

Course Description

Selected Statistical Methods with Applications, 7.5 ECTS, undergraduate level, ST3201

Course contents

The course aims to broaden students' knowledge in statistics and give inspiration when choosing topic for the bachelor thesis.

The course comprises three selected topics: survival analysis, missing data methods and text analysis. For each topic, the course relates theory to practice by combining lectures, practical exercises and programming. A central element is the students' independent work with a number of problems (case studies).

Expected learning outcomes

After completing the course, students should be able to:

- describe definitions and central concepts,
- explain relevant theory,
- discuss pros and cons of different methodological considerations,
- solve relevant theoretical problems,
- apply the selected methods to various problems,
- perform computation and analyses in R,
- present methods and applicable problem solutions in writing and orally,
- interpret, evaluate and critically review results with regard to relevant scientific aspects.

Teaching format

Teaching consists of 10 lectures (L1 - L10), three computer sessions (C1 - C3) and two seminars (S1 – S2).

Attendance at the seminars is compulsory. For students who have been absent from one or more seminars an extra seminar will be organised. The course coordinator or the teacher responsible for the part will inform about the date for this seminar via Canvas. See further details under Examination and assessment criteria.

Submission of home assignments before seminars and oral presentations at seminars are mandatory elements of the course.

The course is given on campus, in English.

Dan Hedlin
24 June 2026

**Examiner, course
coordinator**

Dan Hedlin

Reception hours

On agreement

E-mail

dan.hedlin@stat.su.se

The course covers the following parts/topics.

Part 1: Missing data methods

This part provides an introduction to handling missing data. Topics include: missing data theory and single and multiple imputation methods. Additionally, in the computer session students will learn how to implement the imputation techniques using R.

Teaching consists of four lectures (L1 – L5), one computer-session (C1) and one seminar session (S1) according to the schedule.

Literature: van Buuren, S. (2018). Flexible imputation of missing data, 2nd ed. Boca Raton, Florida: CRC Press. Available online via the library of Stockholm University. Some research papers and other material provided by instructor will be made available at Canvas.

Responsible for part 1: Dan Hedlin, email: dan.hedlin@stat.su.se. Consultation hours by appointment.

Part 2: Text mining

Nowadays, there are vast quantities of unstructured textual information available, for example, from emails, medical journals, social media activities, movie recommendations and web server logs. It is of utmost importance (e.g. for companies) to be able to analyse such information and make it quantifiable, in order to see trends and remain competitive.

This part provides an introduction to quantitative methods for analysing text. Students will learn how to retrieve the text from the original source, process the text data, analyse and summarize the results of text mining experiments.

For successful completion of this part students should be able to: describe and explain basic concepts related to text mining, apply text mining methods to practical problems using software R.

Teaching consists of five lectures (L6 – L10), two computer-session (C2 – C3) and one seminar session (S2) according to the schedule. Lecture notes and other relevant materials will be available in Canvas in connection with the lectures and computer session.

Literature: research papers and other material provided by the instructor will be available via Canvas.

Responsible for part 2: Akram Mahmoudi, email: akram.mahmoudi@stat.su.se.
Consultation hours by appointment.

Examination and assessment criteria

To pass the course, all four of the following requirements need to be met for each part of the course:

1. An adequate written report (assignment) is submitted at the latest at 15.00 hrs two days before the seminar
2. adequate oral presentation at the seminar, in which all students in the group take part
3. attendance at the seminars
4. pass the computer lab exam

A student may fail if she or he is unable to give satisfactory answers to written or oral questions about the assignment. Should the examiner wish to ask further questions about any assignment orally, a time will be agreed on with the student.

The sum of the points from Parts 1 and 2 defines the final grade. Maximum 50 points. Part 1: 25 points (20 for computer lab exam, 5 for oral presentation). Part 2: 25 points (20 for computer lab exam, 5 for oral presentation).

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 = Inadequate, F = Very inadequate.

No points from the oral presentations achieved in the autumn term 2026 can be transferred to the next time the course will be given.

Students who fail any of requirements 1-3 above are given one opportunity for re-exam. However, then at most 2 points are given for this assignment. The next opportunity after that will take place in spring term 2027. Then both assignments need to be retaken.

For students who fail requirement 4, there will be another computer lab exam, see schedule.

The grading criteria are as follows.

A: Excellent (19-20 points)

B: Very good (16-18 points)



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Autumn term 2026

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C: Good (13-15 points)
D: Satisfactory (10-12 points)
E: Adequate (8-9 points)
Fx: Inadequate (5-7 points)
F: Very inadequate (0-4 points)

Both Fx and F are considered as fail. To pass the course, the student must retake the exam.

Use of AI

The use of AI tools is permitted as an aid during the learning process but not to produce material for any kind of examination.

- Any type of plagiarism is prohibited, which includes AI-generated text.
- 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 department.

Read "Guidelines for disciplinary matters at Stockholm University"

<https://www.su.se/medabarteta/organisation-styrning/styrdokument-regelboken/utbildning/regler-och-handlaggningsordning-för-disciplinärenden-1.605869>