Stockholm University

Syllabus
for course at first level

Statistics II

Statistik II

30.0 Higher Education Credits
30.0 ECTS credits

Course code:	ST200G
Valid from:	Autumn 2014
Date of approval:	2007-04-25
Changed:	2023-09-27
Department	Department of Statistics

Main field:	Statistics
Specialisation:	G1F - First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Decision
This syllabus was approved by the Board of the Department of Statistics on April 25, 2007 and revised on October 15, 2008, and March 12, 2014.

Prerequisites and special admittance requirements
Statistics I, first level, 30 ECTS credits or equivalent.

Course structure

Examination code	Name	Higher Education Credits
13VM	Elective part 2	7.5
14VM	Elective part 3	7.5
15ST	Statistical Theory with Applications	15
15VM	Elective part 1	15

Course content
The course consists of one mandatory course unit and one or two optional course units.

The mandatory course unit is Statistical Theory with Applications, 15 ECTS credits.

Optional course units:
1. Optional course unit 1, 15 ECTS credits
2. Optional course unit 2, 7,5 ECTS credits
3. Optional course unit 3, 7,5 ECTS credits

Regarding the optional courses, see Miscellaneous.

The course gives extended knowledge in probability theory and statistical inference theory. Special attention is given to these theories' applications within economics, econometrics and social sciences.

The concepts that are more thoroughly treated are: Introduction to mathematical analysis. Basic concepts in probability theory, stochastic variables and probability distributions. Discrete and continuous distributions, univariate as well as ☐multivariate. Moment-generating functions, the Law of Large Numbers and the Central Limit Theorem. Order statistics. Methods for point estimation such as the method of moments, the least

square method and the method of maximum likelihood. Properties of estimators like efficiency of estimators and sufficient statistics. Confidence intervals. Hypothesis testing. The lemma of Neyman-Pearson, Likelihood ratio tests, the Kolmogorov-Smirnov test, run tests, Bayesian inference and resampling methods.

The course also consists of content from optional course units.

The content of the course gives extended knowledge of great use in applications of statistical methods in several fields.

Learning outcomes
After completing the course the student should be able to:
- solve and interpret problems in probability
- show good knowledge of the foundations of the theory of inference
- solve and interpret more advanced problems regarding distributions and tests
- formulate simple statistical models in some concrete situations.
- compute and interpret point- and interval-estimates and test hypotheses regarding parameters in statistical models

Moreover, the student is expected to achieve the learning outcomes for the optional courses.

Education
The teaching forms consist of lectures and exercises.

Forms of examination
a. Examination will be done by assessing the learning outcomes. Examination will comprise written tests and written reports of group exercises.

b. Grading 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 = Inadequate
F = Totally Inadequate

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

d. In order to pass the course, the grade E or higher is required on all course units.

e. Students who receive the grade Fx or F on an examination are entitled to at least four additional examinations 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.

The grades Fx and F are fail grades and require re-examinations.

Students who receive the grade Fx or F 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. Here, the term examination denotes all compulsory elements of the course.
For every course date there should be two examination dates within the term.

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 Statistical Theory with Applications (ST211G) 15 ECTS credits, or equivalent

Misc

The optional course units for the course are decided by the oard of the Department of Statistics.

Required reading
The course literature is described in appendices to the syllabus.