GENERAL SYLLABUS FOR THIRD-CYCLE PROGRAMMES IN COMPUTER AIDED DESIGN

Chair of the Faculty of Science and Technology 18/12/2018

1 Subject Area

The research subject Computer Aided Design (CAD) encompasses, for engineering systems, simulation-driven product development, modelling and simulation, product development methodology and product information management. Models, methods and tools for developing hardware as well as the associated support systems are important for the research subject.

2 Programme curriculum

Education at post-graduate level in Computer Aided Design that concludes with a licentiate degree comprises a total of two years' full time study (120 higher education credits) and consists of a study programme that gives 30-50 higher education credits and a licentiate thesis that gives 70-90 higher education credits.

Education at post-graduate level in Computer Aided Design that concludes with a doctorate comprises a total of four years' full time study (240 higher education credits) and consists of a study programme that gives 60-90 higher education credits and a doctoral thesis that gives 150-180 higher education credits.

The education is normally given within the framework of a paid position as predoctoral fellow. This means that at least 80% of the student's time can be devoted to courses and research projects as detailed in an individual study programme. The remaining time can be used for teaching or other departmental duties. The normal study period for a doctorate is four and a half years with a paid position as predoctoral fellow.

The courses are both teacher-led and self-study courses. The research work is conducted independently on the student's own responsibility but supervision is given, especially at the beginning of the study period. The research is reported by means of articles in scientific journals and the presentation of articles at scientific conferences.

An individual study programme is drawn up for every third-cykle student (according to a fixed model) where the study programme is specified in detail. The individual study programme is followed up at least once a year by the post-graduate student and his/her supervisor and is then approved by the head of department, as delegated by the Vice-Chancellor.

3 Eligibility and selection

3.1 General eligibility requirements
An individual fulfils the general eligibility requirements for the third-cycle educational programme when he or she 1) has completed a second-cycle degree, 2) has completed higher education courses worth at least 240 credits, of which at least 60 are for second-cycle courses, or 3) in some other manner, in this country or abroad, has acquired the equivalent qualifications. The faculty board may permit an exemption from the requirement of basic eligibility in the case of an individual applicant, if there are special grounds as written in Chapter 7, Section 39 of the Higher Education Ordinance (2010:1064). Also refer to the local guidelines laid down in the Admission Rules for Third-cycle Education at Luleå University of Technology.

3.2 Specific eligibility requirements
- Good skills in oral and written communication in Swedish or English.
- For applicants who achieved basic eligibility before 1 July 2007: Degree of Master of Science in Engineering/Degree of Master.

3.3 Selection
Selection from among applicants meeting the requirements shall be made with reference to their ability to benefit from the education. The mere fact that an applicant is deemed able to receive credit towards the education for previous education or working activities may not alone give the applicant precedence over other applicants in the selection process, as per Chapter 7, Section 41 of the Higher Education Ordinance (2010:1064). Also refer to local guidelines laid down in the Admission Rules for Third-cycle Education at Luleå University of Technology.

In the selection of third-cycle education in Computer Aided Design the following applies to the selection criteria:
- Knowledge relevant to the project in question
- Personal qualities relevant to education at post-graduate level.

4 Examinations included in the education
The education consists of courses and an academic thesis. Examinations included in third-cycle programmes are graded as either Pass or Fail. Course and licentiate thesis grades are decided by specially appointed teachers (examiners). Doctoral thesis grades are decided by a specially appointed grading committee.

4.1 Courses
Goal attainment is tested by means of the form of examination specified in the syllabus.

4.1.1 Recognition of prior studies
As specified in the local guidelines laid down in the Admission Rules for Third-cycle Education at Luleå University of Technology.

4.2 Academic thesis
An academic project in the form of a dissertation/thesis in Computer Aided Design shall be presented as a homogenous, cohesive academic work (monograph) or a brief summary – comprehensive summary – of academic essays (composite thesis) that the third-cycle student has written alone or together with another person or persons.

Thesis manuscripts shall be presented at one or more research seminars or be subjected to equivalent review through the agency of the department.

The licentiate thesis is defended orally at a public licentiate seminar and is graded as either Pass or Fail. When the thesis is graded both the content of the thesis and the defence of the thesis are taken into consideration. The grade of a licentiate thesis is decided by an examiner appointed by the Head of Department.

The doctoral thesis is defended orally at a public disputation and is graded Pass or Fail. When the thesis is graded, both the content of the thesis and the defence of the thesis are taken into consideration. Grades for a doctoral thesis should be decided by a grading committee that is appointed for each thesis.

5 Degree
Where applicable:
In Computer Aided Design, a third-cycle student who has been admitted to a Degree of Doctor has the possibility to take a Degree of Licentiate after completing one part comprising at least 120 credits of a study programme intended to conclude with the award of a Degree of Doctor.

5.1 Degree objectives
As specified in the Qualifications Ordinance (Higher Education Ordinance, Annex 2 – Degree Ordinance). See also the Annex below.

5.2 Degree title
A third-cycle student who takes a Degree of Licentiate in Computer Aided Design receives the degree title of Licentiate of Engineering.

A third-cycle student who takes a Degree of Doctor in Computer Aided Design normally receives the degree title of Doctor of Philosophy.

Requests for other degree titles are made according to established guidelines.

6 Entry into effect and interim regulations
General syllabus for Computer Aided Design applies for admission of third-cycle students admitted after 2018-12-18

Qualifications ordinance (Higher Education Ordinance, Annex 2)

Contents

- the qualifications that may be awarded in the third cycles, and

- the requirements to be fulfilled for the award of each qualification (qualification descriptors).

THIRD-CYCLE QUALIFICATIONS

General qualifications

Degree of Licentiate [Licentiatexamen]

Scope

A Degree of Licentiate is awarded

- either after a third-cycle student has completed a study programme of at least 120 credits in a subject in which third-cycle teaching is offered,

- or after a third-cycle student has completed one part comprising at least 120 credits of a study programme intended to conclude with the award of a Degree of Doctor, if a higher education institution decides that a licentiate of this kind may be awarded at the institution.

Outcomes

Knowledge and understanding

For a Degree of Licentiate the third-cycle student shall:

- demonstrate knowledge and understanding in the field of research including current specialist knowledge in a limited area of this field as well as specialised knowledge of research methodology in general and the methods of the specific field of research in particular.

Competence and skills

For a Degree of Licentiate the third-cycle student shall:

- demonstrate the skills to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake a limited piece of research and other qualified tasks within predetermined time frames in order to contribute to the formation of knowledge as well as to evaluate this work

- demonstrate the skills in both national and international contexts to present and discuss research and research findings in speech and writing and in dialogue with the academic community and society in general, and

– demonstrate the skills required to participate autonomously in research and development work and to work autonomously in some other qualified capacity.

Judgement and approach

For a Degree of Licentiate the third-cycle student shall:

– demonstrate the skills to make assessments of ethical aspects of his or her own research

– demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and

– demonstrate the skills to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

Thesis

For a Degree of Licentiate the third-cycle student shall have been awarded a Pass grade for a research thesis of at least 60 credits.

Miscellaneous

Specific requirements determined by each higher education institution itself within the parameters of the requirements laid down in this qualification descriptor shall also apply for a Degree of Licentiate with a defined specialisation.

Degree of doctor

Scope

A Degree of Doctor is awarded after the third-cycle student has completed a study programme of at least 240 credits in a subject in which third-cycle teaching is offered.

Outcomes

Knowledge and understanding

For the Degree of doctor the third-cycle student shall:

– demonstrate broad knowledge and systematic understanding of the research field as well as advanced and up-to-date specialised knowledge in a limited area of this field, and

– demonstrate familiarity with research methodology in general and the methods of the specific field of research in particular.

Competence and skills

– demonstrate the capacity for scholarly analysis and synthesis as well as review and assess new and complex phenomena, issues and situations autonomously and critically

- demonstrate the skills to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake research and other advanced tasks within predetermined time frames and to review and evaluate such work

- demonstrate through a dissertation the skills to make a significant contribution to the formation of knowledge through his or her own research

- demonstrate the skills in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community and society in general

- demonstrate the skills to identify the need for further knowledge and

- demonstrate the capacity to contribute to social development and support the learning of others both through research and education and in some other qualified professional capacity.

Judgement and approach

For the Degree of Doctor the third-cycle student shall:

- demonstrate intellectual autonomy and disciplinary rectitude as well as the ability to make assessments of research ethics, and

- demonstrate specialised insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used.

Research thesis (doctoral thesis)

For the Degree of Doctor the third-cycle student shall have been awarded a Pass grade for a research thesis (doctoral thesis) of at least 120 credits.

Miscellaneous

Specific requirements determined by each higher education institution itself within the parameters of the requirements laid down in this qualification descriptor shall also apply for a Degree of Doctor with a defined specialisation. Ordinance (2008:132)