

General Syllabus for Third-Cycle Studies in Informatics¹

Finalised by the Education Committee for Third-Cycle Studies in Informatics on
November 4th, 2019, taking effect on the same date.

Registration number HS 2021/209

¹ This is a translation of the Swedish version (Allmän studieplan för utbildning på forskarnivå i informationsteknologi, registration number HS 2019/865). In the event of any discrepancy, the Swedish version of this document shall prevail.

Table of Content

1	Subject Description.....	2
2	Outcomes of the Third-Cycle Studies	2
3	Entry Requirements.....	5
	3.1 General Entry Requirements	5
	3.2 Specific Entry Requirements.....	6
4	Selection	6
	4.1 Local Regulations at the University of Skövde	7
5	Structure and Content of the Third-Cycle Studies in Informatics	7
	5.1 General Structure of Education.....	7
	5.2 Supervision.....	8
	5.3 Individual Study Plan (ISP)	8
	5.4 Content of the Third-Cycle Studies	8
	5.5 Doctoral Thesis and Licentiate Thesis	10
	5.6 Qualifications (Degrees)	10
6	Taking Effect	10

1 Subject Description

Informatics is the subject dealing with how information is represented, processed and communicated in artificial and natural systems, as well as with how informatics systems are used and developed to achieve usable system solutions for individuals, organisations or societies.

Education within the subject is mainly provided within the framework of three comprehensive research domains:

- Computer science – extensive research on forms of representation of data as well as algorithms for processing of data.
- Sociotechnical systems – extensive research on how individuals, groups and organisations create and process information, how they use, influence and are affected by informatics systems, and what consequences this has for the development of such systems.
- Industrial informatics – extensive research on how modern, IT-based engineering tools are integrated with each other and with existing business systems, and how they are connected to physical equipment, what requirements there are for these tools and systems based on distributed production, distributed development projects, and the user, for instance.

2 Outcomes of the Third-Cycle Studies

General outcomes of third-cycle studies, in terms of knowledge and understanding, competence and skills, and judgement and approach, according to the Higher Education Ordinance (1993:100), Annex 2, Qualifications ordinance.

Outcomes of Degree of Doctor, according to the Higher Education Ordinance (1993:100), Annex 2, Qualifications ordinance

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

For the Degree of Doctor the third-cycle student shall

- demonstrate the capacity for scholarly analysis and synthesis as well as to review and assess new and complex phenomena, issues and situations autonomously and critically
- demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work
- demonstrate through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research
- demonstrate the ability 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 ability 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.

Outcomes of Degree of Licentiate, according to the Higher Education Ordinance (1993:100), Annex 2, Qualifications ordinance

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

3 Entry Requirements

Admission to postgraduate education is made either for a doctoral degree or a licentiate degree. See more in “Admission Regulations at the University of Skövde – Regulations for admission to third-cycle studies”

[Antagningsordning vid Högskolan i Skövde – föreskrifter för antagning till utbildning på forskarnivå].

Higher Education Ordinance, chapter 7

Section 35

The requirements for admission to third-cycle courses and study programmes are that the applicant

1. meets the general and specific entry requirements that the higher education institution may have laid down, and
2. is considered in other respects to have the ability required to benefit from the course or study programme. Ordinance (2010:1064).

3.1 General Entry Requirements

Higher Education Ordinance, chapter 7

Section 39

A person meets the general entry requirements for third-cycle courses and study programmes if he or she:

1. has been awarded a second-cycle qualification
2. has satisfied the requirements for courses comprising at least 240 credits of which at least 60 credits were awarded in the second-cycle, or
3. has acquired substantially equivalent knowledge in some other way in Sweden or abroad.

The higher education institution may permit an exemption from the general entry requirements for an individual applicant, if there are special grounds. Ordinance (2010:1064).

3.1.1 Local Regulations at the University of Skövde

When general entry requirements are examined, it shall be assessed whether the applicant has achieved such width and depth in their education that can form the foundation for the third-cycle studies.

Exemption from the general entry requirements can be granted to applicants who have not completed all parts of an education comprising at least 240 credits, but whose completed education includes second-cycle courses (courses

at advanced level) comprising at least 60 credits, including an independent project related to the intended third-cycle studies.

When foreign qualifications are assessed, the Swedish Council for Higher Education's principles for the evaluation of foreign higher education qualifications should be used.

3.2 Specific Entry Requirements

Higher Education Ordinance, chapter 7

Section 40

The specific entry requirements laid down shall be essential for students to be able to benefit from the course or study programme. These requirements may comprise:

1. knowledge from one or more higher education courses and study programmes or corresponding courses and study programmes
2. specific professional or vocational experience, and
3. requisite language skills or other conditions determined by the course or study programme. Ordinance (2006:1053).

3.2.1 Local Regulations at the University of Skövde

To meet the specific entry requirements for admission to the third-cycle studies in informatics, the applicant must have completed course requirements of at least 60 credits, including independent (degree) project of at least 15 credits at advanced level, within the field Informatics, applicable areas of a similar kind or other fields assessed as directly relevant for the licentiate or PhD thesis.

Furthermore, a passing grade from upper secondary school course English 6/English B or equivalent is required. Applicants who do not have grades from a Swedish upper secondary school require a certificate equivalent to English 6 from an internationally recognised language test (TOEFL, IELTS or Cambridge ESOL), in accordance with requirements of www.universityadmissions.se, where any exemption from certificate requirements are regulated.

4 Selection

Higher Education Ordinance, chapter 7

Section 41

In selecting between applicants who meet the requirements laid down in Sections 35 & 36 their ability to benefit from the course or the study programme shall be taken into account.

The higher education institution determines which assessment criteria shall be used in determining the ability to benefit from the courses and study programmes.

However, the fact that an applicant is considered able to transfer credits from prior courses and study programmes or for professional or vocational experience may not alone give the applicant priority over other applicants. Ordinance (2010:1064)

4.1 Local Regulations at the University of Skövde

Selection for third-cycle studies takes place following an assessment of the applicants' ability to benefit from the education. This assessment is mainly based on study results from first- and second-cycle education.

The University of Skövde has decided that the following assessment criteria are to be applied when examining the applicants' ability to benefit from the third-cycle studies in informatics:

1. Knowledge and skills that are relevant to the main subject and the intended thesis work. These can be demonstrated through enclosed documents and interview.
2. Assessed ability for independence and ability to formulate and approach scientific problems. The assessment can, for instance, be made based on the independent project (degree project) at advanced level, and a discussion of the same at an interview.
3. Ability in written and oral communication.
4. Assessed ability to collaborate in research.
5. Other qualifications that are relevant to the third-cycle studies.

5 Structure and Content of the Third-Cycle Studies in Informatics

5.1 General Structure of Education

The University of Skövde awards two degrees at third-cycle level: a doctoral degree and a licentiate degree. A doctoral degree can be obtained when a doctoral student has completed an education that encompasses four years of full-time studies (240 credits) in a third-cycle subject. A licentiate degree can be obtained after two years of full-time studies (120 credits), and can constitute a step on the way, or completion of the education. A third-cycle student who has a doctoral studentship can to a limited extent (maximum 20 percent) work in education and administration. These activities are not included in the actual study time. The net study time is calculated from the date of admission and the time devoted to the education.

The degree of activity is registered annually in Ladok. Previous education whose credits were transferred at admission shall not be included in the net

study time. Studies can be conducted part time, for example in parallel with other service, but must be able to be completed within eight years for a doctoral degree, and within four years for a licentiate degree. Thus, no admissions are made for a degree of activity that is below 50 per cent. The length of the doctoral studies may be increased only if there are special reasons for it, such as time off due to sickness, service in the total defence, commission in union or student organisations, or parental leave.

The doctoral studies comprises a course part, and thesis work.

Throughout the education, the doctoral student is expected to actively participate in relevant scientific activities at the University, such as seminars, guest lectures, conferences, etc., with particular focus on those related to the education subject. In addition, the doctoral student must present their own thesis at a given number of compulsory seminars. Parts of the doctoral studies can be abroad or at another higher education institution in the country. The doctoral student should be given the opportunity to participate in and contribute to international courses and conferences.

5.2 Supervision

At least two supervisors, who are to provide the doctoral student with support and guidance in their studies, are appointed to each doctoral student. One of them shall be nominated as the main supervisor. Read more about supervision, competence requirements, descriptions of responsibility, and the practicalities of supervision in “Guidelines for Supervision and Study Follow-Up in Third-Cycle Education in Informatics at the University of Skövde” [Riktlinjer för handledning och studieuppföljning inom utbildning på forskarnivå i informationsteknologi vid Högskolan i Skövde].

5.3 Individual Study Plan (ISP)

An individual study plan must be drawn up for each doctoral student, no later than three months after admission. The details of the setups of the studies are determined in collaboration between the main supervisor, the doctoral student, and the Director of PhD Studies. The Faculty Board determines each ISP, and is followed up as per the “Guidelines for Supervision and Study Follow-Up in Third-Cycle Education in Informatics at the University of Skövde”.

5.4 Content of the Third-Cycle Studies

The third-cycle studies comprises a course part and a scientific work. Exams that are included in the education are graded pass/fail. Course and licentiate thesis grades are determined by a specially appointed examiner. Doctoral thesis grades are determined by a specially appointed examining committee.

5.4.1 Courses

The third-cycle studies in informatics includes both mandatory courses and optional courses. Their extent is shown in the table below.

Degree	Courses (credits)			Thesis (credits)	Total (credits)
	Mandatory	Optional			
		Informatics	Informatics or other subject areas		
Licentiate degree	20	15	at least 5	80	120
Doctoral degree	25	25	at least 10	180	240

Mandatory courses for a licentiate degree in informatics

- Scientific Theory in Informatics (7,5 credits)
- Scientific Workshop I (5 credits)
- Scientific Methodology and Communication in Informatics (7,5 credits)

Mandatory courses for a doctoral degree in informatics

In addition to the three mandatory courses required for a licentiate degree, the following course is also required

- Research Ethics (5 credits)

A course in higher education pedagogy can be included in the third-cycle studies (maximum 5 credits).

5.4.2 Research Seminars

The doctoral student shall present their thesis work at two or three seminars:

1. Planning seminar and research proposal – the intended research focus (planning of the thesis/essay composition) is reported at an open seminar
2. Half-time seminar and thesis proposal – after about half the time of the third-cycle studies has elapsed, a thesis proposal is reported at an open seminar
3. Final seminar and thesis manuscript – at least three months before the planned thesis defence, a preliminary version of the thesis shall be scrutinised and presented at an open seminar

For a licentiate degree, the half-time seminar is not included. If a licentiate thesis is written as a step towards a doctoral thesis, the licentiate thesis replaces the thesis proposal (see further “Guidelines for Examinations in Third-Cycle Studies” [Riktlinjer för examination inom utbildning på forskarnivå]).

5.5 Doctoral Thesis and Licentiate Thesis

The doctoral thesis and the licentiate thesis respectively are to be based on independent research work, and should be of importance to the research within the chosen subject area. The thesis can either be formed as a compilation of scientific works (compilation thesis) or as a coherent scientific work (monograph thesis).

A compilation thesis must include several scientific articles or manuscripts, as well as a compilation part (summarising chapter). The majority of the articles should have been peer-reviewed and accepted for publication in international scientific forums of high quality. See further “Guidelines for Examinations in Third-Cycle Studies”.

For a monograph thesis, equivalent requirements for quality and extent apply.

Both doctoral and licentiate theses are normally to be written in English, and should have a summary in both Swedish and English.

5.6 Qualifications (Degrees)

The Swedish title of the degree after completing the education with a passing grade is, in accordance with this syllabus, **teknologie licentiat/doktor i informationsteknologi**. A PhD student who wishes to use the suffix² ‘filosofie’ can apply for this to the faculty board when submitting the application for the licentiate seminar or public defence. The English title of the doctoral degree, both ‘teknologie’ and ‘filosofie’, is **Doctor of Philosophy in Informatics**. Teknologie and filosofie licentiat are in both cases translated as **Licentiate of Philosophy in Informatics**.

6 Taking Effect

Finalised by the Education Committee for Third-Cycle Studies in Informatics on November 4th, 2019, taking effect on the same date. Replaces version finalised on June 12th, 2017.

² A prefix in the Swedish title