

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

24th to 27th September 2014
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
- Dates: Wednesday, 24th September, 9.00 – 17.30
Thursday, 25th September, 9.00 – 17.30
Friday, 26th September, 9.00 – 17.30
Saturday, 27th September, 9.00 – 12.30
- Contents: Modern stochastic and statistical methods and the successful application of data mining concepts have become a crucial competitive advantage in a challenging market environment and a “must” with regard to the requirements of the supervisory authorities. During the course analytical methods will be illustrated by specific applications (premium calculation and reserving, optimizing cross-selling and up-selling campaigns in insurance marketing). Solvency II issues (simulations, predictions) will also be addressed.
- 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 Groupe Consultatif 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, €954 (incl. VAT) with accommodation from Tuesday to Saturday (4 nights) in the Castellani Parkhotel including breakfast. Lunches and coffee breaks are included in the fees for all participants.
- Information: 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.

Registration: Please send the attached registration form by e-mail (sarah.lederer@sbg.ac.at) or by post, or fax it to +43 662 8044 155, and arrange for the amount to be transferred (at no cost to the recipient) to the following account before 22nd August 2014. 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 5th September 2014.

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

Location: Unipark Nonntal, Lecture Hall 1
5020 Salzburg, Erzabt-Klotz-Straße 1

Course Structure

Part I: Advanced statistical methods for premium calculation and reserving

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 credibility theory, Bayesian credibility, Bühlmann credibility model, Bühlmann-Straub credibility model

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

Brief summary from the course „Fundamental statistical methods in insurance“ (Solvency II, Monte Carlo method), bootstrapping, stochastic reserving

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

Part II: Data mining concepts illustrated through the optimization of cross-selling and up-selling campaigns in insurance marketing

1 Data mining process

CRISP-DM, evaluation of models, and overfitting

2 Multivariate techniques: theory and practice based on optimizing the return of a direct mailing campaign

a. Visualization of multivariate data, principal component analysis

b. Prediction: strategies of statistical modelling (selection of variables, model choice), modern regression models, regression trees

c. Classification (supervised learning): classification trees, naive Bayes classifier, techniques of discriminant analysis, k nearest neighbours algorithm, support vector machines, ensemble methods

d. Clustering (unsupervised learning): hierarchical methods, k means algorithm, mixture models