



School of Economics and Management

STAG26, Statistics: Statistical Programming, 7.5 credits

Statistik: Statistisk programmering, 7,5 högskolepoäng
First Cycle / Grundnivå

Details of approval

The syllabus was approved by The Board of the Department of Statistics on 2022-05-30 to be valid from 2023-01-16, spring semester 2023.

General Information

First cycle level course in statistics. The course is elective in a Bachelor degree in statistics. The course may also be taken as a single subject course or within other Bachelor and Master's programmes at Lund University.

Language of instruction: Swedish

Main field of studies

Statistics

Depth of study relative to the degree requirements

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Learning outcomes

Knowledge and understanding

For a passing grade the student shall

- be able to explain fundamental concepts in imperative and object-oriented programming,
- be able to explain and give examples of the use of basic data types and simple algorithms,
- be able to explain step by step what happens when a program is run,
- be able to explain fundamental principles of simulation and Monte Carlo methods, and
- be able to explain why certain methods are computationally intensive.

Competence and skills

For a passing grade the student shall

- be able to import, modify and export data in various formats,
- be able to construct and implement algorithms to solve statistical problems,
- be able to write, organise, document, and distribute code in a structured way according to conventions,
- be able to structure programs using functions, classes, and methods,
- be able to stepwise develop, test, and debug programs,
- be able to independently plan and execute a simulation study, and
- be able to orally and in writing describe and discuss programming issues and how they can be solved.

Judgement and approach

For a passing grade the student shall

- be able to assess which data types, algorithms, and implementations are suited for solving different problems, and
- be able to use the documentation of the programming language to develop his or her competence.

Course content

The course gives an introduction to imperative and object oriented programming in general, and to programming aimed at solving statistical problems in particular. The course covers

- different data types,
- import, modification, and export of data,
- control flow using e.g. loops and conditional expressions,
- structures such as functions, methods, and classes,
- implementation of algorithms,
- good coding practices,
- distribution objects for standard distributions (e.g. density functions),
- random number generation, simulation, and Monte Carlo methods, and
- implementation of computationally intensive methods.

Course design

The course is designed as a set of lectures and computer exercises.

Assessment

The examination consists of a written exam and assignments.

The University views plagiarism very seriously, and will take disciplinary actions against students for any kind of attempted malpractice in examinations and assessments. Plagiarism is considered to be a very serious academic offence. The penalty that maybe imposed for this, and other unfair practice in examinations or assessments, includes suspension from the University.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass.

Pass. A result that satisfies the requirements with regard to theoretical depth, practical relevance, analytical ability and independence.

Fail. An inadequate result with regard to theoretical depth, practical relevance, analytical ability and independence.

Entry requirements

General entry requirements and STAA40 Statistics: Basic Course, or the equivalent.

Further information

This course replaces STAG25 Statistics: Statistical Programming. The two courses may not be combined in a degree.

Subcourses in STAG26, Statistics: Statistical Programming

Applies from V23

- 2301 Exam, 5,0 hp
Grading scale: Fail, Pass
- 2302 Assignments, 2,5 hp
Grading scale: Fail, Pass