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Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

**GOVERNING DOCUMENT**

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# General syllabus for the doctoral programme in the subject of:

# BIOINFORMATICS

Valid as of 1 July 2015

The goals and design of the education can vary between faculties (see point 3. Miscellaneous).

## Regulations for third-cycle (doctoral) education at SLU

The third-cycle (doctoral) education is regulated by the Higher Education Ordinance (SFS 1993:100) and the Ordinance for the Swedish University of Agricultural Sciences (SFS 1993:221).

SLU has regulations for the following:

- Recruitment and admission (Admission regulations for third-cycle (doctoral) education, reg. no Fe 2012.4.4-3467);
- Joint programmes leading to a double or joint degree;
- Supervision;
- Scope and content of programmes;
- Planning and follow-up of programmes;
- Procedure when a course or study programme is unsatisfactory;
- Examination;
- Degrees.

These can be found in the Guidelines for third-cycle (doctoral) education (reg. no SLU ua 2015.1.1.1-2467).

A general study syllabus shall indicate the following: the main content of the study programme, specific entry requirements and any other regulations required. All general syllabuses must be approved by the faculty board.

The education is carried out in a way that allows doctoral students to meet the third-cycle studies' qualitative targets specified in the *Higher Education Ordinance's Annex 2 – Qualifications Ordinance*:

***Qualitative targets according to the HEO Qualification Ordinance: Degree of Doctor***

***Objectives For the Degree of Doctor the third-cycle student shall***

*Knowledge and understanding*

- *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 proficiency*

- *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 a 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 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*

- *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 it is used.*

***Objectives For the Degree of Licentiate the third-cycle student shall***
*Knowledge and understanding*
- *demonstrate knowledge and understanding in the field of research including current specialist knowledge in a limited area of this field as well as specialised knowledge of research methodology in general and the methods of the specific field of research in particular.*

*Competence and proficiency*
- *demonstrate the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake a limited piece of research and other qualified tasks within predetermined time frames in order to contribute to the formation of knowledge as well as to evaluate this work;*
- *demonstrate the ability in both national and international contexts to present and discuss research and research findings in speech and writing and in dialogue with the academic community and society in general, and*
- *demonstrate the proficiency required to participate autonomously in research and development work and to work autonomously in some other qualified capacity.*

*Judgement and approach*
- *demonstrate the ability to make assessments of ethical aspects of his or her own research;*
- *demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and*
- *demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.*

## 1. Programme content and scope

The subject bioinformatics is defined as the interdisciplinary subject where algorithms and methods for analysis of biological data are developed, as well as their correct application in biological problems. Research and education in bioinformatics aim to increase the knowledge that is needed to develop, maintain and use bioinformatic methods with the purpose of processing and interpreting biological data.

The subject includes specialisations such as tool design and development, mathematical and statistical modelling, data analysis and simulation of biological systems, sequence analysis, functional annotation, structure prediction, etc.

The programme contains two main elements: research and coursework.

### Research

While studying, the student shall conduct independent research work which is presented in an English-language compilation thesis.

### Courses

The student is required to undertake coursework which corresponds to 30-60 higher education credits for a Degree of Doctor, or 15–30 higher education credits

for a Degree of Licentiate. These studies shall include suitable general courses as well as individually selected subject courses.

## 2. Specific entry requirements

Those admitted shall meet the following specific entry requirements.

Specific entry requirements for the subject are at least 60 credits within biology-related subjects, and 60 credits in mathematic or computer-science specialisations. For applicants who do not fulfil these criteria, eligibility is verified on a case-by-case basis taking into account the research task.

## 3. Miscellaneous

Each respective faculty to which the third-cycle subject area is linked can choose to specify specialisations or requirements in addition to the general study plan. These requirements shall be specified in an annex.

## 4. Annexes

Annex 1 - Faculty of Veterinary Medicine and Animal Science, specific entry requirements

ANNEX 1

# Specific entry requirements for the Faculty of Veterinary Medicine and Animal Science

### Follow-up procedures

In connection with the half-time follow-up, the student must deliver a half-time seminar. The half-time follow-up is documented in a report which is sent to the faculty, together with the student's current study plan. In the half-time report, the student and the supervisors summarise and comment on substantial changes that have been made to the original study plan, as well as the commitments and responsibilities of the student and the supervisors. In addition, the department submits an assessment of whether the student has completed 50 per cent of the programme and of whether the conditions will allow the programme to be completed according to the current plan.

### Courses

When animal testing is included in the third-cycle studies, education in laboratory animal science is compulsory.