

Professor Dr. Robert Jung

Summer 2026

Institute of Economics
Department of Econometrics and Statistics
University of Hohenheim

Time Series Econometrics (5211-740) *MSc Economics program*
**Applied Time Series Analysis: Econometrics and Statistical
Learning (5211-530) *MSc Economics with Data Science program***

Instructors:

Prof. Dr. Robert Jung
FG. Ökonometrie und Wirtschaftstatistik
e-mail: econometrics@uni-hohenheim.de
Office hour: by appointment.

Teaching Assistant:

MSc Domenic Franjic
e-mail: domenic.franjic@uni-hohenheim.de
Office hour: by appointment

Meeting times and locations:

Lecture: Thursday, 14:15 - 15:45, HS 33, (first lecture on April, 9, 2026)
Time Series Lab: Monday, 14:15 - 15:45 Seminarraum Lebensmittelchemie (first class on April, 13, 2026).

Course description:

The goal of the course is to provide a solid foundation in econometric methods that will permit students to conduct a serious empirical analysis of economic time series data. The focus is both on theoretical econometric models and their applications. Special emphasis will be on discussing properties of the models, estimators and test statistics. Throughout the course, the methods discussed will be demonstrated using actual economic and financial data and the software package R. In addition, the course introduces selected statistical learning and machine learning methods for time series, highlighting their role as flexible extensions to classical econometric approaches.

Time Series Lab:

The lecture is accompanied by a weekly Time Series Lab taught by Domenic Franjic. The aim of this class is to build a deeper understanding of the methods introduced in the lecture by examining their underlying mathematical structure and applying them to real-world data using the software package R.

Prerequisites:

This course assumes prior completion of the introductory econometrics courses at the level of Econometrics or Econometric Methods for Business and Economics or Applied Econometrics as well as a solid working knowledge of R and RStudio.

Grading:

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

Bonus rule: Students can earn up to 20 additional points (out of 100) on the final exam: up to 10 points by taking the midterm exam and up to 10 points through participation in the optional forecast competitions. Details will be provided in class.

Literature:

The main references for the course are

- Hamilton, J. *Time Series Analysis*. Princeton UP, 1994.
- Kirchgässner, G.; Wolters, J.; Hassler, U. *Introduction to Modern Time Series Analysis*. Springer Verlag, 2013 (second edition)
- Lütkepohl, H. *New Introduction to Multiple Time Series Analysis*. Springer Verlag, 2005.
- Martin, V.; Hurn, S. and Harris, D. *Econometric Modelling with Time Series*. Cambridge UP, 2013
- Peña, D.; Tsay, R. S. *Statistical Learning for Big Dependent Data*, Wiley, 2021

Additional reading, in particular references to journal articles, will be announced during the course.

Course materials:

Lecture slides, data sets, assignments and additional material will be available via ILIAS. **Note that the ILIAS course membership is by request only. Access is provided only, if your request contains the your current semester and study program.**

Course outline:

1. Introduction
2. Linear Time Series Models
3. Vector Autoregressive Models
4. Nonstationary Time Series Models
5. Latent Factor Models
6. Statistical and Machine Learning Methods for Time Series