Department of Statistics

Stockholm University

Syllabus

for course at first level

Fundamentals of Statistics
Statistikens grunder

15.0 Higher Education Credits
15.0 ECTS credits

Course code:	ST111G
Valid from:	Spring 2017
Date of approval:	2010-10-06
Changed:	2016-09-07
Department	Department of Statistics
Subject	Statistics

Decision

This syllabus was approved by the board of the Department of Statistics on 6 October 2010 and revised on 9 June 2011, 12 March 2014 and 7 September 2016.

Prerequisites and special admittance requirements

Swedish upper secondary school courses English B, Mathematics C and Social Sciences A or equivalent.

Course structure

Examination code	Name	Higher Education Credits
11ST	Fundamentals of Statistics 1	6
12SI	Compulsory Exercise in Fundamentals of Statistics 1	1.5
13ST	Fundamentals of Statistics 2	6
14SI	Compulsory Exercise in Fundamentals of Statistics 2	1.5

Course content

The course consists of two course units and is examined in accordance with four examination codes, "Exam 1" has the examination code 11ST, "Exam 2" has the examination code 12SI, "Exam 3" has the examination code 13ST and "Exam 4" has the examination code 14SI.

This course emphasizes the conceptual background of statistics and its applications in empirical surveys, with special focus on descriptive statistics and statistical inference. The course also gives an orientation of the role of statistics in science. The model concept is discussed thoroughly with special focus on probability models and their applications within different fields. Furthermore, an introduction to the use of statistical software is given.

The concepts that are more thoroughly treated are:
Knowledge building. Models, especially probability models. Basic probability theory. Discrete and continuous stochastic variables and their distributions. Data collection. Descriptive statistics in the form of tables and diagrams. Index. Sampling distributions and the central limit theorem. Point estimation. Interval estimation. Hypothesis testing. Goodness-of-fit test and independence test. Statistical surveys. Decision theory.

Learning outcomes

To pass the course the student shall be able to:

I. critically review statistical surveys from a scientific point of view,
II. design statistical models for elementary problems within different fields of application,
III. solve basic problems in probability theory,
IV. solve basic problems in inference theory,
V. conduct basic data analyses using statistical software.

Education

The teaching forms consist of lectures and exercises. Individual written examinations and oral examinations of group work are compulsory. The requirements for the different examinations are specified in the section of Forms of examination, below. Students who receive the grade Fx or F on an examination have to re-take the examination. The schedules for the examinations are determined one month before the start of the course.

Forms of examination

Examination will be done by assessing the learning outcomes. Examination will be in the form of written and oral examination.

The grading of the course is done according to a seven-point scale related to the specified learning outcomes:
A = Excellent,
B = Very Good,
C = Good,
D = Satisfactory,
E = Adequate,
Fx = Fail, some more work is required,
F = Fail, a lot of more work is required.

The assessment criteria for the course will be distributed at the beginning of the course.

Exam 1 is a written individual examination. Exam 1 examines the learning outcomes II and III. The grading of Exam 1 is done accordning to the above seven-point scale, where the grades F and Fx requires a re-examination.
Exam 2 is a hand-in group assignment, with both written and oral presentations. Exam 2 examines the learning outcomes I, II and III. The individual performance within the group have to be documented and examined. The grading of Exam 2 is done according to a two-point scale related to the learning outcomes: G = Pass, U = Fail.
Exam 3 is a written individual examination. Exam 3 examines the learning outcomes II, III and IV. The grading of Exam 3 is done according to the above seven-point scale, where the grades F and Fx requires a re-examination.
Exam 4 is a hand-in group assignment, with a written presentation. Exam 4 examines the learning outcomes II, III, IV and V. The individual performance within the group have to be documented and examined. The grading of Exam 4 is done according to a two-point scale related to the learning outcomes: G = Pass, U = Fail.

To pass the course, the grade E or higher is required on exams 1 and 3 and Pass (G) on the exams 2 and 4. The grade on the whole course is decided by the grades on Exam 1 and Exam 3 (regardless of the order) according to:
A + A, A + B are added to the grade A,
A + C, A + D, B + B, B + C are added to the grade B,
A + E, B + D, B + E, C + C, C + D are added to the grade C,
C + E, D + D, D + E are added to the grade D,
E + E are added to the grade E.

There shall be two examination sessions for all exams within a course period. If there is only one course period within twelve months, there shall be one more examination session for each exam.

Students who receive the grade Fx or F on an examination are entitled to retake the examination as long as the course is still given. Students who receive the grade E or higher on an examination may not retake this examination in order to attempt to achieve a higher grade. Students who receive the grade Fx or F or U on an examination twice by the same examiner are entitled to request that a different examiner will be appointed to set the grade of the examination. Such a request must be in writing and sent to the head of the department.

Interim

Students can request examination in accordance with this syllabus once per semester during a period of three semesters after the course is no longer given. Such a request must be in writing and sent to the head of the

department.

Limitations

The course can not be included in a degree together with the course Fundamentals of Statistics (ST110G) 15 ECTS credits, or equivalent.

Required reading

The course literature is described in an appendix to the syllabus.