Department of Statistics

Stockholm University

# Syllabus

for course at advanced level

**Statistical Inference**
**Inferensteori**

**7.5 Higher Education Credits**
**7.5 ECTS credits**

| | |
|---|---|
| **Course code:** | ST745A |
| **Valid from:** | Autumn 2014 |
| **Date of approval:** | 2014-02-19 |
| **Department** | Department of Statistics |
| **Main field:** | Statistics |
| **Specialisation:** | A1N - Second cycle, has only first-cycle course/s as entry requirements |

## Decision

This syllabus was approved by the Board of the Department of Statistics on February 19, 2014.

## Prerequisites and special admittance requirements

90 ECTS credits in Statistics or equivalent. Mathematics for Economic and Statistical Analysis, 7.5 ECTS credits. English 6 or equivalent.

## Course structure

| Examination code | Name | Higher Education Credits |
|---|---|---|
| 11IT | Statistical Inference | 7.5 |

## Course content

The course consists of one course unit:
1. Statistical Inference

The course presents, in a stringent way, basic statistical principles such as the principle of sufficiency, ancillarity, invariance, and conditionality. Bayesian, likelihood-based and Neyman-Pearson inference are applied and exemplified through point-estimation, interval estimation, and model-choice.

The course serves as a basis for other statistics courses at the advanced and research level.

## Learning outcomes

To pass the course the student should be able to:
* derive important point estimators, interval estimators, and test statistics in some selected applications.
* demonstrate understanding of important theorems in inference theory
* demonstrate understanding of convergence-properties of estimators

## Education

Teaching forms consist of lectures and exercises. The instruction will be in English if necessary.

## Forms of examination

a. Examination will be done by measuring the knowledge of the learning outcomes. Examination will comprise written tests and written reports of group exercises.

b. Grading is done according to a 7-point scale related to the specified learning outcomes:
A = Excellent
B = Very Good
C = Good
D = Satisfactory
E = Sufficient
Fx = Insufficient
F = Completely insufficient

c. Grading criteria will be distributed at the beginning of the course.

d. To pass the entire course, a minimum grade of E is required.

e. Students who have received the grade Fx or F on an examination are entitled to at least four additional examinations to achieve the lowest grade E as long as the course is given.
Students who have received the grade E on an examination may not retake this examination in order to attempt to achieve a higher grade.
Students who have received the grade Fx or F on an examination on two occasions by the same examiner have the right to request that a different examiner 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.

**Interim**

Students can request examination in accordance with this syllabus up to three times during a period of two years after the course is no longer given. 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.

**Limitations**

---

**Misc**

The course is mandatory in the Master programme in Statistics and the Master programme in Survey Methodology and Official Statistics but it can also be studied as an independent course.
Approved course in Statistical Theory, advanced course (ST4080) or Advanced Statistical Theory, AN (ST406A) can be credited to Statistical Inference, AN (ST703A).

**Required reading**

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