## Module title
Stochastic Models for Risk Analysis

### Abbreviation
12-RM-RA-161-m01

### Module coordinator
Dean of the Faculty of Business Management and Economics

### Module offered by
Faculty of Business Management and Economics

### ECTS
5

### Method of grading
Numerical grade

### Only after succ. compl. of module(s)
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### Duration
1 semester

### Module level
Graduate

### Other prerequisites
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### Contents
- Point and interval estimation for the value at risk
- Point and interval estimation for the conditional value at risk
- Prediction of value at risk in time series
- Risk of forecasts in time series, in particular exponential smoothing under covariates
- Conditional heteroscedasticity: ARCH, GARCH, EGARCH, DVEC, BEKK, DCC
- Aggregated losses and their empirical analysis
- Empirical analysis of statistical distributions
- Nonparametric bounds for the value at risk and conditional value at risk
- Empirical estimation of nonparametric bounds for value at risk and conditional value at risk
- Market model: definition, derivation, parameters, empirical analysis
- Capital asset pricing model: definition, parameters, empirical analysis
- Asset portfolios: definition, risk parameters
- Estimation of portfolio parameters: variance, value at risk, conditional value at risk, shortfall
- Optimum portfolios: concepts, theory, numerical analysis

### Intended learning outcomes
The student is able to estimate risk measures and the parameters of risk models from data. In particular, the student knows software packages and routines which enable empirical risk evaluation in a business context.

### Courses
- Ü (2) + V (2)

### Method of assessment
Written examination (approx. 60 minutes)

### Allocation of places
30 places. Should the number of applications exceed the number of available places, places will be allocated as follows: (1) Master's students of Wirtschaftsinformatik (Business Information Systems) will be given preferential consideration. (2) The remaining places will be allocated to students of other subjects. (3) When places are allocated in accordance with (1) and (2) and the number of applications exceeds the number of available places, places will be allocated by lot among applicants from this group.

### Additional information
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### Referred to in LPO I
Examination regulations for teaching-degree programmes

### Module appears in
- Master's degree (1 major) Business Information Systems (2016)
- Master's degree (1 major) Business Management (2015)
- Master's degree (1 major) China Business and Economics (2016)
- Master's degree (1 major) China Language and Economy (2016)
- Master's degree (1 major) Management (2018)
- Master's degree (1 major) China Business and Economics (2019)
- Master's degree (1 major) China Language and Economy (2019)