Utbildningsplan

Masterprogram, flyg- och rymdteknik
Master's Programme, Aerospace Engineering, 120 credits
120,0 högskolepoäng

Gäller för antagna till utbildningen fr o m HT08.

Utbildningens mål

The main objective of this programme is to educate skilled engineers for the European aerospace industry and research institutions. The programme is mainly intended for (but not exclusive to) Swedish students and students from European universities with which KTH has exchange agreements. It is a joint effort by several different KTH departments, providing leading expertise in their respective areas of research. The Department of Aeronautical and Vehicle Engineering coordinates the programme and contributes about half of the courses.

Kunskap och förståelse

A Master of Science in Aerospace Engineering will:

- have a good ability to independently apply mathematics and basic engineering science in the field of aerospace engineering,
- be able to formulate and approach new problem settings in a scientific manner, by having a creative, critical and systematic attitude to engineering practice.

Färdigheter och förmågor

A Master of Science in Aerospace Engineering will be able to:

- work out solution strategies to real engineering problems, knowing the capabilities and limitations of different methods and tools,
- plan, perform and evaluate basic experimental testing in order to investigate the validity of a theoretical model,
- work efficiently in a teamwork environment in groups with different compositions,
- work efficiently in an international environment, in particular where English is the professional language,
- communicate results and conclusions in a competent and intelligible manner, both orally and in writing,
- follow and participate in aerospace research and development.

Värderingsförmåga och förhållningssätt

A Master of Science in Aerospace Engineering will be able to:

- critically judge a situation and in an independent manner acquire the information and knowledge that is necessary to establish a qualified standpoint,
- have the ability to identify the need for further knowledge in the field and take responsibility for keeping their personal knowledge up to date.

Complete information on the degree requirements can found at the local degree policy of KTH, see http://www.kth.se/info/kth-handboken/II/19/1.html

Utbildningens omfattning och innehåll

Aerospace Engineering is a two-year (120 university credits) master programme on the advanced level (second cycle). The instruction language is entirely in English. The programme consists of a basic curriculum followed by four different specializations in aeronautics, space, structures or systems. The courses in the basic curriculum are compulsory and constitutes about half of the course work. In each specialization there is an additional set of three compulsory courses to ensure that the students are qualified to perform a final Master's thesis project.

Behörighet och urval

Basic eligibility requirements

A completed Bachelor's degree, equivalent to a Swedish Bachelor's degree (180 university credits), from a university recognized by government or accredited by other recognized organization. A good knowledge of written and spoken English. Applicants must provide proof of their proficiency in English.

Specific eligibility requirements

The applicant must have a basic degree, Bachelor's or similar, from an aeronautical, mechanical engineering, or similar programme with sufficient theoretical depth and good academic results. Course work must include multivariable calculus, linear algebra, numerical analysis, ordinary differential equations, rigid body mechanics, solid mechanics, and fluid mechanics.

Selection process

The selection process is based on a total evaluation of the following criteria: University, Grade Point Average (GPA), and relevant course work. Courses on topics such as complex analysis, partial differential equations, thermodynamics, and control theory are considered an additional qualification.

Complete information on the eligibility requirements can be found at the local admission policy of KTH, see http://www.kth.se/info/kth-handboken/II/11/inledning.html

Utbildningens genomförande

Utbildningens upplägg

The academic year at KTH is divided into four periods. Each period lasts approximately seven weeks with at least 33 days of study. Each period is followed by an exam period consisting of two extra days and at least 5 exam days. In addition to the four regular exam periods, there are three additional re-examination periods: after Christmas, after May and immediately preceding the first study period of the academic year. The academic year lasts for a duration of 40 weeks. Teaching activities may, if necessary, be scheduled outside the academic year.

The first year in the programme is mainly dedicated to the compulsory courses in the basic curriculum. However, some courses in the specializations are also given in the first year, in order to harmonize the master programme and the final part of the five-year engineering education at KTH. The second year mainly consists of elective courses and the final degree project, although it depends on the chosen specialization.

Kurser

Utbildningen sker i kursform. Kurslistor finns i bilaga 1.

The programme is course-based. Lists of courses are included in Appendix 1. The basic curriculum corresponds to approximately 45 university credits. In each specialization, there is an additional set of three compulsory courses, corresponding to approximately 20 university credits. This leaves approximately 25 university credits for optional (elective) courses. The optional courses should be on the advanced level, and preferably be related to aerospace engineering.

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.

Courses in 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.

Villkor för deltagande i utbildningen

No later than November 15 and May 15 each academic year, respectively, the students are required to make a study registration and course selection for the coming term. At least 40 university credits have to be completed during the first academic year (including the re-examination period in August) in order for the student to be promoted to the second year of the programme.

Students have to make a decision about the specialization in the very beginning of the programme. In particular, this holds for the systems branch of which some courses are given already in the first period. The programme director will inform about the different options during the reception at KTH.

Tillgodoräknanden

Under certain circumstances, and in agreement with the programme director, credits for previous studies can be received according to the local policy of KTH, see http://www.kth.se/info/kth-handboken/II/13/3.html

Examensarbete

Students admitted to the programme are required to perform an independent study in the form of a thesis project corresponding to 30 university credits. To begin the thesis project, a student must have completed at least 65 university credits of the total course work and at least two of the three compulsory courses in the specialization.

The purpose of the thesis project is that the student should demonstrate the ability to perform independent project work, using and developing the skills obtained from the courses in the programme. The thesis project can either be performed at a university or, more commonly, at a company in the aerospace sector with suitable infrastructure to provide sufficient supervision and resources for the project. The student must actively search for a suitable thesis project in industry; however KTH will provide some assistance with information on suitable points of contact. Exchange students are recommended to find a thesis project in their country of permanent residence or in the country where they intend to start their professional careers.

More information on the KTH policy on the degree project can be found at http://www.kth.se/info/kth-handboken/II/15/1.html

Examen

Students who fulfill all the requirements will be awarded a Degree of Master of Science (two years). Students must apply for the degree and also show proof of their basic degree (Bachelor's or similar) and paid student union fee.

Complete information on the degree requirements can be found in the local degree policy of KTH, see http://www.kth.se/info/kth-handboken/II/19/1.html

Bilaga 1 - Kurslista
Bilaga 2 - Inriktningsbeskrivningar

Bilaga 1: Kurslista

Utbildningsplan kull HT2008, Masterprogram, flyg- och rymdteknik (TAEEM)

Gemensamma kurser

Årskurs 1

Obligatoriska kurser (38,0 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
DN2225	Numerisk behandling av differentialekvationer	6,0 hp	Avancerad nivå
EL1820	Modellering av dynamiska system	6,0 hp	Grundnivå
SD2411	Lättkonstruktioner och FEM *Läses andra året av inriktning systemteknik*	8,0 hp	Avancerad nivå
SD2600	Flygplanets prestanda *Läses andra året av inriktning systemteknik*	6,0 hp	Avancerad nivå
SD2815	Rocket Science	6,0 hp	Avancerad nivå
SF1841	Optimization	6,0 hp	Grundnivå

Årskurs 2

Obligatoriska kurser (7,5 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
AK2036	Vetenskapsteori och vetenskaplig metodik med tillämpningar (naturvetenskap)	7,5 hp	Avancerad nivå

Flygteknik (FLT)

Årskurs 1

Obligatoriska kurser (24,0 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
SD2610	Beräkningsaerodynamik	9,0 hp	Avancerad nivå
SD2800	Experimentell aerodynamik	6,0 hp	Avancerad nivå

SD2805	Flygmekanik	9,0 hp	Avancerad nivå

Årskurs 2

Rekommenderade kurser

Kurskod	Namn	Omfattning	Utbildningsnivå
SD2615	Flygledningssystem och modern avionik	6,0 hp	Avancerad nivå
SD2810	Aeroelasticitet	9,0 hp	Avancerad nivå

Lättkonstruktioner (LKR)

Årskurs 1

Obligatoriska kurser (18,0 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
SD2413	Fiberkompositer- analys och design	6,0 hp	Avancerad nivå
SD2414	Fiberkompositer - material och tillverkning	6,0 hp	Avancerad nivå
SD2416	Strukturoptimering och sandwichdesign	6,0 hp	Avancerad nivå

Årskurs 2

Rekommenderade kurser

Kurskod	Namn	Omfattning	Utbildningsnivå
SD2415	Processmodellering för kompositttillverkning	6,0 hp	Avancerad nivå
SD2450	Biomekanik och neuronik	6,0 hp	Avancerad nivå
SD2505	Biobaserade material och produkter	7,0 hp	Avancerad nivå

Rymdteknik (RMD)

Årskurs 2

Obligatoriska kurser (21,0 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
EF2240	Rymdfysik	6,0 hp	Avancerad nivå
EF2260	Rymdmiljö och rymdteknik	6,0 hp	Avancerad nivå
SH2771	Rymdfarkosters dynamik	9,0 hp	Avancerad nivå

Systemteknik (SYS)

Årskurs 1

Obligatoriska kurser (22,5 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
EL2520	Reglerteknik, fortsättningskurs	7,5 hp	Avancerad nivå
SF2862	Stokastiska beslutsstödsmodeller	7,5 hp	Avancerad nivå
SF2937	Tillförlitlighetsteori	7,5 hp	Avancerad nivå

Årskurs 2

Rekommenderade kurser

Kurskod	Namn	Omfattning	Utbildningsnivå
EL2620	Olinjär reglering	7,5 hp	Avancerad nivå
SF2812	Tillämpad linjär optimering	7,5 hp	Avancerad nivå
SF2822	Tillämpad ickelinjär optimering	7,5 hp	Avancerad nivå

Bilaga 2: Inriktningar

Utbildningsplan kull HT2008, Masterprogram, flyg- och rymdteknik (TAEEM)

Flygteknik (FLT)

Ingen information inlagd.

Lättkonstruktioner (LKR)

Ingen information inlagd.

Rymdteknik (RMD)

Ingen information inlagd.

Systemteknik (SYS)

Ingen information inlagd.