

# **GENERAL STUDY PLAN FOR RESEARCH EDUCATION (THIRD LEVEL HIGHER EDUCATION) IN BIOLOGY WITH SPECIALISATION IN PLANT BREEDING at the Faculty of Natural Resources and Agricultural Sciences at the Swedish University of Agricultural Sciences (SLU)**

## **1. Objective and purpose of the programme**

Biology with specialisation in plant breeding involves genetic and molecular genetic studies of biological processes and methods whose application can lead to new, improved crops. The objective of the programme is to provide research students with in-depth knowledge of the subject and familiarise them with scientific methods and information tools, as well as the research methods that are typical of the subject.

- The student is to acquire knowledge of the entire scientific process, from defining problems to solving them to presenting the results.
- In addition, students are to obtain education in, and experience of, pedagogy and research information, along with experience and knowledge of project management.
- The research student is to experience working both independently and in collaboration with others.
- Students are also to acquire knowledge about, and an attitude to, ethical issues associated with research in the subject.

The purpose is to meet the qualifications for research education specified by Chapter 6, Sections 4-5 of the Higher Education Ordinance (HEO). Research education can lead to both a degree of Licentiate and a degree of Doctor. The degree of Licentiate can be credited toward continuing studies for a degree of Doctor.

## **2. Eligibility**

People are eligible for admission to research education who have taken a second level (Master level) qualification and meet the requirements for basic eligibility (Chapter 7, Section 39 of HEO (2006:1053)), i.e., at least 240 higher education credits, including 60 credits at the second level (Master level) or acquired essentially the same knowledge in some other way, either in Sweden or abroad. The Faculty Board may exempt an individual applicant from the requirement for basic eligibility if special grounds exist. In such cases, SLU demands that the applicant has taken a first level (Bachelor level) qualification and presents a written account of an independent project the scope of which is equivalent to 15 higher education credits and the content of which corresponds to the knowledge and skills required for a degree project toward a degree of Master, or a relevant independent project of similar difficulty and extent. The project should be written in English.

Those who are admitted must also meet the special eligibility requirements adopted for the subject (Chapter 7, Section 40 of HEO (2006:1053)). Special eligibility requires knowledge equivalent to at least 120 higher education credits in biological subjects, at least 30 of which in genetics, plant breeding or closely related subjects. A grade of Pass on an in-depth project of at least 15 higher education credits may also be included. Consultation among the supervisor concerned, supervisor group, director of studies for research education at the department and the head of the department leads to an individual assessment concerning whether the student is eligible on the basis of another comparable programme.

### **3. Selection and admission**

Applicants are to be selected on the basis of their ability to benefit from the research education programme (Chapter 7, Section 41 of HEO (2006:1053)). The head of the department to which the applicant wishes to be admitted as a research student proposes admission to the Faculty Board. The board makes admissions decisions.

### **4. Scope, content and organisation**

#### ***4.1 Scope***

The programme for a degree of Doctor consists of four years of full-time studies (240 higher education credits). Two years of full-time studies (120 higher education credits) are required for a degree of Licentiate.

#### ***4.2 Content***

The programme contains two primary components: a scientific project and course-related studies.

##### *Scientific project*

During the period of education, the student shall conduct an independent research project, presented in a doctoral thesis that normally represents 150-200 higher education credits. The thesis may be presented as a monograph or – normally – in compilation form. The quality of most papers in a compilation thesis must be such that they are publishable in a good scientific journal with a peer review system.

A total of 3-5 papers represent the norm for a thesis in the subject. The variation reflects the individual contribution. It is desirable that the research student be the primary author of at least one paper that has been accepted or published by the time of the defence. The thesis is to be written in English.

A scientific project equivalent to 75-100 higher education credits is required for a degree of Licentiate.

The thesis is expected to include 1-2 papers.

At least one paper is to be of sufficient quality as to be publishable in a good international scientific journal that uses a peer review system.

The thesis is to be written in English.

If the papers of the thesis have multiple authors, the contribution of the research student must be clearly specified in the thesis.

##### *Coursework*

The coursework shall consist of 45 higher education credits for a degree of Doctor and 25 higher education credits for a degree of Licentiate. Coursework shall include suitable basic courses (approximately 1/3 of the course credits), as well as individually selected courses on special subjects (approximately 2/3 of the course credits). The scope and focus of the courses shall be adapted to the research student's background knowledge, orientation and preferences.

Participation is encouraged in courses associated with a research institution or similar network.

### **4.3 Organisation**

The individual study plan (Chapter 6, Section 36 of HEO (2006:1053)) for research education is drawn up in consultation between the research student and supervisor/supervisor group during the application process for admission. The faculty's guidelines for research education specify what should appear in the individual study plan. Evaluation and any modifications of the plan are to be on an annual basis. The research student and supervisor shall attest in writing that they have read the plan and any modifications to it. The study plan signed by the research student and supervisor is subsequently ratified in writing by the head of the department.

Evaluations shall be performed when 25%, 50% and 75% of the net period of studies has been used. The thesis is to be reviewed 18 weeks prior to the defence. Templates and additional details are available at [www.vbsg.slu.se](http://www.vbsg.slu.se)

### **5. Examination**

A doctoral thesis must be defended orally in public and assessed by a grading committee consisting of three or five members appointed by the Faculty Board. A licentiate thesis is to be defended orally at a public seminar and approved by a grading committee appointed by the Faculty Board. The grading committee consists of three members.

The faculty's guidelines for research education specify the provisions that apply to the examination of doctoral theses and licentiate theses at the Faculty of Natural Resources and Agricultural Sciences.

The degrees of Doctor and Licentiate require that the student receives a grade of Pass on examinations and the thesis.

### **6. Supervision**

Anyone admitted as a research student is entitled to supervision throughout the period of study, i.e., full-time studies toward a degree of Doctor for four years. Each student is assigned at least two supervisors, one of whom is the principal supervisor (Chapter 6, Section 31 of HEO (2006:1053)). Without a decision having been made in each individual case, the principal supervisor must have documented qualifications as a docent and hold a position at SLU. At least one of the assistant supervisors must hold a position at SLU.

The supervisor group consists of the principal supervisor and one or more assistant supervisors. The supervisors assist the research student on both practical and theoretical issues, while continually monitoring the progress of studies in cooperation with the student. The supervisors are also to help the student select literature and courses. The student must keep the supervisors up to date about the progress of studies so that corrections can be made when needed.

All research students should be given the opportunity to have a mentor with whom career planning may be discussed.

## **7. Additional information**

Additional information about research education appears in Swedish Code of Statutes 2006:1053, including information about study grants in 1995:938 with amendments 1998:81 (reprint), as well as 1998:161 and 2006:1053. Information about research education at SLU appears in Guidelines for research education (third level programmes) in the Faculty of Natural Resources and Agricultural Sciences (Reg. no. SLU ua 40-1244/08).