

General study syllabus for doctoral studies in Information systems

This study syllabus applies for students who conclude the study programme with a doctoral degree and for students who conclude the study programme with a licentiate degree.

Please observe, this is a translation of the Swedish document “Allmän studieplan för forskarutbildning inom informationssystem (Dnr LiU-2019-00747). In case of uncertainty, please consult the original document.

Content

1	Aims of the education	2
2	Entry requirements.....	4
2.1	General provisions	4
2.2	General entry requirements.....	4
2.3	Specific entry requirements.....	4
3	Admission	5
3.1	Application.....	5
3.2	Admission limitations and selection.....	5
3.3	Decision of admission.....	6
4	Programme design.....	7
4.1	General information	7
4.2	Courses.....	7
4.3	The doctoral thesis.....	8
4.4	The licentiate thesis	9
5	Structure of the education	11
5.1	Individual study plan.....	11
5.2	Teaching.....	11
5.3	Supervision	11
6	Forms of examination.....	13

1 Aims of the education

Doctoral studies in information systems aims to increase the depth of knowledge of the student within the field of study and to prepare the student well for independent work in research and development. Thus, the aim of doctoral studies is to prepare for a professional career as an independent researcher or for advanced work in education, analysis, or development where research skills within information systems are important.

The aim of the programme is to provide the student with the ability to independently plan and carry out advanced research and to present and disseminate research results both within and beyond the academic sphere.

The field of research, information systems, explores the work of people to develop and modify IT-based information systems in operational use and in society, and the possible effects that arise in this connection on people, organisations and society. This comprises theories, perspectives, strategies and policies, models, methods, working methods used during digitalisation, and IT tools (digital resources) with respect to systems development. Various situations centred around development and change can be studied, such as planning/governance/co-ordination, analysis/inquiry/specification, procurement, structuring, design, introduction, evaluation, administration/further development, replacement and discontinuation of information systems, and interaction with other forms of operational development. IT-based information systems that are studied within the field of research may be part of larger infrastructure and shared resources. They may also be of a more independent nature or packaged in various ways, one example of which is in the form of services. The subject also investigates the preconditions of digitalisation and its results, such as in studies of the application and consequences of information systems that result from systems development, or as a necessary condition for change and the further development of systems.

Doctoral studies and research within information systems are based on a number of long-term research themes and in robust and relevant research projects included in these themes. The direction of the research is guided by both within-subject and practical relevance. In order to achieve the goals of the doctoral studies, work is required to develop the research skills of the student. The purpose of doctoral studies in information systems is, by definition, to provide education to researcher level within the field of study. This means that a considerable part of the doctoral

studies is constituted by training in the conduct of research. In order to acquire good research skills, it is necessary that the doctoral student carries out, under supervision, various research tasks (preferably in project form). It is for this reason necessary that the doctoral student learns to define, describe, report, critically examine, discuss and defend the results of research, not only in writing but also orally (at seminars and conferences, etc.), in different ways and for different target groups. It is important that the doctoral student also develops during the studies other skills that are significant for a future career as researcher. Examples of such skills are: participation in the assessment (in the role of a reviewer) of manuscripts for scientific journals, and those submitted to or presented at scientific conferences and seminars, the organisation of conferences and seminars, writing research plans, applications for research funding and collaboration agreements, and contact with research funding bodies and organisations in the field of practice.

2 Entry requirements

2.1 General provisions

In order to be admitted to doctoral studies, an applicant must satisfy both general entry requirements and specific entry requirements, as described below.

Furthermore, the applicant must have been assessed to possess such other abilities as are required to successfully complete the education.

2.2 General entry requirements

The general entry requirements for doctoral studies are satisfied by a person who has been awarded an advanced degree, has satisfied the requirements for courses comprising at least 240 credits of which at least 60 credits were awarded in second-cycle courses, or has acquired substantially equivalent knowledge in some other way in Sweden or abroad. If special reasons exist, the faculty board may allow exception for an applicant from the requirement to satisfy the general entry requirements.

2.3 Specific entry requirements

The specific entry requirements are satisfied by a person who has knowledge corresponding to 90 credits in information systems or an equivalent subject.

The requirements of the general entry requirements and the specific entry requirements are also considered to be satisfied by a person who has been awarded a corresponding older degree, or who has acquired corresponding knowledge in Sweden or abroad.

3 Admission

3.1 Application

An application for admission to doctoral studies in information systems is to be made to the director of graduate studies in the subject.

3.2 Admission limitations and selection

The number of students admitted to doctoral studies may not exceed the number that can be offered supervision and otherwise acceptable conditions for study. Funding must have been secured for the education of all students admitted. A limitation on admission to doctoral studies will be applied if the number of qualified applicants is larger than the number of places available. The basis of selection among qualified applicants for doctoral studies in information systems is the ability of the applicants to benefit from such education. An assessment will be made of the potential of an applicant to develop excellent skills to complete high-quality scientific work. This involves an assessment of, primarily, such properties as creativity, analytical focus, written and other communication skills, independence and initiative, integrity, collaboration skills, work capacity and stamina. The following circumstances are considered during the selection process:

- study results that demonstrate creativity, maturity, an ability to make independent judgements, and critical analysis
- special knowledge and experience possessed by the applicant, obtained through, for example, periods of professional activities that may be significant for the applicant benefiting from the doctoral studies.

The selection is primarily based on material that the applicant presents and provides documentary evidence of, such as independent study and certificates of professional activities. In addition to this, further decision-support information is significant, gained from, for example, interviews with the applicant. During the admission process, consideration is also taken of the expertise possessed by the supervisors and teachers involved in doctoral studies, and how this expertise is expressed in prioritised research topics. It is, therefore, critical that the student has a research focus that is in line with ongoing or planned research initiatives within the field of study.

Students are admitted to doctoral studies in information systems who are employed as doctoral students in the department, and students who are employed at another

institution of higher education, company or government agency.

3.3 Decision of admission

A decision to admit a student to doctoral studies will be taken by the departmental board at the Department of Management and Engineering (IEI) after consideration of the case within the research environment.

4 Programme design

4.1 General information

Research education that leads to a licentiate degree comprises 120 credits and consists of 60 credits to be awarded for courses and 60 credits to be awarded for an academic thesis. Such a degree can either constitute the final goal for the programme, or may be an intermediate station on the pathway to a doctoral degree. Education to a doctoral degree is based on successful completion of a licentiate degree. Research education that leads to a doctoral degree comprises 240 credits and consists of 90 credits to be awarded for courses and 150 credits to be awarded for a thesis. Doctoral students who have written a master's thesis with close relationship in scientific field and time to the work with a doctoral thesis may be given the possibility to write a doctoral thesis without taking a preceding licentiate degree. This assessment is to be made in each case individually, and a decision taken by the principal supervisor in consultation with other supervisors in the research environment.

The student should start their own scientific work during the first year of study, and thus carry out research in parallel with course-based study. Within six months of admission, the doctoral student is to present a thesis proposal at a seminar in the research environment. The proposal is to be presented and defended at this seminar by the doctoral student. A designated senior researcher from the environment who does not hold the role of principal or associate supervisor for the doctoral student is to act as discussion partner at the seminar. A follow-up is to take place six months after this, in the form of a further seminar that describes how the plan has been put into practice. The principal supervisor is responsible for organising both of these seminars.

4.2 Courses

Doctoral students who undertake teaching must take a course in teaching methods in higher education.

The course "Thesis seminars" is compulsory, and describes how to present, discuss and defend thesis text in not only licentiate theses but also doctoral theses. This course comprises to a considerable extent work to examine and discuss text written by others. The minimum acceptable level of participation is stated below. Doctoral

studies also includes active participation in seminars at the research environment.

In addition to the specific “Thesis seminars” course described above, the following types of course are compulsory: (1) a course that provides in-depth knowledge in information systems within the local research environment or a corresponding course at another institution or department of higher education at which the relevant field of study is represented at the level of doctoral studies, (2) an in-depth course in research methods (with a specialisation in qualitative analysis), and (3) a course in academic writing. The latter two courses may be taken at LiU or at another institution of higher education. The three course types described above must together correspond to at least 15 credits when part of doctoral studies. For a licentiate degree, two of the three types of course must be taken, and must correspond to at least 10 credits. Selection of courses is to take place in dialogue with the principal supervisor.

Modifications may be made for an individual student after consideration of the individual’s prior knowledge and the requirements posed by participation in the research environment. Courses selected for an individual are to be determined by the student’s principal supervisor after discussions with the student. Certain courses include organised teaching, while in other courses knowledge is gained through individual study (“required reading”).

Basic courses that are at second-cycle level or higher and that have not been included in the courses presented to fulfil the specific entry requirements may, after approval from the principal supervisor, be counted towards the doctoral studies.

4.3 The doctoral thesis

For a doctoral degree, the doctoral student shall compose an academic thesis, the extent of which corresponds to 150 credits. The thesis is to be based on independent research, and must present significant results for research within the selected area. The thesis may be in the form of a monograph or a compilation thesis, written in Swedish or English. If the thesis is a monograph, parts of the scientific work that has led to the doctoral thesis must also be presented in at least two scientific articles (journal articles or conference proceedings that have been subject to quality review) that have been exposed and examined in an international context. The doctoral student must have had a primary authorship role in these two articles. If the thesis is a compilation thesis, it must be based on five to six journal articles or conference

proceedings that have been subject to quality review. The doctoral student must also demonstrate independence through writing at least one of the component articles without the principal or any associate supervisor being co-author. The introductory summary of a compilation thesis must clearly contribute added value, in addition to that of the published articles included in the thesis. The introductory summary must contain comparative material, and parts that are more unified and integrative. These must summarise and refine the contributions to knowledge presented in the published articles included. It must be possible to view the introductory summary as a clear contribution to knowledge in its own right, to be read, understood and examined as an independent part of the thesis.

A plan for the doctoral thesis is to be presented and examined at two formally arranged seminars during the first year of study (as described above). Partial results from the thesis must also be presented and examined within the framework of the “Avhandlingsseminarier” course, at least once a year, as described above. In cases in which a doctoral student does not write a licentiate thesis as part of the requirements for a doctoral thesis, the material must be examined by an external reviewer at a corresponding point in time (corresponding to approximately 60% completed). Before the doctoral thesis is presented at a public defence, it must be collectively presented and examined at a final seminar at which an external reviewer and the student’s colleagues contribute to quality assurance.

The thesis is to be defended at a public defence. Regulations governing the procedure for thesis defences are given in the Higher Education Ordinance, to which have been added local regulations laid down by the University Board and the board of the Faculty of Arts and Sciences.

4.4 The licentiate thesis

For a licentiate degree, the doctoral student shall compose an academic thesis, the extent of which corresponds to 60 credits. The thesis may be in the form of a monograph or a compilation thesis, written in Swedish or English. If the thesis is a monograph, a part of the scientific work that has led to the thesis must also be presented in at least one scientific article (journal article, or conference or workshop proceedings that have been subject to quality review) that have been exposed and examined in an international context. The doctoral student must have played an important role as principal author or co-author of this article. If the thesis is a compilation thesis, it must be based on two to three journal articles, or conference

or workshop proceedings that have been subject to quality review. The doctoral student must also demonstrate independence through writing at least one of the component articles without the principal or any associate supervisor being co-author. The introductory summary of a compilation thesis must clearly contribute added value, in addition to that of the published articles included in the thesis. The introductory summary must contain comparative material, and parts that are more unified and integrative. These must develop the contributions to knowledge presented in the published articles included. It must be possible to view the introductory summary as a clear contribution to knowledge in its own right, to be read, and examined as an independent part of the thesis.

A plan for the licentiate thesis is to be presented and examined at two formally arranged seminars during the first year of study (as described above). Partial results from the licentiate thesis must also be presented and examined within the framework of the “Avhandlingsseminarier” course, at least once a year.

The licentiate thesis must be based on independent research. The licentiate thesis shall be defended at a public seminar. The board of the Faculty of Arts and Sciences will decide the details of how the scientific thesis for a licentiate degree is to be presented.

5 Structure of the education

5.1 Individual study plan

In collaboration with the principal supervisor, a doctoral student is to draw up an individual study plan for the doctoral studies, which is to be reviewed at least once a year.

The principal supervisor is responsible to provide advice concerning the focus of the thesis work, its extent and its execution. One or several associate supervisors are available to support this work. The individual study plan is to be approved by the head of department at least once a year, who then registers and archives it at the department.

5.2 Teaching

Teaching is to consist principally of lectures, seminars and supervision. During the period of study, the doctoral student is to take part in academic activity through attending seminars, guest lectures, etc., and shall present own results at seminars in the research environment. The student may be given the opportunity to participate in teaching and the assessment of study at another faculty or another institution of higher education. It is the responsibility of the research environment to offer the doctoral student the opportunity to participate in international conferences and courses abroad. Most of the courses in the doctoral studies are to be selected, in consultation with the principal supervisor, within the student's field of study. Courses from other relevant fields of study may be selected, also in consultation with the principal supervisor. Courses are to be taken as specified by the individual study plan of the doctoral student. It is desirable that participation in courses not only supports subject-specific in-depth knowledge, but also promotes the development of research skills.

All doctoral students (both those writing licentiate theses and those writing doctoral theses) shall follow the designated thesis seminars given continuously in course form within the research environment.

5.3 Supervision

A doctoral student has the right to supervision during the studies, unless the vice-chancellor has decided otherwise. The supervisors in the field of study are jointly responsible for the quality and execution of doctoral studies. The selection of a

thesis topic is to take place in consultation between the doctoral student and the principal supervisor. It must take place during the first term of the programme (details of seminars to be held after 6 and 12 months are given above). At least two supervisors must be appointed to each doctoral student, one of whom is to be principal supervisor. The principal supervisor is to be nominated by the departmental board in consultation with those responsible for the field of study. The principal supervisor must be qualified as a docent, and must have taken education in the supervision of research students. Associate supervisors must have been awarded a doctoral degree or have corresponding academic expertise. Associate supervisors may be selected from the Department of Management and Engineering or may come from outside the department. The associate supervisor may come from within the relevant field of study or may possess expertise that is of value to the thesis from a neighbouring field of study. A doctoral student who so requests may change supervisor.

The Faculty Board has laid down guidelines for examining the right to supervision and other resources for doctoral students.

The principal supervisor shall advise the doctoral student about possible careers after the conclusion of the doctoral studies. Such advice shall be given in particular in the final stages of the studies. Such career pathway advice is to be given also during with employee review dialogues and career guidance.

6 Forms of examination

Student performance shall be monitored through written or oral exams.

Examinations and tests are to be awarded a pass or fail grade. The principal supervisor is examiner for any courses for which an examiner has not been designated.

The doctoral thesis is to be assessed by an examining committee as specified in regulations laid down by the Higher Education Ordinance, to which have been added local regulations laid down by the University Board and the board of the Faculty of Arts and Sciences. When determining the grade, consideration shall be taken of the contents of the thesis and to its defence. The doctoral thesis shall be given a pass or fail grade.

The board of the Faculty of Arts and Sciences will decide the details of how a licentiate thesis is to be presented. The grading of a licentiate thesis will be given by an examining committee appointed by the department whose members are at least three teachers with doctorate degrees. The thesis will be awarded either a pass or fail grade.

Decision in this matter has been taken by the Faculty Board of the Faculty of Arts and Sciences at its meeting today. The following have participated in the decision: dean and chair Karin Axelsson; members Mattias Arvola, Mathias Broth (who presented the material to the board), Karin Osvaldsson Cromdal, Henrik Danielsson, Åsa Danielsson, Mark Granberg, Stefan Jonsson, Emma Linder and Sofia Ritenius. Others present were: head of faculty office and secretary Helena Klöfver, faculty programme director and associate head of faculty office Charlotta Einarsson (who presented the material to the board), and representative from the employee association Rowena Sarinas Bladh, from OFR/S.

Karin Axelsson, Dean

Mathias Broth, Pro-dean