



LUNDS UNIVERSITET

Magnus Ögren

770406-4679

HAR AVLAGT

Filosofie magisterexamen

HUVUDÄMNE: FYSIK

HAS BEEN AWARDED THE DEGREE OF

Master of Science

MAJOR: PHYSICS

LUND, 5 JULI 2004

BENGT SÖDERSTRÖM

DEKANUS FÖR NATURVETENSKAPLIGA FAKULTETEN

DEAN, FACULTY OF SCIENCE



LUNDS
UNIVERSITET

KURSFÖRTECKNING

1(2)

Filosofie magisterexamen
Huvudämne: Fysik

COURSE RECORD

Master of Science
Major: Physics

Namn
Name

Magnus Ögren

Personnummer

Civic Registration Number

770406-4679

Kurskod Code	Kursbenämning Course	Poäng Credit points	Betyg Grade	Betygsdatum Date
FYS001	Fysik 1: Allmän kurs (1-20) <i>Physics 1: General Course (1-20)</i>	20	Väl godkänd <i>Pass with Distinction</i>	2000-01-19
FYS022	Fysik 2: Allmän kurs (21-40) <i>Physics 2: General Course (21-40)</i>	20	Väl godkänd <i>Pass with Distinction</i>	2001-01-31
FYS023	Fysik 3: Allmän kurs (41-60) <i>Physics 3: General Course (41-60)</i>	20	Väl godkänd <i>Pass with Distinction</i>	2003-07-03
FYS244	Fysik: Systemteori <i>Physics: Theory of Systems</i>	05	Väl godkänd <i>Pass with Distinction</i>	2001-03-30
FYS245	Fysik: Ickelinjära system <i>Physics: Theory of Nonlinear Systems</i>	05	Väl godkänd <i>Pass with Distinction</i>	2001-06-27
FYS226	Fysik: Statistisk mekanik <i>Physics: Statistical Mechanics</i>	05	Väl godkänd <i>Pass with Distinction</i>	2002-02-13
FYS238	Fysik: Kvantmekanik I <i>Quantum Mechanics I</i>	05	Väl godkänd <i>Pass with Distinction</i>	2002-11-28
FMF820	Examensarbete i matematisk fysik <i>Degree Project in Mathematical Physics for Engineers</i>	20	Godkänd <i>Pass</i>	2004-05-27
MAT111	Matematik 1A <i>Mathematics 1A</i>	10	Godkänd <i>Pass</i>	1998-03-20
MAT112	Matematik 1B <i>Mathematics 1B</i>	10	Väl godkänd <i>Pass with Distinction</i>	1998-05-28
MAT221	Matematik 2, analys 2 <i>Mathematics 2, Analysis 2</i>	10	Godkänd <i>Pass</i>	1998-11-20
MAT222	Matematik 2, tillämpad linjär analys <i>Mathematics 2, Linear Analysis with Applications</i>	10	Godkänd <i>Pass</i>	1998-12-16
MAT314	Matematik 3, ordinära differentialekvationer <i>Mathematics 3, Ordinary Differential Equations</i>	05	Godkänd <i>Pass</i>	1999-03-24
MAT311	Matematik 3, algebra 2 <i>Mathematics 3, Algebra 2</i>	05	Godkänd <i>Pass</i>	1999-12-20



LUNDS
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2(2)

Filosofie magisterexamen
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COURSE RECORD

Master of Science
Major: Physics

Namn
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Magnus Ögren

Personnummer

Civic Registration Number

770406-4679

Kurskod Code	Kursbenämning Course	Poäng Credit points	Betyg Grade	Betygsdatum Date
MAT324	Matematik 3, fördjupningskurs till ordinära differentialekvationer <i>Mathematics 3, Advanced Course in Ordinary Differential Equations</i>	05	Väl godkänd <i>Pass with Distinction</i>	2000-05-18
MAT426	Matematik 4, särskild kurs <i>Mathematics 4, Special Course</i>	05	Väl godkänd <i>Pass with Distinction</i>	2001-01-15
*	Air/Ice/Sea Interaction I	10	Se transcript <i>See Transcript</i>	Vår 2002 <i>Spring 2002</i>

Summa poäng: 170

Total sum of credit points: 170

*) NTNU, Norges teknisk-naturvitenskapelige universitet, Norge.
NTNU, Norwegian University of Science and Technology, Norway.

Betygsskala om ej annat anges: Godkänd, Väl godkänd.
Marking scale if nothing else is stated: Pass, Pass with Distinction.

Utbildningen slutförd den 27 maj 2004.
Education completed May 27, 2004.

Lund, 5 juli 2004

På universitetets vägnar
On Behalf of the Registrar

Minna Kolko

Särskilda upplysningar

Enligt högskoleförordningen (SFS 1993:100) uppnås magisterexamen med ämnesdjup efter fullgjorda kursfordringar om sammanlagt minst 160 poäng. I huvudämnet krävs fördjupade studier på 80-poängsnivån med godkänt resultat. Studenten skall inom huvudämnet ha fullgjort ett självständigt arbete (examensarbete) om minst 20 poäng eller två om vardera minst 10 poäng. I huvudämnet får 40 poäng från forskarutbildning tillgodoräknas. Huvudämnet i filosofie magisterexamen skall tillhöra antingen humanistisk, samhällsvetenskaplig eller naturvetenskaplig fakultet eller Ekonomihögskolan eller vara hänförligt till nämnda områden.

40 poäng (60ECTS-credits) motsvarar ett års heltidsstudier.

For information, see attached Diploma Supplement

Originalhandling är försedd med universitetets reliefstämpel.
The Original Document is provided with raised seal of the University.

DNR I G 41 1744/94

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 the reason why.

1. INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

- 1.1 Family name: Ögren
- 1.2 Given name: Magnus
- 1.3 Date of birth (day/month/year): 6 April 1977
- 1.4 Civic registration number: 770406-4679

2. INFORMATION IDENTIFYING THE QUALIFICATION

- 2.1 Date of issue: 5 July 2004
- 2.2 Name of qualification and (if applicable) title conferred (in Swedish): Filosofie magisterexamen
- 2.3 Name of qualification and (if applicable) title conferred in official translation to English: Master of Science
- 2.4 Main field(s) of study for the qualification: Physics
- 2.5 Name (in Swedish) and status of awarding institution: LUNDS UNIVERSITET (State)
- 2.6 Name (in Swedish) and status of institution (if different from 2.5) administering studies: Not applicable.
- 2.7 Language(s) of instruction: Mainly Swedish.

3. INFORMATION ON THE LEVEL OF THE QUALIFICATION

- 3.1 Level of qualification: Undergraduate education, 4 years (160 credit points). For further information on the Swedish higher education system, see point 8.
- 3.2 Official length of programme: Minimum 160 credit points (240 ECTS credits). 40 credit points (60 ECTS credits) correspond to 40 weeks (=one academic year).
- 3.3 Access requirement(s): General eligibility to higher education (see information on the Swedish higher education system, point 8). Additional requirements may be stipulated and may vary according to the course and the level of the course.

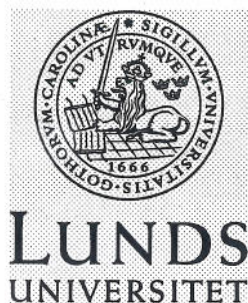
4. INFORMATION ON THE CONTENTS AND RESULTS GAINED

- 4.1 Mode of study: Full-time equivalent.
- 4.2 Degree requirements:
 - Master of (Magisterexamen med ämnesdjup)
 - Scope

A Master shall be obtained after completing course requirements of at least 160 credit points. Advanced studies are required in the main subject at 80-credit point level, with passing grades.
 - Objectives

The general objectives set out in chapter 1, section 9 of the Higher Education Act and the objectives determined by the institution of higher education concerned.
 - Miscellaneous

In order to receive a degree of Master, the student shall have completed an independent project (degree project) of at least 20 credit points or two such projects of at least 10 credit points each. This project (these projects) shall be part of the main subject studied. Credit may be given for 40 credit points from doctoral studies in the main subject.



The main specialisation of the degree shall be stated in the diploma.

- 4.3 Programme details (e.g. modules or units studied), and the individual grades/marks/credits obtained: See "Course Record"
- 4.4 Grading scheme and, if available, grade distribution guidance: See "Course Record" and information on the Swedish higher education system, point 8.
- 4.5 Overall classification of the qualification (in Swedish): 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 studies.
- 5.2 Professional status (if applicable): Not applicable for this degree.

6. ADDITIONAL INFORMATION

- 6.1 Additional information: -
- 6.2 Further information sources:
- Examensavdelningen
Lunds universitet
Box 117
SE-221 00 Lund
SWEDEN
+46 46 222 00 00
telefax; +46 46 222 04 95
<http://www.lu.se/stu/examina/>

National Agency of Higher Education: Swedish Higher Education: A survey 1977-2000, 2001, ISBN 91-88874-65-6

The Higher Education Sector of Sweden (National Agency of Higher Education)
<http://www.hsv.se/english/sector/>

7. CERTIFICATION OF THE SUPPLEMENT

- 7.1 Date: 5 July 2004
- 7.2 Signature and official stamp


Minna Kokko



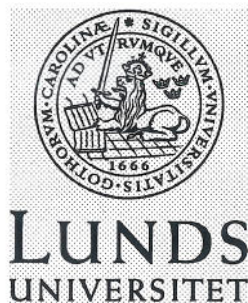
7.3 Capacity: Degree Officer

8. INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

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. *Högskoleexamen* 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:

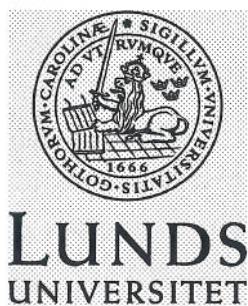
Professional degrees are awarded in the fields of engineering, health care, agriculture, law, education, the arts etc. There are around 60 professional degrees. Programmes leading to professional degrees vary in length depending on their character. Some of the professional degrees demand a previous undergraduate 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).