
General syllabus for the doctoral programme in the subject of:

Mathematical statistics

Valid as of 1 July 2016

Objectives and design of courses in this subject may vary between faculties (see 3. Miscellaneous).

The subject mathematical statistics comprises probability theory and statistical theory with applications in all parts of society such as forest and natural sciences, technology and economics. Probability theory is mainly used to develop mathematical models to describe and analyse stochastic processes, or to study the mathematical characteristics of such models. Probability theory includes the study of principles and methods used to build and test models using empirical facts and data. The subject also includes developing models and methods for experimental verification of them, in cooperation with the fields of application. Probability theory and statistical theory are closely linked as the latter is based on the former and often gives rise to probability theory problems.

Regulations for third-cycle (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).

In addition, SLU has regulations for the following:

- recruitment and admission, in Admission regulations for third-cycle (doctoral) education (SLU-ID: SLU.ua.2018.1.1.1-930)
- 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
- qualifications.

These can be found in Guidelines for third-cycle (doctoral) education (SLU-ID: SLU.ua.2018.1.1.1-4677).

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

The programme should be delivered 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 Annexe 2 – Qualifications Ordinance*:

Qualitative targets according to the Qualifications Ordinance: Degree of Doctor

Outcomes

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 skills

- *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.*

Outcomes

For a 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 skills

- *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 their 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 their ongoing learning.*

1. Programme content and scope

The programme contains two main elements: research and coursework.

The third-cycle subject area mathematical statistics specialising in forest science covers research on mathematical statistics methods for efficiently describing and modelling variables and characteristics related to organisms (including humans) and life processes. The subject focus is on quantitative methods.

Research

On this programme, the student will conduct independent research work and present it in an English-language compilation thesis.

Courses

The student is required to take courses of 30–60 credits for a doctoral degree and 15–30 credits for a licentiate degree. This must include suitable general courses as well as elective subject courses.

2. Specific entry requirements

Those admitted must meet the following specific entry requirements.

The specific entry requirement for the subject of mathematical statistics specialising in forest science is at least 90 credits within subjects relevant to mathematical statistics, at least 30 of which at second-cycle level.

3. 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 annexe.

4. Annexes

N/A