

CHALMERS



CHALMERS TEKNISKA HÖGSKOLA
CHALMERS UNIVERSITY OF TECHNOLOGY · GÖTEBORG · SWEDEN

JOHAN E V SKOGLUND

HAR AVLAGT
CIVILINGENJÖRSEXAMEN
I DATATEKNIK

DIPLOMA OF MASTER OF SCIENCE (MSc)
IN COMPUTER SCIENCE AND ENGINEERING

Göteborg 16 december 2004

A handwritten signature in blue ink, appearing to read "Jan-Eric Sundgren".
Jan-Eric Sundgren
rektor

A handwritten signature in blue ink, appearing to read "Ingrid Sjöberg".
Ingrid Sjöberg
byrådirektör

Examensbevis för
personnummer

som har antagits till utbildningsprogram
vid Chalmers tekniska högskola
har avlagt civilingenjörsexamen
(180 poäng) i

Utbildningen har omfattat kurser förtecknade på
följande sidor samt ett godkänt examensarbete
inom ämnet

Examensarbetets titel

Examinator

Johan E V Skoglund
780409-4931

höstterminen 1999

Datateknik

Datorsystemteknik

Linux i trådlösa IP-telefoner

Univ lektor Arne Dahlberg

Diploma for

Year, month, day of birth; identification No.

*who was admitted to
Chalmers University of Technology
and who has fulfilled the requirements for
the degree of Master of Science in*

*The programme is of 4.5 years duration and
consists of courses listed on the following pages
and submission of a thesis in the subject of*

Title of the thesis

Examiner

Examensfordringarna var avklarade
The examination requirements were fulfilled on

Johan E V Skoglund
1978-04-09 (4931)

in the fall of 1999

Computer Science and Engineering

Computer Systems Technology

Linux in Wireless IP Telephones

Univ lektor Arne Dahlberg

2004-09-23
September 23, 2004

Examensbevis för

Johan E V Skoglund*Diploma for***780409-4931**

Av de 180 poäng som ingår i fordringarna för civilingenjörsexamen tillgodoskrivs 50 poäng från studier vid Griffith University, Brisbane, Queensland, Australien. Resterande del av examensfordringarna redovisas i detta examensbevis.

The undergraduate courses normally take four and a half years to complete and lead to the degree of Master of Science in Engineering. The requirement for graduation is 180 credits of which 50 credits have been acquired through studies at Griffith University, Brisbane, Queensland, Australia. The remaining credits required for graduation are presented in this diploma.

Datum <i>Date</i>	Obligatoriska kurser <i>Compulsory courses</i>	Poäng <i>Credits</i>	Betyg <i>Grades</i>
29 aug 2003	Digital- och datorteknik <i>Fundamentals of digital systems and computer engineering</i> Docent Stig-Göran Larsson	6.0	Tre <i>Three</i>
7 mar 2001	Digitalteknik – syntes <i>Switching circuit theory and logic design</i> Univ lektor Eskil Johnson	4.0	Tre <i>Three</i>
23 aug 2003	Datorsystemteknik <i>Computer system engineering</i> Forskarassistent Peter Folkesson	4.0	Fyra <i>Four</i>
29 maj 2002	Projektkurs <i>Project course</i> Docent Stig-Göran Larsson	7.0	Fyra <i>Four</i>
10 dec 1999	Helhetsbild av data tekniken <i>Computer science and engineering in context</i> Civilingenjör Peter Jansson	4.0	Fem <i>Five</i>
27 aug 2004	Elektriska kretsar och signaler <i>Electrical circuits and signals</i> Univ adjunkt Eva Palmberg	6.0	Tre <i>Three</i>
19 aug 2004	Reglerteknik <i>Automatic control</i> Docent Stefan Pettersson	4.0	Tre <i>Three</i>

Examensbevis för

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Diploma for

780409-4931

Datum <i>Date</i>	Obligatoriska kurser (forts) <i>Compulsory courses (cont)</i>	Poäng <i>Credits</i>	Betyg <i>Grades</i>
21 okt 2000	Bärkraftig resursanvändning <i>Sustainable use of resources</i> Docent John Holmberg	3.0	Tre <i>Three</i>
16 jan 2004	Fysik <i>Physics</i> Docent Åke Fälldt	10.0	Tre <i>Three</i>
30 maj 2002	Mekanik <i>Engineering mechanics</i> Docent Jonas Niklasson	6.0	Tre <i>Three</i>
28 maj 2000	Programmeringsteknik <i>Computer programming</i> Univ lektor Björn von Sydow	9.0	Fyra <i>Four</i>
21 maj 2001	Numerisk analys <i>Numerical analysis</i> Univ lektor Thomas Ericsson	3.0	Tre <i>Three</i>
11 jun 2002	Datastrukturer <i>Data structures</i> Univ lektor Björn von Sydow	4.0	Tre <i>Three</i>
28 aug 1999	Introduktionskurs <i>Introductory course</i> Docent Rolf Pettersson	1.0	Godkänd <i>Passed</i>
10 mar 2004	Matematisk statistik <i>Mathematical statistics</i> Docent Rossitza Dodunekova	4.0	Tre <i>Three</i>
9 jan 2001	Matematik <i>Calculus</i> Docent Johan Karlsson	13.0	Tre <i>Three</i>
19 okt 2000	Matematik D2 <i>Mathematics</i> Docent Johan Karlsson	4.0	Tre <i>Three</i>

Examensbevis för
Johan E V Skoglund

Diploma for
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Datum <i>Date</i>	Valfria kurser (18.0 poäng erfordras) <i>Elective courses (18.0 credits are required)</i>	Poäng <i>Credits</i>	Betyg <i>Grades</i>
25 maj 2002	Datorer, kommunikation och sociala nätverk <i>Computers, communication and social networks</i> Bitr professor Ralph Schroeder	4.0	Fyra <i>Four</i>
15 dec 2003	Datorarkitektur <i>Computer architecture</i> Professor Per Stenström	4.0	Fyra <i>Four</i>
20 nov 2003	Fault-tolerant computer systems <i>Fault-tolerant computer systems</i> Professor Johan Karlsson	4.0	Fyra <i>Four</i>
6 mar 2002	Digital konstruktion <i>Digital project laboratory</i> Tekn lic Arne Linde	4.0	Godkänd <i>Passed</i>
20 feb 2004	Industriell digital konstruktion <i>Digital electronics design</i> Tekniklektor Sverker Steen	6.0	Fyra <i>Four</i>
28 nov 2003	Digital VLSI-teknik <i>Digital VLSI design</i> Bitr professor Kjell Jeppson	4.0	Tre <i>Three</i>
31 mar 2000	Engelska <i>English for computer science and engineering</i> Univ lektor Eva Hood	3.0	Fyra <i>Four</i>
25 okt 2001	Kryptoteknik <i>Cryptography</i> Docent Dag Wedelin	4.0	Tre <i>Three</i>
23 sep 2004	Datorgrafik <i>Computer graphics</i> Univ lektor Magnus Bondesson	4.0	Tre <i>Three</i>
24 okt 2003	Parallel programmering <i>Concurrent programming</i> Professor David Sands	4.0	Fem <i>Five</i>
Summa valfria poäng			41.0

Name
 Johan E Skoglund

 Griffith Identification Number
 2127428

 Date of Birth
 09 Apr 1978

 Page
 1 of 1

ACADEMIC RECORD

- - - Beginning of Non Award Record - - -

Study Abroad
Semester 2 - 2002

 Program : Study Abroad
 Academic Load : Full-Time

			<u>Credit Points</u>	<u>Grade</u>
ENGINEER	2074ENG	Analog Electronics	10	High Distinction
MANAGMNT	3053ENG	Engineering Management	10	Credit
INFOSYS	2006INT	Systems Analysis and Design	10	Distinction
COMPUT	2010INT	Operating Systems	10	Distinction
		Total Credit	40	Cumulative GPA 6.00

Semester 1 - 2003

 Program : Study Abroad
 Academic Load : Full-Time

			<u>Credit Points</u>	<u>Grade</u>
ENGINEER	2072ENG	Digital Systems	10	High Distinction
INFTECH	3003INT	Data Communications	10	Distinction
INFOSYS	7006INT	Database Design	10	High Distinction
		Total Credit	70	Cumulative GPA 6.29

----- End of Transcript -----

KOMMENTARER TILL EXAMENSBEVISET

STUDIETID OCH POÄNGSYSTEM

Studietiden för civilingenjörsexamen och arkitektxamen är 4 1/2 år exklusive eventuella studieuppehåll. Varje kurs är poängsatt där 1 läsår omfattar 40 poäng. 1 poäng motsvarar 1 veckas studier. Under studietiden kan poängtalet för kurserna

ha ändrats något. I regel rör det sig om små avvikelser. I examensbeviset anges för varje kurs det poängtal som gällde examensäret.

BETYGSSKALA I CIVILINGENJÖRSUTBILDNINGARNA

TRE	cirka 50%
FYRA	cirka 35%
FEM	cirka 15%

I ett fatal kurser ges endast betyget GODKÄND.
Cirka 30% av de examinerade har ett medelbetyg
på 4,0 eller högre.

BETYGSSKALA I ARKITEKTUTBILDNINGEN

För godkänd prestation finns endast betyget GODKÄND.

BETECKNINGAR FÖR KURSER

I vissa fall finns beteckningar efter kursnamnet i examensbeviset. Beteckningen anger den utbildning och studieinriktning som kursen kommer ifrån. I examensbeviset anges

dock inte beteckning för de kurser som normalt ingår i den utbildning den studerande har examinerats vid.

UTBILDNINGSPROGRAM

A	= Arkitektur
D	= Datateknik
E	= Elektroteknik
F	= Teknisk fysik
I	= Industriell ekonomi
IT	= Informationsteknik
K	= Kemiteknik
Kb	= Bioteknik
Kf	= Kemiteknik med fysik
M	= Maskinteknik
TD	= Teknisk design
V	= Väg- och vattenbyggnad
Z	= Automatiseringsteknik
Z	= Automation och mekatronik

INDIVIDUELLA UTBILDNINGAR

I vissa fall kan ett individuellt program inrättas på begäran från en studerande. Ett individuellt program innehåller vanligen

kurser från två eller flera utbildningar.

ADRESS

Chalmers tekniska högskola, 412 96 Göteborg

BRIEF INFORMATION ABOUT CHALMERS UNIVERSITY OF TECHNOLOGY

Chalmers University of Technology, founded in 1829, is situated in Göteborg on the West Coast of Sweden. The educational programmes include both bachelor's and master's degree and doctoral programmes and give the graduates a wide range of knowledge and skills which can lead to many careers, such as design, production, consulting, sales, management at various levels, teaching and research.

The master's degree programmes take four and a half years and lead to a degree of Master of Science in Engineering or Master of Architecture. (Within these programmes there is no intermediate degree corresponding to a bachelor's degree.)

There are also shorter master programmes, which require a first degree for admission. Those programmes are taught in English and lead to the degree of Master of Science in Engineering.

The doctoral programmes take an average of five years to complete, after the master's degree, and lead to a Ph. D. degree. The intermediate degree of Licentiate of Engineering can be taken after two years of study. The research activities are of both a basic and an applied nature, often supported by governmental or industrial grants through contracts.

Chalmers University of Technology has about 5500 full-time students in the master's degree programmes and about 1000 students in the doctoral and licentiate programmes. In addition, about 2500 students attend each year other study programmes. The university has about 2500 employees working as teachers, researchers, technicians and administrators. Every year another 3000 persons are temporarily employed for special tasks such as giving guest lectures and consultations.

The master's degree programmes of four and a half years' duration within the Schools of Engineering and Architecture are:

Arkitektur (A)	Architecture
Datateknik (D)	Computer Science and Engineering
Elektroteknik (E)	Electrical Engineering
Teknisk fysik (F)	Engineering Physics
Industriell ekonomi (I)	Industrial Engineering and Management
Informationsteknik (IT)	Information Engineering
Kemiteknik (K)	Chemical Engineering
Bioteknik (Kb)	Bio Engineering
Kemiteknik med fysik (Kf)	Chemical Engineering with Engineering Physics
Maskinteknik (M)	Mechanical Engineering
Teknisk design (TD)	Industrial Design Engineering
Väg- och vattenbyggnad (V)	Civil Engineering
Automatiseringsteknik (Z)	Automation Engineering
Automation och mekatronik (Z)	Automation and Mechatronics Engineering

The bachelor's degree programmes take three years and lead to a degree of Bachelor of Science in Engineering or Bachelor of Science in Nautical Science.

For further information about this diploma or the university in general, please contact the Office for Educational Planning (Utbildningsavdelningen).

GRADING SYSTEM AT THE SCHOOLS OF ENGINEERING

The grades assigned and their percentages are as follows:

THREE = 3 = TRE	about 50%
FOUR = 4 = FYRA	about 35%
FIVE = 5 = FEM	about 15%

A higher figure signifies a better grade.

GRADING SYSTEM AT THE SCHOOL OF ARCHITECTURE

Courses are given on a passed/not passed basis.

UNIT SYSTEM

Each course is counted in units of credits and one academic year consists of 40 units. The student is expected to work 1 600 hours each year non-scheduled hours included. Thus

one unit of credit corresponds to 40 hours of work for the student.

SWEDISH TITLES AND THEIR EQUIVALENT

Rektor	Rector (President)
Prorektor	Vice rector (Vice president)
Viceretur	Vice rector (Vice president)
Professor	Professor
Universitetslektor	Senior lecturer
Universitetsadjunkt	Lecturer
Civilingenjör	Master of Science in Engineering
Arkitekt	Master of Architecture
Tf (before title)	Acting

ADDRESS

Chalmers University of Technology, SE-412 96 Göteborg, Sweden



CHALMERS

DIPLOMA SUPPLEMENT

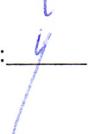
This Diploma Supplement follows the model developed by the European Commission, Council of Europe and UNESCO/CEPES. The purpose of the supplement is to provide sufficient independent data to improve the international "transparency" and fair academic and professional recognition of qualifications (diplomas, 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. Information in all eight sections should be provided. Where information is not provided, an explanation should give reason why.

1. Information identifying the holder of the qualification

- 1.1 Family name:** Skoglund
- 1.2 Given name:** Johan E V
- 1.3 Date of birth (day/month/year):** 9 April 1978
- 1.4 Civic registration number:** 780409-4931

2. Information identifying the qualification

- 2.1 Date of issue:** 16 December 2004
- 2.2 Name of qualification and (if applicable) title conferred (in original language):**
Civilingenjörsexamen
- 2.3 Name of qualification and (if applicable) title conferred in official translation to English:**
Master of Science in Engineering
- 2.4 Main field(s) of study for the qualification:** See Degree Certificate/Official Transcript.
- 2.5 Name (in original language) and status of awarding institution:**
Chalmers tekniska högskola
- 2.6 Name (in original language) and status of institution (if different from 2.5) administering studies:**
Not applicable.
- 2.7 Language(s) of instruction:** Swedish

Sign: 

3. Information on the level of the qualification

- 3.1 Level of qualification:** Undergraduate education 4,5 years.
- 3.2 Official length of programme:** 180 credits (270 ECTS). The scope of undergraduate educations shall be stated in accordance with a credit system, where each credit corresponds to one week's full-time study.
- 3.3 Access Requirement(s):** General eligibility is attained by completing an upper secondary school programme and obtaining a pass grade or better in courses comprising at least 90 per cent of the upper secondary credits required in the programme, or by providing proof of an equivalent level of knowledge. The specific eligibility (requirements) vary according to the field of higher education and are expressed in terms of subjects in the upper secondary school.

4. Information on the contents and results gained

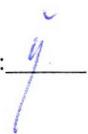
- 4.1 Mode of study:** Full-time equivalent.
- 4.2 Degree requirements:** A Master of Science in Engineering (Civilingenjörsexamen) will be awarded after completion of course requirements of 180 credits (270 ECTS) in total.
Objectives (in addition to the general objectives in chapter 1 section 9 of the Higher Education Act).
In order to obtain a Master of Science in Engineering, the student shall have
- acquired knowledge of mathematics and natural science subjects to the extent required to understand and be able to apply the mathematical and natural science basis of the chosen area of technology
- acquired knowledge of skills in design of products, processes and working environments, taking into account the abilities and needs of human beings as well as society's objectives as regards social conditions, economy of resources, environments and economy.
- acquired the knowledge enabling him or her, after a few years work experience within his or her field, to take independent responsibility for development or utilisation of new technology at an internationally competitive level.
The objectives decided by the individual institution of higher education shall apply in addition.
Local regulations: In certain cases studies at another university or college can be counted towards the degree at Chalmers. In the MScEng and MArc programmes, however, at least 40 credits from courses and 20 credits from a master thesis at Chalmers must be included. Of these, 20 course credits must be from the fourth and fifth years.
- 4.3 Programme details (e.g. modules or units studied), and the individual grades/marks/credits obtained:** See Degree Certificate/Official Transcript.
- 4.4 Grading scheme and, if available, grade distribution guidance:** See Degree Certificate/Official Transcript.
- 4.5 Overall classification of the qualification (in original language):** Not applicable for Swedish degrees.

5. Information on the function of the qualification

- 5.1 Access to further study:** The degree gives access to postgraduate training.
- 5.2 Professional status (if applicable):** Regulated education in accordance with the Swedish Degree Ordinance and covered by directive 89/48/EEC or 92/51/EEC by 2001/19/EC.

6. Additional information:

- 6.1 Additional information:** The first phase of the Master's programme is a core curriculum of five or six terms of compulsory courses and projects, followed by a second phase including two terms of specialization. The final phase of the Master's programme is a one-term degree thesis.

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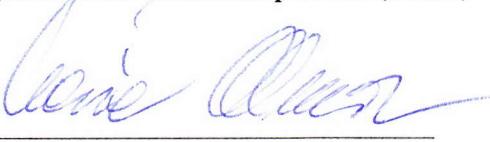
6.2 Further information sources: Chalmers tekniska högskola, SE-412 96 Göteborg
<http://www.chalmers.se>

National Agency for Higher Education, The Swedish ENIC/NARIC Office, Box 7851
SE-103 99 Stockholm
<http://www.hsv.se>

7. Certification of the supplement

7.1 Date: 16 December 2004

7.2 Signature and official stamp or seal (if used)



Iréne Olsson

7.3 Capacity: Officer of Degree

8. Information on the national higher education system

Information on the Swedish higher education system cf enclosure.

Sign: 

The Swedish Higher Education System

(The following description is approved by the National Agency for Higher Education)

General

Higher education institutions have great autonomy in the organisation of studies, use of resources and general organisation. The higher education institutions in Sweden are designated as either *universitet* or *högskola*. The status of *universitet* is awarded by the Government to higher education institutions fulfilling certain criteria. Diplomas from all higher education institutions recognised by the Government have equal official value. The same law governs all higher education institutions. Independent higher education providers may be recognised by the Government, obtain the right to award degrees and receive state subsidies. All recognised higher education is funded by the State. All programmes and major subjects are to be evaluated by the National Agency for Higher Education every six years, starting from 2001.

Grading

The Higher Education Ordinance states that the following grades can be awarded: Pass with Distinction (*väl godkänd*), Pass (*godkänd*) or Fail (*underkänd*) unless the institution decides to grade on some other scale. A number of courses use only two grades: Pass and Fail. Others, like Law and Engineering, traditionally use scales with several levels – expressed as letters or numbers. No overall grade is given for a degree and students are not ranked.

Degrees

Higher education is provided in the form of courses. These may be combined to constitute degree programmes with varying levels of individual choice. Students themselves are also able to combine different courses for the award of a degree. A course syllabus is required for each undergraduate course and a curriculum for each degree programme. Sweden has a system of credit points (*poäng*); one week of successful full-time study is equivalent to 1 credit point. One academic year usually yields 40 credit points. In the Degree Ordinance, the Government has laid down which degrees may be awarded and the objectives for these degrees. In the Swedish higher education system there are generally no intermediate qualifications. All degrees are regarded as final qualifications, even if there is a possibility to continue studying. Degrees are divided into general degrees and professional degrees.

General degrees

1. *Högskolexamen* requiring a minimum of 80 credit points
2. *Kandidatexamen* requiring a minimum of 120 credit points with 60 credit points in the major subject including a thesis/degree project of 10 credit points
3. *Magisterexamen med ämnesdjup* (Master of) requiring a minimum of 160 credit points with 80 credit points in the major subject including one thesis/degree project of 20 or two thesis/degree projects of 10 credit points each
4. *Magisterexamen med ämnesbredd* (Master of) requiring a minimum of 40 credit points with specialisation including a thesis/degree project of at least 10 credit points. A prerequisite for *Magisterexamen med ämnesbredd* is a general or professional degree of at least 120 credit points or a comparable foreign degree. *Kandidatexamen* and *Magisterexamen med ämnesdjup* may indicate the major

subject or faculty, e.g. *ekonomie magisterexamen* (... of Science in Business Administration or ... of Science in Economics). The most advanced courses (at the 61-80 credit points level) for *Magisterexamen med ämnesdjup* can be accepted as partial fulfilment of the requirements for a doctoral programme.

Professional degrees

Professional degrees are awarded in the fields of engineering, health care, agriculture, law, education, the arts etc. There are around 60 professional degrees. Programmes leading to professional degrees vary in length depending on their character. Some of the professional degrees demand a previous undergraduate qualification as a prerequisite, especially within the field of health care. Institutions have to apply for the right to award professional degrees.

Access and admission to higher education

Higher education in Sweden has two strata of eligibility: general/basic and (additional) specific requirements. The general eligibility is the same for all higher education. General eligibility is attained by completing an upper-secondary school programme and obtaining a pass grade or better in courses comprising at least 90 per cent of the credits required for the programme, or by providing proof of an equivalent level of knowledge. People who are at least 25 years old, who have been employed for four years and who have a command of English and Swedish corresponding to that obtained by completing a national upper-secondary programme are also considered to have general eligibility. The specific requirements vary according to the field of higher education and are expressed in terms of upper-secondary school qualifications in specific subjects. Restricted admission is used for all study programmes and courses.

Postgraduate studies

Higher education institutions with the status of *universitet* have permanent allocations of funds for research and postgraduate programmes and may award doctoral degrees, whereas at institutions designated as *högskola* these rights may be restricted to specific research areas only or they may have research links with a *universitet*. For admission to postgraduate programmes undergraduate qualifications of at least 120 credit points are required. Furthermore, the appropriate faculty board may stipulate additional requirements for admission. Postgraduate programmes nominally comprise 160 credit points (four years of full-time study) and lead to a *doktorsexamen* (PhD). A PhD student must complete a number of taught courses and write a doctoral dissertation. The dissertation must be defended at a public oral examination. A *licentiatexamen* (licentiate degree) can be obtained after a minimum of 2 years (80 credit points) and requires course work and a thesis. Normally students aim directly for a *doktorsexamen* but it is also possible to take a *licentiatexamen* as an intermediate degree. All faculties can award a *licentiatexamen* or *doktorsexamen*, in which the discipline is named, e.g. *teknologie licentiatexamen* (Licentiate in Technology). However a faculty of engineering, like any other, may also award a *filosofie doktorsexamen* (PhD).