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

Engineering Sciences with specialization in Solid State Physics

Swedish title: Teknisk fysik med inriktning mot fasta tillståndets fysik

TNTEKF04

Swedish curriculum adopted by the Board of the Faculty of Science and Technology (Third-cycle Educational Board) on 2014-11-19.

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 on basic research, the third-cycle studies are expected to provide further insight into the most important areas of the subject as well as in-depth knowledge within at least one subdivision. Supervision and thesis work will make the student well prepared to carry out independent scientific research. After the education, the student will be familiar with scientific questions and methods in Solid State Physics and will have reached thorough knowledge within the specific area of the thesis. The student will be able to critically assess his/her own scientific work and that of others.

The doctoral student shall also be able to present her/his goals and results orally and in writing to different target groups in English and, in the case of Swedish-speaking doctoral students, in Swedish.

Subject description
Solid state physics embraces a broad area of research with contents founded on different technical solutions to societal needs. The specialization towards solid state physics is focused on basic properties of solid materials and on applications based on these, taken in a wide sense.

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Interdisciplinary research—oriented towards chemistry, energy and the environment, biology, medicine and other life sciences—can be pursued.

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 taken courses within all relevant areas of the subject, with sufficient width and depth. Thus, special eligibility is considered for a candidate with one of the following:
(a) a master degree in engineering (Swedish “Civilingenjör”) from a Swedish Technical University/College and hence has taken courses within the relevant areas of the subject, or
(b) in a different way has gained knowledge of principally the same extent as in a), irrespectively of the country of study.

Admission
Applicants for third level program in Engineering Sciences with specialization in solid state physics must submit an application to the head of the Department of Engineering Sciences. Admissions to places in third level programs take place normally six times per year.

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, as well as university educational theory for doctoral students who teach at basic or advanced level.

The main supervisor acts as examiner when crediting courses within the third-cycle studies. Decisions on crediting of courses given at Master level at Uppsala University as well as crediting of courses given at other universities are taken by the main supervisor after consultation with the responsible teacher of the respective course.

The range of courses offered is revised continuously. (A selection of) the following courses shall be included in the studies:
For the widening of knowledge within the specialization Solid State Physics, it is required that a minimum of 10 higher education credits shall be advanced courses in the field, in particular Solid State Theory.

Students in solid state physics are recommended to take a course in scientific publication and an introductory course to education on the research level.

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 in engineering science with specialization in solid state physics is pursued through international collaboration and presumes information from international sources. Hence it is necessary that the student can read and understand scientific texts in English.