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

Chemistry

Swedish title: Kemi

TNKEMI00 (Department of Chemistry-BMC)
TNKEMI14 (Department of Chemistry-Ångström)

Swedish curriculum adopted by the Board of the Faculty of Science and Technology (Third-cycle Educational Board) on 2008-07-02, revised 2019-06-11. Translated revised version approved on 2019-08-21.

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
Based on first- and second cycle education, the third cycle education in chemistry will give additional competences in the area as well as increased knowledge and skills within the specialization.

During the education, the student will, by active participation in courses and research work under supervision, reach a high level of theoretical competence in chemistry and extensive practical competence in the methodology relevant for the subject area and the research specialization.

A person holding a PhD in chemistry should be able to independently plan and execute research projects in chemistry. This competence should be applicable not only in an academic environment but also for research and development in corporate as well as manufacturing and organisations. Besides, the student should become actively involved in the scientific discussion of the area.

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.

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A person holding a licentiate degree in chemistry should have accumulated enough experience in independent research and have reached a level of theoretical as well as methodological competence within the area enough for active participation in research projects within the specialization, and being able to critically discuss the scientific development in the area.

Subject description
Chemistry concerns aspects of elements and chemical compounds. In Uppsala, the subject is dynamic and wide in scope, with possible interdisciplinary connections and research collaborations with (for example) biosciences, physics, materials science, medicine, pharmacy and education development. Research and third-level education at the faculty of science and engineering are carried out at the departments within the division of chemistry, located at the BMC and the Ångström laboratory.

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

Special Eligibility
A person has special eligibility for third-cycle studies in chemistry if s/he has passed courses of at least 90 higher education credits (or equivalent), of which at least 40 higher education credits are from courses at advanced level (second cycle).

Since research in chemistry is carried out in an international context with English as a major working language, a high level of active knowledge, orally as well as in reading and writing, in this language is a necessity for successful third-level education.

Second cycle study programs that may provide special eligibility include chemistry specializations within 1 or 2 year master programmes, 4 or 5 year pharmacy programmes and engineering programmes such as those specializing towards chemistry, molecular biotechnology or materials. Equivalent skills and knowledge may also have been achieved from other study programs, in Sweden or abroad.
If specific courses or specific second cycle education background is recommended for the research training of the study position, this is specified in the announcement of the study position.

**Admission**

Admission to third-cycle studies in chemistry are to announced study positions only. Applicants should submit an application to the Head of the Department at which the study position is placed. Admission to doctoral studies is normally several times per year.

Upon admission to third-cycle education, the Swedish title of the degree is to be specified in the application. According to decision (TEKNAT 2012/215), postgraduate education in chemistry shall lead to a *filosofie doktorsexamen*. The English rendering will 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 those given at the chemistry departments, at other units at Uppsala university or other universities, in Sweden or abroad. In some cases, courses given
at advanced level can be included, provided these are not among those that provide the special eligibility.

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.

For the Ph.D. degree: at least 30 higher education credits need to be courses in chemistry.
For the Ph.Lic. degree: at least 15 higher education credits need to be in chemistry

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 40 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 20 higher education credits.

Other
Research in chemistry is carried out in an international context within and between the established specializations as well as in cross- and multidisciplinary projects. It is essential that the doctoral students in chemistry receive training to apprehend chemistry research texts in English and to communicate constructively both within and outside the area of their research project.
For more information, see www.kemi.uu.se.