LINKÖPINGS UNIVERSITET

Aeronautical Engineering, Master's Programme

120 credits

Aeronautical Engineering, masterprogram

6MAER

Valid from: 2017 Spring semester

Determined by
Faculty Board of Institute of Technology

Date determined
2017-01-25

Purpose

A Master of Science in Aeronautical Engineering from Linköping University is about aircraft design from a broad system perspective. In addition there are specializations in various subdisciplines.

A graduate from this program will be able to take part in multidisciplinary design processes where technical as well as economical, environmental and sustainability requirements are satisfied.

The programme is aimed at students with a Bachelor degree who would like to extend their knowledge in mechanical engineering and engineering science, into aeronautical engineering. Graduates are suitable for employment in industry, academic institutions and at major research/development laboratories.

Aim

Mathematics, natural sciences and engineering subjects
A Master of Science in Aeronautical Engineering

- should have solid foundations in mathematics and engineering science
- should be able to use computer effectively to model and analyze engineering problems as well as to visualize results
- should have a specialized knowledge in one area of mechanical engineering

Personal and professional skills
A Master of Science in Aeronautical Engineering

- should have the ability to take a leading role in modern research and engineering
- should be able to gain competency in new fields of engineering, rapidly and independently
- should be able to participate effectively in multidisciplinary design teams, either as team leader or in a specialist role

Interpersonal skills: Teamwork and communication
A Master of Science in Aeronautical Engineering

- should be capable of teamwork and collaborate actively within the group by sharing in the tasks and responsibilities
- should be able to initialize, to plan, to carry out and to evaluate scientific and engineering projects
- should be able to communicate and to give presentations in english, orally and in writing

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Content

The curriculum includes fundamental courses such as Aircraft Design, Flight Dynamics and Aerodynamics. An important part of the program is student projects where the knowledge and skills earned in the courses are put to use in challenging design projects The programme ends with a one semester Master's thesis in industry or at the university. The programme is designed to prepare students for careers within the aerospace industry, ranging from conceptual aircraft design to more specialized fields. Students will also be very well prepared to work in related fields such as in the vehicle industry, etc. Students will also be prepared for a research career.

Entry requirements

- Bachelor's degree in aeronautical engineering, mechanical engineering, or equivalent
- 30 ECTS credits in mathematics/applied mathematics and/or application of mathematics relevant for the programme
- English corresponding to the level of English in Swedish upper secondary education (English 6/B)

Degree thesis

The thesis should be based on the high quality scientific content and carried out in close contact with the research groups involved in the programme and in the area of the profile chosen by the students. The major subject of the Thesis work should be Aeronautical Engineering.

Degree requirements

The programme is designed to give the Master's Degree "Teknologie masterexamen i flygteknik" translated to "Degree of Master of Science (Two Years) with a major in Aeronautical Engineering".

The requirements are the following:

- a Bachelor's degree as specified in the entrance requirements
- course requirements for a total of 120 ECTS credits from courses from the curriculum of the programme, or after special decision from the programme board, and thesis work.
- passed the requirements for all mandatory courses and one course marked M/E (Mandatory/Elective)
- courses on advancement level A (advanced) 90 ECTS credits including:
    - at least 30 ECTS credits courses from the major subject (Aeronautical Engineering)
    - a 30 ECTS credits Master's Thesis in the major subject (Aeronautical Engineering)
- at least 45 ECTS credits from courses in mathematics or applications of mathematics from the Bachelor level (basic) or Master level (advanced), see list of specific courses
- a Master's thesis in major subject Aeronautical Engineering presented and passed as per Linköping Institute of Technology degree regulations.

Courses overlapping each other regarding contents are not allowed to be included in the degree. Courses used for the Bachelor's degree can never be included in the Master's degree. As a master program is based on a bachelor degree, some assumptions of background knowledge is assumed. There is no guarantee, however, that there are not courses needed that are not part of a particular bachelor program. It is the responsibility of the student to make sure that he/she has the necessary background to succeed in his/her studies.

Degree in Swedish

Master of Science (120 credits) with a major in Aeronautical Engineering

Degree in English

Master of Science (two years) with a major in Aeronautical Engineering

Specific information

Graduate Level Courses
Certain PhD courses can be taken by master students. These course selections are subject to formal decision by the executive committee of the Program Board.

Common rules

Se also common rules

Curriculum

Semester 1 (Autumn 2017)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMAL02	Aircraft and Vehicle Design	6	G2X	4	C
TMMV01	Aerodynamics	6	A1X	2	C
Period 2					
TMHL63	Introduction to Computational Mechanics	6	G2X	3	C
TMHP03	Engineering Systems Design	6	A1X	4	C
TMME50	Flight Mechanics	6	A1X	2	C

Semester 2 (Spring 2018)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMAL51	Aircraft Conceptual Design	6	A1F	2	C
TMMV08	Computational Fluid Dynamics	6	A1X	3	C
TMAL56	Aircraft Systems Engineering	6*	A1F	4	E
TMHL41	Continuum Mechanics	6	A1X	2	E
TMHL62	The Finite Element Method; advanced course	6	A1X	4	E
TMKM40	Engineering Materials - New Materials	6	A1X	2	E
TMMS30	Multi Body Dynamics and Robotics	6	A1X	3	E
Period 2					
TMAL06	Aircraft Conceptual Design - Project Course	6	A1X	2	C
TMAL56	Aircraft Systems Engineering	6*	A1F	4	E
TMHL61	Damage Mechanics and Life Analysis	6	A1X	2	E
TMKM09	Engineering Materials for Lightweight Applications	6	A1X	3	E
TMKT57	Product Modelling	6	A1X	3	E
TMME11	Road Vehicle Dynamics	6	A1X	1	E
TMMV07	Computational Fluid Dynamics, advanced course	6	A1X	4	E
TMMV56	Aerodynamics, Continued Course	6	A1X	3	E

Semester 3 (Autumn 2018)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TMAL07	Prototype Realization - Project Course	6	A1X	-	C
TMMV12	Gas Turbine Engines	6	A1X	4	C
TMME40	Vibration Analysis of Structures	6	A1X	3	E
Period 2					
TMAL08	Aircraft Systems Engineering - Project Course	6	A1X	-	C/E
TMHL26	Aircraft Structures - Project Course	6	A1X	-	C/E
TMMV17	Aircraft Aerodynamics - Project Course	6	A1X	-	C/E
TMHL03	Mechanics of Light Structures	6	A1X	3	E
TMKM90	Engineering Materials - Deformation and Fracture	6	A1X	2	E
TMMS20	Structural Optimization	6	A1X	1	E
TMMV54	Computational Heat Transfer	6	A1X	1	E

Semester 4 (Spring 2019)

Course code	Course name	Credits	Level	Timetable module	ECV
Period 1					
TQXX30	Degree project - Master's Thesis	30*	A1X	-	C
Period 2					
TQXX30	Degree project - Master's Thesis	30*	A1X	-	C

ECV = Elective / Compulsory /Voluntary
*The course is divided into several semesters and/or periods