



Stockholms  
universitet

**STOCKHOLMS  
UNIVERSITET**  
Statistiska institutionen  
Autumn term 2022

Edgar Bueno  
31 Aug 2022

## 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,  $\pi$ ps 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 01 15-17 and Jan 04 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 (Friday 13 Jan, 08.00 - 13.00).
2. Home assignments, which consist of: **i.** solving exercises that are left during the lectures, **ii.** a written report which is divided in two parts (deadline for the first part, Friday 23 Dec, 23.59; deadline for the second part, Friday 30 Dec, 23.59) and an oral presentation (last session, Wednesday, 04 Jan, 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.

Students must register for the exam / re-exam at least ten days in advance. Registration is done via <https://www.student.ladok.se/> or via e-mail to [expedition@stat.su.se](mailto:expedition@stat.su.se). If registration has been done properly, you will be sent a confirmation including a code to use at the exam. Without registration you will not be able to take the exam.

## **EXAMINER AND TEACHER**

Edgar Bueno, room 4600

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Reception hours: On agreement

The Department of Statistics is located on the 6th floor in Building 4 of the new campus in 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](http://www.statistics.su.se).