

GOVERNING DOCUMENT

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General syllabus for the doctoral programme in the subject of:

BIOLOGY with specialisation in ECOLOGY

Valid as of 1 January 2013

| Department to which the syllabus applies | Subject code |
|--|--------------|
| AQUATIC RESOURCES | NLBIEK03 |
| ECOLOGY | NLBIEK02 |
| FOREST MYCOLOGY AND PATHOLOGY | NLBIEK00 |
| AQUATIC SCIENCE AND ASSESSMENT | NLBIEK04 |
| CROP PRODUCTION ECOLOGY | NLBIEK01 |

The goals and design of the programme may vary between departments (see 4. Miscellaneous)

Regulations for third-cycle (doctoral) education at SLU

These can be found in the [Guidelines for third-cycle \(doctoral\) education](#) (reg. no. SLU ua Fe.2012.40-3218) and [Admission regulations for third-cycle \(doctoral\) education at SLU](#) (reg. no. SLU ua Fe.2012.4.4-3467). These governing documents lay out rules and recommendations for *entry requirements, recruitment and admission, joint programmes leading to a double or joint degree, scope and content of the programme, planning and follow-up of the programme, procedure when a course or study programme is unsatisfactory, examination and degrees.*

General study plans for subjects within the doctoral studies can provide additional, subject-specific rules in addition to these joint rules. This document specifies the subject-specific rules for the subject of biology with specialisation in ecology. In other respects the third-cycle studies in this subject shall adhere to the Guidelines for third-cycle education and the Admission regulations for third-cycle education at the Swedish University of Agricultural Sciences.

1. Purpose and objectives

The goal is for the doctoral student, after completing their studies, to be familiar with the general tools of science as well as the research methods typical for the

subject field of biology, specialising in ecology, which includes interactions between organisms and their biotic and abiotic environments, from the level of the individual organism up to an ecosystem level. The research aims to produce knowledge for applied ecology and its theoretical background. The purpose is to meet the qualitative targets for third-cycle studies specified in the Higher Education Ordinance, Annex 2 – Qualifications ordinance.

2. Entry requirements

Those admitted shall meet the following specific entry requirements.

The specific entry requirements for are normally knowledge corresponding to at least 90 credits in biological subjects, which shall include passed basic and advanced courses in the specialisations included in ecology.

3. Scope and content of the programme

The programme contains two main elements: research and coursework.

Research

While studying, the student shall conduct independent research which is presented in a doctoral thesis corresponding to at least 180 credits. The thesis shall be based on independent research work and can be presented as a compilation thesis or in special cases as a monograph. A doctoral thesis in the form of a compilation thesis should comprise 3–5 different works. All the works shall be of such a standard that they may be published in refereed international scientific publications. It is normal for at least one paper to be accepted or published in such a journal. The summarising section of a compilation thesis shall place the student's work in an international academic context and provide a synthesis of the various works.

The licentiate student shall conduct scientific work during his/her period of study, which is to be presented in a licentiate thesis corresponding to at least 90 higher education credits. The thesis is based on independent research work and can be presented as a compilation thesis or in very special cases as a monograph. A licentiate thesis in the form of a compilation thesis should comprise two works. The licentiate student shall be the principal author of at least one of them. All the works shall be of such a standard that they may be published in refereed international scientific publications.

Courses

The student is required to undertake coursework which corresponds to at least **45** higher education credits for a Degree of Doctor, and at least **25** higher education credits for a Degree of Licentiate. These studies shall include suitable general courses as well as individually selected subject courses.

Of the general courses, a basic course in teaching in higher education, statistics, theory of knowledge and ecological methodology are strongly recommended. Subject courses, including literature reviews, should be chosen so that the student, after completing their studies, has a wide foundation in the subject of ecology, as

well as significant in-depth knowledge. A description of courses at the Department of Ecology can be found in Appendix 1.

The student shall actively participate in and partially run activities such as seminars, workshops and discussion groups.

4. Miscellaneous

Further information about third-cycle is available in SFS 2006:1053, and information about grants can be found in SFS 1995:938 as amended by 1998:81 (reprint), 1998:161 and 2006:1053. Information about third-cycle studies at SLU is available in the Admission regulations for third-cycle (doctoral) education (reg. no SLU ua 41-1482/07) with the annex to the Board's decision of 26 April 2007, reg. no SLU ua 41-1482/07, the vice-chancellor's decision and the guidelines for doctoral education at the Faculty of Natural Resources and Agricultural Science (reg. no SLU ua 40-1244/08). Each department to which the third-cycle subject area is linked can choose to specify requirements in addition to those in this study plan. These requirements are to be specified in an annex.

5. Annexes

Annex 1 – Department of Ecology, specific requirements

Specific requirements at the Department of Ecology

The specific requirements below apply jointly to the three doctoral studies subjects Biology, specialising in ecology, Conservation biology and Entomology, and concerns the Department of Ecology, SLU, Uppsala.

Coursework

In addition to the strongly recommended courses mentioned in section 3 of the general study plans, the student shall take subject courses in order to gain advanced knowledge in the doctoral studies subject. These courses are taken as literature reviews (each book corresponding to a maximum of 4 credits in the subject field but not as part of the doctoral project) or as subject courses/longer workshops. Literature reviews are preferably coordinated between doctoral students to include joint reading and recurring meetings to discuss the findings.

Below is a more detailed description of what provides credits in the doctoral studies.

Introductory paper: The doctoral student can choose to write the type of introductory paper that is compulsory according to Guidelines for third-cycle education, which does not give course credits, or write an introductory paper as described below, which gives credits in the education.

Introductory paper at the Department of Ecology: The paper shall be an introduction to the thesis work. The student shall improve their opportunities for identifying research fields with good potential by summarising and analysing literature concerning a significant part of the thesis work or a theoretical problem. The overall goal is for the introductory paper to hone the student's critical thinking and writing. The introductory paper obviously cannot give a full summary of an entire field of research. The primary concern is to identify the central theories and the general knowledge level of the field, and to single out questions that may advance the field. This means that the student can give their own views on central problems. The subject of the introductory paper is chosen in consultation with the supervisor. The supervisor shall initially provide help with literature and, in consultation with the student, settle on a suitable outline and scope (for licentiate studies, a maximum of 10 pages, 20 references; for doctoral studies, a maximum of 15 pages, 40 references). The introductory paper shall be written during the first year of studies.

Literature reviews and subject courses: The courses include broadening and advanced studies within the doctoral studies subject as well as within other sciences, if it is relevant to the student's breadth of knowledge in the doctoral education. Coordinated literature reviews (i.e. several doctoral students reading the same book) shall be reported to and approved by the doctoral studies coordinator at

the department in advance. Other subject courses are applied for when they are available. The doctoral student can take courses at SLU but is encouraged to also participate in courses organised by other universities and institutions, in Sweden or abroad. Literature reviews and subject courses are chosen in consultation with the supervisor.

Participation in seminars: This can concern the department's own seminars or seminars held by other departments. As a guideline, participation gives approx. 12 literature seminars, or approx. 20 “normal” seminars 1 credit. Attendance shall be documented. Active participation in seminars gives a maximum of 3 credits if attendance is registered.

In the courses the study results are assessed through tests or other examination methods in connection with the courses. A pass score on tests and an approved thesis are required for the doctoral and licentiate degrees. The grade is either a pass or a fail.

Other elements in third-cycle studies

In addition to carrying out the elements of specified above, the student should participate in and obtain experiences from other research and departmental activities. The student therefore should:

- Actively participate in the department's seminar and lecture activities.
- Be encouraged to apply for courses and seminars outside of their home department.
- Be encouraged to actively participate in international congresses/symposia.
- Be encouraged to make international contacts.
- Write at least basic research grant applications.
- Actively participate in research activities such as work planning, work management, thesis supervision etc.
- Carry out certain teaching at first and second-cycle level.

Follow-up of doctoral studies at the Department of Ecology

Follow-up meetings

The student shall twice during their studies (in the first year and at the midway point) hold internal seminars at which the thesis project is discussed. At these seminars, plans, ongoing work and completed work are presented. The seminars are organised at the department for researchers, doctoral students and other interested parties. When 75% of the study period has passed, the student and supervisors shall arrange a meeting for the final follow-up. The purpose of these follow-ups is to discuss the student's plans and results in order for the wider thesis work to flow as well as possible.

The student is also expected to orally present the results of their research during the department's two mini-symposia when they are held. The presentation shall be in English and take 10–15 minutes.

First-year review

The follow-up takes place within the first net study year and mainly describes the research assignment and how it is to be solved. Detailed instructions can be found in the department's doctoral student's handbook "The Guide to the Galaxy of Science".

Mid-way review

The follow-up shall take place after half the net study period has passed, i.e. after 24 months of full-time studies. Before the seminar, the doctoral student provides a revised study plan and manuscript to the supervisory group, the doctoral studies coordinator(s) at the department, the head of department and any external evaluator. One recommendation is to have an external evaluator (who has defended their thesis at another department within SLU, or at another university). Detailed instructions for the mid-way review can be found in the department's doctoral student's handbook "The Guide to the Galaxy of Science". The date can be postponed due to a lower degree of activity caused by teaching, other departmental work, leave of absence, paternal/maternal leave and long-term sick leave.

75% follow-up

The doctoral student shall hold a longer meeting (approximately half a day) when 75% of the net study period has passed. At this internal meeting, the doctoral student, all supervisors and 1-2 evaluators from outside of the group will have a constructive discussion about the progress and end phase of the project. Obviously, other interested persons may also be invited to the meeting. The doctoral student presents the results so far and how they intend to design their thesis, with a subsequent discussion about each respective sub-project/paper. The remaining time up to the defence of the thesis is also planned. Brief minutes are taken and given to the doctoral studies coordinator.

Individual study plan

The individual study plan shall be revised annually in consultation between the doctoral student and the supervisor. The follow-up is done in consultation between the doctoral studies coordinator and the student. The plan shall state if the goal of the studies is a licentiate or doctoral degree.

Examination

Defence of a doctoral thesis

A "Count-down schedule for dissertations" shall be read well ahead of the public defence of the thesis (shall be available at a department server). The doctoral student and supervisor review what needs to be done in the final six months leading up to the defence of the thesis.