

Vak: Data Science 2

credits: 5

Vakcode BFVM23DATASCNC2
Naam Data Science 2
Studiejaar 2026-2027
ECTS credits 5
Taal Engels
Coördinator S.M. Nabuurs

Werkvormen Hoorcollege
Werkcollege
Toetsen Bayesian Statistics - Computer, eigen organisatie
Numerical Analysis - Computer, eigen organisatie

Leeruitkomsten

- You assess the quality of life science data and perform data clean-up.
- You apply frequentist and Bayesian methods to estimate parameters with standard errors and confidence intervals.
- You implement and apply numerical methods for analysis of data, including differentiation, integration and finding roots and extrema.
- You explain how discretization, round-off and error propagation may affect the results of outcomes.

Inhoud

This course is designed to provide students with the practical implementation of Bayesian Statistics and Numerical Analysis using Python.

The first subject, Bayesian Statistics, covers topics such as constructing histograms, calculating sample moments, estimating parameters using the Method of Moment and Maximum Likelihood methods, evaluating various distributions, using null hypothesis significance tests, assessing normality, calculating standard errors and confidence intervals, and interpreting effect sizes. Students will learn how to use Bayes' theorem/law to calculate conditional probabilities and evaluate Bayesian estimators for parameters of various distributions using conjugated priors.

The second subject, Numerical Analysis, is focused on the application of numerical methods to solve mathematical problems. The course will provide an overview of numerical differentiation, numerical integration, root finding, optimization, and differential equations, and characterize their propagated errors.

By the end of the course, students will have an understanding of Bayesian Statistics and Numerical Analysis, and the ability to apply these concepts in their research.

Opgenomen in opleiding(en)

Master Data Sciences for the Life Science

School(s)

Engineering, Life Sciences & ICT