**Malmö University/Faculty of Technology and Society**
Faculty board

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# General study plan for postgraduate studies in computer science

## *Datavetenskap*
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# 1. Subject description
Computer Science is the analysis and development of concepts, methods and tools aimed at making the development and use of digital systems easy, reliable and efficient.

# 2. Objectives of the programme
The programme leads to a licentiate or doctoral degree in computer science, with related knowledge and skills. The degree regulations and educational objectives are shown below, which in applicable parts follow the degree ordinance in the Higher Education Ordinance (HEO App. 2).

**Licentiate degree**
Scope: A licentiate degree is obtained either after a student has completed a course of at least 120 ECTS within a subject at postgraduate level, or after the student has completed a part of at least 120 ECTS of a programme that is completed with a doctoral degree.

*Knowledge and understanding*
For a licentiate degree, doctoral students must

- demonstrate knowledge and understanding of the area of *computer science*, including current specialist knowledge within a delimited part of this, as well as in-depth knowledge in scientific methodology in general and *computer science* methods in particular.

*Competence and skills*
For a licentiate degree, doctoral students must

- demonstrate the ability to identify and formulate questions critically, independently, creatively and with scientific accuracy, plan and implement using appropriate methods

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limited research work and other qualified tasks within given time frames, and in doing so contribute to the development of knowledge, and to evaluate such work;
- demonstrate the ability in both national and international contexts, orally and in writing, to clearly present and discuss research and research results in dialogue with the scientific community and society in general, and
- demonstrate such skills that are required to participate independently in research and development work, and to work independently with other qualified activities.

*Judgement and approach*
For a licentiate degree, doctoral students must

- demonstrate the ability to make ethical assessments in their own research,
- demonstrate awareness of the opportunities and limitations of science, its role in society and human responsibility for how it is used, and
- demonstrate the ability to identify their need of additional knowledge and to take responsibility for their acquisition of knowledge.

*Scientific thesis*
For a licentiate degree a doctoral student must have a scientific thesis of 90 ECTS approved.

**Doctoral Degree**
A doctoral degree is obtained after the doctoral student has completed a programme of 240 ECTS within a subject at postgraduate level.

*Knowledge and understanding*
For a doctoral degree, doctoral students must

- demonstrate wide-ranging knowledge and a systematic understanding of ***computer science***, as well as deep and current specialist knowledge within a delimited part of the research area, and
- demonstrate familiarity with scientific methodology in general and with ***computer science***
methods in particular.

*Competence and skills*
For a doctoral degree, doctoral students must

- demonstrate the ability to make scientific analyses and synthesis, as well as independent critical reviewing and assessment of new and complex phenomena, issues and situations,
- demonstrate the ability to identify and formulate questions critically, independently, creatively and with scientific accuracy, as well as planning and using appropriate methods to conduct research and other qualified tasks within a given time frame and examining and assessing such work;
- demonstrate their ability through their own research and via a thesis to contribute significantly to the development of knowledge,
- demonstrate the ability in both national and international contexts, orally and in writing, to present and discuss with authority research and research results in dialogue with the scientific community and society in general,
- demonstrate the ability to identify the needs of further knowledge, and
- demonstrate the potential in research and education, as in other qualified professional contexts, to contribute to society's development and support others' learning.

*Judgement and approach*
For a doctoral degree, doctoral students must

- demonstrate intellectual independence, scientific probity and the ability to apply ethical assessments to research, and
- demonstrate a deep awareness of the opportunities and limitations of science, its role in society and human responsibility for how it is used.

*Scientific thesis (doctoral thesis)*
For a doctoral degree a doctoral student must have had a scientific thesis of 180 ECTS approved.

## 3. Eligibility for postgraduate studies

In order to be accepted for postgraduate studies, the applicant must have *basic eligibility* as well as the *special eligibility* required for the subject, and must be deemed to have sufficient ability in general to profit from the programme.

*Basic eligibility* (according to HEO Chapter 7 section 39) is accorded to those who

- have passed a degree at second-cycle level,
- have completed course requirements of at least 240 ECTS, of which 60 ECTS at second-cycle level, or
- in some other way, in or outside Sweden, have acquired essentially equivalent knowledge.

*Special eligibility* is accorded to those who

- have knowledge and skills equivalent to a second-cycle degree in computer science or in another subject that has relevance for computer science, or
- have acquired essentially equivalent knowledge in or outside Sweden

Malmö University may grant exemption from the requirement of basic eligibility for an individual applicant if there are specific reasons for doing so (HEO, Chapter 7 section 39).

Accreditation of prior studies, for example at second-cycle level in a subject, which is relevant for the postgraduate studies, may only be made after admission to postgraduate studies. A review is made by the examiner and can only be initiated by the doctoral student.

## 4. Admissions

When Malmö University intends to admit one or more doctoral students in computer science, this must be announced by advertising or equivalent procedure (HF 7 kap. § 37). Applicants are assessed on the basis of the specified selection criteria and specific requirements that the advertised vacancy or vacancies may require. The main applicants are ranked and offered the position(s) in rank order.

Malmö University may also admit doctoral students in computer science, who have study financing from an external employer. The applicant's ability to benefit from the education is then assessed in the same way as in other doctoral student admissions[1].

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[1] See "Admission regulations for third-cycle studies", ref.no LED 1.3-2018/478

See Malmö University admission regulations for third-cycle studies (LED 1.3-2018/478).

## 5. Selection

Selection from applicants who have basic and special eligibility "shall be made with regard to their ability to profit from the studies." (HEO Chapter 7 section 41)

The following general criteria will be used.

- Subject competence
- Scientific quality in previous work
- Methodological and scientific maturity
- Communication and collaborative skills

In addition, specific criteria may be used depending on the level of specialisation of the vacancy. The fact that an applicant is judged to be able to have previous education or professional activities credited for a programme must not give the applicant precedence over other applicants during the selection process. (HEO Chapter 7 section 41). The under-represented gender shall be given preferential treatment in a situation where several applicants are equally well-equipped to benefit from the education.

## 6. Structure of the programme

Doctoral students are normally admitted to four years of full-time postgraduate studies, 240 ECTS, which conclude with a doctoral degree. Doctoral students may also be admitted to two years of full-time postgraduate studies, 120 ECTS, concluded with a licentiate degree. Postgraduate studies with the aim of a licentiate degree shall mainly be offered to persons who are professionally active in a field and wishing to develop their skills through postgraduate studies[2].

Studies consist of courses and an independent scientific thesis. Tests included in postgraduate studies are graded as pass/fail. Grades for courses are determined by a specially designated examiner. Grades for licentiate thesis is determined by the examiner and grades for doctoral thesis are determined by a specially designated examining committee.

For a licentiate degree the following are required:

- At least 30 ECTS in approved courses
- 90 ECTS for an approved scientific thesis

For a doctoral degree the following are required:

- at least 60 ECTS in approved courses
- 180 ECTS for an approved doctoral thesis

The doctoral student shall have a start-up seminar, licentiate/halftime seminar and a 90% seminar. If there are specific grounds to not go through the licentiate/halftime seminar or the 90 % seminar, it is possible to request that a doctoral student is exempted. The doctoral student shall also present his/her research in at least one international conference. The doctoral student is assumed to actively participate in research seminars and other recommended activities during the entire period of study and to take advantage of the opportunities offered to attend guest lectures and so on at the university.

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[2] See "Admission regulations for third-cycle studies", ref.no LED 1.3-2018/478

**Courses**
A licentiate degree requires at least 15 ECTS in approved courses of an in-depth nature within computer science, including at least 7.5 ECTS in research methodology, research ethics and gender equality. The remaining 15 ECTS are allocated on the basis of the doctoral student's individual needs in relation to the educational objectives.

A doctoral degree requires at least 30 ECTS in approved courses of an in-depth nature within computer science, including at least 7.5 ECTS in research methodology, research ethics and gender equality. The remaining 30 ECTS are allocated on the basis of the doctoral student's individual needs in relation to the educational objectives.

**Scientific thesis**
Scientific work in the form of a licentiate/doctoral thesis in computer science must be structured as a summary of scientific papers (compilation), in which the doctoral student may have written individually or jointly with other persons, or as a single, coherent scientific thesis (monograph).

A licentiate thesis is defended orally at a public licentiate seminar. A doctoral thesis is defended orally at a public defence of thesis. The thesis work, including active participation in research community processes in the form of courses, seminars, conferences, international exchanges and so on, is carried out in such a way that it provides the doctoral student with an opportunity to meet all the educational objectives.

**Individual study plan**
The individual study plan governs the doctoral student's postgraduate studies and is an important instrument in regulating the collaboration between the student, supervisors and faculty. The individual study plan is drawn up in conjunction with admission and is revised yearly.

**Supervision**
Chapter 6 section 28 of the Higher Education Ordinance states that, "A doctoral student has the right to supervision during studies unless the Vice-Chancellor decides otherwise pursuant to Chapter 6 section 30." Each doctoral student is appointed at least two supervisors, one of whom is the principal supervisor. The supervisors will meet the doctoral student regularly to discuss ongoing work.

## 7. Degree titles
The following degree titles are used by the Faculty for Technology and Society:

- Teknologie licentiat – Licentiate of Philosophy
- Teknologie doktor – Doctor of  Philosophy (Ph.D.)

The doctoral student may also find the following qualifications issued after notification to the dean

- Filosofie licentiate - Licentiate of Philosophy
- Filosofie doctor - Doctor of Philosophy (Ph.D.)