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Curriculum Statement for Graduate Level (Third Level) Education

Computer Science with specialization in Embedded Systems

Swedish title: Datavetenskap med inriktning mot inbyggda system

TNDAVE06

Swedish Curriculum and English translation adopted by the Board of the Faculty of Science and Technology (Board for Third-level Education) on 2012-01-23.

Translation approved: 2012-01-23.

The Curriculum Statement for Third-level Education consists of three parts: a general part, this subject specialized curriculum statement, and each doctoral student's individual study plan.

Objective

The education shall, starting at the basic education for the subject area, provide broad knowledge in Computer Science and deep insights in the specialization of Embedded Systems. This includes training in research methodology, along with good insight in the presentation of problems that exist in the research area and its applications. Through supervision and thesis writing the doctoral student should become well prepared to critically and independently plan, execute, and present orally and in writing research and development projects of high international quality.

The doctoral student shall also be able to present her/his own goals and results orally and in writing to different target groups in English and, in the case of Swedish-speaking doctoral students, in Swedish.

Subject description

Embedded Systems are computer-based systems designed for control functions within a larger technical system such as mobile phones, industrial robots, cars and air planes. The subject is a specialization of Computer Science, covering theory, technology and experimental methodology for the construction and analysis of Embedded Systems. Central to the subject is to develop, from both theoretical and practical



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points of view, concepts, languages, programs, methods and tools for making the design, implementation and analysis of Embedded Systems simpler, more reliable and more efficient.

Eligibility

Basic Eligibility

The basic eligibility for third level education is described in the general part of the curriculum statement.

Special Eligibility

Special qualification to education at research level in Computer Science with specialization in Embedded Systems is granted to persons who have passed examination for courses in Computer Science or courses in areas relevant to Embedded Systems, covering at least 90 higher education credits. Of these, at least 15 higher education credits must be within courses close to the area of Embedded Systems. Persons who have acquired corresponding knowledge outside Sweden are also qualified.

Admission

Applicants for third level program in Computer Science with specialization in Embedded Systems must submit an application to the head of the Department of Information Technology. Admissions to places in third level programs take place normally several times per year.

In connection with the admission it must be stated how it is planned to finance both the personal maintenance of the doctoral student, and her/his research.

Program structure

The third level program includes theoretical and experimental courses, literature studies, and seminars as well as research work leading to a dissertation.

In connection with the admission, each doctoral student and her/his supervisor shall make an individual study plan after consultation with the professor in charge of the third level program. The plan is to be approved by the head of the department (by delegation of the Faculty Board), in connection with the admission.



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The individual study plan shall be reviewed jointly by the doctoral student and her/his supervisor, annually, and be provided with a summary of the achieved results and the plans for the coming year. Significant changes and any disagreement on the individual study plan shall be reported to the head of the department or, if deemed necessary, to the Board for Third-level Education.

Courses

The courses are intended to provide broader insights into the subject as a complement to the specialist competence acquired in the research work. The courses included in the individual study plan may partly be selected among Computer Science, Mathematics, Engineering and other fields relevant for the intended dissertation subject. Furthermore, a person employed as doctoral student normally has some departmental duties regarding education, research, and administrative work.

A doctoral degree should include courses corresponding to normally 60-90 higher education credits. The exact number of credits is specified in the individual study plan. A Licentiate degree should include courses corresponding to 30 higher education points.

For a doctoral degree at least 15 higher education credits should be for graduate level courses outside the area of Computer Science or outside the department. In addition, at least 15 higher education credits should be graduate level courses within Computer Science but not considered to be within the dissertation topic. Furthermore, at least 15 higher education credits should be individual specialization courses within Embedded Systems connected to the doctoral students' own dissertation work.

At most 15 higher education credits from advanced courses on undergraduate level education can be included.

Courses among those used for special eligibility cannot be included in the individual study plan.

Requirements for doctoral degree

The requirements for doctoral degree consist of on one hand passed examinations in the courses included in the approved individual study plan of each doctoral student, and on other hand passed public defense of the doctoral thesis. The program leading to the doctoral degree amounts to 240 higher education credits (four years of full-time



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studies), of which the thesis part amounts to a minimum of 120 higher education credits and the course part to a minimum of 60 higher education credits.

Requirements for licentiate degree

A stage of at least 120 higher education credits (two years of full-time studies) in the third level program may be completed with a licentiate degree. The requirements for this are that the doctoral student both has passed the examinations included in the program stage and has got an academic paper amounting to a minimum of 60 higher education credits passed. The course part amounts to a minimum of 30 higher education credits.

Other

Research in Computer Science with specialization in Embedded Systems is conducted within a wide international and interdisciplinary cooperation and requires a substantial international flow of information. It is necessary that the graduate student can understand and write texts in English.