



**CHALMERS**

CHALMERS TEKNISKA HÖGSKOLA | *CHALMERS UNIVERSITY OF TECHNOLOGY*

## TEKNOLOGIE MASTEREXAMEN

Masterprogram: Datavetenskap - algoritmer, programspråk och logik  
Huvudområde: Datateknik

*DEGREE OF MASTER OF SCIENCE (120 CREDITS)*

*Master's programme: Computer Science - Algorithms, Languages and Logic*  
*Major subject: Computer Science and Engineering*

**Raphael Isemann**

19940526-T299

Göteborg den 8 augusti 2019  
*Gothenburg 8 August 2019*

På rektors vägnar  
*On behalf of the President*

Victoria Ewers

Examenshandläggare  
*Officer of Degree*

Raphael Isemann

Namn/Name

19940526-T299

Personnummer/ Personal identity number

Teknologie Masterexamen

Masterprogram: Datavetenskap - algoritmer, programspråk och logik

Huvudområde: Datateknik

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Kurs <i>Course</i>	Högskolepoäng <i>Credits</i>	Betyg <i>Grade</i>	Datum <i>Date</i>
Matematisk logik för datavetenskap <i>Logic in computer science</i>	7,5	Fem <sup>1</sup> <i>Five</i>	2016-10-25
Software engineering med formella metoder <i>Software engineering using formal methods</i>	7,5	Fyra <sup>1</sup> <i>Four</i>	2016-11-17
Programspråk <i>Programming language technology</i>	7,5	Fem <sup>1</sup> <i>Five</i>	2017-01-13
Kryptografi <i>Cryptography</i>	7,5	Fyra <sup>1</sup> <i>Four</i>	2017-01-30
Datasäkerhet <i>Computer security</i>	7,5	Fem <sup>1</sup> <i>Five</i>	2018-03-17
Principer för parallell programmering <i>Principles of Concurrent Programming</i>	7,5	Fem <sup>1</sup> <i>Five</i>	2018-03-23
Kompilatorkonstruktion <i>Compiler construction</i>	7,5	Fem <sup>1</sup> <i>Five</i>	2018-06-05
Språkbaserad datasäkerhet <i>Language-based security</i>	7,5	Fem <sup>1</sup> <i>Five</i>	2018-06-08
Algoritmer <i>Algorithms</i>	7,5	Fyra <sup>1</sup> <i>Four</i>	2018-10-27
Computer graphics <i>Computer graphics</i>	7,5	Fem <sup>1</sup> <i>Five</i>	2019-01-18
Datavetaren i samhället <i>The computer scientist in society</i>	7,5	Godkänd <sup>2</sup> <i>Pass</i>	2019-01-18
Datavetenskapligt projekt <i>Project in computer science</i>	7,5	Fem <sup>1</sup> <i>Five</i>	2019-07-08
<b>Examensarbete</b>			
<b><i>Degree Project</i></b>			
Masterexamensarbete vid Data- och informationsteknik <i>Master's thesis in Computer science and engineering</i>	30,0	Godkänd <sup>2</sup> <i>Pass</i>	2019-06-12

Examen är på avancerad nivå och omfattar 120 Hp

*The degree is within the second cycle and comprises 120 credits*

Datum för avslutade studier: den 8 juli 2019

*Date of completed studies: 8 July 2019*

**Noter/Notes**

- 1 Betygsskala: Fem (5), Fyra (4), Tre (3)  
*Grading scale: Five (5), Four (4), Three (3)*
- 2 Betygsskala: Godkänd (G)  
*Grading scale: Pass (G)*



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## DIPLOMA SUPPLEMENT

This Diploma Supplement model was developed by the European Commission, Council of Europe and UNESCO/CEPES. The purpose of the 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 should be free from any value judgements, equivalence statements or suggestions about recognition. Information in all eight sections should be provided. Where information is not provided, an explanation should give the reason why.

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

- 1.1 **Family name(s)** Isemann
- 1.2 **Given name(s)** Raphael
- 1.3 **Date of birth (day/month/year)** 26 May 1994
- 1.4 **Student identification number or code (if available)** 19940526-T299

### 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**  
Computer Science and Engineering
- 2.3 **Name and status of awarding institution (in original language)**  
Chalmers tekniska högskola (Chalmers University of Technology).  
State recognised independent higher education institution.
- 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 of the qualification

- 3.1 **Level of 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 length of programme**  
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.

The specific entry requirements vary according to the field of higher education.

### 4. Information on the contents and results gained

- 4.1 **Mode of study**  
Full-time equivalent.
- 4.2 **Programme requirements**  
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))

Concerning degrees that follow a study programme syllabus: Programme-specific outcomes and compulsory elements are adopted by the Dean of Education and published on the web portal of Chalmers University of Technology.

**4.3 Programme details (e.g. modules or units studied), and the individual grades/marks/credits obtained (if this information is available on an official transcript this should be used here)**

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.

For more information, see Degree Certificate/Official Transcript.

**4.4 Grading scheme and, if available, grade distribution guidance**

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.

Unless otherwise prescribed in the course syllabus, a grade is to be awarded on completion of a course. The grade is to be determined by a teacher specially appointed by the higher education institution (an examiner). The grades assigned are defined as Three, Four or Five. A higher figure signifies a better grade. The grade Three is the lowest pass grade. As well as the numbered scale, the scale Passed/Failed is used. The grading system at the school of Architecture: courses are given on a Passed/Failed basis. No overall grade is given for a degree and students are not ranked.

**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 Professional status (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**

If there are credited courses from external universities, they are stated in the degree certificate.

**6.2 Further information sources**

Chalmers tekniska högskola | Chalmers University of Technology  
SE-412 96 Göteborg | Gothenburg  
Sweden

[www.chalmers.se](http://www.chalmers.se)

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 provide information on education in Sweden. Please see: <http://www.uhr.se>

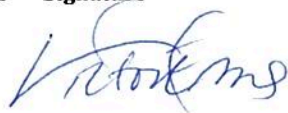
For information on Professional Qualifications Directive, Swedish National Assistance Centre for the Recognition of Professional Qualifications (Professional Qualifications Directive 2005/36/EC): [pqinfo@uhr.se](mailto:pqinfo@uhr.se)

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

**7. Certification of the supplement**

**7.1 Date 8 August 2019**

**7.2 Signature**



Victoria Ewers

**7.3 Capacity Officer of Degree**

**7.4 Official stamp or seal**



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

See attached information on the The Swedish higher education system.