

General syllabus for third-cycle studies in environmental science

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Scope: 240 higher education credits

The Degree: Degree of Doctor

Study level: Third-cycle

Established by: Programme syllabus established by the Faculty of Science and Technology Board on 11/08/2009, revised on 20/03/2014

Enters into force: 11/08/2009

Responsible body: Faculty of Science and Technology

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 knowledge and understanding within environmental science acquired through literature studies and his/her own research.
- demonstrate knowledge in matters relating to the philosophy of science.
- demonstrate knowledge of scientific methods, and especially of methods within environmental science.

Competence and skills

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

- demonstrate critical thinking and analytical ability within environmental science.
- formulate environmental scientific questions and conduct empirical or theoretical studies that essentially contribute knowledge to these questions.
- select, correctly conduct and analyse appropriate methods within environmental science.
- be able to present his/her own research and that of others in English, both verbally and in writing.

Judgement and approach

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

- demonstrate the ability to critically appraise research and to evaluate the reliability, validity and relevance of published studies.

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 abroad, 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 within the subject of environmental science, the applicant is required to have completed courses within a first-cycle subject relevant to environmental science comprising at least 120 credits. At least one course at second-cycle level in a subject that is central to the doctoral student's planned specialisation shall have been completed, as well an independent piece of work (degree project) with relevant specialisation of at least 15 credits.

If special reasons exist, for example, if the planned research work has a strong interdisciplinary leaning, then consent may be given for 30 of these 120 credits to be replaced by courses within another relevant subject area.

The prior knowledge requirements in respect of the above are also deemed to be fulfilled by applicants who have in some other manner acquired largely equivalent skills.

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 45-60 credits and a doctoral thesis of 180-195 credits.

4.2 Contents

The studies comprise four years of full-time study and consist of a number of courses and a doctoral thesis. In addition to in-depth knowledge within environmental science, exercises are also conducted in critical and analytical thinking. During the studies, problems are solved independently and preparations are made for a professional career within academia, industry or the public sector.

4.2.1 Courses

Third-cycle studies in environmental science consist of a course component of 45-60 credits, a literature course of at least 20 credits and other courses comprising at least 20 credits. A list of mandatory courses is provided by the department. These courses include those that develop general skills, and which amount to 10 credits. Eight of these credits are to consist of courses within philosophy of science, ethics and conduct, oral presentation and a written presentation. Otherwise, the courses are chosen by the student in consultation with the supervisor and the examiner and can be largely adapted to the student's interests and area of specialisation.

Courses within other subject areas and which are of value to third-cycle studies in environmental science can be included to a certain extent; this applies to certain courses in ecology, physical geography, quaternary geology, chemistry, statistics, molecular biology, microbiology, and to engineering, social science and humanities courses.

4.2.2 Doctoral thesis

The doctoral thesis may either take the form of a single coherent work (a monograph) or a compilation consisting of an introduction, a number of scientific papers, and a summary and discussion of the papers (compilation thesis) and is to comprise 180-195 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 the content of both 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 environmental science, 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.