Invitation to a Course on
Advanced Statistical Methods in Insurance
Premium calculation, reserving, data mining, and risk modelling under Solvency II

27th to 30th September 2017
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, 27th September 2017, 9.00 – 17.30
Thursday, 28th September 2017, 9.00 – 17.30
Friday, 29th September 2017, 9.00 – 17.30
Saturday, 30th September 2017, 9.00 – 12.30

Contents:

Modern stochastic and statistical methods and the successful application of modern data mining concepts have become a crucial competitive advantage in a challenging market environment and a "must" with regard to the expectations and requirements of the supervisory authorities. During the course analytical methods will be illustrated by specific applications (e.g. premium calculation and reserving, optimizing cross-selling and up-selling campaigns in insurance marketing) as well as by touching Solvency II issues (simulations, predictions).

The course covers all aspects of advanced 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). The course also meets the requirements by the Austrian Financial Market Authority with respect to the (deputy) responsible actuary (§§ 114 – 116 Austrian Insurance Supervision Act), the (deputy) head of the actuarial function (§ 113) and the (deputy) head of the risk management function (§ 112). 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.

<table>
<tr><td>Course fees:</td><td>€ 666 (incl. VAT) without hotel accommodation, € 1.066 (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.</td></tr>
<tr><td>Information:</td><td>For further information, please contact Sarah Lederer (sarah.lederer@sbg.ac.at) by e-mail with your telephone number. Your questions will be answered as soon as possible.</td></tr>
<tr><td>Registration:</td><td>Please send the attached registration form by e-mail (sarah.lederer@sbg.ac.at) or by post, and arrange for the amount to be transferred (at no cost to the recipient) to the following account before 25th August 2017. 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 8th September 2017.</td></tr>
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Salzburg Institute of Actuarial Studies (SIAS)
IBAN: AT79 2040 4000 0001 2021   BIC: SBGSAT2S

Location:	Wednesday:	Unipark Nonntal, Lecture Hall 2 5020 Salzburg, Erzabt-Klotz-Straße 1
	Thursday, Friday, Saturday:	Faculty of Science, Lecture Hall 402 5020 Salzburg, Hellbrunner Straße 34

Course Structure

1   Principles and methods in life, health, and non-life

Insurance principle, smoothing of raw data, tariff structures, techniques

2   Statistical modelling

Multiple regression model, regression with indicator variables, modelling of non-linearities, generalized linear models

3   Experience rating and credibility models

Basics of experience rating and credibility theory, Bayesian credibility, Bühlmann credibility model, Bühlmann-Straub credibility model

4   Selected topics on simulation techniques, tariff calculation, and reserving

Recapitulation from the course „Fundamental Statistical Methods in Insurance" (Solvency II, Monte Carlo method, bootstrapping), stochastic reserving, and application to risk modelling

5   Data mining process

Process models, approaches for implementation of analytics, evaluation of models, overfitting

6   Multivariate techniques: theory and practical applications in insurance industry (e.g. prediction of risk behaviour, fraud detection, optimizing the return of a direct mailing campaign)

Dimension reduction (principal component analysis), visualization of multivariate data, application of regression models, classification (supervised learning), segmentation of data sets by means of cluster analysis (unsupervised learning)

Each chapter ends with a summary of typical examples, exercises, and questions.