

Course Syllabus

Data Analysis and Visualization 7.5 Credits*, Second Cycle

Learning Outcomes

On completion of this course, students shall be able to:

- demonstrate understanding of visual literacy, decide on the graphical elements that are used to create data visualisations, and base the choice of graphical display both in the context of the data and the audience for which it is intended as well as in relation to perception and cognition
- explore uni and bivariate data consisting of categorical and quantitative variables by using numerical summary measures explain which summary measures have good statistical properties
- apply methods for visualising different data types: temporal data, categorical data, and textual data
- communicate relevant data patterns in the form of graphical displays.

Course Content

Data and visual analytics is an emerging field concerned with the analysis, modeling and visualisation of complex high-dimensional data.

This course will introduce students to the field by covering state of the art modeling, analysis and visualisation techniques. Focus is on practical challenges involving complex real-world data and including case studies and hands on work with a high level programming language using either Python or the R programming language for the purpose of communicating relevant data patterns in the form of graphical displays.

The course covers classical descriptive statistics and data visualisation. Classical descriptive statistics includes how to draw conclusions about the distribution of data using graphs and covers how to summarise data using measures of centre, spread, and association, and how to analyse data using normal distribution.

The course covers the fundamentals of data driven visualisation of information. It introduces how graphical elements and colour theory, design aspects, and perception affect how figures are perceived. The term visual literacy is introduced together with Tufte's principles for scientific graphics. The visualisation of different data types, including categorical and textual data, is also covered in the course.

Assessment

Individual projects, reports, seminars and computer exercises. A requirement for examination is that the student actively participates in at least two thirds of the timetabled seminars and computer exercises.

Forms of Study

Lectures, tutorials and computer labs.

Grades

The Swedish grades U–VG.

The final grade for the course is based on an overall assessment by the examiner.

Prerequisites

Bachelor's degree in Statistics, Economics, Business Administration, Computer Science, Information Science or Informatics comprising at least 180 credits and English 6

Subject:

Microdata Analysis

Group of Subjects:

Other Interdisciplinary Studies

Disciplinary Domain:

Natural Science, 100%

This course can be included in the following main field(s) of study:

1. Microdata Analysis

Progression Indicator within (each) main field of study:

1. A1N

Approved:

Approved 29 August 2019

Valid from 29 August 2019