Examensbevis | *Degree Certificate*

Civilingenjörsexamen - Medieteknik

Degree of Master of Science in Engineering - Media Technology and Engineering

Rasmus Hogslätt

19990224-7973

Linköpings universitet den 14 november 2024
Linköping University 14 November 2024

På Tekniska fakultetens vägnar
On behalf of the Faculty of Science and Engineering

Gunilla Hultman

Samordnare/Examen
Officer of Degree Administration

LINKÖPINGS UNIVERSITET

Rasmus Hogslätt | **19990224-7973**

Namn/*Name* | Personnummer/*Personal identity number*

Kurs *Course*	Högskolepoäng *Credits*	Betyg *Grade*	Datum *Date*
Matematisk grundkurs *Foundation Course in Mathematics*	6,0	Fem [1] *Pass with distinction*	2019-11-07
Digitala medier *Digital Media*	6,0	Godkänd [2] *Pass*	2020-01-17
Linjär algebra *Linear Algebra*	6,0	Fem [1] *Pass with distinction*	2020-01-17
Elektronisk publicering *Electronic Publishing*	6,0	Fem [1] *Pass with distinction*	2020-02-06
Analys I *Calculus I*	6,0	Fem [1] *Pass with distinction*	2020-03-20
Objektorienterad programmering *Object-Oriented Programming*	6,0	Fem [1] *Pass with distinction*	2020-04-28
Analys II *Calculus II*	6,0	Fem [1] *Pass with distinction*	2020-06-03
Datorgrafik *Computer Graphics*	6,0	Fyra [1] *Pass with credit*	2020-06-04
Programmering grk *Programming*	6,0	Fem [1] *Pass with distinction*	2020-08-25
Tillämpad matematik i teknik och naturvetenskap *Applied Mathematics in Science and Technology*	6,0	Godkänd [2] *Pass*	2020-08-28
Analys III *Calculus III*	6,0	Tre [1] *Pass*	2020-10-30
Mekanik och vågfysik *Mechanics and Wave Physics*	6,0	Fem [1] *Pass with distinction*	2020-11-17
Kommunikation och användargränssnitt *Communication and User Interfaces*	6,0	Fem [1] *Pass with distinction*	2021-01-14
Vektoranalys *Vector Analysis*	6,0	Fyra [1] *Pass with credit*	2021-03-14
Programmering i C++ *Programming in C++*	6,0	Fyra [1] *Pass with credit*	2021-03-16
Tillämpad transformteori *Applied Transform Theory*	6,0	Fem [1] *Pass with distinction*	2021-03-25
3-D Datorgrafik *3-D Computer Graphics*	6,0	Fem [1] *Pass with distinction*	2021-06-03
Matematisk statistik *Statistics*	6,0	Fem [1] *Pass with distinction*	2021-06-04
Grafisk teknik *Graphic Arts*	6,0	Fem [1] *Pass with distinction*	2021-06-08
Signaler och system *Signals and Systems*	6,0	Fem [1] *Pass with distinction*	2021-06-18
Reglerteknik *Automatic Control*	6,0	Fyra [1] *Pass with credit*	2021-10-25
Ljudfysik *Physics of Sound*	6,0	Tre [1] *Pass*	2021-10-27
Bildbehandling och bildanalys *Image Processing and Analysis*	6,0	Tre [1] *Pass*	2022-01-13
Tillämpad visualisering och virtuell verklighet *Practical Data Visualization and Virtual Reality*	6,0	Godkänd [2] *Pass*	2022-01-14
Modellbygge och simulering *Modelling and Simulation*	6,0	Tre [1] *Pass*	2022-03-18

Kurs *Course*	Högskolepoäng *Credits*	Betyg *Grade*	Datum *Date*
Modelleringsprojekt *Modelling Project*	6,0	Fem [1] *Pass with distinction*	2022-04-04
Datastrukturer *Data Structures*	6,0	Tre [1] *Pass*	2022-06-01
Medietekniskt kandidatprojekt *Media Technology - Bachelor Project*	18,0	Godkänd [2] *Pass*	2022-06-02
Vetenskaplig visualisering *Scientific Visualization*	6,0	Tre [1] *Pass*	2022-11-02
Advanced Global Illumination and Rendering *Advanced Global Illumination and Rendering*	6,0	Fyra [1] *Pass with credit*	2022-12-11
Procedurella metoder för bilder *Procedural Methods for Images*	6,0	Fyra [1] *Pass with credit*	2023-01-13
VR-teknik *Virtual Reality Techniques*	6,0	Tre [1] *Pass*	2023-01-18
Industriell ekonomi *Industrial Economics*	6,0	Fem [1] *Pass with distinction*	2023-03-21
Bildreproduktion och bildkvalitet *Image Reproduction and Image Quality*	6,0	Fyra [1] *Pass with credit*	2023-03-30
Artificiell intelligens - principer och tekniker *Artificial Intelligence - Principles and Techniques*	6,0	Fyra [1] *Pass with credit*	2023-06-09
Bild- och ljudkompression *Image and Audio Compression*	6,0	Tre [1] *Pass*	2023-06-09
Modellering och animering *Modelling and Animation*	6,0	Fyra [1] *Pass with credit*	2023-07-21
Bildteknik *Imaging Technology*	6,0	Fyra [1] *Pass with credit*	2023-10-26
Matrismetoder för AI *Martix Methods for AI*	6,0	Godkänd [3] *Pass*	2023-10-26
Artificiell intelligens för interaktiv media, projektkurs *Artificial Intelligence for Interactive Media, Project*	6,0	Godkänd [3] *Pass*	2023-11-02
Ljudteknik *Sound Technology*	6,0	Tre [1] *Pass*	2023-11-08
Vetenskaplig metod *Scientific Method*	6,0	Godkänd [2] *Pass*	2023-12-13
Deep Learning för medieteknik *Deep learning for media technology*	6,0	Tre [1] *Pass*	2024-01-11
Examensarbete *Degree Project - Master's Thesis*	30,0	Godkänd [2] *Pass*	2024-09-23

Examensarbete
Degree Project
Mixed Reality for Control and Visualization of Imminent Path of Vehicles

Civilingenjörsexamen är en yrkesexamen på avancerad nivå
The Degree of Master of Science in Engineering is a professional degree within the second cycle

Datum för avslutade studier den 23 september 2024
The degree requirements were fulfilled 23 September 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 300 högskolepoäng.

1.5 credits correspond to one week of full time studies, 30 credits correspond to one semester of full-time studies.
The scope of this degree is 300 credits.

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

The degree has been awarded in accordance with the regulations governing Swedish higher education (SFS 1993:100).

LINKÖPINGS UNIVERSITET

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) Hogslätt

1.2 First name(s) Rasmus

1.3 Date of birth (dd/mm/yy) 24 February 1999

1.4 Student identification number or code (if available) 19990224-7973

2. Information identifying the qualification

2.1 Name of qualification and (if applicable) title conferred (in original language)
Civilingenjörsexamen - Medieteknik (Degree of Master of Science in Engineering - Media Technology and Engineering)

2.2 Main field(s) of study for the qualification

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 Swedish.

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
300 högskolepoäng (credits)/300 ECTS. Duration of 5 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 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.

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)

The Media Technology and Engineering Programme includes a large extent of project work and autonomous learning. Students continuously practice verbal and written communication with progression in both English and Swedish during their studies.

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

A requirement for the award of a Degree of Master of Science in Engineering is completion by the student of an independent project (degree project) for at least 30 credits.
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.

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)
Civilingenjörsexamen (Degree of Master of Science in Engineering) constitutes regulated education and training as defined in Article 3(1)(e) of Directive 2005/36/EC. The provisions of Article 13(2) last paragraph of Directive 2005/36/EC apply for the holders of the Civilingenjörsexamen (Degree of Master of Science in Engineering).
The Degree of Master of Science in Engineering 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, SE581 83 Linköping, Sweden
Phone: +46 13 28 10 00, 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
For information on quality assurance, Swedish Higher Education Authority: http://english.uka.se

7. Certification of the supplement

7.1 Date 14 November 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. 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 or 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.

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

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. 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. 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. 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. To do this, the student needs to provide you with a control code.

Detta dokument tillhandahålls av Ladok, det register för studiedokumentation som används av 40 svenska universitet och högskolor, för mer information se www.ladokkonsortiet.se.

This document is provided by Ladok, the student registry that is used by 40 Swedish higher education institutions, for more information see www.ladokkonsortiet.se.

LADOK