

B.Sc. Course (Elective Module Bachelor Study Phase 2)**Applied Data Science****Course number 22 154 (Tutorial 22 155)****Examiner** Prof. Dr. Daniel Rösch**Instructor** Prof. Dr. Daniel Rösch**Tutorial** Alicia Billand, M.Sc. with Honors

Course Objectives The primary objectives of this course are to provide statistical literacy as well as an in-depth understanding of modeling issues, techniques, and methods in random phenomena and statistical data analysis to real life situations. The course extends upon and complements the methodologies from the first study phase and will prepare for the complex issues of data exploration as well as for the more advanced statistical methods in multivariate data analysis in the Masters studies. A main emphasis is on a balanced implementation to a practical applicability in the fields of economic and social sciences.

Specifically, the course covers important areas including an introduction into probability. In the context of Data Science a specific focus is laid on linear and logistic regression analysis, regression trees, principal component analysis and cluster analysis.

In short, the topics covered in the course include:

- Probability theory
- Introduction to Data Science (supervised and unsupervised learning)
- Statistical modeling and applied regression analysis

Primary Learning Outcomes The students acquire the ability to think probabilistically as well as the skills and tools necessary to independently model and analyze statistical data and make informed decisions.

In an accompanying tutorial lecture contents are complemented by examples, case studies and IT based applications combining theoretical foundations with conceptual understanding, practical aspects and real life situations.

Prerequisites Statistics 1 (recommended)
Statistics 2 (recommended)

Applicability of the BSc Module WiWi – BSc – Wahlbereich W in Studienphase 2

Frequency Summer term

Recommended Semester 6

Examination Written exam, 90 minutes (100% of final grade)

Workload Overall: 180h (6 ECTS * 30h)
Hours of presence: 60h
Selfstudy: 120h

Credit Points 6 ECTS

Last updated March 25, 2025