UMEÅ UNIVERSITET

General syllabus for the doctoral programmes in physical geography
with a doctoral degree as the final goal

Scope: 240 credits
Degree: Doctoral degree
Level affiliation: Researcher level
Adoption: Syllabus adopted by the Faculty Board of Science and Technology 2025-10-20
Entry into force: 2025-11-01
Responsible body: Faculty of Science and Technology

1. Subject description and delimitation

Physical geography focuses on processes that shape the natural environment, including the atmosphere, biosphere, hydrosphere and lithosphere. In this context, physical geography covers a wide range of research areas, including meteorology, limnology and oceanography, soil science, biogeochemical processes and cycles, geology, Quaternary geology, geomorphology and other related topics. This research provides knowledge on natural processes in the environment, weather and climate, climate change, natural resources, disasters and environmental impacts.

PhD students in physical geography are expected to have acquired good general expertise in the subject and deep knowledge in their specific area of specialisation. The latter is demonstrated by the ability to conduct research that makes significant contributions to the field as described above.

2. Objectives of the programme

2.1 Description of the programme at the current level
The programme is at doctoral level. The objectives for third-cycle programmes are set out in the Higher Education Act, Chapter 1. 9 a §.

2.2 National objectives for the degree in question
The national objectives for the degree programme can be found in Appendix 2 of the Higher Education Ordinance.

The objectives for the doctoral programme in physical geography are defined in the Higher Education Ordinance, Chapter 6. 4 and 5 (see page 5), where the terms research area and delimited part of research area are interpreted as physical geography in the sense above, and as the doctoral student's specialised area within this subject. The objectives of the Higher Education Ordinance are supplemented with a gender equality and equal opportunities perspective that is integrated into the content and design of the programme, and gives the doctoral student insight into how the maintenance of inequalities through traditional structures can be counteracted.

3. Eligibility and prerequisites
To be admitted to a third-cycle programme, the applicant must have the general entry requirements and the specific entry requirements established by the Faculty Board of Science and

Technology, and be deemed to have the other abilities needed to benefit from the programme (Higher Education Ordinance, Chapter 7, Section 35).

Basic entry requirements

Basic eligibility is granted to those who have completed an advanced level degree, fulfilled course requirements of at least 240 higher education credits, of which at least 60 higher education credits are at advanced level, or in some other way acquired essentially equivalent knowledge within or outside the country. The Faculty Board may grant an individual applicant an exemption from the basic eligibility requirement if there are special reasons for doing so. (Higher Education Ordinance Chapter 7, Section 39)

Specific entry requirements

In order to fulfil the specific entry requirements for admission to doctoral studies in physical geography, the applicant must have passed courses in a basic higher education subject relevant to physical geography of at least 120 credits. At least one second-cycle course in a subject that is central to the doctoral student's planned specialisation must be included, as well as an independent project (degree project) with a relevant specialisation of at least 15 credits.

If there are special reasons, for example a strong interdisciplinary focus of the planned research work, it may be permitted to replace up to 30 of these 120 credits with courses in another relevant subject area.

The requirements for prior knowledge as described above are also considered to be fulfilled by those who have acquired essentially equivalent knowledge in other ways.

4. Selection

Selection of applicants who meet the eligibility requirements shall be made taking into account their ability to benefit from the postgraduate programme and shall be based on the following assessment criteria:

- previous academic achievements
- specific merits in the proposed field of research
- personal suitability

However, the mere fact that an applicant is judged to be able to have previous education or professional activity credited for the programme may not give the applicant preference over other applicants in the selection process (HF Chapter 7, Section 41).

Decisions on admission to third-cycle programmes with a doctoral degree as the final goal are made in accordance with Umeå University's delegation regulations.

5. Content and organisation

5.1 General information

An individual study plan shall be drawn up for each doctoral student, specifying funding, supervision, courses, thesis work, etc. The programme shall comprise 240 credits for a doctoral degree. A doctoral student who has been admitted to a doctoral programme with a doctoral degree

as the final goal may, if the doctoral student so wishes, complete a licentiate degree as a stage goal (120 credits).

Postgraduate education leading to a doctoral degree comprises four years of net study time and consists of a course component of 60 credits and a doctoral thesis of 180 credits.

5.2 Content

In addition to in-depth knowledge of physical geography, students will also practise critical and analytical thinking. During the programme, students solve problems independently and are prepared for a career in academia, business or the public sector. The programme has a very international character. Doctoral students often participate in international collaborations and have to present their research results in international contexts.

5.2.1 Courses

The 60 credits of coursework required for the doctoral degree comprise a set of fixed, compulsory courses and a variable number of courses determined individually according to the needs of the doctoral student. The compulsory courses focus on generic skills, provide an overview of the scientific activity and include gender and equality issues as integral parts. Depending on the specialisation and the prior knowledge of the doctoral student, the admission decision may also specify additional compulsory course requirements if deemed necessary to ensure that the doctoral student achieves a good overall subject matter expertise and in-depth knowledge in his/her specialised field.

The following courses are compulsory for all PhD students in Physical geography:

Faculty-wide courses developing generic skills (11 credits):

- Introductory course for PhD students at the Faculty of Science and Technology, 1 credit
- Oral presentation, 1 credit
- Scientific Writing, 5 credits
- Science, ethics and society, 4 credits

Courses at department level that develop subject competence (24 credits):

- Introductory course for PhD students at the Department of Physical geography, Environment and Earth Sciences (1 credit)
- Introductory thesis (9 credits)
- Literature courses (6 credits)
- Attendance and participation in seminars (8 credits)

Elective courses (25 credits):
These courses are chosen by the doctoral student in consultation with the supervisor and examiner and can be highly customised according to the doctoral student's interest and field of study. Elective courses may include additional literature courses and other courses offered by the department or other relevant departments. Courses that occur in other subject areas and that are of value to the doctoral programme in physical geography may be included to some extent. This applies in particular to certain courses in statistics, mathematics, computing, genetics, molecular biology, microbiology, systematics, physical geography, physical geography and chemistry, but also to certain courses in engineering, social sciences, pedagogy and humanities.

5.2.2 Doctoral thesis

The doctoral thesis comprises 180 credits. The doctoral thesis shall be written either as a single, coherent scientific work (monograph thesis) or as a compilation of scientific papers with an introduction, summary and discussion of these, including a description of the authors' contribution to each paper (compilation thesis).

The doctoral thesis must be defended orally at a public defence. It is assessed with one of the grades pass or fail. The grading shall take into account the content of the thesis and its defence.

6. Examination

A doctoral degree is awarded after the doctoral student has completed a doctoral programme of 240 higher education credits in physical geography and has received a passing grade in the examinations included in the programme and has written and defended a doctoral thesis at a public defence, which has been approved by the examining committee. Degree certificates are issued upon application to the Student Centre/Degrees.

7. Other instructions

Applicable regulations on doctoral programmes are stated in:

- Higher Education Ordinance: Chapter 5. employment as a doctoral student, Chapter 6. the programme and Chapter 7. admission to the programme, Appendix 2 degree regulations.
- Admission regulations for third-cycle programmes at Umeå University
- Local degree regulations at Umeå University
- Rules for third-cycle programmes at Umeå University
- Guide to third-cycle education at the Faculty of Science and Technology at Umeå University.

National goals for the exam

(HF 6 chapter, 4 and 5 §)

Knowledge and understanding

For a doctoral degree, the doctoral student must

- demonstrate broad knowledge and a systematic understanding of the research field as well as deep and up-to-date specialised knowledge in a defined part of the research field, and
- demonstrate familiarity with scientific methodology in general and with the methods of the specific research area in particular.

Skills and abilities

For a doctoral degree, the doctoral student shall

- demonstrate the ability to scientifically analyse and synthesise and to independently critically examine and assess new and complex phenomena, issues and situations,
- demonstrate the ability to identify and formulate questions critically, independently, creatively and with scientific rigour, and to plan and use appropriate methods to carry out research and other qualified tasks within given time frames and to review and evaluate such work,
- demonstrate, through a thesis, the ability to make a significant contribution to the development of knowledge through their own research,
- demonstrate the ability to present and discuss research and research results with authority in both national and international contexts, orally and in writing, in dialogue with the scientific community and society in general,
- demonstrate the ability to identify the need for further knowledge, and
- demonstrate the ability to contribute to the development of society and to support the learning of others, both in research and education and in other qualified professional contexts.

Judgement and attitude

For a doctoral degree, the doctoral student shall

- demonstrate intellectual independence and scientific integrity as well as the ability to make ethical judgements, and
- demonstrate in-depth insight into the possibilities and limitations of science, its role in society and people's responsibility for how it is used.