UNIVERSITÄT HOHENHEIM

Prof. Dr. Robert Jung
Econometrics and Statistics (520K)
Prof. Dr. Aderonke Osikominu
Econometrics and Empirical Economics (520B)
Faculty of Business, Economics and Social Sciences

Course Outline Summer Term 2026

"Statistical Learning" (5200-510)

Master in International Business and Economics

Master in Economics with Data Science

AIDAHO Certificate Program

Schedule:

- **Lecture: Tuesday 14:15 – 15:45**, **HS Ö2**, starting **7.4.2026**
- **Practical class**: **Thursday, 10:15 – 11:45, HS 32** starting **9.4.2026**
  Instructor: Christopher Griffin (christopher.griffin@uni-hohenheim.de)

Objectives:

The course presents theory and applications for important statistical learning (supervised and unsupervised) techniques such as linear and logistic regression, classification and regression trees, random forests and lasso regularization. R statistical programming will be used throughout the course.

By the end of the course, a successful student should:

- have a solid understanding of the described statistical learning methods;
- be able to correctly identify the appropriate techniques to be applied to real-world data sets;
- have a good working knowledge of R programming software to apply the techniques;
- demonstrate the ability to communicate the results of applying selected statistical learning methods to the data.

Practical class:

A weekly practical class accompanies the lecture. This class aims to repeat concepts discussed in the lecture and demonstrate their practical application using real-world data sets and a statistical software package R. R is a free, open-source software package from https://www.r-project.org/.

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Grading:

The final grade will be based on **a paper and pen exam** (90 min).
The exam is a closed book, but you can bring a 'cheat sheet'; specific rules will be announced during the course.

Bonus rule: Students can earn up to 10 points on the final exam by taking a midterm exam. Details will be provided in class.

Prerequisites and recommendations:

This course assumes a foundation in statistics and prior completion of the course *Principles of Data Science*, and therefore a solid working knowledge of R and RStudio.

Literature:

Hastie, T.; Tibshirani, R. and Friedman, J. (2009). The
Elements of Statistical Learning: Data Mining, Inference, and Prediction,
New York: Springer, 2nd edition.
https://web.stanford.edu/~hastie/ElemStatLearn/.

James, G.; Witten, D.; Hastie, T. and Tibshirani, R. (2021). An Introduction to Statistical Learning. Springer. 2nd edition.
https://www.statlearning.com/

Course material:

All course material is available on ILIAS.

Course content:

1. Introduction
2. Predictive Regression
3. Classification
4. Resampling Methods
5. Model Selection and Regularization
6. Tree-Based Methods
7. Unsupervised Learning

This syllabus may be subject to change.