

General syllabus for third-cycle studies in chemistry

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Scope: 240 higher education credits

The Degree: Degree of Doctor

Study level: Third-cycle

Established by: General syllabus established by the Faculty of Science and Technology Board on 09/06/2010; revised on 24/04/2014

Enters into force: 09/06/2010

Responsible body: Faculty of Science and Technology

Specialisations: Analytical chemistry, biophysical chemistry, biogeochemistry, biochemistry, chemometrics, environmental chemistry, inorganic chemistry, organic chemistry, engineering chemistry and medicinal chemistry

1. Learning outcomes

Learning outcomes for the degree in question

(Higher Education Ordinance, Chapter 6, Sections 4 and 5)

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 dissertation the ability to make 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 in society in general
- demonstrate the ability to identify the need for further knowledge and
- 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, and
- demonstrate specialised insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how this is used.

Local learning outcomes for the degree in question

Knowledge and understanding

For the degree of Doctor of Philosophy the third-cycle student shall

- demonstrate in-depth and current specialist knowledge within the chosen specialisation and broad knowledge within other specialisations.

Competence and skills

For the degree of Doctor of Philosophy the third-cycle student shall

- demonstrate a very good ability to present research and research results within the field of chemistry, both verbally and in writing, in English.
- demonstrate a good ability to independently initiate and conduct research projects within the field of chemistry.
- demonstrate the ability, based on their own research, to discuss possible applications that meet social needs.

Judgement and approach

For the degree of Doctor of Philosophy the third-cycle student shall

- demonstrate the ability, both verbally and in writing, to participate in discussions concerning ethical questions within the field of chemistry.
- demonstrate in-depth insight regarding the possibilities presented by the field of chemistry and the limitations, and an understanding of its role within society, industry and academia.

2. Entry requirements and prior knowledge required

General entry requirements

To be admitted for studies at third-cycle level the applicant is required to have completed a second-cycle level degree, or completed course requirements of at least 240 credits, of which at least 60 credits are at second-cycle level, or have an equivalent education from overseas, or equivalent qualifications.

Applicants who meet the general entry requirements that applied prior to 1 July 2007, i.e. at least 120 credits or the equivalent, meet the current general entry requirements up to and including 30 July 2015.

Specific entry requirements

To fulfil the specific entry requirements to be admitted for studies at third-cycle level in chemistry, the applicant is required to have completed first-cycle courses of at least 90 credits within the field of chemistry or another subject considered to be directly relevant to the specialisation in question. Of those 90 credits, at least 15 credits shall have been acquired at second-cycle level within the specialisation or an equivalent subject.

3. Selection process

Selection process

The selection among those applicants who meet the entry requirements will be conducted with reference to their ability to successfully perform third-cycle studies, and is based on the following assessment grounds:

- personal suitability
- previous study results and
- other merits

However, applicants must not be given preference over other applicants in the selection process solely based on the assessment that the applicant can receive accreditation for previous education or professional activities. (Higher Education Ordinance, Chapter 7, Section 41)

Decisions regarding admissions to studies at third-cycle level concluding in a doctoral degree are made in accordance with Umeå University's delegation of authority.

4. Contents and scheduling

4.1 General

An individual study plan is to be established for each doctoral student which shall give details of financing, supervision, courses, thesis-related work, etc. For a degree of doctor to be awarded, the studies shall entail 240 credits. A doctoral student who is admitted for third-cycle studies that are to conclude with a doctoral degree can, if he/she so wishes, study for a licentiate degree as an intermediate goal.

Studies at third-cycle level that are to be concluded with a doctoral degree shall comprise a net study period of four years and consist of a course component of 40-90 credits and a doctoral thesis of 150-200 credits.

4.2 Contents

4.2.1 Courses

Third-cycle studies in chemistry consist of a course component of 40-90 credits, of which at least 15 credits shall have been acquired at second-cycle level within the field of chemistry. Courses are chosen by the student in consultation with their supervisor and the examiner. These courses can be largely adapted to the student's interests and area of specialisation.

Mandatory courses for the doctoral degree:

Courses that develop generic skills amounting to 10 credits. 8 of these credits are to consist of courses within philosophy of science, ethics and conduct, oral presentation and a written presentation.

The Department of Chemistry's seminar series for doctoral students comprising 2 credits per year (6-8 credits in total).

4.2.2 Doctoral thesis

The doctoral thesis, which is to be written in English, may either take the form of a single coherent work (a monograph) or a compilation of a number of academic essays incorporating an introduction, a summary and discussion of the essays (compilation thesis) and is to comprise 150-200 credits.

The doctoral thesis shall be defended verbally in public. The thesis is assessed with the following grades: G (Pass) or U (Fail). When setting the grade, attention will be paid to both the content of the thesis and its defence.

5. Examination

The degree of doctor can be awarded following the student's completion of third-cycle studies equivalent to 240 credits within chemistry, and where the applicant has received the grade of pass for the tests included in the studies in addition to writing and publicly defending a doctoral thesis approved by the Examining Committee. Degree certificates are issued following application to Student Services/Examina.

6. Other instructions

The provisions that apply in respect of third-cycle studies can be found in:

- The Higher Education Ordinance: Chapter 5 Employment of doctoral students, Chapter 6 Courses and study programmes, and Chapter 7 Admission to courses and study programmes, Annex 2 Qualifications ordinance.
- Admission regulations for doctoral studies at Umeå University (Ref. no. FS 1.1.2-25-14).
- Local system of qualifications at Umeå University (Ref. no. 500-2958-11).
- Regulations for doctoral studies at Umeå University (Ref. no. 500-953-13).
- Handbook for postgraduate students at the Faculty of Science and Technology at Umeå University.