

Education plan

for

Master's Programme in Biostatistics
Masterprogram i biostatistik

120.0 Higher Education
Credits
120.0 ECTS credits

Programme code: NBISO
Valid from: Autumn 2007
Date of approval: 2006-10-18
Department: Department of Mathematics (incl. Math. Statistics)

Decision

Denna utbildningsplan är fastställd av Naturvetenskapliga fakultetsnämnden vid Stockholms universitet.

Prerequisites and special admittance requirements

A Bachelor's degree with 45 ECTS in Mathematics, 15 ECTS in Computer Science and 60 ECTS in Mathematical Statistics is required for admission to the programme. (60 ECTS is equivalent to one year full-time studies.) Second level courses in probability theory, statistical inference theory and linear statistical models are recommended. Proficiency in English, which must be demonstrated in one of the following ways:

- * IELTS score (Academic) of 6.5 or more (with none of the sections scoring less than 5.5)
- * TOEFL score of 575 or more (internet based 90)
- * Cambridge/Oxford - Advanced or Proficiency level

Programme structure

The Master's Programme in Biostatistics is an education that leans towards students who want to provide deeper knowledge within mathematical statistics, especially within biostatistics. The education's fields are mathematical statistics, scientific computing, biology and medicine. The programme is a two year full-time study programme that is composed of courses in mathematical statistics on the second level. The education covers 120 credits. One course in mathematical statistics is a compulsory course. Other courses are elective within mathematical statistics, of which at least three courses in biostatistics (45 credits) one course in scientific computing (7.5 credits) and courses in biology or medicine (15 hp). The education ends with a degree project in biostatistics for 30 credits. Prerequisites are a knowledge equivalent to courses Probability Theory II, FC, 7.5 hp, Theory of Statistical Inference, FC, 7.5 hp and Linear Statistical Models, FC, 7.5 hp. A student who does not have these prerequisites is recommended to study them within facultative block.

Goals

The main field of study is mathematical statistics.

For a Degree of Master students must

- demonstrate knowledge and understanding in their main field of study, especially biostatistics, both broad knowledge in the field and substantially deeper knowledge of certain parts of the field, together with a deeper insight into current research and development work,
- demonstrate deeper methodological knowledge within mathematical statistics,
- demonstrate an ability to critically and systematically integrate knowledge and analyse, assess and deal with

complex phenomena, issues and situations, even when limited information is available,

- demonstrate an ability to critically, independently and creatively identify and formulate issues and to plan, and in using appropriate methods, carry out advanced tasks within specified time limits, so as to contribute to the development of knowledge and to evaluate this work,

- demonstrate an ability to clearly present and discuss their conclusions and the knowledge and arguments behind them, in a dialogue with different groups, orally and in writing, in national and international contexts,

- demonstrate the skill required to participate in research and development work or to work independently in other advanced contexts,

- demonstrate an ability to make assessments in the main field of study, taking into account relevant scientific, social and ethical aspects, and demonstrate an awareness of ethical aspects of research and development work,

- demonstrate insight into the potential and limitations of science, its role in society and people's responsibility for how it is used, and

- demonstrate an ability to identify their need of further knowledge and to take responsibility for developing their knowledge.

Courses

Ms is stated for courses within mathematical statistics.

Compulsory courses: 1. Statistical Models, SC, 7.5 hp (Ms) 2. Biostatistics, Degree Project, SC, 30 hp (Ms).

Elective courses: The collection of elective courses is decided by the department board. The list of elective courses is brought up to date every new academic year. Before every new start of a programme there will be a list showing a minimal amount of elective courses that will be guaranteed during the time of the programme.

Example of current elective courses:

1. Probability Theory III, SC, 7.5 hp (Ms) 2. Stochastic Processes III, SC, 7.5 hp (Ms) 3. Statistical Consulting Methodology, SC, 7.5 hp (Ms) 4. Martingale Theory and Stochastic Integration, SC, 7.5 hp (Ms)

6. Generalized Linear Models, SC, 7.5 hp (Ms) 7. Nonparametric Methods, SC, 7.5 hp (Ms) 8. Survival Analysis, Sc, 7.5 hp (Ms) 9. Repeated Measurements, Sc, 7.5 hp (Ms) 10. Epidemiology, SC, 7.5 hp (Ms)

11. Clinical Trials, SC, 7.5 hp (Ms)

Courses in Scientific Computing:

1. Statistical Computing, SC, 7.5 hp, (given by MEB, Karolinska Institute) 2. Numerical Methods for Physicists, FC, 7.5 hp (given by NADA, KTH).

Courses in biology:

1. Molecular Life sciences, FC, 15 hp (given by Department of Biochemistry and Biophysics).

The minimum amount of credits that has to be studied in mathematical statistics is 45 credits, of which at least 22.5 hp in biostatistics, 7.5 credits in scientific computing and 15 credits in medicine or biology. Optional courses 37.5 credits. Prerequisites are a knowledge equivalent to courses Probability Theory II, FC, 7.5 hp,

Theory of statistical inference, FC, 7.5 hp and Linear Statistical Models, FC, 7.5 hp. A student who does not have these prerequisites is recommended to study them within facultative block. Maximum 30 credits is

allowed to be chosen from first level.

Degree

Master's Degree

Misc

Students, admitted to the program and not having finished it within two years, may request that they be allowed to finish the program even after it has ceased to apply. By this the limitations given in the syllabi of the courses in the program must be taken into consideration.

Programme in cooperation with MEB (Karolinska Institute) and NADA (KTH).