# Linnæus University

# Course syllabus

School of Business and Economics
Department of Economics and Statistics

4NA915 Avancerad visualisering av data, 7,5 högskolepoäng
Advanced Data Visualization, 7.5 credits

**Main field of study**
Economics

**Subject**
Economics

**Level**
Second cycle

**Progression**
A1N

**Date of Ratification**
Approved 2024-02-12.
The course syllabus is valid from autumn semester 2024.

**Prerequisites**
Statistics 15 credits (descriptive statistics, statistical inference, and regression analysis), or the equivalent. English 6, or the equivalent.

## Objectives

After completing this course the student should be able to:

- discuss theoretical and practical construction of data visualization
- explain basic principles and strategies for creating good visualization of data
- apply appropriate visualization method for a given problem setting
- present in writing the visualization output produced from the data
- interpret the produced visualization results
- use visualizations for evaluating statistical models and statistical inference
- critically assess modern visualization tools covered in the course

## Content

The course contains:

- introduction to R, R packages
- introduction to data formats, import and manage data sets
- introduction to Base R graphics, ggplot2
- textdata and visualization
- geographical/demographic/spatial data visualization through maps
- summarization and abstraction of large data sets
- visualization of statistical models
- data visualization of multidimensional scaling
- interactive dynamics for visual analysis

## Type of Instruction

Teaching is carried out as distance learning via a learning platform and consists of self-studies based on instructions from the course coordinator. The teaching consists of computer lab introductions and individual communication between students and teacher. The course requires access to a computer with internet connection and a webcam.

## Examination

The course is assessed with the grades A, B, C, D, E or F.

The course is examined through two individual written computer labs (2 credits each), an individual written project carried out using R software (2 credits) and an individual written digital quiz (1.5 credits).

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail.

Resit examination is offered in accordance with Linnaeus University's Local regulations for courses and examination at the first- and second-cycle levels.

In the event that a student with a disability is entitled to special study support, the examiner will decide on adapted or alternative examination arrangements.

## Course Evaluation

A course evaluation should be conducted during the course or in connection with its conclusion. The results and analysis of the completed course evaluation should be promptly communicated to students who have completed the course. Students participating in the next course instance should be informed of the results of the previous course evaluation and any improvements that have been made, no later than at the start of the course.

## Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course: 1ST915 with 6 credits.

## Required Reading and Additional Study Material

**Required Reading**
Wiston C. *R graphics Cookbook, practical recipes for visualizing data*. O'Reilly Media, USA. Latest edition.

**Additional study material**
R Online Manuals (electronic resources included in the computer program. The manual cannot/must not be purchased).

**Reference literature**
References to other online resources and study material that may be of relevance will be supplied by the course coordinator before the start of the course.