band score of at least 6.5, with no section lower than 6, is required.
- University of Cambridge/University of Oxford Certificates:
Certificate in Advanced English (CAE): grades A- C are accepted.
Certificate of Proficiency in English (CPE): grades A- C are accepted.

Also accepted:

- Students with 30 higher education credits (equivalent to 30 ECTS credits) from an EU/EEA country or Switzerland where the language of instruction of the course is English.
- Students with 30 higher education credits (equivalent to 30 ECTS credits) from a university that is physically located in one of the following countries: USA, Canada, UK, Ireland, Australia or New Zealand.
- TOEFL PBT (paper-based test): Score of 4.5 (scale 1-6) in written test, total score of 575, 45 in the written part.
- Turkish students who have studied a 1 year preparatory class in English at a University.
- Swedish applicants that can demonstrate knowledge in English "Engelska B"
- Applicants from some other countries that can demonstrate high-school knowledge in English "Engelska B", ie GCE O-level with score above C.

For students with mobility requirements, the chosen exchange university, similar to KTH, may also accept additional evidence (see local university regulations).

Special requirements

Internationally recognized bachelor's degree (Bachelor's degree)- in Electrical/Electronic Engineering, Computer Science, Computer Engineering, Computer Science or Information Technology, including at least 60 ECTS (credits) courses in computer science, basic digital and analogue electronics, basic control theory, computer systems/computer architecture and programming, and at least 30 ECTS in mathematics, including analysis (calculus), linear algebra and mathematical statistics.

The specific requirements may be assessed as not fulfilled if:

- The degree awarding institution is not considered to meet acceptable quality standards by the authorities of the country in which the institution is located.
- The degree does not qualify for admission to equivalent Master level in the country where the degree is awarded.

Applicants admitted to basic technical education and who have completed courses equivalent to 180 credits will be assessed on a case-by-case basis.

Selection process

The selection process for non-mobility students is based on the following selection criteria: university status (weight = 4), study result (weight = 3), motivation for studies (weight = 2), references (weight = 1) and work experience (weight = 1). The evaluation scale is 1-75. The selection process is administered by KTH.

The selection process for mobility students is based on the following criteria: university status, study results, motivation for the studies, relevant work experience, and overall CV assessment. The selection process is managed by EIT Digital.

Implementation of the education

Structure of the education

This programme is offered in two different forms:

1. Without mobility requirements: two years at KTH entirely according to KTH's regulatory system and processes for admission, tuition fees, study follow-up and examination.

- Human Computer Interaction and Design KTH (HCIN)- Year 1+2
- Digital Media Technologies KTH (DMTK) - Year 1+2
- Internet technologies and architectures KTH (ITAR) - Year 1+2
- Embedded Systems KTH (INSM) -Year 1+2
- Data Science KTH (DASE) Year 1+2
- Autonomous Systems KTH (AUSY) Year 1+2

2. With mobility requirements, in cooperation with EIT Digital in accordance with signed agreements. This includes a mandatory geographical mobility: studies year 1 resp. year 2 at two universities in two different countries, one of which is at KTH. In addition to Swedish legislation, EIT Digital's rules and processes apply. Full information is available on EIT Digital's website (<https://www.eitdigital.eu/>).

- Human Computer Interaction and Design EIT (HCID) - Year 1 alt. 2 at KTH
- Digital Media Technologies EIT (DMTE) - Year 1 alt. 2 at KTH
- Internet technologies and architectures EIT (ITAK) - Year 1 alt. 2 at KTH
- Embedded Systems EIT (INSY) - Year 1 alt. 2 at KTH
- Cloud Computing and Services EIT (DAMO) -Year 2 at KTH
- Data Science EIT (DASC) Year 1 alt. 2 at KTH
- Autonomous Systems EIT (AUSM) Year 1 alt. 2 at KTH

The programme is two-year, where the first three semesters comprise courses, while the fourth semester consists of a degree project. Term 1 and 2 mainly includes compulsory courses. Term 3 includes compulsory and conditional elective courses according to the chosen specialization. Business-oriented courses are mandatory for both year 1 and year 2.

For mobility requirements, the additional also applies:

- The education takes place in conjunction with EIT Digital according to the current agreement.
- This includes a mandatory geographical mobility: studies year 1 resp. year 2 at two universities in two different countries, of which one year at KTH.
- In addition to Swedish legislation, university's national legislation and EIT Digital's rules and processes apply. Full information on the latter is available on the EIT Digital website (<https://www.eitdigital.eu/>).
- The degree project should be substantively well-founded in industrially relevant problems and an industrial environment.
- The programme also includes a number of joint activities: i.e. 'Kickoff', Summer School and 'Graduation Ceremony'.

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.

For the degree projects at KTH, the grades are approved (P) or Fail (F).

For specialisations with mobility requirements, are the participating university's own grade system for the respective academic year used. Conversion of grades is done using conversion tables determined in agreement.

Conditions for participation in the programme

Students apply for/will be assigned to a specialization upon applying for the program. An individual study plan is established. Students may apply for a changed individual study plan during the first semester of semester 2. A student may commence the second year after the grant has been granted. The condition for relocation is that the student must have completed at least 80% of the first year of the course with approved results. For students at KTH, course selection for future semesters will be held on KTH's website no later than 15 November and 15 May.

For students with mobility requirements, students must be enrolled each semester (semester 1 and 2 at universities 1 and terminals 3 and 4 at university 2, where one of these universities is KTH). For students in these areas, geographic mobility for Year 2 is managed by EIT Digital.

Recognition of previous academic studies

According to the Swedish Higher Education Ordinance, a student who has gone through certain first-cycle study courses and study programmes with a passing result has the right to have such credit recognised for a corresponding course of education at another institution of higher education. The programme director for the master program will make the decisions concerning recognition of entire courses. Awards of credits for parts of courses may be decided upon by an examiner.

For further information on recognition of previous academic studies, see the KTH regulations.

Studies abroad

Studies abroad for specializations with mobility requirements

For specializations with mobility requirements, the mobility point is after year one. One of the two years is conducted at a university other than KTH. University is chosen upon application. The student is able to apply for degrees from both universities after completing studies. The following mobility options are offered:

Human Computer Interaction and Design (HCID)

- Year 1: Aalto U., UPS, UPM, U. of Twente.
- Year 2: U. of Twente, Aalto U., UPS, TU Berlin, UNITN, UPM

Digital Media Technologies (DMTE)

- Year 1: TU Delft, Aalto U.
- Year 2: TU Delft, Aalto U, BME.

Internet technologies and architectures (ITAK)

- Year 1: TU Berlin, UPMC, UNITN
- Year 2: UNITN, UPMC, TU Berlin, UNS, Institute Mines Telecom, UPM

Embedded Systems (INSY) - Year 1 alt. 2 at KTH

- Year 1: TU/e, TU Berlin
- Year 2: TU/e, Aalto U., TUCS, TU Berlin, UNITN, BME

Cloud Computing and Services (DAMO) - Year 2 at KTH

- Year 1: TU Berlin, Aalto U., U. Rennes 1, TUD
- Year 2: KTH, UR1, Aalto, TUB, TUD, UPS

Data Science (DASC) - Year 1 alt. 2 at KTH

- Year 1: KTH, UNS, UPM, POLIMI, TU/e
- Year 2: KTH, UNS, Aalto, TUB, UPM, TU/e

Autonomous Systems (AUSM)

- Year 1: Aalto, KTH, TU Berlin, U Trento
- Year 2: Aalto, KTH, TU Berlin, U Trento, EURECOM, ELTE

Transition between specializations

For specializations without mobility requirements an opportunity for a transfer to a specialization with mobility requirements are offered. A separate application for this should be submitted to the program management at the beginning of year 1.

The choice of specializations with mobility requirements is binding. The reason is the special benefits that the student receives in these cases. For transfer to non-mobility requirements, a completely new application is required.

Degree project

A degree project of 30 HE credits within the field of technology should be carried out. The degree project is normally carried out at the end of the education and cannot be started, until the student has achieved the special admission requirements for the course. The degree project should be carried out within the chosen Master's programme.

Specific directives and criteria for grading are available in the official course syllabus.

For students with mobility requirements and who study second year on a different university than KTH will that university rules and policies applies.

Degree

For specializations with mobility requirements, students graduated from the program have the opportunity to obtain dual degrees from the KTH and the exchange university to which the student has been admitted. The application for the degree for the latter university must be done separately. The dual examinations can be supplemented with an EIT Label Certificate 'documenting the fulfilment of EIT's specific learning goals.

KTH's procedure for awarding degrees is described in the KTH regulations. The Masters degree is awarded after fulfilling all requirements defined by the program. This includes a total of 120 credits out of which 90 credits are at the advanced level and at least 60 credits (including 30 credits for the thesis work) corresponds to advanced level courses within the major subject of the program. The name of the degree is "Teknologie Mastersexamen", which in English translates to "Degree of Masters of Science (two years)". The program name, ICT Innovation, is indicated on the diploma. The application for degree is made through the Personal menu at www.kth.se.

[Appendix 1 - Course list](#)

[Appendix 2 - Programme syllabus descriptions](#)



Appendix 1: Course list

Master's Programme, ICT Innovation, 120 credits (TIVNM), Programme syllabus for studies starting in autumn 2018

General courses

Year 1

Mandatory courses (19.0 credits)

Course code	Course name	Credits	Edu. level
ME2072	Entrepreneurship for Engineers	6.0	Second cycle
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Year 2

Mandatory courses (6.0 credits)

Course code	Course name	Credits	Edu. level
ME2096	ICT Innovation Study Project	6.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits

Year 3

Autonomous Systems EIT (AUSM)

Year 1

Mandatory courses (41.5 credits)

Course code	Course name	Credits	Edu. level
DD2410	Introduction to Robotics	7.5	Second cycle
DD2421	Machine Learning	7.5	Second cycle
ID2209	Distributed Artificial Intelligence and Intelligent Agents	7.5	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2380	Artificial Intelligence	6.0	Second cycle
DD2423	Image Analysis and Computer Vision	7.5	Second cycle
DD2424	Deep Learning in Data Science	7.5	Second cycle
EL1010	Automatic Control, General Course	6.0	First cycle
EL2450	Hybrid and Embedded Control Systems	7.5	Second cycle

Course code	Course name	Credits	Edu. level
EL2520	Control Theory and Practice, Advanced Course	7.5	Second cycle
EQ2321	Speech and Audio Processing	7.5	Second cycle
EQ2341	Pattern Recognition and Machine Learning	7.5	Second cycle
EQ2425	Analysis and Search of Visual Data	7.5	Second cycle
EQ2871	Cyber-Physical Networking	7.5	Second cycle
II2302	Sensor Based Systems	7.5	Second cycle
IL2206	Embedded Systems	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Year 2

Mandatory courses (13.5 credits)

Course code	Course name	Credits	Edu. level
ID2223	Scalable Machine Learning and Deep Learning	7.5	Second cycle
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2380	Artificial Intelligence	6.0	Second cycle

Course code	Course name	Credits	Edu. level
EL2320	Applied Estimation	7.5	Second cycle
EL2820	Modelling of Dynamical Systems	7.5	Second cycle
ID2209	Distributed Artificial Intelligence and Intelligent Agents	7.5	Second cycle
IL2206	Embedded Systems	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits

Year 3

Autonomous Systems KTH (AUSY)

Year 1

Mandatory courses (41.5 credits)

Course code	Course name	Credits	Edu. level
DD2410	Introduction to Robotics	7.5	Second cycle
DD2421	Machine Learning	7.5	Second cycle
ID2209	Distributed Artificial Intelligence and Intelligent Agents	7.5	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2380	Artificial Intelligence	6.0	Second cycle
DD2423	Image Analysis and Computer Vision	7.5	Second cycle
DD2424	Deep Learning in Data Science	7.5	Second cycle
EL1010	Automatic Control, General Course	6.0	First cycle
EL2450	Hybrid and Embedded Control Systems	7.5	Second cycle
EL2520	Control Theory and Practice, Advanced Course	7.5	Second cycle
EQ2321	Speech and Audio Processing	7.5	Second cycle
EQ2341	Pattern Recognition and Machine Learning	7.5	Second cycle
EQ2425	Analysis and Search of Visual Data	7.5	Second cycle
EQ2871	Cyber-Physical Networking	7.5	Second cycle
II2302	Sensor Based Systems	7.5	Second cycle
IL2206	Embedded Systems	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Year 2

Mandatory courses (13.5 credits)

Course code	Course name	Credits	Edu. level
ID2223	Scalable Machine Learning and Deep Learning	7.5	Second cycle
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2380	Artificial Intelligence	6.0	Second cycle
EL2320	Applied Estimation	7.5	Second cycle
EL2820	Modelling of Dynamical Systems	7.5	Second cycle
ID2209	Distributed Artificial Intelligence and Intelligent Agents	7.5	Second cycle
IL2206	Embedded Systems	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, DH2610, AK2036 shall be choosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, DH2610, AK2036 shall be choosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits

Year 3

Cloud Computing and Services EIT (DAMO)

Year 1

Supplementary information

All year 1 courses is given at another university.

Year 2

Mandatory courses (6.0 credits)

Course code	Course name	Credits	Edu. level
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2421	Machine Learning	7.5	Second cycle
ID2207	Modern Methods in Software Engineering	7.5	Second cycle
ID2209	Distributed Artificial Intelligence and Intelligent Agents	7.5	Second cycle
ID2221	Data-Intensive Computing	7.5	Second cycle
ID2222	Data Mining	7.5	Second cycle
ID2223	Scalable Machine Learning and Deep Learning	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits

Year 3

Data Science EIT (DASC)

Year 1

Mandatory courses (41.5 credits)

Course code	Course name	Credits	Edu. level
DD2421	Machine Learning	7.5	Second cycle
ID2211	Data Mining, Basic Course	7.5	Second cycle
ID2214	Programming for Data Science	7.5	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2257	Visualization	7.5	Second cycle
DD2424	Deep Learning in Data Science	7.5	Second cycle
DD2434	Machine Learning, Advanced Course	7.5	Second cycle
DD2437	Artificial Neural Networks and Deep Architectures	7.5	Second cycle
DD2447	Statistical Methods in Applied Computer Science	6.0	Second cycle
DD2476	Search Engines and Information Retrieval Systems	9.0	Second cycle
ID2203	Distributed Systems, Advanced Course	7.5	Second cycle
ID2210	Distributed Computing, Peer-to-Peer and GRIDS	7.5	Second cycle
ID2225	Learning Machines	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
ME1033	Open and User Innovation	7.5	First cycle

Course code	Course name	Credits	Edu. level
	<i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>		
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Year 2

Mandatory courses (21.0 credits)

Course code	Course name	Credits	Edu. level
ID2221	Data-Intensive Computing	7.5	Second cycle
ID2222	Data Mining	7.5	Second cycle
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2380	Artificial Intelligence	6.0	Second cycle
DD2418	Language Engineering	6.0	Second cycle
DD2423	Image Analysis and Computer Vision	7.5	Second cycle
ID2223	Scalable Machine Learning and Deep Learning	7.5	Second cycle
ID2225	Learning Machines	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits)

Year 3

Data Science KTH (DASE)

Year 1

Mandatory courses (41.5 credits)

Course code	Course name	Credits	Edu. level
DD2421	Machine Learning	7.5	Second cycle
ID2211	Data Mining, Basic Course	7.5	Second cycle
ID2214	Programming for Data Science	7.5	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2257	Visualization	7.5	Second cycle
DD2424	Deep Learning in Data Science	7.5	Second cycle
DD2434	Machine Learning, Advanced Course	7.5	Second cycle
DD2437	Artificial Neural Networks and Deep Architectures	7.5	Second cycle
DD2447	Statistical Methods in Applied Computer Science	6.0	Second cycle
DD2476	Search Engines and Information Retrieval Systems	9.0	Second cycle
ID2203	Distributed Systems, Advanced Course	7.5	Second cycle
ID2210	Distributed Computing, Peer-to-Peer and GRIDS	7.5	Second cycle
ID2225	Learning Machines	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle

Course code	Course name	Credits	Edu. level
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be chosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be chosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be chosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be chosen</i>	7.5	Second cycle

Year 2

Mandatory courses (21.0 credits)

Course code	Course name	Credits	Edu. level
ID2221	Data-Intensive Computing	7.5	Second cycle
ID2222	Data Mining	7.5	Second cycle
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2380	Artificial Intelligence	6.0	Second cycle
DD2418	Language Engineering	6.0	Second cycle
DD2423	Image Analysis and Computer Vision	7.5	Second cycle
ID2223	Scalable Machine Learning and Deep Learning	7.5	Second cycle
ID2225	Learning Machines	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits)

Year 3

Digital Media Technology EIT (DMTE)

Year 1

Mandatory courses (32.5 credits)

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science)	7.5	Second cycle
DH2320	Introduction to Visualization and Computer Graphics	6.0	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2257	Visualization	7.5	Second cycle
DD2423	Image Analysis and Computer Vision	7.5	Second cycle
DD2476	Search Engines and Information Retrieval Systems	9.0	Second cycle
DH2323	Computer Graphics and Interaction	6.0	Second cycle
EP2200	Queuing Theory and Teletraffic Systems	7.5	Second cycle
EQ2341	Pattern Recognition and Machine Learning	7.5	Second cycle
EQ2425	Analysis and Search of Visual Data	7.5	Second cycle
EQ2461	Seminars in Information and Network Engineering	3.0	Second cycle
EQ2845	Information Theory and Source Coding	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
EP2120	Internetworking <i>Mandatory for DMTE exit Aalto, BME. Elective for others in DMTE</i>	7.5	Second cycle
EQ1220	Signal Theory <i>Mandatory for DMTE exit Delft, UniTN. Elective for others in DMTE.</i>	7.5	First cycle
ID2208	Programming Web-Services <i>Mandatory for DMTE exit Aalto. Elective for others in DMTE.</i>	7.5	Second cycle
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Year 2

Mandatory courses (6.0 credits)

Course code	Course name	Credits	Edu. level
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2429	Computational Photography	6.0	Second cycle
EQ2300	Digital Signal Processing	7.5	Second cycle
EQ2321	Speech and Audio Processing	7.5	Second cycle
EQ2401	Adaptive Signal Processing	7.5	Second cycle
EQ2411	Advanced Digital Communications	7.5	Second cycle
EQ2415	Machine Learning and Data Science	7.5	Second cycle
EQ2425	Analysis and Search of Visual Data	7.5	Second cycle
EQ2461	Seminars in Information and Network Engineering	3.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle
EQ2310	Digital Communications	9.0	Second cycle
EQ2330	Image and Video Processing	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits

Year 3

Digital Media Technology KTH (DMTK)

Year 1

Mandatory courses (32.5 credits)

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science)	7.5	Second cycle
DH2320	Introduction to Visualization and Computer Graphics	6.0	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2257	Visualization	7.5	Second cycle
DD2423	Image Analysis and Computer Vision	7.5	Second cycle
DD2476	Search Engines and Information Retrieval Systems	9.0	Second cycle

Course code	Course name	Credits	Edu. level
DH2323	Computer Graphics and Interaction	6.0	Second cycle
EP2200	Queuing Theory and Teletraffic Systems	7.5	Second cycle
EQ2341	Pattern Recognition and Machine Learning	7.5	Second cycle
EQ2425	Analysis and Search of Visual Data	7.5	Second cycle
EQ2461	Seminars in Information and Network Engineering	3.0	Second cycle
EQ2845	Information Theory and Source Coding	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
EP2120	Internetworking <i>Mandatory for DMTE exit Aalto, BME. Elective for others in DMTE</i>	7.5	Second cycle
EQ1220	Signal Theory <i>Mandatory for DMTE exit Delft, KTH, UniTN. Elective for others in DMTE.</i>	7.5	First cycle
ID2208	Programming Web-Services <i>Mandatory for DMTE exit Aalto. Elective for others in DMTE.</i>	7.5	Second cycle
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Year 2

Mandatory courses (6.0 credits)

Course code	Course name	Credits	Edu. level
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2429	Computational Photography	6.0	Second cycle
EQ2300	Digital Signal Processing	7.5	Second cycle

Course code	Course name	Credits	Edu. level
EQ2321	Speech and Audio Processing	7.5	Second cycle
EQ2401	Adaptive Signal Processing	7.5	Second cycle
EQ2411	Advanced Digital Communications	7.5	Second cycle
EQ2415	Machine Learning and Data Science	7.5	Second cycle
EQ2425	Analysis and Search of Visual Data	7.5	Second cycle
EQ2461	Seminars in Information and Network Engineering	3.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
EQ2310	Digital Communications	9.0	Second cycle
EQ2330	Image and Video Processing	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits)

Year 3

Human Computer Interaction and Design EIT (HCID)

Year 1

Mandatory courses (52.0 credits)

Course code	Course name	Credits	Edu. level
DH2632	Human-Computer Interaction, Research Seminars	3.0	Second cycle
DH2642	Interaction Programming and the Dynamic Web	7.5	Second cycle
IC1007	Human-computer Interaction: Principles and Design	7.5	First cycle
IC2005	Methodology of Interaction Design	7.5	Second cycle

Course code	Course name	Credits	Edu. level
II2202	Research Methodology and Scientific Writing	7.5	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2421	Machine Learning	7.5	Second cycle
DH2408	Evaluation Methods in Human-Computer Interaction	6.0	Second cycle
DH2670	Haptics, Tactile and Tangible Interaction	7.5	Second cycle
DT2140	Multimodal Interaction and Interfaces	7.5	Second cycle
ID2209	Distributed Artificial Intelligence and Intelligent Agents	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Year 2

Mandatory courses (21.0 credits)

Course code	Course name	Credits	Edu. level
DH2400	Physical Interaction Design and Realization	7.5	Second cycle
ID2216	Developing Mobile Applications	7.5	Second cycle
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DH2670	Haptics, Tactile and Tangible Interaction	7.5	Second cycle
DT2140	Multimodal Interaction and Interfaces	7.5	Second cycle
ID2012	Ubiquitous Computing	7.5	Second cycle
II2302	Sensor Based Systems	7.5	Second cycle
IK2560	Mobile Networks and Services	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits

Year 3

Human Computer Interaction and Design KTH (HCIN)

Year 1

Mandatory courses (52.0 credits)

Course code	Course name	Credits	Edu. level
DH2632	Human-Computer Interaction, Research Seminars	3.0	Second cycle
DH2642	Interaction Programming and the Dynamic Web	7.5	Second cycle
IC1007	Human-computer Interaction: Principles and Design	7.5	First cycle
IC2005	Methodology of Interaction Design	7.5	Second cycle
II2202	Research Methodology and Scientific Writing	7.5	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle

Course code	Course name	Credits	Edu. level
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DD2421	Machine Learning	7.5	Second cycle
DH2408	Evaluation Methods in Human-Computer Interaction	6.0	Second cycle
DH2670	Haptics, Tactile and Tangible Interaction	7.5	Second cycle
DT2140	Multimodal Interaction and Interfaces	7.5	Second cycle
ID2209	Distributed Artificial Intelligence and Intelligent Agents	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Year 2

Mandatory courses (21.0 credits)

Course code	Course name	Credits	Edu. level
DH2400	Physical Interaction Design and Realization	7.5	Second cycle
ID2216	Developing Mobile Applications	7.5	Second cycle
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
DH2670	Haptics, Tactile and Tangible Interaction	7.5	Second cycle
DT2140	Multimodal Interaction and Interfaces	7.5	Second cycle
ID2012	Ubiquitous Computing	7.5	Second cycle
II2302	Sensor Based Systems	7.5	Second cycle
IK2560	Mobile Networks and Services	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be choosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits

Year 3

Embedded Systems KTH (INSM)

Year 1

Mandatory courses (56.5 credits)

Course code	Course name	Credits	Edu. level
ID2202	Compilers and Execution Environments	7.5	Second cycle
II2202	Research Methodology and Scientific Writing	7.5	Second cycle
IL2206	Embedded Systems	7.5	Second cycle
IL2212	Embedded Software	7.5	Second cycle
IS2202	Computer Systems Architecture	7.5	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle

Course code	Course name	Credits	Edu. level
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Year 2

Mandatory courses (15.0 credits)

Course code	Course name	Credits	Edu. level
IL2203	Digital Design and Validation using Hardware Description Languages	9.0	Second cycle
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
II2300	Product Realization Processes I	7.5	Second cycle
II2302	Sensor Based Systems	7.5	Second cycle
IL2225	Embedded Hardware Design in ASIC and FPGA	7.5	Second cycle
IL2230	Hardware Architectures for Deep Learning	7.5	Second cycle
IL2236	Embedded Many-Core Architectures	7.5	Second cycle
IS2500	RFID Systems	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits

Year 3

Embedded Systems EIT (INSY)

Year 1

Mandatory courses (56.5 credits)

Course code	Course name	Credits	Edu. level
ID2202	Compilers and Execution Environments <i>Mandatory for INSY exit Aalto, TU Berlin, TU Eindhoven. Elective for others.</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing	7.5	Second cycle
IL2206	Embedded Systems	7.5	Second cycle
IL2212	Embedded Software <i>Mandatory for INSY exit Aalto, TU Berlin, TU Eindhoven. Elective for others.</i>	7.5	Second cycle
IS2202	Computer Systems Architecture <i>Mandatory for INSY exit Aalto, TU Berlin, TU Eindhoven. Elective for others.</i>	7.5	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
ID2218	Design of Fault-tolerant Systems	7.5	Second cycle

Course code	Course name	Credits	Edu. level
	<i>Elective for INSY exit UNITN, TUCS, BME</i>		
II2302	Sensor Based Systems <i>Elective for INSY exit UNITN, TUCS, BME</i>	7.5	Second cycle
IL2217	Digital Design with HDL <i>Elective for INSY exit UNITN, TUCS, BME</i>	7.5	Second cycle
IL2225	Embedded Hardware Design in ASIC and FPGA <i>Elective for INSY exit UNITN, TUCS, BME</i>	7.5	Second cycle
IL2237	Electronic Systems Design <i>Elective for INSY exit UNITN, TUCS, BME</i>	7.5	Second cycle
IL2238	Fundamentals of Integrated Electronics <i>Elective for INSY exit UNITN, TUCS, BME</i>	7.5	Second cycle
IL2239	Analog-Digital Interfaces <i>Elective for INSY exit UNITN, TUCS, BME</i>	7.5	Second cycle
IL2450	System Level Validation <i>Elective for INSY exit UNITN, TUCS, BME</i>	7.5	Second cycle
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Supplementary information

Students going to exits Aalto, TU Berlin, TU Eindhoven do only have mandatory courses in year 1. Other exits can chose more freely.

Year 2

Mandatory courses (15.0 credits)

Course code	Course name	Credits	Edu. level
IL2203	Digital Design and Validation using Hardware Description Languages	9.0	Second cycle
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
II2300	Product Realization Processes I	7.5	Second cycle
II2302	Sensor Based Systems	7.5	Second cycle
IL2225	Embedded Hardware Design in ASIC and FPGA	7.5	Second cycle
IL2230	Hardware Architectures for Deep Learning	7.5	Second cycle
IL2236	Embedded Many-Core Architectures	7.5	Second cycle
IS2500	RFID Systems	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits)

Year 3

Internet Technology and Architecture EIT (ITAK)

Year 1

Mandatory courses (49.0 credits)

Course code	Course name	Credits	Edu. level
EP2200	Queuing Theory and Teletraffic Systems	7.5	Second cycle
EP2950	Wireless Networks	7.5	Second cycle
II2202	Research Methodology and Scientific Writing	7.5	Second cycle
IK2215	Advanced Internetworking	7.5	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle

Course code	Course name	Credits	Edu. level
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
EP2500	Networked Systems Security	7.5	Second cycle
ID1212	Network Programming	7.5	First cycle
ID2216	Developing Mobile Applications	7.5	Second cycle
IK2217	Advanced Internetworking II	7.5	Second cycle
IK2220	Software Defined Networking (SDN) and Network Functions Virtualization (NFV)	7.5	Second cycle
IK2560	Mobile Networks and Services	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be choosen</i>	7.5	Second cycle

Year 2

Mandatory courses (21.0 credits)

Course code	Course name	Credits	Edu. level
IK2200	Communication System Design	15.0	Second cycle
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
EP2300	Management of Networks and Networked Systems	7.5	Second cycle
EP2510	Advanced Networked Systems Security	7.5	Second cycle
EP2520	Building Networked Systems Security	7.5	Second cycle
EQ2461	Seminars in Information and Network Engineering	3.0	Second cycle
IK2206	Internet Security and Privacy	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits

Year 3

Internet Technology and Architecture KTH (ITAR)

Year 1

Mandatory courses (49.0 credits)

Course code	Course name	Credits	Edu. level
EP2200	Queuing Theory and Teletraffic Systems	7.5	Second cycle
EP2950	Wireless Networks	7.5	Second cycle
II2202	Research Methodology and Scientific Writing	7.5	Second cycle
IK2215	Advanced Internetworking	7.5	Second cycle
ME2072	Entrepreneurship for Engineers	6.0	Second cycle
ME2073	Business Development Lab of Entrepreneurship Engineers	9.0	Second cycle

Course code	Course name	Credits	Edu. level
ME2078	Summer Course- Entrepreneurship for Engineers	4.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
EP2500	Networked Systems Security	7.5	Second cycle
ID1212	Network Programming	7.5	First cycle
ID2216	Developing Mobile Applications	7.5	Second cycle
IK2217	Advanced Internetworking II	7.5	Second cycle
IK2220	Software Defined Networking (SDN) and Network Functions Virtualization (NFV)	7.5	Second cycle
IK2560	Mobile Networks and Services	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
ME1033	Open and User Innovation <i>One of ME1033, ME2062, ME2094, ME2095 shall be chosen</i>	7.5	First cycle
ME2062	Technology-based Entrepreneurship <i>One of ME1033, ME2062, ME2094, ME2095 shall be chosen</i>	7.5	Second cycle
ME2094	Internet Marketing <i>One of ME1033, ME2062, ME2094, ME2095 shall be chosen</i>	7.5	Second cycle
ME2095	e-Business Strategies <i>One of ME1033, ME2062, ME2094, ME2095 shall be chosen</i>	7.5	Second cycle

Year 2

Mandatory courses (21.0 credits)

Course code	Course name	Credits	Edu. level
IK2200	Communication System Design	15.0	Second cycle
ME2096	ICT Innovation Study Project	6.0	Second cycle

Optional courses

Course code	Course name	Credits	Edu. level
EP2300	Management of Networks and Networked Systems	7.5	Second cycle
EP2510	Advanced Networked Systems Security	7.5	Second cycle
EP2520	Building Networked Systems Security	7.5	Second cycle
EQ2461	Seminars in Information and Network Engineering	3.0	Second cycle
IK2206	Internet Security and Privacy	7.5	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AK2036	Theory and Methodology of Science with Applications (Natural and Technological Science) <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle
II2202	Research Methodology and Scientific Writing <i>One of II2202, AK2036 shall be chosen</i>	7.5	Second cycle

Supplementary information

Degree project 30 credits advanced level is mandatory during the spring term.

In accordance with KTH's regulations, a mandatory course in Research Methodology and Scientific Writing 7,5 credits needs to be included. This course can be taken anytime during the studies. Currently, the following courses are offered:

- II2202 Research Methodology and Scientific Writing 7,5 credits
- AK2036 Theory and Methodology of Science with Applications (Natural and Technological Science 7,5 credits

Year 3



Appendix 2: Specialisations

Master's Programme, ICT Innovation, 120 credits (TIVNM), Programme syllabus for studies starting in autumn 2018

Autonomous Systems EIT (AUSM)

Autonomous Systems KTH (AUSY)

Cloud Computing and Services EIT (DAMO)

Data Science EIT (DASC)

Data Science KTH (DASE)

Digital Media Technology EIT (DMTE)

Digital Media Technology KTH (DMTK)

Human Computer Interaction and Design EIT (HCID)

Human Computer Interaction and Design KTH (HCIN)

Embedded Systems KTH (INSM)

Embedded Systems EIT (INSY)

Internet Technology and Architecture EIT (ITAK)

Internet Technology and Architecture KTH (ITAR)