

# Field: Statistics and Econometrics

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## Field: Statistics and Econometrics

- Statistical and econometric methods are at the core of all empirical inquiry into economics and the social sciences.
- Our specialized courses provide in depth knowledge of modern econometric analysis in the fields of stochastic processes, statistical inference, financial statistics, microeconometrics, panel data analysis, time series, Bayesian econometrics and more!
- The acquired knowledge enables the students to perform their own empirical research and to understand and critically evaluate empirical economic contributions.
- Numerous job offers requiring strong quantitative skills: Empirical Economic Researcher, Data Analyst (Social and Economic), Quantitative Financial Analyst, Market Research, ...

# Basic Module Econometrics

- 12 LP (6 hours / week) (WT, Prof. Liesenfeld, Core Econometrics)
- Research track version (WT, N.N., Fast Track and PhD students at CGS)
- Introductory course that provides the main results from regression analysis (linear regression model, asymptotics, heteroskedasticity, ML, GMM, time series, binary choice,...).
- Provides the basis for all special courses offered within the specialization field “Statistics and Econometrics”.

# Specialization Section (Schwerpunktbereich)

## Statistics

- Advanced Statistics: Stochastic Processes (Wied, ST)
  - Probabilities and random variables
  - Moments of random variables
  - Parametric families of univariate and multivariate distribution functions
  - Basic asymptotics
  - Stochastic processes.
- Advanced Statistics: Statistical Inference (Wied, WT)
  - Sample theory
  - Theory of point- and interval estimation methods
  - Theory on hypothesis testing
  - Estimation and testing for stochastic processes.

# Specialization Section (Schwerpunktbereich)

## Econometrics

- Time Series Analysis (Breitung, WT)
  - Estimation and forecasting of ARMA processes
  - Model selection and model fit
  - Unit root testing
  - GARCH processes
  - multivariate time series analysis
  - Cointegration and Granger causality
- Microeconometrics (Liesenfeld, ST)
  - Binary choice models
  - Multinomial models
  - Models for limited dependent variables (censoring, truncation,...)
  - Models for count data
  - Linear and non-linear panel models

# Specialization Section (Schwerpunktbereich)

- Statistical Analysis of Financial Data (Liesenfeld, ST)
  - Financial time series and their properties
  - Linear time series models
  - Empirical analysis of the efficiency of financial markets and stock return predictability
  - Empirical analysis of asset pricing models (CAPM, intertemp. CAPM)
  - Volatility modeling
  - Market microstructure and high frequency data
- Bayesian Econometrics (Liesenfeld, WT)
  - Fundamentals of Bayesian Econometrics
  - Importance sampling and Markov-Chain-Monte-Carlo
  - The linear regression model and (non-)conjugate prior distributions
  - Time series models
  - Models for discrete dependent data

## Specialization Section (Schwerpunktbereich)

- Selected Topics in Statistics and Econometrics (irregular, e.g. Analysis of Large Data Sets, Panel Data Analysis).
- Seminar in Statistics and Econometrics (Breitung / Wied / Liesenfeld)



**THANKS FOR YOUR ATTENTION!**  
**DON'T HESITATE TO ASK QUESTIONS!**