Utbildningsplan

En tillgänglighetsanpassad version av utbildningsplanen finns i Kurs- och programkatalogen.

Masterprogram, informations- och kommunikationsteknik 120 hp

Master's Programme, Research on Information and Communication Technologies

Gäller för antagna till utbildningen fr o m HT10.

Utbildningens mål

The Erasmus Mundus master program in Research on Information and Communication Technologies (MERIT) aims at educating students with knowledge and specific skills in research and innovation in the field of ICT in order to meet the needs of European and worldwide R&D organizations, both from the industry and academia.

The program is organized by a consortium of 5 European institutions in different countries where KTH is one partner in the consortium. Each student spends the first year at one institution and the second year at any of the other institutions. After completing the two years, the students are awarded double degrees from the two institutions they attended.

Kunskap och förståelse

For the master's degree, the student should:

- show knowledge and understanding about key technologies for information and communication technologies (ICT), especially on modern communication systems, including an overview of the area as well as a deeper knowledge within the selected area of knowledge.

- Show deepened knowledge about the fundamentals of theory and methods within the subject area.

Färdigheter och förmågor

For the master’s degree, the student should:

- show the ability to integrate knowledge and analyse, judge and handle complex phenomena, inquiries and situations, even with limited information

- show the ability to independently identify and formulate inquiries and plan, and with adequate methods, carry out qualified analysis and design of communication systems, within given time constraints

- show the ability to orally, and in writing, clearly present and discuss one’s own conclusions and the knowledge and arguments which are the foundation for them in a dialogue with different groups

- show such a skill which is demanded in order to participate in research and development work within the area

Värderingsförmåga och förhållningssätt

For the master’s degree, the student should:

1. show the ability to, within the technical area, make judgments with regards to relevant scientific, social, and ethical aspects and show awareness about ethical aspects in research and development work

2. show insight about technology’s possibilities and limitations, its role in society and humans’ responsibility for how it is used

3. Show the ability to identify his/her need for further knowledge and take responsibility for developing his/her knowledge.

Utbildningens omfattning och innehåll

The Erasmus Mundus programme MERIT is on the second level and comprises 120 higher education credits. The language of instruction throughout the programme is English. Student mobility is a requirement and each student should spend one year at one of the partner institutions and the other year at another.

The program offers several specialisations, where each specialisation is within one of the following Areas of Knowledge (AoK)

1. Microwave, Antennas, Remote Sensing and Photonics
2. Wireless and Optical Communication Systems and Networks
3. Multimedia Signal Processing

Within these three Areas of Knowledge, KTH offers specialisations in

- Photonics (within AoK 1.)
- Information Transmission and Wireless Communication Systems (within AoK 2.)
- Wireless Network Management (within AoK 2.)
- Speech and Language Technologies (within AoK 3.)

A description of the full program and all the specialisations, is available at www.meritmaster.org.

Behörighet och urval

Basic eligibility

Basic eligibility to be accepted to the master's programme requires that the applicant has a degree on the first level consisting of at least 180 higher education credits or a corresponding foreign degree. In addition, good knowledge in English, oral and written, is required.

Specific eligibility

Specific eligibility:

- In the previous education, the following course contents must have been successfully passed. Mandatory: Probability Theory, Complex Analysis and Integral Transformations, Linear Circuits and Networks, Electronic Circuits, Fields and Waves, Basic Laboratory in Electronic Circuits and Digital Circuits. With strong recommendation: Mathematics I and II, Physics I and II, Information Technology, Laboratory in Information Technology.

- A good knowledge of English, equivalent to Eng B.

The number of places within the study programme is limited. All eligible applications are evaluated by representatives from all participating institutions, based on the study results, adequacy of education, language skills, quality of institution, motivation letter and recommendation letters. The applicant's academic results are given higher weight than the other parameters.

Utbildningens genomförande

Utbildningens upplägg

The study year for KTH's part of the programme is divided into four periods. The study periods correspond to about seven weeks of studies with at least 33 study days. Every study period is followed by an exam period consisting of two dispensable days and at least five exam days.

The programme comprises 1.5 years of full-time studies (90 higher education credits), and a half-year degree project (30 higher education credits). The degree project is normally performed during the spring of the second year.

An individual study plan is prepared for each student.

Kurser

Utbildningen sker i kursform. Kurslistor finns i bilaga 1.

The courses are classified into Core courses, Concentration courses and Transversal courses (developing abilities like scientific communication, project management and language skills). As a general rule, it is advisable that the student completes 24 ECTS credits from core courses, 48 credits from concentration courses and 18 ECTS credits for transversal courses.

Betygssystem

För kurser på KTH används en sjugradig målrelaterad betygsskala A-F som slutbetyg för kurser på grundnivå och avancerad nivå. A-E är godkända betyg med A som högsta betyg. Betygen godkänd (P) och underkänd (F) används som slutbetyg då särskilda skäl föreligger.

Grades from the different institutions are transferred into the ECTS grading scale.

Villkor för deltagande i utbildningen

For promotion to study year two, the student must have received at least 45 higher education credits from the first year.

Tillgodoräknanden

According to the higher education ordinance, a student who has gone through certain higher education with passing results has the right to receive recognition of their previous academic studies for the corresponding programme at another higher education institution. The Director of Studies at the School of Electrical Engineering makes the decisions about recognition of complete courses. Recognition of elements of previous courses can be decided by the examiner.

The application for recognition of previous academic studies is submitted to the local programme office on a special form.

Reference to the policy, KTH-handbook 2, section 13.3.

Utlandsstudier

All students study in two different countries during the program, following the directions for mobility in Erasmus Mundus from the European commission.

Examensarbete

The degree project comprises 30 higher education credits and is carried out individually and must be within an area corresponding to the courses which the student has taken. In order to start the degree project, the student must have passed at least 60 higher education credits.

The degree project is graded, according to the A-F scale, based on three KTH-common assessment principles; engineering-related and scientific content, process and presentation.

Examen

Students who have successfully completed a two-year Master's programme (120 ECTS) will be awarded a "Teknologie masterexamen", translated into English as "Degree of Master of Science (two years)". Each student will receive a degree from each participating university, a so-called dual degree.

For the degree, the following is required:

- At least 90 higher education credits from courses included in the individual study plan approved by the advisor and program director, including the core courses corresponding to the selected AoK.

- Passed Degree Project 30 higher education credits.

Bilaga 1 - Kurslista
Bilaga 2 - Inriktningsbeskrivningar

Bilaga 1: Kurslista

Masterprogram, informations- och kommunikationsteknik (TIKTM)

Gemensamma kurser

Årskurs 1

Obligatoriska kurser (51,0 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
EN2500	Informationsteori och källkodning *Spår (AoK) - Multimedia Signal Processing, obligatorisk*	7,5 hp	Avancerad nivå
EQ1220	Signalteori *Spår (AoK) - Multimedia Signal Processing samt Wireless and Optical Communication Systems and Networks, obligatorisk*	7,5 hp	Grundnivå
EQ2310	Digital kommunikation *Obligatorisk för alla spår (AoK)*	9,0 hp	Avancerad nivå
EQ2410	Avancerad digital kommunikation *Spår (AoK) - Microwave, Antennas, Remote Sensing and Photonics, obligatorisk*	6,0 hp	Avancerad nivå
IK2500	Radiokommunikation, grundkurs *Spår (AoK) - Microwave, Antennas, Remote Sensing and Photonics, obligatorisk*	6,0 hp	Avancerad nivå
IO2653	Fiberoptisk kommunikation *Spår (AoK) - Wireless and Optical Communication Systems and Networks, obligatorisk*	7,5 hp	Avancerad nivå
IT2651	Mikrovågsteknik *Spår (AoK) - Microwave, Antennas, Remote Sensing and Photonics, obligatorisk*	7,5 hp	Avancerad nivå

Rekommenderade kurser

Kurskod	Namn	Omfattning	Utbildningsnivå
AK1213	Samhälle, kultur och industri i Sverige ur ett historiskt perspektiv	7,5 hp	Grundnivå
DS1301	Teknisk engelska, mellannivå	9,0 hp	Grundnivå
DS1302	Teknisk engelska, mellannivå	9,0 hp	Grundnivå
DS1303	Teknisk engelska, mellannivå	9,0 hp	Grundnivå
DS1307	Teknisk engelska, mellannivå	9,0 hp	Grundnivå

DS1500	Svenska 1, grundnivå	7,5 hp	Grundnivå
DS1508	Svenska 1, grundnivå	7,5 hp	Grundnivå
DS150N	Svenska 1, grundnivå	7,5 hp	Grundnivå
DS2304	Teknisk engelska, högre nivå	9,0 hp	Avancerad nivå
EH2720	Projektstyrning	7,5 hp	Avancerad nivå
EH2730	Kravhantering	7,5 hp	Avancerad nivå
EI2400	Tillämpad antennteknik	7,5 hp	Avancerad nivå
EI2410	Fältteori för vågledare	7,5 hp	Avancerad nivå
EN2202	Mönsterigenkänning	7,5 hp	Avancerad nivå
EN2600	Projektkurs i multimedia-signalbehandling	12,0 hp	Avancerad nivå
EP2120	Internetworking	7,5 hp	Avancerad nivå
EP2200	Köteori och teletrafiksystem	7,5 hp	Avancerad nivå
EP2210	Prestandaanalys för kommunikationsnätverk	7,5 hp	Avancerad nivå
EP2300	Nätverkshantering	7,5 hp	Avancerad nivå
EQ2300	Digital signalbehandling	7,5 hp	Avancerad nivå
EQ2430	Projektkurs i signalbehandling och digital kommunikation	12,0 hp	Avancerad nivå
EQ2440	Projektarbete i trådlös kommunikation	12,0 hp	Avancerad nivå
EQ2460	Seminarier i trådlösa system	3,0 hp	Avancerad nivå
EQ2800	Optimal filtrering	6,0 hp	Avancerad nivå
EQ2810	Estimeringsteori, forskarförberedande	6,0 hp	Avancerad nivå
EQ2820	Matrisalgebra, forskarförberedande	7,5 hp	Avancerad nivå
EQ2830	Detekterings- och modulationsteori, forskarförberedande	7,5 hp	Avancerad nivå
EQ2840	Informationsteori och kanalkodning, forskarförberedande	7,5 hp	Avancerad nivå
EQ2850	Kodning för trådlös kommunikation, forskarförberedande	7,5 hp	Avancerad nivå
FEL3300	Konvex optimering med ingenjörstillämpningar	6,0 hp	Forskarnivå
IF2651	Kvantelektronik	7,5 hp	Avancerad nivå
IK2503	Simulering, forskarförberedande	6,0 hp	Avancerad nivå
IK2504	Wireless Access Protocols	6,0 hp	Avancerad nivå
IK2555	Trådlösa och mobila nätverksarkitekturer	7,5 hp	Avancerad nivå
IL2219	Radioelektronik	7,5 hp	Avancerad nivå

IO2651	Optik	9,0 hp	Avancerad nivå
IO2652	Optik, fortsättningskurs	6,0 hp	Avancerad nivå
IO2654	Optiska nätverk	7,5 hp	Avancerad nivå
IO2655	Fotonik	7,5 hp	Avancerad nivå
IO2659	Laserteknik	7,5 hp	Avancerad nivå
ME1000	Industrial Management	6,0 hp	Grundnivå
ME2043	Leadership in Cross-Cultural Context	6,0 hp	Avancerad nivå
SK2350	Optisk mätteknik	6,0 hp	Avancerad nivå

Årskurs 2

Rekommenderade kurser

Kurskod	Namn	Omfattning	Utbildningsnivå
AK1213	Samhälle, kultur och industri i Sverige ur ett historiskt perspektiv	7,5 hp	Grundnivå
AK2036	Vetenskapsteori och vetenskaplig metodik med tillämpningar (naturvetenskap)	7,5 hp	Avancerad nivå
DS1301	Teknisk engelska, mellannivå	9,0 hp	Grundnivå
DS1302	Teknisk engelska, mellannivå	9,0 hp	Grundnivå
DS1303	Teknisk engelska, mellannivå	9,0 hp	Grundnivå
DS1307	Teknisk engelska, mellannivå	9,0 hp	Grundnivå
DS1500	Svenska 1, grundnivå	7,5 hp	Grundnivå
DS1508	Svenska 1, grundnivå	7,5 hp	Grundnivå
DS150N	Svenska 1, grundnivå	7,5 hp	Grundnivå
DS2304	Teknisk engelska, högre nivå	9,0 hp	Avancerad nivå
EH2720	Projektstyrning	7,5 hp	Avancerad nivå
EH2730	Kravhantering	7,5 hp	Avancerad nivå
EI2400	Tillämpad antennteknik	7,5 hp	Avancerad nivå
EI2410	Fältteori för vågledare	7,5 hp	Avancerad nivå
EN2202	Mönsterigenkänning	7,5 hp	Avancerad nivå
EN2500	Informationsteori och källkodning	7,5 hp	Avancerad nivå
EP2120	Internetworking	7,5 hp	Avancerad nivå
EP2210	Prestandaanalys för kommunikationsnätverk	7,5 hp	Avancerad nivå

EP2300	Nätverkshantering	7,5 hp	Avancerad nivå
EQ2430	Projektkurs i signalbehandling och digital kommunikation	12,0 hp	Avancerad nivå
EQ2440	Projektarbete i trådlös kommunikation	12,0 hp	Avancerad nivå
EQ2460	Seminarier i trådlösa system	3,0 hp	Avancerad nivå
EQ2800	Optimal filtrering	6,0 hp	Avancerad nivå
EQ2810	Estimeringsteori, forskarförberedande	6,0 hp	Avancerad nivå
EQ2820	Matrisalgebra, forskarförberedande	7,5 hp	Avancerad nivå
EQ2830	Detekterings- och modulationsteori, forskarförberedande	7,5 hp	Avancerad nivå
EQ2840	Informationsteori och kanalkodning, forskarförberedande	7,5 hp	Avancerad nivå
EQ2850	Kodning för trådlös kommunikation, forskarförberedande	7,5 hp	Avancerad nivå
IF2651	Kvantelektronik	7,5 hp	Avancerad nivå
IK2503	Simulering, forskarförberedande	6,0 hp	Avancerad nivå
IK2504	Wireless Access Protocols	6,0 hp	Avancerad nivå
IK2510	Radionät	7,5 hp	Avancerad nivå
IK2555	Trådlösa och mobila nätverksarkitekturer	7,5 hp	Avancerad nivå
IL2219	Radioelektronik	7,5 hp	Avancerad nivå
IO2651	Optik	9,0 hp	Avancerad nivå
IO2652	Optik, fortsättningskurs	6,0 hp	Avancerad nivå
IO2653	Fiberoptisk kommunikation	7,5 hp	Avancerad nivå
IO2654	Optiska nätverk	7,5 hp	Avancerad nivå
IO2655	Fotonik	7,5 hp	Avancerad nivå
IO2659	Laserteknik	7,5 hp	Avancerad nivå
IT2651	Mikrovågsteknik	7,5 hp	Avancerad nivå
ME1000	Industrial Management	6,0 hp	Grundnivå
ME2043	Leadership in Cross-Cultural Context	6,0 hp	Avancerad nivå
SK2350	Optisk mätteknik	6,0 hp	Avancerad nivå

Bilaga 2: Inriktningar

Masterprogram, informations- och kommunikationsteknik (TIKTM)

Programmet har inga inriktningar.