

**Invitation to a Course on  
Fundamental Statistical Methods in Insurance  
with emphasis on statistical challenges due to Solvency II**

28<sup>th</sup> September 2016 to 1<sup>st</sup> October 2016  
Salzburg University

- Lecturers:
- Prof. Dr. Marcus Hudec  
Department of Scientific Computing, Vienna University  
Director of Data Technology, Vienna  
Visiting professor at Salzburg University
- Dr. Michael Schlögl  
Head of Motor Insurance Department and Actuarial Department Non-Life  
Wiener Städtische Versicherung AG – Vienna Insurance Group, Vienna  
Visiting professor at Salzburg University
- Andreas Missbauer  
Deputy Actuarial Function Non-Life  
Wiener Städtische Versicherung AG – Vienna Insurance Group, Vienna  
Visiting professor at Salzburg University
- Dates:
- |            |                                  |              |
|------------|----------------------------------|--------------|
| Wednesday, | 28 <sup>th</sup> September 2016, | 9.00 – 17.30 |
| Thursday,  | 29 <sup>th</sup> September 2016, | 9.00 – 17.30 |
| Friday,    | 30 <sup>th</sup> September 2016, | 9.00 – 17.30 |
| Saturday,  | 1 <sup>st</sup> October 2016,    | 9.00 – 12.30 |
- Contents:
- The current regulations in insurance supervision – especially with regard to the standard formula and internal models under Solvency II – require not only a profound knowledge of the underlying stochastic and statistical methods, but also sound justifications of the assumptions made based on the available statistical data. The course covers all aspects of fundamental statistical methods in insurance required to become a fully qualified actuary according to the education syllabus of the International Actuarial Association and the core syllabus of the Actuarial Association of Europe as well as according to the regulations of the Actuarial Association of Austria (AVÖ), which correspond to the regulations of the German Actuarial Association (DAV). For continuing professional development (CPD) the course counts as 21 hours. The emphasis will be on a practical and data oriented approach. A basic stochastic knowledge is sufficient. Please find the structure of the course below.
- Course fees:
- € 594 (incl. VAT) without hotel accommodation, € 994 (incl. VAT) with accommodation from Tuesday to Saturday (4 nights) in the Arcotel Castellani including breakfast. Lunches and coffee breaks are included in the fees for all participants.

**Information:** For further information, please contact Sarah Lederer by e-mail ([sarah.lederer@sbg.ac.at](mailto:sarah.lederer@sbg.ac.at)) with your telephone number. Your questions will be answered as soon as possible.

**Registration:** Please send the attached registration form by post or by e-mail ([sarah.lederer@sbg.ac.at](mailto:sarah.lederer@sbg.ac.at)), and arrange for the amount to be transferred (at no cost to the recipient) to the following account before 26<sup>th</sup> August 2016. After this date registration with hotel accommodation is only possible upon request. The registration and payment deadline for participants who do not need accommodation is 9<sup>th</sup> September 2016.

Salzburg Institute of Actuarial Studies (SIAS)  
IBAN: AT79 2040 4000 0001 2021 BIC: SBGSAT2S

**Location:** Faculty of Science, Lecture Hall 402  
5020 Salzburg, Hellbrunner Straße 34

## Course Structure

### **1 Introduction: Statistical methods with regard to Solvency II**

- a. Actuarial tasks and role of statistics under Solvency II
- b. Definitions and key figures
- c. Influences on technical results
- d. Necessary techniques
- e. Exercises and applications

### **2 Data analysis**

- a. Deriving information from data
- b. Basics of descriptive statistics
- c. Data visualisation
- d. Introduction to probability theory
- e. Measures of dependency
- f. Exercises and applications

### **3 Stochastic risk models with special focus on their relevance for Solvency II**

- a. Empirical data and theoretical models
- b. Probability distributions with specific relevance to insurance (claim count and claim size distributions)
- c. Parameter estimation
- d. Basic concepts in risk management
- e. Standard formula and internal model under Solvency II
- f. Risk modelling in the internal model based on a showcase (e.g. claims model, correlations, reinsurance)
- g. Experiences with Solvency II: calibration, validation, sensitivity, backtesting
- h. Risk classification based on examples in rate-making
- i. Time series models
- j. Exercises and applications

### **4 Simulation techniques**

- a. Generation of random numbers
- b. Monte Carlo method: concept/idea and applications under Solvency II
- c. Markov processes and bonus-malus systems
- d. What are the costs of a 'claim for free' or a 'bonus saver'?
- e. Exercises and applications