



General syllabus for third-cycle studies in Transport and Road Technology TEVTTF02

The syllabus was approved by the Board of the Faculty of Engineering/LTH 21 May 2008 and most recently amended 12 March 2019 (reg. no U 2019/104).

1. Subject description

The subject covers the planning, design, construction and maintenance of roads, streets and other transport systems. The point of departure of the research in the subject is the needs of the road user, taking into account demands of society such as safety and the environment.

The subject includes studies of how planning, design, construction and maintenance are carried out, as well as the generation of knowledge that could improve the execution and efficiency of these processes and the development of methods that may be required for the generation of such knowledge.

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 PhD or 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 his or her 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.

3.1 Licentiate

Knowledge and understanding

For a 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 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
- 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 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
- demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning

3.2 Doctor of Philosophy*Knowledge and understanding*

For the degree of Doctor of Philosophy 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 of Philosophy the third-cycle 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 qualified 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 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
- 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 of Philosophy the third-cycle 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

4. General and specific admission requirements

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

1. has been awarded a second-cycle qualification, or

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).

A person meets the specific admission requirements if he or she has:

- a specialised project of at least 30 second-cycle credits in the field

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

Exemptions from the admission requirements may be granted by the Board 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 this 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

Third-cycle studies lead to a PhD or, if the student wishes or if it has been specified in the decision on admission, to a licentiate. The student also has the right to complete a licentiate as a stage in his or her third-cycle studies, but is not obliged to do so.

The requirements for a licentiate are

- passed courses of at least 30 credits, and
- a passed thesis of a scope corresponding to studies of at least 75 credits

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

The requirements for a PhD 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.

6.1 Degrees awarded

The programme can lead to the following degrees:

Teknologie licentiatexamen/Licentiate in Engineering

Teknologie doktorsexamen/Doctor of Philosophy in Engineering

or:

Filosofie licentiatexamen/Licentiate of Philosophy

Filosofie doktorsexamen/Doctor of Philosophy

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 his or her 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 Doctoral Students at LTH (*Introduktionskurs för nyantagna doktorander vid LTH*) GEM056F or the equivalent.

A significant proportion of the courses (at least 37.5 credits) should be courses that give broad knowledge of research methodology and an initial broad overview of the entire field. These courses are to be taken at the start of third-cycle studies as far as possible. Neither should the other courses have a narrow focus on the specific subject of the thesis.

The courses can, and should, also include some given by other departments at Lund University or other higher education institutions. First- and second-cycle courses may be included to a limited extent.

The courses included in third-cycle studies in Transport and Roads should normally feature:

- multiple sessions with participation by a course leader and students
- interaction between students as part of the learning process
- encouragement to actively process the material

However, other types of course can be used to a certain extent, for example independent knowledge acquisition in addition to what can be considered to form part of the preparatory work for the thesis (individual text study course), or oral and written presentations in the form of conference papers and research articles (that do not form part of the thesis) or research posters. However, this type of individual course shall not comprise more than 15 credits in total.

8. Thesis

The programme shall include a research project documented in a licentiate or doctoral thesis. The thesis is to comprise either a number of research articles with a single summary (compilation thesis), or a continuous academic work (monograph).

8.1 Licentiate thesis

The thesis written for a licentiate in Transport and Roads shall comprise at least 75 credits. The thesis is to be defended orally at a public seminar. An external informal reviewer is invited to the seminar specifically to review and discuss the thesis.

The examiner for the licentiate thesis is appointed by the head of department.

8.2 PhD thesis

A PhD thesis in Transport and Roads shall comprise at least 150 credits. If a licentiate has been taken, the licentiate thesis can form part of the PhD thesis. It is then defended again at the defence of the PhD thesis.

9. Other rules and regulations

Supervisors

There is a desire within the subject to concentrate the role of principal supervisor to a small number of individuals. The aim of this concentration is to guarantee equal treatment and to simplify policymaking, but leads to a relatively high number of doctoral students per principal supervisor. The doctoral students will therefore often have closest contact with someone who is formally their assistant supervisor. A decision is taken in conjunction with the student's admission on who is to form the ongoing and closest point of contact. The doctoral student will regularly discuss both the work on the thesis and general issues relating to his or her studies with this supervisor.

The department shall take into account that every doctoral student must receive sufficient supervision time, not only when a decision is taken on how many doctoral students to admit, but also when supervisors are allocated to newly admitted doctoral students and when supervisors are assigned other duties.

The individual study plan shall contain details of the division of responsibilities and powers between the principal supervisor and the assistant supervisors. In addition to this, all supervisors in the subject have a responsibility for all the doctoral students in the subject.

10. Transitional provision

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 Doctoral Students at LTH (*Introduktionskurs för nyantagna doktorander vid LTH*) GEM056F or the equivalent in order to fulfil the requirements for the degree.