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## **Translation of Subject Curriculum (Study Plan) for Third-cycle (PhD) Education**

### **Engineering Science with specialization in Civil Engineering and Built Environment**

**Swedish title: Teknisk fysik med inriktning mot byggt teknik och byggd miljö**

TNTEKF20

Swedish curriculum adopted by the Board of the Faculty of Science and Technology (Third-cycle Educational Board) on 2019-08-21.  
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Translated version approved on 2019-08-21 and 2020-01-15.

The Study Plan for third-cycle studies consists of three parts: a general part, this subject specific study plan, and each doctoral student's individual study plan.

### **Objective**

Building upon the undergraduate education within the subject, the third-cycle studies should provide additional insights within the subject's core areas, as well as in-depth knowledge within at least one sub-area. Through supervision and thesis work, the doctoral student is to be well prepared for critical and independent research activities or for other professional activities for which high demands are placed on in-depth knowledge and research practice within the subject area. The doctoral student will, after completing the studies, be well acquainted with research questions and methods regarding the built environment and have acquired in-depth knowledge within the specific area of the thesis. The doctoral student should be able to critically examine her/his own scientific work and the work of others.

The doctoral student should also be able to present her/his goals and results in oral and written form for different target groups in English and, in the case of Swedish-speaking doctoral students, in Swedish.

### **Subject description**

The subject of Engineering Science is a broad area of research, based on the need for engineering solutions in different societal areas. The



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specialization in Civil Engineering and Built Environment aims at designing, constructing and managing the built environment as well as at increased knowledge and development of sustainable technological systems for the built environment, in a broad sense. The focus is on design, construction and production of buildings and infrastructure, installation technology, technological systems in the built environment, their energy and resource requirements, as well as coordination between the built environment's engineering systems and other societal systems. The topic includes everything from individual buildings and building components to entire cities and communities. Methodologically, the research includes mathematical modeling, computer simulation, laboratory experiments, as well as experiments and evaluation of full-scale systems. Interdisciplinary studies aimed at relevant areas can be included as part of the doctoral education.

## Eligibility

### Basic Eligibility

The basic eligibility for third-cycle studies is described in the general part of the study plan.

### Special Eligibility

Special eligibility is assigned to a candidate who has successfully completed courses in areas relevant to the subject in a satisfactory manner and to a sufficient extent. Special eligibility is considered for a candidate that has either:

- a) received a degree of Master of Science in Engineering (sv. *civilingenjörsexamen*) from a Swedish University of Technology and thereby studied courses in areas of relevance to the subject.
- b) by other means, within or outside the country, acquired knowledge of mainly the same extent.

## Admission

Applicants for third-cycle studies in Engineering Science with specialization in Civil Engineering and Built Environment must submit an application to the Head of the Department of the Department of Civil and Industrial Engineering. Admission to doctoral studies takes place continuously during the year after decision by the Board of the Department.

Upon admission to postgraduate education, the Swedish title of the degree is to be specified in the application. According to decision (TEKNAT 2012/215), postgraduate education in Engineering Science



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with specialisation in Civil Engineering and Built Environment shall lead to a *filosofie doktorsexamen* or *teknologie doktorsexamen*. The English rendering will in either case be a licentiate/doctorate degree of philosophy.

At the time of admission, the department must provide a financial assistance plan demonstrating sufficient support to cover the maintenance of the applicant as well as her/his research.

### Program structure

At the time of admission, each doctoral student and her/his supervisor shall draw up an individual study plan after consultation with the professor in charge of third-cycle studies. The plan is to be approved by the Head of the Department (by delegation of the Faculty Board) at the time of admission.

The individual study plan shall be annually reviewed by the doctoral student and her/his supervisor jointly, and supplemented with a summary of the achieved results and the plans for the coming year. Significant changes as well as any disagreement on the individual study plan shall be reported to the Head of the Department or, if deemed necessary, to the Third-cycle Educational Board.

### Courses

The third-cycle studies may include different kinds of courses, such as lectures, literature studies, practical training, field studies, etc. The courses are intended to provide a wider insight into the subject as a complement to the competence acquired during research. The courses included in the individual study plan may be selected among advanced level courses given at Uppsala University as well as from courses offered at other universities.

A course in research ethics (of at least 2 higher education credits) is mandatory for licentiate and doctoral degree. A course in university educational theory is mandatory for doctoral students who teach at basic or advanced level.

Doctoral students within the subject are recommended to study courses in scientific writing as well as introduction courses for postgraduate studies.



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## Requirements for doctoral degree

The requirements for the doctoral degree consist of passed examinations in the courses included in the approved individual study plan of each doctoral student, as well as a passed public defense of the degree project. The studies awarded a doctoral degree comprise 240 higher education credits (four years of full-time studies), of which the doctoral thesis comprises a minimum of 120 higher education credits and the course part a minimum of 60 higher education credits.

## Requirements for licentiate degree

A doctoral student who has acquired at least 120 higher education credits (two years of full-time studies) is eligible for a licentiate degree. The requirements consist of passing the examinations included in the program stage and receiving a passing grade on an academic paper of at least 60 higher education credits. The part of the course amounts to a minimum of 30 higher education credits.

## Other

Research into Engineering Science with specialization in Civil Engineering and Built Environment takes place within the context of extensive international collaboration and requires a comprehensive global information flow. It is essential that the student apprehend scientific texts in English.