

GOVERNING DOCUMENT

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

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.

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.

1. Programme content and scope

The programme has two main components: courses and the doctoral thesis. Doctoral students should be given opportunity to participate in international courses and conferences.

Thesis work

During the period of study, the doctoral student shall carry out independent research, which is presented in a compilation thesis written in English.

Courses

The coursework shall comprise 30-60 credits for the degree of Doctor and 15-30 credits for the degree of Licentiate. The coursework shall include both appropriate general courses in transferable skills and individually selected subject-specific courses. Basic course in philosophy of science and research ethics is compulsory. When animal testing is included in the third-cycle studies, education in laboratory animal science is compulsory.

2. Specific entry requirements

The following specific entry requirements apply:

Specific entry requirements for the subject are at least 60 credits within biology-related subjects, and 60 credits in mathematic or computer-science specialisations. This must include at least 30 credits at advanced level and the student must have demonstrated the ability to work independently in a degree project. Applicants with a different, comparable educational background may be eligible; this will be decided by the faculty board on a case-by case basis.

3. Overall rules for doctoral education at SLU

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).

The local governing documents that regulate doctoral education at SLU level can be found on the page [Regulations and forms for doctoral education](#).

The programme is organised in a way that allows doctoral students to meet the qualitative targets for third-cycle courses and programmes specified in the Higher Education Ordinance's Annex 2 – System of Qualifications (see appendix 1).

4. Miscellaneous

Each faculty offering the third-cycle subject can choose to specify specialisations or requirements in addition to the general syllabus. These requirements must be documented in an appendix.

5. Appendixes

Appendix 1. Higher Education Ordinance Annex 2 – System of Qualifications.

Appendix 2. Faculty of Veterinary Medicine and Animal Science specific requirements for the subject.

Appendix 1. Higher Education Ordinance (SFS 1993:100)

Annex 2 – System of Qualifications.

Degree of Doctor [Doktorsexamen]

Scope

A Degree of Doctor is awarded after the third-cycle student has completed a study programme of 240 credits in a subject in which third-cycle teaching is offered.

Outcomes

Knowledge and understanding

For the Degree of Doctor 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 the third-cycle student shall

- demonstrate the capacity for scholarly analysis and synthesis as well as 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

For the Degree of Doctor 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 it is used.*

Research thesis (doctoral thesis)

For the Degree of Doctor the third-cycle student shall have been awarded a pass grade for a research thesis (doctoral thesis) of at least 120 credits.

Miscellaneous

Specific requirements determined by each higher education institution itself within the parameters of the requirements laid down in this qualification descriptor shall also apply for a Degree of Doctor with a defined specialisation.

Degree of Licentiate [Licentiatexamen]

Scope

A Degree of Licentiate is awarded

- either after a third-cycle student has completed a study programme of at least 120 credits in a subject in which third-cycle teaching is offered,*
- or after a third-cycle student has completed one part comprising at least 120 credits of a study programme intended to conclude with the award of a PhD, if a higher education institution decides that a Degree of Licentiate of this kind may be awarded at the institution.*

Outcomes

Knowledge and understanding

For a Degree of Licentiate the third-cycle student shall

- 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 skills

For a Degree of Licentiate the third-cycle student shall

- 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 skills required to participate autonomously in research and development work and to work autonomously in some other qualified capacity.*

Judgement and approach

For a Degree of Licentiate the third-cycle student shall

- 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.*

Thesis

For a Degree of Licentiate the third-cycle student shall have been awarded a pass grade for a research thesis of at least 60 credits.

Miscellaneous

Specific requirements determined by each higher education institution itself within the parameters of the requirements laid down in this qualification descriptor shall also apply for a Degree of Licentiate with a defined specialisation.

Appendix 2. Specific requirements at the Faculty of Veterinary Medicine and Animal Science for the subject Bioinformatics

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 where 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 percent of the programme and of whether the conditions will allow the programme to be completed according to the current plan.