LUND UNIVERSITY

LTH
FACULTY OF ENGINEERING

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International Office

General syllabus for third-cycle studies in Transformative Innovation, TEIDEF10

The syllabus was approved by the Board of the Faculty of Engineering/LTH, on 14th of December 2021 (Reg. no U 2020/881).

1 Subject description

Transformative Innovation is a subject that aims to understand, explain and improve activities that focus on the development and adaptation of new and existing solutions (e.g. systems, goods and/or services) as well as new or changed processes (e.g. technical, organisational and business-related) in order to create value for individuals, groups, companies and other organisations, as well as society as a whole.

The research includes how the subject contributes to strengthening the ability of individuals, groups, companies and other organisations to develop and/or adapt solutions and processes based on identified or assumed needs. This includes research on ways of working, behaviour, usage and perceptions, as well as the development and application of strategies, methods, techniques and tools. The research addresses human, organisational, process-related and technical aspects such as user-centred design, technology and business development, development methodology, integration and collaboration, industrialisation and sustainable development.

The research also covers how the subject contributes to societal development and transformation, and how challenges such as societal crises, climate change and globalisation of economic activities interact

and are managed. This requires deep insights into how knowledge is created and spread within and between regions and countries, and globally, into how knowledge is converted into solutions, and about societal conditions that promote the generation and diffusion of solutions.

2 Objective of third-cycle studies at LTH

The Board of LTH established the following objective for third-cycle studies on 15 February 2007.

The overall objective of third-cycle studies at LTH is to contribute to social development and prosperity by meeting the needs of business and industry, academia and wider society for staff with third-cycle qualifications. LTH shall primarily provide education leading to a Degree of Doctor or Degree of Licentiate in the fields of LTH's professional degrees. The programmes are first and foremost intended for the further training of engineers and architects. The programmes are designed to encourage personal development and the individual's unique qualities.

Third-cycle graduates from LTH shall demonstrate:

- proficiency in research theories and methods and in a critical, scientific approach
- both breadth and depth of knowledge within the subject of their third-cycle studies.

The programmes aim to develop:

- creativity and independence with the ability to formulate advanced research issues, solve problems and plan, carry out and evaluate projects within a set time frame
- openness to change
- personal networks, both national and international
- social skills and communication skills
- teaching ability
- innovation skills, leadership and entrepreneurship.

In order to enable students to achieve these skills and abilities, LTH provides:

- high-quality supervision and good conditions for study in a creative environment
- a good balance between basic and applied research, with openness to wider society
- a range of advanced third-cycle courses at both departmental and faculty level
- a good balance between courses and thesis work
- opportunities to present research findings at national and international conferences and in internationally recognised journals, or by another equivalent method which leads to wide exposure and circulation
- opportunities to spend time in international research environments for short or extended periods.

3 Learning outcomes for third-cycle studies

The learning outcomes for third-cycle studies are given in the Higher Education Ordinance.

1.1 Degree of Licentiate

Knowledge and understanding

For the 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 the 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 advanced 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
- demonstrate the skills required to participate autonomously in research and development work and to work autonomously in some other advanced capacity.

Judgement and approach

For the Degree of Licentiate third-cycle student shall:

- demonstrate the ability to make assessments of ethical aspects of their 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
- demonstrate the ability to identify the personal need for further knowledge and to take responsibility for their ongoing learning.

1.2 Degree of Doctor

Knowledge and understanding

For the Degree of Doctor the doctoral 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
- 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 doctoral student shall:

- demonstrate the capacity for scholarly analysis and synthesis as well 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 advanced tasks within predetermined time frames and to review and evaluate such work
- demonstrate through a thesis the ability to make a significant contribution to the formation of knowledge through their 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
- demonstrate the capacity to contribute to social development and support the learning of others both through research and education and in some other advanced professional capacity.

Judgement and approach

For the degree of Doctor the doctoral student shall:

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

Midway review

A midway review, with the aim of reviewing the doctoral student's education in relation to the learning outcomes for the degree in the Higher Education Ordinance, is to be implemented at least once during the doctoral student's programme for all doctoral students whose education is to conclude with a doctoral degree.

4 General and specific admission requirements

General admission requirements

A person meets the general admission requirements for third-cycle courses and study programmes if they have:

1. been awarded a second-cycle qualification, or
2. satisfied the requirements for courses comprising at least 240 credits, of which at least 60 credits were awarded in the second cycle, or
3. 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.

Specific admission requirements

The specific admission requirements may also contain a specification of the 240 credits within the scope of the general admission requirements.

A person meets the specific admission requirements if they have

- at least 50 credits within the subject areas for the third-cycle programme including at least 25 second-cycle credits of relevance to the subject areas, or
- an artistic higher education diploma, Degree of Master of Science in Engineering, Degree of Master of Science in Business and Economics, Masters' degree (120 credits) or Master's degree (60 credits) of relevance to the subject areas.

Finally, the student must be judged to have the potential to complete the programme.

Exemptions from the admission requirements may be granted by the dean of LTH.

5 Selection

Selection for third-cycle studies is based on the student's potential to profit from such studies.

The assessment of potential in accordance with the first paragraph is made primarily on the basis of academic results from the first and second cycle. Special attention is paid to the following:

1. Knowledge and skills relevant to the thesis project and the subject of study. These may be demonstrated through documents appended to the application and at a possible interview.
2. An assessment of ability to work independently and to formulate and tackle research problems. The assessment could be made on the basis of the student's degree project and a discussion of the degree project at a possible interview.
3. Written and oral communication skills
4. Other experience relevant to the third-cycle studies, e.g. professional experience

6 Degree requirements and degrees awarded

Third-cycle studies lead to a Degree of Doctor or, if the student wishes or if it has been specified in the decision on admission, to a Degree of Licentiate. The student also has the right to complete a Degree of Licentiate as a stage in their third-cycle studies, but is not obliged to do so.

The requirements for a Degree of Licentiate are:

- passed courses of at least 30 credits, and
- a passed thesis of a scope corresponding to studies of at least 60 credits.

The thesis and courses shall comprise at least 120 credits in total.

The requirements for a Degree of Doctor are:

- passed courses of at least 60 credits, and
- a passed thesis of a scope corresponding to studies of at least 150 credits.

The thesis and courses shall comprise at least 240 credits in total.

1.3 Degrees awarded

The programme can lead to the following degrees:

- Licentiate in Engineering/Teknologie licentiatexamen
- Doctor of Philosophy in Engineering/Teknologie doktorsexamen/

or

- Licentiate of Philosophy/Filosofie licentiatexamen
- Doctor of Philosophy/Filosofie doktorsexamen

7 Course component

The programme is to include courses. For each course, an examiner shall be appointed at the department that delivers the course. The examiner shall draw up a written syllabus which states the course title in Swedish and English, the learning outcomes of the course, the course content and the number of credits.

The individual study plan is to include details of which courses the individual student shall or may include in their studies and how many credits for each course may be included in the degree. Courses taken at other faculties or higher education institutions may also be included in the study plan.

It is compulsory to participate in and pass the course Introductory Workshop for Newly Admitted PhD Students at LTH GEM056F or equivalent.

It is compulsory to participate in and pass the course Research Ethics, GEM090F.

7.1 Licentiate thesis

For a licentiate degree it is compulsory to pass the following courses or equivalent:

- Introduction to Doctoral Studies at the Department of Design Sciences IDE020F (4 credits)

- Advanced Seminars in Innovation and Design, Part 1 MMK010F (2.5 credits)

7.2 PhD thesis

For a doctoral degree it is compulsory to pass the following courses or equivalent:

- Introduction to Doctoral Studies at the Department of Design Sciences IDE020F (4 credits)
- Advanced Seminars in Innovation and Design, Part 1 MMK010F (2.5 credits) and Part 2 MMK015F (2.5 credits)
- Innovation and Value Creation in Research INT001F (4 credits)

For a doctoral degree it is compulsory to have:

- at least 4.5 credits in theory of science or philosophy of science
- at least 5 credits in sustainable development

8 Thesis

The programme shall include a research project documented in a licentiate or PhD thesis.

8.1 Licentiate thesis

The licentiate thesis is normally presented as a compilation thesis containing international publications, but can also be presented as a monograph thesis.

A licentiate thesis structured as a compilation thesis consists of at least two (normally two to three) publications, of which at least one is to be a journal publication. At least one of the submitted publications is to be accepted for publication at the time of the registration of the licentiate seminar.

A licentiate thesis structured as a monograph thesis is to be characterised by being an integrated, cohesive work of scholarship.

8.2 PhD thesis

The PhD thesis is normally presented as a compilation thesis containing international publications, but can also be presented as a monograph thesis.

A PhD thesis structured as a compilation thesis consists of at least three (normally three to six) submitted publications, of which at least two are to be journal publications accepted for publication at the time of the registration of the public defence.

A PhD thesis structured as a monograph thesis is to be characterised by being an integrated cohesive work of scholarship.

9 Transitional provisions

For doctoral students with an admission date of 1 January 2019 or later, it is compulsory to participate in and pass the course Introductory Workshop for Newly Admitted PhD Students at LTH GEM056F or equivalent in order to fulfil the requirements for the degree.

For doctoral students admitted on or after 1 January 2021, it is compulsory to attend and earn a Pass grade on the course Research Ethics, GEM090F.

The midway review is compulsory for doctoral students admitted on or after 1 January 2019.

Amendments to a general syllabus normally enter into force immediately and also apply to those who have already started the programme. If the conditions or terms for already admitted doctoral students change substantially or it is otherwise onerous for those already admitted, they should be given the right to complete their studies according to the previous syllabus. This is to be documented in the individual study plan.