

General study plan for  
Doctoral Programme  
in  
Computer and Systems Sciences

Department of Computer and Systems  
Sciences,  
Stockholm University

Established by the Faculty Board, 08 Mar 2014 (previous revisions: 31 May 2007, 08 Jan 2008).

## 1 The goals of the programme

For a doctorate, the doctoral student must show

### *Knowledge and understanding*

- demonstrate broad knowledge within Computer and Systems Sciences and a systematic understanding of the research area, as well as in-depth and up-to-date specialist knowledge within a limited section of the research area; and
- demonstrate adequate familiarity with the scientific method.

### *Proficiency and ability*

- demonstrate an ability for scientific analysis and synthesis, as well as independent critical review and assessment of new and complex phenomena, questions and situations,
- demonstrate an ability to critically, independently, creatively and with scientific accuracy identify and formulate questions; to plan and, with adequate methods, conduct research and other fully-qualified tasks within given time frames, and to review and evaluate such work;
- demonstrate, with a thesis, an ability to contribute significantly through own research to the development of knowledge;
- demonstrate an ability in both national and international contexts to present and discuss, orally and in writing, research and research results in dialogue with the scientific community and society in general;
- demonstrate an ability to identify needs for further knowledge; and
- demonstrate qualifications to contribute to the development of society and support the learning of others, both within research and education as well as other qualified contexts.

### *Evaluation ability and approaches*

- demonstrate intellectual independence and scientific probity, as well as the ability to make research ethical assessments; and
- demonstrate in-depth insight into the possibilities and limitations of the science, its role in society, and the responsibility of people for how it is used.

For a licentiate, the doctoral student must show

### *Knowledge and understanding*

- demonstrate knowledge and understanding within the field of research, comprised of current specialist knowledge within a limited part of this, and in-depth knowledge of scientific method.

*Proficiency and ability*

- demonstrate an ability to critically, independently, creatively and with scientific accuracy identify and formulate questions; to plan and, with adequate methods, conduct limited research work and other fully-qualified tasks within given time frames, thereby contributing to the development of knowledge, and to evaluate this work;
- demonstrate an ability in both national and international contexts to present and discuss, orally and in writing, research and research results in dialogue with the scientific community and society in general; and
- - demonstrate the skills required to independently participate in research and development work and to work independently in other qualified activities.

*Evaluation ability and approaches*

- demonstrate an ability to make research ethics assessments in own research;
- demonstrate insight into the possibilities and limitations of the science, its role in society, and the responsibility of people for how it is used; and
- - demonstrate an ability to identify needs for further knowledge and to take responsibility for own knowledge development.

## **2 Entry requirements**

### **2.1 General entry requirements**

A person who has fulfilled the general entry requirements for third-cycle courses and programmes is one who:

- has received an advanced degree;
- - has completed course requirements of at least 240 credits, of which at least 60 credits at an advanced level; or
- in some way, either within or outside the country, has acquired the equivalent knowledge on the whole.

The Faculty Board can, for individual applicants, permit exceptions from the general entry requirements if there are particular reasons.

*Transitional rules*

A person who, prior to July 1, 2007, has fulfilled the general entry requirements for admission to postgraduate education will thereafter be regarded as having qualified for admission to third-level courses and programmes, although only until the end of June 2015.

### **2.2 Specific entry requirements**

A person who has fulfilled the specific entry requirements to third-cycle courses and programmes is one who has at least 90 credits in data and systems sciences or the equivalent, of which at least 15 credits must be thesis or project work.

The programme is conducted primarily in English; doctoral students must have mastered the language both orally and in writing to be able to profit from the programme and the course literature.

### **3 Admission**

An application for admission to third-cycle studies is addressed to the head of the faculty. Notifications usually take place twice a year, with application deadlines of April 30 and October 15.

Current placements for third-cycle programmes and courses are announced in connection with the notification on the department's website, and in the media, which are determined in a particular order.

Application packages must contain documents that confirm the applicant's qualifications.

The admissions procedures are described in more detail in connection with the notification.

Prior to the decision on admission, the department must see to it that a plan for funding exists. The funding plan must be signed by the future doctoral student, the supervisors, and the Department Head.

### **4 Selection**

The selection criteria in assessing the applicants are:

- independence in analysis and arrangement in prior work;
- problem formulation and stringency in prior work and research plans;
- previously demonstrated ability to keep to given time frames;
- methodological and scientific maturity; and
- the ability to communicate and to collaborate.

## **5 The content and structure of the programme**

### **5.1 The structure of the programme**

At the beginning of every academic year, the department puts out a summary of the planned programme. The programme is given in the form of lectures, exercises, seminars and tutorials, balanced in a reasonable manner with regards to available resources, the number of doctoral students, the character of the courses, the wishes of the supervisors, and so on. The programmes intend to promote the opportunities for the doctoral students to independently assimilate the literature. As a link in the programme, the doctoral students must regularly participate in seminars throughout the entire duration of their studies.

## **5.2 Supervision, and study and career orientation**

Doctoral students have the right to supervision during the time that can be considered necessary for the prescribed programme of 120 and 240 credits, respectively.

Two supervisors must be appointed at the beginning of studies or immediately thereafter; at least one of them must have undergone supervisor training or be judged by the Faculty Board to have the equivalent competence. If supervisors are not appointed at the beginning of studies, the doctoral student must be given the opportunity for qualified counselling in another form. Decisions on supervisors can be changed upon request from supervisors or doctoral students, or for other reasons. The doctoral students have the right to receive written assessments of their performances from their supervisors once a year.

The supervisors must provide the doctoral students with advice and directions on how courses should be chosen and on how their thesis work should be directed, planned, and carried out. The doctoral students must keep their supervisors informed of the progress of their work through regular contact, and consult with them about the further structure.

The department must see to it that the doctoral students have been given study and career guidance during their time as doctoral students.

## **5.3 Individual study plan**

At the beginning of studies, though at the latest three months after this, the doctoral students must draw up an individual study plan of the courses and elements that will be included in the programme, together with their supervisors on an established form. The funding plan established must be attached to the study plan, and form a part of it. The study plan must be followed up at least yearly and can gradually be revised during the course of studies. The principal supervisors are responsible for the individual study plans having an appropriate structure and being followed up properly. The individual study plan must be signed by the doctoral student, the supervisors, and the Department Head.

## **6 Courses and credit transfer**

The programme consists of a course component of 90 credits for a doctorate and 60 credits for a licentiate. In the course component, 60 advanced-level credits may be transferred (of which 15 credits must be methodology courses), provided that the courses do not constitute qualifying courses.

The thesis component of the doctorate contains 150 credits, and 60 hours for the licentiate. The independent advanced-level work(s) can be integrated into the thesis work, with the supervisor's permission. Similarly, the licentiate thesis can be included, wholly or in part, as a part of the thesis for the doctorate, with the supervisor's permission.

The course component for the doctorate includes these mandatory elements:

- scientific theory, 7.5 credits
- quantitative and qualitative methods, 7.5 credits
- scientific communications and research methodology, 7.5 credits

The course component for the licentiate must include two of these mandatory courses.

In order to ensure that all doctoral students have basic knowledge of the subject's five central areas—systems development, data and information management, person–computer interaction, programming, and IT/information safety—an individual test of the doctoral student's need for supplementary qualifications will be conducted in connection with admission. This test will be administered by the Director of Studies, who will notify the principal supervisor and the doctoral student of suitable courses for supplementary qualifications (equivalent to 7.5 credits per area).

The licentiate and the doctorate require that assigned supplementary qualifications be carried out completely and the credits transferred to the programme.

Supplementary courses are normally first-cycle. Only half of the credit total for these courses can be transferred.

Cases where there is no English-language supplementary course and the doctoral student has not mastered Swedish will be handled by the Director of Studies in a particular order.

The remaining credits will be obtained from elective courses and the project work. These are regulated in the individual study plan established in consultation with the supervisors so that breadth and depth in the programme is provided with regard to the doctoral student's background and qualifications. First- and second-cycle courses, and courses in third-cycle degree programmes other than the one assigned, must be clearly relevant to the student's specialisation.

Individual tests are held in connection with each course. These can be both written and oral. The results are evaluated with the mark “pass” and “fail”, respectively.

## **7 Thesis and defence**

### **7.1 Thesis**

The doctoral thesis is based on independent research work and must document the doctoral student's ability to handle a scientific problem through developing or applying the relevant methodology. The quality of the thesis should be comparable to that of academic papers in good scientific periodicals. The thesis should be designed either as a uniform, coherent work (monograph thesis), or as an amalgamation of scientific papers (compilation thesis). Works where the doctoral student is a co-author can also be included in the thesis. It should clearly be indicated which part of the work is the doctoral student's.

Licentiate theses should demonstrate the doctoral student's ability to make use of scientific methodology and present problems and results in a precise and appropriate way.

### **7.2 Thesis defence**

The doctoral thesis must be defended in a public defence and evaluated by a grading committee in accordance with HEO Chap. 6. The faculty examiner and grading committee are appointed by the Dean. One of the expressions “pass” or “fail” will be used as a grade.

### **7.3 Thesis defence**

The licentiate thesis must be reviewed in a seminar that takes place during term-time by a faculty examiner with at least doctoral qualifications who has proper knowledge of the subjects and methods that are essential to the thesis. The principal supervisor is normally the chair of the seminar, but the Department Board may appoint another teacher as chair. If there are particular reasons, the Vice-Chancellor may permit the seminar to take place at a time other than term-time, and that the scientific thesis may be made available at a time other than term-time.

The paper must have been made available at the Stockholm University Library and the Department at least two weeks before the seminar takes place. Announcements about theses must be sent to the other institutions in the same subject in the country's universities and colleges. The grade on the thesis will be determined by a professor, or potentially by a grading committee consisting of three teachers, of whom at least one is a professor. Other teachers must have at least doctoral qualifications. The faculty examiner or grading committee are appointed by the Faculty Board.

One of the expressions "pass" or "fail" will be used as a grade.

## **8 The degree**

For a doctorate, the doctoral student must have had a scientific thesis (doctoral thesis) of 150 credits approved, plus passing grades on all elements included therein according to the individual study plan. The diploma is issued by the Vice-Chancellor after notification by the Department.

For a licentiate, the doctoral student must have a scientific thesis of 60 credits approved, plus passing grades on all elements included therein according to the individual study plan. The diploma is issued by the Vice-Chancellor after notification by the Department.