**Module title**

Stochastic Models for Risk Analysis

**Abbreviation**

12-M-RA-102-m01

**Module coordinator**

Dean of the Faculty of Business Management and Economics

**Module offered by**

Faculty of Business Management and Economics

**ECTS**

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**Method of grading**

Only after succ. compl. of module(s)

**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** (type, number of weekly contact hours, language — if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

**Method of assessment** (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

written examination (approx. 60 minutes)

**Allocation of places**

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**Additional information**

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**Referred to in LPO I** (examination regulations for teaching-degree programmes)

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**Module appears in**

Master's degree (1 major) Business Management (2010)