



SWEDISH BUSINESS SCHOOL

Syllabus

Computational Statistics, 6 credits

Course code:		Established:	Spring semester 2012
Level of study:	Third level	Valid from:	Spring semester 2012
Subject area:	Statistics	Last approved:	2012-02-09
Credits:	6	Approved by:	Head of school

Aims and objectives

General aims for third level education

Third level education shall essentially build on the knowledge that students acquire in first level and second level education or corresponding knowledge. In addition to what applies to first level and second level education, third level education shall develop the knowledge and skills needed to be able to conduct research independently (Higher Education Act, Chapter 1, Section 9 a).

The specific national expected learning outcomes in accordance with the Higher Education Ordinance for the degree of doctor and the licentiate degree can be found in *appendix 1 to the general syllabus for the subject*.

Course objectives

On completion of the course, the research student shall have:

- an understanding of structured programming
- good knowledge of numerical methods and algorithms
- good knowledge of random number generation and simulation methods

Main content of the course

- Floating point numbers and computer arithmetic
- Algorithms and basic programming
- Numerical linear algebra
- Numerical optimization
- Numerical integration
- Random number generation

- Simulation methods
- The bootstrap and jackknife

Reading list and other teaching materials

Required Reading

Articles, approx. 150 pages.

Braun, W. John, Duncan J. Murdoch (2007), A first course in statistical programming with R, Cambridge

Teaching methods

Lectures, seminars and independent study.

Research students who have been admitted to a course have the right to receive tuition and/or supervision for the duration of the time period specified for the particular course to which they were accepted. After that, the right to receive tuition and/or supervision expires.

Examination methods

Assignments and term paper.

A research student has the right to request exemption from a compulsory module. If the module in accordance with the course syllabus can be completed in a different way, the examiner may decide, in writing, that the research student shall be exempt from the compulsory module. Should exemption be granted, the research student shall instead complete a substitute assignment determined by the examiner in his/her decision. The substitute assignment will be assessed by the examiner. Should exemption be refused, the decision may be appealed against (Higher Education Ordinance, Chapter 12, Section 2, point 7).

Grades

Examinations included in third level education are to be assessed with one of the grades 'fail' or 'pass' (Vice-Chancellor Decision no 181/2003, reg. no. CF 392-2003).

Unless otherwise prescribed above, the research student is required to successfully complete all examinations and compulsory modules in order to be awarded the course grade 'pass'.

Re-examination

Research students who have failed an examination are entitled to a retake. Normally, retakes are offered a certain time period after the first examination was offered.

A research student who has failed an examination twice for a specific course or course module is entitled to request, with the head of school, the appointment of another examiner to determine the grade.

Admission requirements

General entry requirements to the course are admission to third level education at a higher education institution in Sweden, or equivalent programme abroad.

Specific entry requirements are successful completion of the courses Probability theory, 6 credits and Inference, 6 credits.

Selection

Priority will be given to students within the GRAPES network for research studies. Secondly, research students from other subjects at Örebro University will be offered a place on the course, upon which selection is done randomly. Any remaining course places will be offered to research students from other higher education institutions.

Transfer of credits for previous studies and other activities

If a student at a higher education institution in Sweden has successfully completed a certain higher education programme, the student is entitled to credit for this when studying at another higher education institution. This does not, however, apply if there is a substantial difference between the educational programmes.

The same applies to students who have successfully completed a certain educational programme at a university or other institution of higher education in Denmark, Finland, Iceland or Norway or in an entity that is party to the Council of Europe Convention of 11 April 1997 on the Recognition of Qualifications concerning Higher Education in the European Region (Swedish Treaty Series 2001:46), or at the Nordic School of Public Health.

A student is entitled to credit for an educational programme other than one referred to in Section 6 if the knowledge and skills that the student cites are of such a nature and of such a scope that they essentially correspond to the educational programme toward which they are intended to give credit. A student may also receive credit for corresponding knowledge and skills acquired in the course of working activities.

The higher education institution is to consider whether previous education or activities can be accepted for credit (Higher Education Ordinance, Chapter 6, Sections 6-8).

Other regulations

Transitional provisions

A research student who has commenced but not completed the course in accordance with this syllabus has the right to be examined under the course syllabus at least one semester after that during which the course was last offered according to this course syllabus.