



# UNIVERSITY OF GOTHENBURG

## THE IT FACULTY BOARD

### **DIT555, Master's Thesis in Computer Science and Engineering, 60,0 higher education credits**

Masterexamensarbete vid Data- och informationsteknik, 60.0  
högskolepoäng

*Second Cycle*

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#### **1. Confirmation**

The course syllabus was confirmed by Department of Computer Science and Engineering on 2012-10-08 to be valid from 2012-01-16.

*Field of education:* Science 100 %

*Department:* Computer Science and Engineering

#### **2. Position in the educational system**

This course, 60 higher education credits, is given as part of the Master's programmes in Computer Science and Software Engineering at the University of Gothenburg, and constitutes the final thesis work for that programme. Level for the course in relation to degree requirements is Master's degree. Code A2E

*Main field of studies*

Software Engineering

Computer Science

*Specialization*

A2E, Second cycle, contains degree project for Master of Arts/Master of Science (120 credits)

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#### **3. Entry requirements**

To be eligible for this course, the equivalent of 60 hec is required, not counting credits from an earlier, first cycle (Bachelor) degree. These should come from courses on the advanced (Master) level, out of which 45 hec (or more) must come from courses within the Computer science area.

A first cycle (Bachelor) degree is assumed in general. In particular, a Bachelor thesis (15 hec) is required as a prerequisite. The topic of the thesis must be preapproved by the thesis examiner, who also decides whether the student has the required prerequisites to start the particular thesis project.

## 4. Course content

During this course the student(s) shall investigate an academically interesting problem in the subject area of Computer Science or Software Engineering. The student(s) will perform research, theoretical or applied, in parts in collaboration with supervision, and in parts independently.

The student(s) will document this investigation in a report, describing the problem, assumptions, methods, choices, results, evaluation of the work, including the comparison to relevant work external to the thesis.

The course is divided in to following subcourses:

- Interim report 30 higher education credits (Fail, Pass) This will contain:
  - a description of the achievements within the project up to the halfway point
  - a plan for completing the remainder of the project
  
- Final written report 30 higher education credits (Fail, Pass, Pass with Distinction)

## 5. Learning outcomes

After completing the course the student is expected to be able to:

### *Knowledge and understanding*

- demonstrate knowledge and understanding in the main subject area of the education programme, including both broad knowledge in the field and substantially deeper knowledge of certain parts of the field and insight into current research and development.
- constructively review and reflect upon the works of others in terms of: relevance, presentation, content, technical quality, credibility, novelty of results and methodology used
- demonstrate deeper methodological knowledge in the main subject area of the education programme.

### *Skills and abilities*

- identify relevant problems and design solutions to in the main subject area of the education programme, aimed at the realisation of new or modified solutions of a more complex nature, with the intention of creating value in accordance with predefined requirements.
- apply and integrate knowledge and skills in a systematic and critical way to develop results that are original and relevant within a research or professional context of the main subject area of the education programme
- systematically develop and use theories and models, and consciously, with a critical attitude, choose between alternative approaches.
- demonstrate the ability to deal with changing requirements due to external circumstances or increased insight.
- document well and present well a substantial project, both in terms of the new contribution, the design choices taken, the basis of the work, and related work.

### *Judgement and approach*

- synthesize and critically evaluate new scientific knowledge through research, i.e., to develop new more complex insights, in a purposeful and methodical way, while choosing the right level of abstraction.
- apply the accumulated knowledge and skills to a problem that is interesting from a research or an industrial point of view
- clearly communicate their results, and knowledge and rationally underpinning these, to specialist and non-specialist audiences
- unambiguously judge the relevance of the results for the research community and industry

## 6. Literature

Required reading is partly defined by the supervisor, but the student is also expected to search for, and examine, relevant literature independently

## 7. Assessment

The course is examined by:

- an interim report presented after 20 working weeks to the examiner and the manager of the Master's programme that includes a status description of the achievements within the project up to the halfway point, and a plan for completing the remainder of the project. On satisfactory examination 30 hp is reported in Ladok for the student(s).
- a thesis report, a presentation and defense of this in a seminar

In order to Pass the course the student(s) should also:

- produce an acceptable planning report of the entire Master's thesis work at start.
- produce an acceptable manuscript (not necessarily published) based on the results of the project, in the style/format of a journal or workshop research paper in the field
- attend at two other Master's thesis presentations (expected before the student's own presentation, defense, and opposition)
- be an opponent of another Master's thesis report

## 8. Grading scale

The grading scale comprises Fail (U), Pass (G), Pass with Distinction (VG).

The requirement to Pass the full course (G) is a written report that:

- demonstrates significant specialization within the main field of study.
- uses existing knowledge within the main field of study on an advanced level.
- demonstrates that a review of existing literature has been performed and that there is reflection on the connection between the thesis problem/formulation of objectives and the existing knowledge in the main field of study.
- clearly presents the contribution to research or development work
- identifies, selects, and justifies well potentially relevant engineering or scientific theories and methods.
- applies selected theories and methods in a correct manner.
- demonstrates a clear and delimited problem or formulation of objectives.
- demonstrates that the problem has been studied in an adequate manner.
- demonstrates a clear connection between the problem/formulation of objectives, results, and conclusions.

- demonstrates that the thesis' conclusions are well supported and correct.
- demonstrates the use of relevant and correct language, where the totality, structure and layout achieve a good level of quality.

In addition the obligatory parts and the interim report must be approved.

The requirement to Pass the full course with Distinction (VG) is a written report that:

- demonstrates significant specialization within the main field of study.
- uses existing knowledge within the main field of study on an advanced level.
- demonstrates that a comprehensive review of existing literature has been performed and that there is reflection on the connection between the thesis problem/formulation of objectives and the existing knowledge in the main field of study.
- contributes original knowledge in the main field of study and clearly presents it.
- identifies, selects, and justifies well potentially relevant engineering or scientific theories and methods.
- applies selected theories and methods in a correct and innovative manner.
- demonstrates a clear and delimited problem or formulation of objectives.
- demonstrates that the problem/formulation of objectives has been studied in a critical and reflective manner.
- demonstrates a clear connection between the problem/formulation of objectives, results, discussion and conclusions.
- demonstrates that the thesis' conclusions are well supported and correct.
- demonstrates a very well written report where totality, structure and layout achieve a very high level of quality.

In addition the obligatory parts and the interim report must be approved.

A Pass with Distinction requires that the work has been performed in an independent manner by the student(s).

Granting a Pass with Distinction requires approval of a second teacher (entitled to be a thesis examiner).

## **9. Course evaluation**

After completion, the course course will be evaluated by the students. The results of the evaluation are reported to the program manager and discussed with the students. A summary of the evaluation results together with the suggestions for improvement is made available to students and teachers.

## **10. Additional information**

Language of instruction: English.

Students work individually or in pairs under the supervision of a teacher. Each thesis project has to be accepted by the programme manager and the examiner prior to registration.