

Seminar Experimental Economics (Master)

Machine Learning in Economic Applications (5 ECTS)

- Course Description -

1. Objectives

The seminar places a special focus on machine learning methods. Students familiarize themselves with machine learning methods in economic applications. Specifically, students

- obtain an overview of currently applied machine learning methods
- get an idea of how to incorporate machine learning into economic research and interpret results in a meaningful way
- learn how to apply these methods while working with real data
- learn how to present complex problems in a comprehensive way

2. Structure

- Block sessions

Three blocked sessions (three hours each) will cover relevant machine learning topics for economists. Students will be guided through different techniques using various examples from the applied literature, accompanied by coding examples in R. The topics covered include regularization, tree-based methods, classification, and deep learning.

- Project phase

In the second part of the semester, students will work on their own data projects in small groups (two to three students). These projects aim at utilizing the machine learning methods discussed in the first half of the class in an applied context. Each group is assigned one data set they can flexibly work on while receiving guidance from a supervisor. The groups hand in a project report (similar to a seminar thesis) and present their projects in seminar sessions towards the end of the semester.

3. Prerequisites

The course requires programming in R and/or Python. Previous experience in these languages is helpful, but not necessary. Overall, a sound background in programming languages would be useful. A necessary prerequisite is that students have successfully completed the compulsory modules Micro, Math, Econometrics and Game Theory, in the MSE study program. Participation is recommended starting from the 3rd semester. No more than 9 students will be admitted to the seminar.

4. Grading

The module grade consists of three parts. The overall grade will reflect the quality of the project report (50%), the presentation in the seminar (30%), and the student's contributions to the discussion following each of the presentations (20%). To pass the seminar, students must obtain at least a passing grade in each of the parts.

5. Timeline

The blocked sessions will take place on October 24th, October 31st and November 7th at 9:30. Students are required to participate in the blocked sessions. The deadline for submitting the project report is December 10th, 2025. Project presentations will take place on December 16th, 2025.

6. Miscellaneous

Teaching and examination language is English. A timetable and further course material will be provided via StudOn. To express your interest, please send a transcript of records and a short paragraph describing your motivation to take the course to bianca.haustein@fau.de until **October 5th**.