STOCKHOLMS UNIVERSITET
Statistiska institutionen
Autumn term 2026

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Course description
Sampling and estimation (Urval och estimation), 7.5 hp, ST720A

CONTENTS OF THE COURSE

The course addresses sampling and estimation methods in finite populations. The course covers the most commonly used sampling designs, among them, simple random sampling, stratified sampling, πps sampling, cluster sampling and multi-stage sampling. The course also covers the most commonly used estimators: the Horvitz-Thompson estimator, the difference estimator, the ratio estimator and the regression estimator. The course covers also estimation of several finite population parameters, among them, totals, ratios, averages, variances and covariances.

LEARNING GOALS

After completing the course students should be able to

- explain the advantages and disadvantages of standard sampling designs
- choose appropriate sampling designs for different selection problems
- choose suitable estimators depending on the problem and the access to auxiliary information
- carry out estimation and precision estimation on data from some standard sampling designs, with and without auxiliary information
- describe and use some basic estimation methods for nonresponse problems

COURSE LITERATURE

- Särndal, C.E. and Swensson, B. and Wretman, J. (1992), *Model Assisted Survey Sampling*, Springer.
- Additional material distributed during the course.

SCHEDULE

Visit the schedule and/or the course website (Swedish name Urval och Estimation).
Note: Attendance to the first and last sessions (Dec 03, 10-12 and Jan 08, 15-17) is mandatory. During the last session students orally present the results of the home assignment.

EXAMINATION

The examination consists of two parts:

1. Written exam (Wednesday Jan 11, 08.00 - 13.00).
2. Home assignments, which consist of a written report that is divided in two parts (deadline for the first part, Sunday 20 Dec, 23.59; deadline for the second part, Sunday 03 Jan, 23.59) and an oral presentation (Friday, Jan 08, 15.00).

GRADES
The assignment is graded as Pass (G) or Fail (U). If a compulsory assignment is graded as Fail (U), the student will have only one chance to re-submit the assignment and this has to be done within a week.

The written examination is graded as A, B, C, D, E, Fx and F. The passing grades are A, B, C, D and E, where A is the highest and E is the lowest. Failing grades are F and Fx, where F is lower than Fx. When obtaining a failing grade F or Fx in the written examination, we will not give extra exercises or extra assignments to obtain a passing grade.

To pass the course at least grade E on the home exam and grade Pass on the home assignment are required. The grading of the course will be based solely on the grading of the home exam, provided that the home assignment is a pass. If you pass the home exam but fail the home assignment, the grade of the course will be Fx.

- Students who have obtained at least grade E on the course cannot retake the exam to achieve a higher grade.
- Both Fx and F on the course are fails. To pass the course, the student must retake the exam.
- Students with either Fx or F on the course can redo the examination at least four times, provided that the course is still offered, to achieve at least grade E.
- A student who has obtained either grade Fx or F twice on the same exam has the right to demand another examiner the next time the student takes the same exam. This must be done in writing to the head of department.
- Any type of plagiarism is prohibited. This includes text generated by AI tools. The use of AI tools is permitted only as an aid in terms of knowledge acquisition and study but not to produce material for any kind of examination. The use of AI tools for the improvement of an originally self-written text is not permitted. Text matching software and AI-generated text detectors are used by the institution. Read Guidelines for disciplinary matters at Stockholm University.

Students must register for the exam / re-exam via Ladok (https://www.student.ladok.se). Registration must normally be made no later than 10 days before the exam, but in some cases the deadline is earlier than that. Check in Ladok which deadline applies to each individual exam. Registration opens 30 days before the exam. If you have registered correctly, an anonymous code is generated directly on the screen. If you have problems with your registration, contact the student office (expedition@stat.su.se) before the registration deadline. **If you fail to register, you cannot take the exam!**

EXAMINER AND TEACHER
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Reception hours: On agreement

The Department of Statistics is located on the 6th floor in Building 4 of campus Albano: Albanovägen 12, Hus 4, Plan 6. General information about the department (office hours, phone numbers, schedules etc.) is posted on the department website, www.statistics.su.se.