

Syllabus

for course at advanced level

Computational statistics
Statistiska beräkningar

**7.5 Higher Education
Credits**
7.5 ECTS credits

Course code:	ST5101
Valid from:	Spring 2021
Date of approval:	2020-09-14
Department	Department of Statistics
Main field:	Statistics
Specialisation:	A1F - Second cycle, has second-cycle course/s as entry requirements

Decision

This syllabus was approved by the board of the Department of Statistics on September 14, 2020.

Prerequisites and special admittance requirements

90 ECTS credits first-cycle (basic level) courses in Statistics or equivalent. Probability theory, 7.5 ECTS credits second-cycle (advanced level) course and Mathematics for Economic and Statistical analysis 7.5 ECTS credits first-cycle course or equivalent. English 6 or equivalent.

Course structure

Examination code	Name	Higher Education Credits
11ST	Statistical computation, exam	4.5
12ST	Statistical computation, home assignment	3

Course content

The course consists of one part and is examined through two tests in accordance with the exam codes above, 11ST which is referred to as Test 1 and 12ST as Test 2.

The course covers some basic principles for numerical computing. Function optimization, integration and simulation techniques are studied. The course also deepens the students knowledge in statistical programming.

The course contents provide knowledge and skills that are useful in statistical computing problems such as design of statistical surveys, estimation, hypothesis testing and Bayesian analysis.

Learning outcomes

To pass the course, the student should be able to:

- demonstrate knowledge of basic principles of numerical computing
- design and organize algorithms for function optimization, integration and simulation of distributions
- solve statistical computing problems with help of statistical software
- carry out simulation experiments

Education

The instruction consists of lectures and computer labs. The language of instruction is English.

More detailed information may be found in the course description. The course description is posted on the Department of Statistics' website www.statistics.su.se/utbildning no later than one month before the start of the course.

Forms of examination

a) The course is examined by assessing the students' mastery of the expected outcomes. Exam 1 is a written exam. Exam 2 consists of individual written assignments. The programme is examined in English.

b) Test 1 is graded according to a seven-point grading scale: A = Excellent, B = Very Good, C = Good, D = Satisfactory, E = Sufficient, Fx = Insufficient, F = Completely insufficient. Both Fx and F are failed grades that require re-examination.

Test 2 is graded according to a two-point grading scale: U = Fail, G = Pass.

c) The grading criteria for Test 1 and Test 2, respectively, are communicated in writing to the students at the start of the course.

d) In order to pass the entire course, a minimum grade of E on Test 1 and the grade G on Test 2 is required. The final grade for the entire course is equal to the grade on Test 1. Examination assignments that are not submitted on time will not be assessed. Parts of courses that have been transferred and credited are excluded when determining the final grade.

e) For each course instance, at least two examination opportunities must be provided for all tests. During a semester when the course is not offered, at least one examination opportunity must be provided for all tests.

Students who fail either of the two tests are entitled to take additional tests as long as the course is offered in order to achieve a passing grade.

Students who have received the grade Fx or F on Test 1 or the grade U on Test 2 twice in a row by one and the same examiner have the right to have another examiner appointed at the next exam, unless there are special reasons that militate against it. A request to this effect must be sent in writing to the head of department.

Students who have received a grade of E or higher, may not retake a test in order to obtain a higher grade.

f) It is not possible for students who have received the grade Fx to increase the grade to a passing grade by submitting supplementary assignments.

Interim

When this syllabus is repealed, the student has the right to be examined once per semester according to the present syllabus during a completion period of three semesters. A request to this effect must be sent in writing to the head of department.

Limitations

This course may not be part of a degree together with the course Statistical Computation 7,5 ECTS credits (ST705A, ST725A, ST743A) or any other course which fully or partially conforms with the contents of this course.

Misc

The course replaces Statistical Computations, ST743A, 7,5 ECTS credits.

Required reading

The course literature is specified separately in an attachment. The current course literature (and other teaching resources) is posted on the Department of Statistics' website, www.statistics.su.se/utbildning, no later than two months before the start of the course.