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Translation of Curriculum Statement for Graduate Level (Third-level) Education

Chemistry with specialization in Materials Chemistry

Swedish title: Kemi med inriktning mot Materialkemi

TNKEMI13

Swedish Curriculum adopted by the Board of the Faculty of Science and Technology (Board for Third-level Education) on 2012-01-23. Translation approved 2012-01-23.

The Curriculum Statement for Third-level Education consists of three parts: a general part, this subject specialized curriculum statement, and each doctoral student's individual study plan.

Objective

Based on the basic training within the scientific discipline, the education on the graduate level shall result in a high level of knowledge within at least one sub-area of the discipline. Through supervision and writing of the thesis the doctoral student shall be prepared for a scientifically independent and critical professional role within areas in which a high level of scientific knowledge and research abilities are essential.

The doctoral student shall also be able to present her/his own 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

Materials chemistry, with applications within Swedish industry as well as the healthcare and environmental sectors, is a vast scientific research area devoted to interdisciplinary chemical studies of the composition, structure, reactivity and properties of materials.



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Eligibility

Basic Eligibility

The basic eligibility for third level education is described in the general part of the curriculum statement.

Special Eligibility

A person has special eligibility for third-level education in materials chemistry if she/he has passed examinations in courses of chemistry or in courses of areas of relevance for the discipline, ranging a minimum of 90 higher education credits (of which at least 60 higher education credits should be on the advanced level and at least 30 higher education credits within chemistry), or if she/he has acquired the equivalent knowledge abroad. More information regarding the special eligibility can be provided by the professor responsible for the third-level education.

Examples of educations providing special eligibility include the one and two year master programmes in chemistry, the chemical civil engineering programme as well as the civil engineering programmes within the fields of materials engineering, molecular biotechnology, energy systems and engineering physics.

To be accepted as a graduate student in materials chemistry it is required that the candidate is judged to have the ability required to conclude the graduate level education. The decision based on this evaluation of the ability is made by the head of the department in collaboration with the professor in charge of the third-level education, the professors responsible for the research programmes and the supervisors within the discipline.

Admission

Applicants for third-level education in Materials chemistry must submit an application to the head of the Department of Chemistry, The Ångström Laboratory. Admissions to the third-level education are normally provided several times per year.

In connection with the admission it must be stated how it is planned to finance both the personal maintenance of the doctoral student, and her/his research.



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Program structure

In connection with the admission, each doctoral student and her/his supervisor shall draw up an individual study plan after consultation with the professor in charge of the third-level education. The plan is to be approved by the head of the department (by delegation of the Faculty Board), in connection with the admission.

The individual study plan shall be reviewed jointly by the doctoral student and her/his supervisor, annually, and be provided with a summary of the achieved results and the plans for the coming year. Significant changes and any disagreement on the individual study plan shall be reported to the head of the department or, if deemed necessary, to the Board for Third-level Education.

Courses

The graduate courses can be given in the form of lectures, literature projects, practical exercises etc. The courses are intended to provide wider insights into the subject as a complement to the specialist competence acquired in the research work.

For both the doctoral and licentiate degree, the following course is compulsory: Materials chemistry (10 HE credits). A course in research ethics is likewise compulsory. Pedagogical training is compulsory for doctoral students who teach fundamental or advanced level courses.

An introduction course to third-level education is also recommended as well as a course in scientific writing.

The choice of the other courses depends on the focus of the research project and if the doctoral student is participating in a compulsory graduate school or not. These courses are therefore selected in connection with the establishment of the individual study plan. Examples of suitable courses include: chemical bonds, molecular spectroscopy, electrochemical methods, energy relevant materials, theoretical materials modeling, surface chemistry and polymer chemistry. Other courses given at other universities may also be included.

For the doctoral degree, a minimum of 25 higher education credits is required within the field of chemistry.



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The course assortment and the contents of the literature courses are continuously revised. The graduate student may also be registered within a research school, with compulsory as well as elective courses given in Sweden or abroad.

The graduate courses are normally taken in the first part of the third-level education.

The course frequency depends on the availability of the required resources. The graduate student is expected to study parts of the course literature by himself. Such independent study activities are important elements within the third-level education.

Exams for the third-level education courses may be given as written or oral exams and are arranged according to agreements between the graduate student and the main supervisor or the course responsible individual. The exams are marked using one of the grades: passed or failed.

The graduate student is expected to participate in the scientific activities at the department by e.g. taking active part in seminars and by attending invited lectures.

Requirements for doctoral degree

The requirements for doctoral degree consist of on one hand passed examinations in the courses included in the approved individual study plan of each doctoral student, and on other hand passed public defense of the doctoral thesis. The program leading to the doctoral degree amounts to 240 higher education credits (four years of full-time studies), of which the thesis part amounts to a minimum of 120 higher education credits and the course part to a minimum of 40 higher education credits (including Materials chemistry 10 higher education credits).

Requirements for licentiate degree

A stage of at least 120 higher education credits (two years of full-time studies) in the third-level education may be completed with a licentiate degree. The requirements for this are that the doctoral student both has passed the examinations included in the program stage and has got an academic paper amounting to a minimum of 60 higher education credits passed. The course part amounts to a minimum of 20 higher education credits (including Materials chemistry 10 higher education credits).



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Other

The research within materials chemistry is conducted based on international collaborations and requires a significant global flow of information. It is therefore essential that the doctoral student is able to read and write scientific texts in English.