Program Integrating Course
DD2300

Örjan Ekeberg, Viggo Kann

2014-2016

Course contents

- How do second-cycle studies at KTH work?
- What may a computer scientist do after graduation? Study visits.
- The aim and parts of the Master's programme: courses, tracks and master thesis.
- Self-reflection - what do I want with my education?

Learning outcomes

After the course, the students should be able to:

- compare different workplaces and professions relevant to computer scientists,
- critically review and reflect in a deeper way over both the set-up and implementation of the education as well as the situation of the studies,
- plan and carry out assignments within stipulated time,
- identify their need of additional knowledge and continuously develop their skills in relation to the objective of the course and the future professional role

in order to

- obtain the most of the education in a long-term perspective, influence the development of the program.

Implementation

What will we do during this course?

- 8 reflection seminars
- Visits to IT companies
- Information about specializations
- Information about masters thesis project

Reflection seminars
Mentors

Group numbers	Mentor	Department
1-2	Örjan Ekeberg	CB
3-4	Erik Fransén	CB
5-6	Jens Lagergren	CB
7-8	Mads Dam	TCS
9-10	Viggo Kann	TCS
11-12	Mårten Björkman	Cvap
13-14	Hedvig Kjellström	Cvap
15-16	Joakim Gustafson	TMH
17-18	Sten Ternström	TMH

Reflection seminars
Topics

1. The computer science master's program - intended learning outcomes and contents.
2. The study visit and employability.
3. Specialization and the master's thesis.
4. Scientific, social and ethical aspects of computer science.
5. The computer science master's program revisited.
6. The study visit.
7. International opportunities and contexts.
8. The education in retrospect.

What sets the requirements for a Masters exam?

- Swedish Higher Education Ordinance (SFS 2006:1053)
- Local goals for the Computer Science programme at KTH

Masters Education — Learning outcomes
Knowledge and understanding

For a degree of Master of Science students must:

- demonstrate knowledge and understanding in the main field of the programme, including both **broad knowledge** in the field and **substantially deeper knowledge of certain parts** of the field, together with deeper insight into **current research and development** work; and
- demonstrate **deeper methodological knowledge** in their main field of study.

Masters Education — Learning outcomes
Skills and abilities

- demonstrate an ability to critically and systematically **integrate knowledge** and to **analyse, assess and deal with** complex phenomena, issues and situations, even when limited information is available;
- demonstrate an ability to critically, independently and creatively identify and formulate issues and to **plan** and, using appropriate methods, **carry out advanced tasks** within specified time limits, so as to contribute to the development of knowledge and to evaluate this work;
- demonstrate an ability to clearly **present and discuss** their conclusions, and the knowledge and arguments behind them, in dialogue with different groups, **orally and in writing**, in national and international contexts; and
- demonstrate the skill required to **participate in research and development work** or to work independently in other advanced contexts.

Masters Education — Learning outcomes
Judgement and approach

- demonstrate an ability to make assessments in their main field of study, taking into account relevant scientific, social and ethical aspects, and demonstrate an **awareness of ethical aspects** of research and development work;
- demonstrate insight into the potential and limitations of science, its **role in society** and people's responsibility for how it is used; and
- demonstrate an ability to identify their need of further knowledge and to take **responsibility for developing their knowledge**.

Goals of the Computer Science Masters Programme

The aim of the Master's programme is to provide a broad education in Computer Science with the possiblity of deepening and specializing within the area of computer science, **the method science for construction of computer programmes including theoretical foundations as well as the practical ability to develop products and systems which include computers and software**.

The programme will provide the students with the requisites and abilities to participate and lead work within evaluation, development and implementation of new technology within the field of computer science.

Goals of the Computer Science Masters Programme
Knowledge and understanding

The objective of the program is to provide the student with:
- deepened knowledge within computer science and engineering,
- knowledge within at least one subject area complementary to technology.

The programme shall also provide the student with the opportunity to specialize with one of the following goals:

- provide a deepened knowledge within one or more of the areas: computer vision, robotics, artificial intelligence, and neuro-informatics,
- provide an orientation within computer security, foundations for technical computer security, and a deepened knowledge within one or more areas concerning technical aspects of computer security,
- provide a deepened knowledge within leadership and management of large IT projects and management of complex IT-environments. Also, an orientation within modeling and decision making in company-wide IT questions such as information security, modifiability, interoperability, etc.. is offered,

continued...

...continued

- provide deepened knowledge and understanding for methodology and scientific perspective within the internet technology area and provide the students with practical skills, above all, for initiation, configuration and maintenance of computer networks,
- provide deepened knowledge about software construction in a technical development context,
- provide deepened knowledge about solutions of resource-demanding computational problems and related combinatory/statistical analysis methods,
- provide an extended understanding for existent and non-existent efficient algorithms for different computational problems,
- implement and use language knowledge in the development of programmes and systems that can recognize, interpret and generate human language.

Goals of the Computer Science Masters Programme
Skills and abilities

The objective of the program is to provide the student with:

- a good analytical problem solving ability,
- the ability to independently define and solve construction problems within computer science,
- the requisites and abilities to participate in and develop practices implemented in industry, maintenance and academic research,
- the requisites for successful work in international and interdisciplinary project groups which include engineers and non-engineers. This goal includes abilities in oral and written presentation and argumentation in Swedish and English.

Goals of the Computer Science Masters Programme
Ability to make judgments and adopt a standpoint

The objective of the program is that the student should:

- be able to evaluate the quality of scientific studies and show a reflective and critical approach to scientific and non-scientific texts,
- through self-development, retain his/her own professional ability during a professional career
- follow the discussion about technology in society and contribute to it.

Structure of the Programme

- ▶ 32hp Mandatory courses
- ▶ 30hp Specialization (track)
- ▶ 28hp Elective courses
- ▶ 30hp Masters Thesis project

Mandatory Courses

DD2300	Program Integrating Course	2.0
DA2210	Research Methodology	6.0
DD2440	Advanced Algorithms	6.0
IK2218	Protocols and Principles of the Internet	6.0
DD2380	Artificial Intelligence	6.0
DD2395	Computer Security	6.0

Some students must also take some of

ID2200	Operating Systems	6.0
SF2736	Discrete Mathematics	7.5
DD2352	Algorithms and Complexity	7.5

Tracks for Specialization

- ▶ Autonomous Systems
- ▶ Computer Security
- ▶ IT-Management with Enterprise Architecture
- ▶ Program System Technology
- ▶ Language Technology
- ▶ Theoretical Computer Science
- ▶ Computational Biology
- ▶ Computer Systems Engineering
- ▶ Sound and Music Computing