



Examensbevis | *Degree Certificate*

# Teknologie masterexamen

med huvudområde Flygteknik

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

**Abhishek Dhiman**

19960718-0396

Linköpings universitet den 23 juli 2024

*Linköping University 23 July 2024*

På Tekniska fakultetens vägnar

*On behalf of the Faculty of Science and Engineering*

Rebecca Andersson

Samordnare/Examen

*Officer of Degree Administration*



Studierna är genomförda inom Masterprogrammet i flygteknik

*The studies have been carried out within the Master's Programme in Aeronautical Engineering*

Kurs Course	Högskolepoäng Credits	Betyg Grade	Datum Date
Flyglära <i>Aircraft and Vehicle Design</i>	6.0	Fem <sup>1</sup> <i>Pass with distinction</i>	2022-10-31
Introduktion till beräkningsmekanik <i>Introduction to Computational Mechanics</i>	6.0	Fem <sup>1</sup> <i>Pass with distinction</i>	2023-01-07
Flygmekanik <i>Flight Mechanics</i>	6.0	Fem <sup>1</sup> <i>Pass with distinction</i>	2023-01-13
Tekniska system <i>Engineering Systems Design</i>	6.0	Fem <sup>1</sup> <i>Pass with distinction</i>	2023-01-13
Flygplansprojektering <i>Aircraft Conceptual Design</i>	6.0	Fyra <sup>1</sup> <i>Pass with credit</i>	2023-03-25
Aircraft Conceptual Design - Project Course <i>Aircraft Conceptual Design - Project Course</i>	6.0	Godkänd <sup>2</sup> <i>Pass</i>	2023-06-21
Beräkningsmetoder för aerodynamik <i>Computational Aerodynamics</i>	6.0	Tre <sup>1</sup> <i>Pass</i>	2023-07-01
Aerodynamik <i>Aerodynamics</i>	6.0	Tre <sup>1</sup> <i>Pass</i>	2023-08-26
Beräkningsmetoder i strömningslära, fk <i>Computational Fluid Dynamics, advanced course</i>	6.0	Tre <sup>1</sup> <i>Pass</i>	2023-08-31
Prototype Realization - Project Course <i>Prototype Realization - Project Course</i>	6.0	Fyra <sup>1</sup> <i>Pass with credit</i>	2023-11-14
Beräkningsmetoder i strömningslära <i>Computational Fluid Dynamics</i>	6.0	Tre <sup>1</sup> <i>Pass</i>	2023-11-16
Gasturbinteknik <i>Gas Turbine Engines</i>	6.0	Tre <sup>1</sup> <i>Pass</i>	2023-11-20
Modellering och simulering för värmeöverföring <i>Computational Heat Transfer</i>	6.0	Fyra <sup>1</sup> <i>Pass with credit</i>	2024-01-10
Examensarbete <i>Degree Project - Master's Thesis</i>	30.0	Godkänd <sup>2</sup> <i>Pass</i>	2024-06-06
Aircraft Aerodynamics - Project Course <i>Aircraft Aerodynamics - Project Course</i>	6.0	Godkänd <sup>3</sup> <i>Pass</i>	2024-06-16
Tillämpning av beräkningsmetoder i strömningslära <i>Applied Computational Fluid Dynamics</i>	6.0	Tre <sup>1</sup> <i>Pass</i>	2024-06-16

**Examensarbete**

***Degree Project***

Nearest Neighbour Search Method For 3D Data Mapping of CFD Data

Teknologie masterexamen är en generell examen på avancerad nivå

*The Degree of Master of Science (120 credits) is a general degree within the second cycle*

Datum för avslutade studier den 16 juni 2024

*The degree requirements were fulfilled 16 June 2024*

Noter/Notes

- 1      Betygsskala: Fem (5), Fyra (4), Tre (3)  
         *Grading scale: Pass with distinction (5), Pass with credit (4), Pass (3)*
- 2, 3    Betygsskala: Godkänd (G)  
         *Grading scale: Pass (G)*

1,5 högskolepoäng motsvarar en veckas heltidsstudier, 30 högskolepoäng motsvarar en termins heltidsstudier.  
Denna examen omfattar 120 högskolepoäng.

*1.5 credits correspond one week of full time studies, 30 credits correspond one semester of full-time studies.  
The scope of this degree is 120 credits.*

Examen har avlagts i enlighet med bestämmelserna i högskoleförordningen (SFS 1993:100) och rektors beslut.

*The degree has been awarded in accordance with the regulations governing Swedish higher education (SFS 1993:100) and the decision by the Vice-chancellor.*

## DIPLOMA SUPPLEMENT

The purpose of the Diploma Supplement is to provide sufficient independent data to improve the international “transparency” and fair academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It is free from any value judgements, equivalence statements or suggestions about recognition. This Diploma Supplement model was developed by the European Commission, Council of Europe and UNESCO.

**1. Information identifying the holder of the qualification**

- 1.1 Last name(s)** Dhiman
- 1.2 First name(s)** Abhishek
- 1.3 Date of birth (dd/mm/yy)** 18 July 1996
- 1.4 Student identification number or code (if available)** 19960718-0396

**2. Information identifying the qualification**

- 2.1 Name of qualification and (if applicable) title conferred (in original language)**  
Teknologie masterexamen (Degree of Master of Science (120 credits))
- 2.2 Main field(s) of study for the qualification**  
Aeronautical Engineering
- 2.3 Name and status of awarding institution (in original language)**  
Linköpings universitet (Linköping University).  
State recognised university.
- 2.4 Name and status of institution (if different from 2.3) administering studies (in original language)**  
Not applicable.
- 2.5 Language(s) of instruction/examination**  
Mainly English.

**3. Information on the level and duration of the qualification**

- 3.1 Level of the qualification**  
Avancerad nivå/Second-cycle QF-EHEA SeQF 7/EQF 7.  
For information on the Swedish higher education system, see section 8.
- 3.2 Official duration of programme in credits and/or years**  
120 högskolepoäng (credits)/120 ECTS. Duration of 2 years of full-time studies. A normal 40-week academic year corresponds to 60 credits (högskolepoäng). One credit corresponds to 1 ECTS credit.
- 3.3 Access requirement(s)**  
There are general and (additional) specific entry requirements that should be fulfilled for access to higher education within all cycles. The general entry requirements for second-cycle studies are a first-cycle qualification of at least 180 credits, or a corresponding foreign qualification. An applicant may also be accepted on the basis of a comparable level of learning outcomes obtained through other education, practical experience or other circumstances.

**4. Information on the programme completed and the results obtained**

- 4.1 Mode of study**  
Full-time equivalent.
- 4.2 Programme learning outcomes**  
The Swedish Higher Education Act takes account of 1) courses and study programmes based on scholarship or artistic practice and on proven experience, and 2) research and artistic research as well as development work. Reference to research below also applies to artistic research.

According to the Swedish Higher Education Act, second-cycle courses and study programmes shall (in addition to the requirements for first-cycle courses and study programmes): further develop the ability of students to integrate and make autonomous use of their knowledge; develop the ability to deal with complex phenomena, issues and situations; and develop the potential for professional activities that demand considerable autonomy, or for research and development work. (For further information, see The Swedish Higher Education Act and The Higher Education Degree Ordinance: [www.uhr.se/en](http://www.uhr.se/en))

A Master of Science in Aeronautical Engineering from Linköping University works with all aspects of development of resource efficient technical systems, complex products and industrial processes.

**4.3 Programme details, individual credits gained and grades/marks obtained**

A Degree of Master (120 credits) is awarded after the student has completed the courses required to gain 120 credits with a defined specialisation determined by each higher education institution itself, of which at least 60 credits are for specialised study in the principal field (main field of study) of the study programme. In addition the prior award of a Degree of Bachelor,

a Degree of Bachelor of Fine Arts, a professional or vocational qualification of at least 180 credits or a corresponding qualification from abroad is required.

A requirement for the award of a Degree of Master (120 credits) is completion by the student of an independent project (degree project) for at least 30 credits in the main field of study. The degree project may comprise less than 30 credits, however no less than 15 credits, if the student has already completed an independent project in the second cycle for at least 15 credits in the main field of study or the equivalent from a programme of study outside Sweden.

At least 90 credits (including in-depth studies in the main field of study) of the requirements for a degree of Master (120 credits), must refer to courses at advanced level.

For more information, see Degree Certificate/Official Transcript.

#### **4.4 Grading system and, if available, grade distribution table**

There is no national grading system in Sweden. Higher education institutions may determine which grading system is to be used. For more information, see Degree Certificate/Official Transcript.

According to a decision by the Vice-chancellor, LiU-2019-00920, 11 March 2019, the following translation into ECTS is applied  
Two grades given:

The grade Pass is the translation of the Swedish grade 'Godkänd' (Pass)

The grade Fail is the translation of the Swedish grade 'Underkänd' (Fail)

Three grades given:

The grade A is the translation of the Swedish grade 'Väl godkänd' (Pass with distinction)

The grade C is the translation of the Swedish grade 'Godkänd' (Pass)

The grade Fx is the translation of the Swedish grade 'Underkänd' (Fail)

Four grades given:

The grade A is the translation of the Swedish grade 'Fem(5)' (Pass with distinction)

The grade B is the translation of the Swedish grade 'Fyra(4)' (Pass with credit)

The grade C is the translation of the Swedish grade 'Tre(3)' (Pass)

The grade Fx is the translation of the Swedish grade 'Underkänd' (Fail)

#### **4.5 Overall classification of the qualification (in original language)**

Not applicable for Swedish qualifications, since no overall grade is awarded for a degree and students are not ranked. For example, Grade Point Average (GPA) and other ranking systems are not used in Sweden.

### **5. Information on the function of the qualification**

#### **5.1 Access to further study**

The degree gives access to third-cycle studies (doctoral studies)

#### **5.2 Access to a regulated profession (if applicable)**

The Degree of Master corresponds to the qualification level referred to in point (e) of Article 11 of Directive 2005/36/EC.

### **6. Additional information**

#### **6.1 Additional information**

None.

#### **6.2 Further information sources**

Linköpings universitet, SE-581 83 Linköping, Sweden

Phone: +46 13 28 10 00, [www.liu.se/examen](http://www.liu.se/examen)

You can verify the issued qualification by logging on to Ladok, the Swedish national student registry. For this you need a unique code provided by the student.

The Swedish Council for Higher Education (Universitets- och högskolerådet) has been commissioned to act as the Swedish NARIC and is also part of ENIC. The ENIC-NARIC office provides information on education in Sweden. Please see: <http://www.uhr.se>

For information on Professional Qualifications Directive, Swedish National Assistance Centre for the Recognition of Professional Qualifications (Professional Qualifications Directive 2005/36/EC): [pqinfo@uhr.se](mailto:pqinfo@uhr.se)

For information on quality assurance, Swedish Higher Education Authority: <http://english.uka.se>

### **7. Certification of the supplement**

#### **7.1 Date 23 July 2024**

#### **7.2 Signature**

This document has an electronic stamp. For information on how to verify the document, see last page.

#### **7.3 Capacity Not applicable.**

#### **7.4 Official stamp or seal**

Not applicable.

### **8. Information on the national higher education system**

**The following description is approved by the Swedish Council for Higher Education.**

The Swedish higher education system is based on The Swedish Higher Education Act (SFS 1992:1434) and the 1 January 2007 amendments to The Higher Education Ordinance (1993:100). The following description is a short summary based on the legislation regulating the Swedish higher education system.

Qualifications from all higher education institutions (universities, university colleges and independent higher education providers) that are recognized by the Government are of equal official value. The same legislation governs all state higher education institutions. All Swedish degrees are issued in accordance with the same degree ordinances.

## Quality assurance

The Swedish Higher Education Authority (UKÄ), a member of the European Association for Quality Assurance in Higher Education (ENQA), has been responsible for the quality assurance system for all higher education since 1 January 2013. Before 2013 The Swedish National Agency for Higher Education was the responsible agency. For more information, please visit [www.uka.se](http://www.uka.se). Evaluation reports are available to the public.

## National Qualifications Framework

The Swedish Higher Education Act and The Higher Education Ordinance have been amended in accordance with the agreements reached as part of the Bologna Process, including the Qualifications Frameworks in the European Higher Education Area (QF-EHEA). Legislation for a three-cycle structure of higher education started to apply in July 2007, and is now the only one in use in all Swedish higher education. Transitional provisions apply to courses and programmes that started prior to this. For more information, please visit [www.uhr.se/en](http://www.uhr.se/en) or [www.enic-naric.net](http://www.enic-naric.net).

In 2015, the Swedish Government decided on a national qualifications framework (SeQF), based on the European Qualifications Framework for Lifelong Learning (EQF). The SeQF has eight levels that are in accordance with the EQF levels. Higher education qualifications are at levels six to eight. For more information, please visit [www.seqf.se](http://www.seqf.se).

## Credit system

Sweden has a system of credits (högskolepoäng, hp); a normal 40-week academic year corresponds to 60 credits. The system is compatible with European Credit Transfer System (ECTS) credits.

## Grading system

There is no national grading system in Sweden. Higher education institutions may determine which grading system is to be used. No overall grade is awarded for a degree and students are not ranked. For example, Grade Point Average (GPA) and other ranking systems are not used in Sweden.

## Access and admission

There are general and specific entry requirements for access to higher education within all cycles. The specific entry requirements vary according to the field of higher education and should be essential for students to be able to benefit from the course or study programme. The number of places is limited on all study programmes and courses.

The general entry requirements for first-cycle studies are the same for all higher education. General entry requirements can be attained by completing an upper-secondary school programme, via adult education at upper-secondary school level or the applicants achieving a comparable level of learning outcomes through other education, practical experience or other circumstances.

The general entry requirements for second-cycle studies are a first-cycle qualification of at least 180 credits, or a corresponding foreign qualification. An applicant may also be accepted on the basis of a comparable level of learning outcomes obtained through other education, practical experience or other circumstances. The general entry requirements for some specific second-cycle professional qualifications are a prior specific qualification or a specific professional registration.

The general entry requirements for third-cycle studies are a second-cycle qualification, or completed courses worth at least 240 credits (of which 60 credits are at second-cycle level) or the equivalent level of knowledge acquired in Sweden or abroad.

## Qualifications

All courses, study programmes and qualifications are on one of three levels: first-, second- or third-cycle. In The Higher Education Ordinance, the Government has determined which qualifications may be awarded, as well as their scope, requirements and intended learning outcomes. There are three categories of qualifications: general; the fine, applied and performing arts; and professional qualifications. For some more information, please see below.

### General qualifications

#### *First-cycle (SeQF/EQF 6)*

Högskoleexamen (Higher Education Diploma) requires 120 credits and an independent project (degree project).

Kandidatexamen (Degree of Bachelor) requires 180 credits. At least 90 credits must be completed in the main field of study, including an independent project (degree project) worth 15 credits.

#### *Second-cycle (SeQF/EQF 7)*

Magisterexamen (Degree of Master, 60 credits) requires 60 credits. At least 30 credits must be completed in the main field of study, including an independent project (degree project) worth 15 credits. In addition, the student must normally hold a kandidatexamen, or a professional degree of at least 180 credits, or an equivalent foreign degree.

Masterexamen (Degree of Master, 120 credits) requires 120 credits. At least 60 credits must be completed in the main field of study, including an independent project (degree project) worth at least 30 credits. In addition, the student must normally hold a kandidatexamen, or a professional degree of at least 180 credits or an equivalent foreign degree.

#### *Third-cycle (SeQF/EQF 8)*

Licentiatexamen (Degree of Licentiate) requires at least 120 credits, including a research thesis worth at least 60 credits. A higher education institution may decide that a licentiatexamen can be awarded as a separate qualification or as a step on the way to doktorsexamen (see below).

Doktorsexamen (Degree of Doctor) requires 240 credits, including a research thesis (doctoral thesis) worth at least 120 credits. The thesis must be presented at a public defence.

## Qualifications in the fine, applied and performing arts

Qualifications in the fine, applied and performing arts are awarded at all three cycles and corresponding SeQF levels. At first-cycle level: konstnärlig högskoleexamen (Higher Education Diploma) and konstnärlig kandidatexamen (Degree of Bachelor of Fine Arts). At second-cycle level: konstnärlig magisterexamen (Degree of Master of Fine Arts, 60 credits) and konstnärlig masterexamen (Degree of Master of Fine Arts, 120 credits). Two third-cycle qualifications are awarded: konstnärlig licentiatexamen (Degree of Licentiate) and konstnärlig doktorsexamen (Degree of Doctor).

### Professional qualifications

Professional qualifications are offered at either first- or second-cycle level and corresponding SeQF levels. These qualifications may stretch over two cycles and are awarded in areas that include engineering, health care, agriculture, law, and education. Professional qualifications are regulated by national legislation and are considered regulated education subject to the Professional Qualifications Directive 2005/36/EC.

### Titles of qualifications

Translations into English of all titles of qualifications are regulated at the national level. Higher education institutions may decide to add a prefix to a qualification title (for example “filosofie kandidatexamen”) and add a major field of studies (for example “civilingenjörsexamen i maskinteknik”).

	QUALIFICATIONS	SeQF	EQF	Bologna
Forskarnivå (third-cycle)	<p>General Qualifications</p> <p>Doktorsexamen (Degree of Doctor), 240 hp/ECTS credits</p> <p>Licentiatexamen (Degree of Licentiate), 120 hp/ECTS credits</p> <p>Qualifications in the fine, applied and performing arts</p> <p>Konstnärlig doktorsexamen (Degree of Doctor), 240 hp/ECTS credits</p> <p>Konstnärlig licentiatexamen (Degree of Licentiate), 120 hp/ECTS credits</p>	8	8	3
Avancerad nivå (second-cycle)	<p>General Qualifications</p> <p>Masterexamen (Degree of Master, 120 credits), 120 hp/ECTS credits</p> <p>Magisterexamen (Degree of Master, 60 credits), 60 hp/ECTS credits</p> <p>Qualifications in the fine, applied and performing arts</p> <p>Konstnärlig masterexamen (Degree of Master of Fine Arts, 120 credits), 120 hp/ECTS credits</p> <p>Konstnärlig magisterexamen (Degree of Master of Fine Arts, 60 credits), 60 hp/ECTS credits</p> <p>Professional qualifications</p> <p>Degree of Master*, 60 hp/ECTS credits, 240–360 hp/ECTS credits</p> <p>Postgraduate Diploma*, 60–90 hp/ECTS credits</p> <p>*Degrees and diplomas within different professional fields.</p>	7	7	2
Grundnivå (first-cycle)	<p>General Qualifications</p> <p>Kandidatexamen (Degree of Bachelor), 180 hp/ECTS credits</p> <p>Högskoleexamen (Higher Education Diploma), 120 hp/ECTS credits</p> <p>Qualifications in the fine, applied and performing arts</p> <p>Konstnärlig kandidatexamen (Degree of Bachelor of Fine Arts), 180 hp/ECTS credits</p> <p>Konstnärlig högskoleexamen (Higher Education Diploma), 120 hp/ECTS credits</p> <p>Professional qualifications</p> <p>Degree of Bachelor*, 180–210 hp/ECTS credits</p> <p>Higher Education Certificate*, 60 hp/ECTS credits</p> <p>*Degrees, diplomas and certificates within different professional fields.</p>	6	6	1



## E-stämplat dokument *E-stamped document*

### **Digitalt beslut om examen**

Beslut om examen har fattats digitalt i Ladok. Detta dokument är en representation av beslutet och innehåller all information som ingår i beslutet, samt beslutsfattare och beslutsdatum. Beslutet sparas i Ladok och studenten kan hämta sitt examensbevis utifrån det beslut som finns sparad.

### **Verifiera dokument**

Examensbeviset är e-stämplat. Det betyder att du som mottagare av dokumentet kan kontrollera att det inte har ändrats sedan hämtningen från Ladok. Detta gör du genom att ladda upp det mottagna dokumentet på Ladoks sida för verifiering: [www.student.ladok.se/student/verifiera-dokument](http://www.student.ladok.se/student/verifiera-dokument). Ladok intygar då om dokumentet du har laddat upp är identiskt med det som studenten hämtade. Det är också möjligt att verifiera e-stämpeln via etablerade pdf-läsare. E-stämpeln är giltig i två år från det att beviset hämtas.

### **Kontrollera beslutet om examen**

Förutom att verifiera dokumentet går det även att kontrollera själva beslutet om examen direkt emot Ladok: [www.student.ladok.se/student/kontrollera](http://www.student.ladok.se/student/kontrollera). För att du ska kunna göra det behöver studenten förmedla en kontrollkod till dig.

### **Digital decision on qualification**

*Decision on qualification has been made digitally in Ladok. This document is a representation of the decision and contains all information included in the decision, decision-maker and decision date. The decision is digitally stored in Ladok and the student can download his or her degree certificate based on the saved decision.*

### **Verify the document**

*The degree certificate is e-stamped. This means that you, as recipient of the document, can control that it has not been changed since downloaded from Ladok. You do this by uploading the received document on Ladok's page for verifying the document: [www.student.ladok.se/student/verifiera-dokument/en](http://www.student.ladok.se/student/verifiera-dokument/en). Ladok will then verify if the document you have uploaded is identical to the one downloaded by the student. It is also possible to verify the e-stamp by using established PDF readers. The e-stamp is valid for two years from the date the certificate is retrieved.*

### **Control the decision on qualification**

*In addition to verifying the document it is also possible to check the actual decision on qualification directly against Ladok: [www.student.ladok.se/student/kontrollera/en](http://www.student.ladok.se/student/kontrollera/en). To do this, the student needs to provide you with a control code.*