### Module title

**Stochastic Models for Risk Assessment**

| Abbreviation | 12-RM-RW-102-m01 |

### Module coordinator

Dean of the Faculty of Business Management and Economics

### Module offered by

Faculty of Business Management and Economics

<table>
<thead>
<tr>
<th>ECTS</th>
<th>Method of grading</th>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Only after succ. compl. of module(s)</td>
<td>1 semester</td>
<td>graduate</td>
<td>--</td>
</tr>
</tbody>
</table>

### Contents

- Etymological background of the risk concept
- Definitions of risk
- Basic concepts and terminology of stochastic risk modelling: risk phenomenon, risk object, risk variable, risk source, risk factor, risk cause, direct peril, indirect peril, loss under risk, profit under risk, loss variable, profit variable, risk distribution, risk indicator, risk parameter
- Classification of business risks
- Risk policy, risk management
- Risk analysis: risk identification, risk description, risk exploration, risk-relevant measurements, risk evaluation, risk assessment, risk modelling
- Risk management: risk minimisation, risk protection, risk avoidance, risk mitigation, bearing of risk, risk prevention
- Risk control, risk monitoring
- Risk matrix, risk diagram
- Score diagram
- Stochastic risk parameters and risk measures as distribution parameters
- Probability distributions: Gaussian, Laplace, Student’s t, extreme value, logistic, exponential, Weibull, gamma, negative Gaussian, Burr, hyperbolic, generalised hyperbolic
- Elementary stochastic risk measures: variance, standard deviation, signal-to-noise ratio, coefficient of variation, Sharpe ratio, nonconformance probability, expected shortfall, shortfall probability, risk parameters under reference values, Stone family Value at Risk and Conditional Value at Risk: definition, formal representations, values under special probability distributions
- Axioms of risk measures: distribution invariance, subadditivity, superadditivity, additivity, comonotonous additivity, nonnegative homogeneity, translation invariance, convexity, continuity, coherence

### Intended learning outcomes

The student knows the schemes and concepts of risk analysis, risk assessment, risk measurement, and the theoretical background. The student knows the concepts of advanced stochastic risk modeling. In a practical business situation, the student is able to identify an appropriate scheme of risk assessment and corresponding meaningful risk measures.

### Courses

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

**Method of assessment**

(S, 60 minutes)

### Allocation of places

Number of places: 30. 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 among applicants from this group according to the following quotas: Quota 1 (50% of places): total number of ECTS credits already achieved in the respective degree subject; among applicants with the same number of ECTS credits achieved, places will be allocated by lot. Quota 2 (25% of places): number of subject semesters of the respective applicant; among applicants with the same number of subject semesters, places will be allocated by lot. Quota 3 (25% of places): allocation by lot. (4) Within the groups according to (1) and (2), applicants who already have successfully completed at least one module component of the respective module will be given preferential consideration. (5) Places on all courses of the module component
with a restricted number of places will be allocated in the same procedure. (6) A waiting list will be maintained and places re-allocated as they become available.

**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 Information Systems (2011)
- Master's degree (1 major) Business Information Systems (2013)
- Master's degree (1 major) Business Information Systems (2014)
- Master's degree (1 major) Business Management (2013)
- Master's degree (1 major) Business Management (2014)
- Master's degree (1 major) Business Management (2011)
- Master's degree (1 major) Business Management (2010)