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Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Faculty of Veterinary Medicine and Animal Science

12 June 2014

General syllabus for the doctoral programme in the subject of bioinformatics

Established by the faculty board on 12 June 2014.

The Faculty's doctoral programme is comprehensively regulated by the following documents. The numbers are used to indicate references to these documents in the text:

1. The Higher Education Ordinance (Högskoleförordningen, HF) (SFS 1993:100 et seqq.)
2. Admission regulations for third-cycle (doctoral) education (Journal no SLU ua Fe.2012.4.4-3467)
3. Guidelines for third-cycle (doctoral) education (Journal no SLU ua Fe.2012.4.4-3218)

1. Objectives of the education

The doctoral programme results in a licentiate degree or a doctoral degree. The licentiate degree may be credited towards continued studies to a doctoral degree. The content and scope of the doctoral programme must be such that upon completion of the doctoral degree, the student fulfils the objectives specified in the Higher Education Ordinance (1), Appendix 2.

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 aims to increase the knowledge that is needed to develop, maintain and use bioinformatic methods. The objective of this study programme is to acquaint the student with the general tools of science, as well as the research methods typical for the subject.

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.

2. Entry requirements

The entry requirements for admission to doctoral programmes is regulated

by Chapter 7 of the Higher Education Ordinance (1). The applicant's knowledge of the English language is documented through Eng B in the national upper secondary school programme in English or an internationally approved, comparable language test (TOEFL, IELTS or Cambridge ESOL) in accordance with the requirements set out at: www.universityadmissions.se (2).

Specific entry requirements for the subject are at least 60 credits within biology-related subjects, and 60 credits in mathematic or computer-science specialisations. The student must have demonstrated the ability to work independently, e.g. through an advanced study project corresponding to at least 15 higher education credits. Applicants with a different, comparable educational background may be eligible; this will be decided by the head of department on a case-by-case basis.

3. Selection and admission

Selection among eligible applicants and admission are regulated by the Higher Education Ordinance (1) Chapter 7 and by SLU's admission regulations. Admission is granted by the Faculty, following the recommendation of the head of the department to which the student will be assigned and in which his/her principal supervisor is active.

4. Scope, content and planning

The scope, content and planning of the programme are regulated by the Higher Education Ordinance (1) Chapter 6, and the SLU guidelines (3). A programme leading to a doctoral degree corresponds to four years of full-time study (240 credits). For the licentiate degree, the corresponding time of study is two years (120 credits).

The scope of the thesis is described in the SLU guidelines (3). The thesis must be a compilation thesis, written in English.

A licentiate thesis must contain at least one and preferably no more than two composite papers. The composite papers must be of such quality that they are eligible for publication in a peer-reviewed international scientific journal. The student must be the lead author of at least one composite paper.

A doctoral thesis must contain at least three and preferably no more than five composite papers, at least one of which must be accepted by or published in a peer-reviewed international scientific journal The composite papers must be of such quality that they are eligible for publication in a peer-reviewed international scientific journal. The doctoral student must be the lead author of at least two of the papers, and should also be the lead author of the paper which has been accepted for publication/published.

The coursework shall comprise 30 to 70 credits for the doctoral degree, at least 10 of which should be from basic courses. The coursework shall comprise 15 to 35 credits for the licentiate degree, at least 7.5 of which

should be from basic courses. These courses must encompass both the appropriate basic courses and individually selected subject courses. The coursework should be included early on in the programme of study. The scope and direction of the courses should be adapted to the student's academic focus.

The student shall follow the relevant international research through independent literature study, and shall participate in seminar series. Over the course of the first year of the programme, the student must write an introductory essay, written in accordance with the SLU guidelines for doctoral education (3). In addition, it is expected that students attach themselves to the relevant graduate school, as well as being active participants in seminars and conferences that are connected to their research and education.

5. Supervision

Matters concerning supervision are regulated by the Higher Education Ordinance (1) Chapter 6, SLU's admission guidelines (2) and the SLU guidelines (3). The supervisors shall support the doctoral/licentiate student in both practical and theoretical issues and continually follow and go through the progress of the work with the student. The supervisors shall also help the student choose the proper literature and courses. The supervisor group is to be composed so that, together, the supervisors have sufficient expertise in the subject to ensure a doctoral education of good quality.

6. Follow-up

The programme must be followed up at least once per year. The yearly follow-up is conducted by the student and his/her supervisors. The follow-up is registered in LADOK, and the individual study plan is entered in the journal and archived by the department.

The introductory essay, written by the student in his/her first year, is approved by the principal supervisor and this is documented in the individual study plan.

The doctoral student and the group of supervisors must also fulfil all the other follow-up requirements as described in the SLU general provisions for third-cycle education.

7. Examination

Matters concerning examination, public defence of the thesis and the licentiate seminar are regulated by the Higher Education Ordinance (1), Chapter 6, and by the SLU guidelines (3).

8. Title of qualification

The title of the qualification is determined by the degree the student has obtained to fulfil the entry requirements, for example, Doctor of Philosophy

in Veterinary Medicine for veterinarians, Doctor of Philosophy in Bioinformatics for biologists, Doctor of Pharmacy in Bioinformatics for pharmacists, Doctor of Technology in Bioinformatics for engineers, Doctor of Agronomy in Bioinformatics for agronomists, etc.