

**Invitation to a Course on  
Non-Life Insurance Mathematics**  
with special consideration of recent developments

Summer Semester 2010  
Salzburg University

- Lecturer:** Prof. Dr. Klaus D. Schmidt  
Chair of Actuarial Mathematics at Dresden University of Technology  
Visiting professor at Salzburg University
- Dates:** On the following weekends Friday from 3 p.m. to 7 p.m. and Saturday from 9 a.m. to 1 p.m.:  
5<sup>th</sup> and 6<sup>th</sup> March 2010  
23<sup>rd</sup> and 24<sup>th</sup> April 2010  
28<sup>th</sup> and 29<sup>th</sup> May 2010
- Contents:** The course covers all aspects of non-life insurance mathematics required to become a fully qualified actuary according to the education syllabus of the International Actuarial Association and the core syllabus of Groupe Consultatif, according to the regulations of the Actuarial Association of Austria (AVÖ), as well as according to the regulations of the German Actuarial Association (DAV). For continuing professional development (CPD) the course counts as 21 hours. Recent developments, in particular in loss reserving (Bornhuetter-Ferguson principle, correlation between different lines of business, paid & incurred problem), have been taken into account. Special attention will be paid to a comprehensive survey about methods used for estimating loss and premium reserves carried out by the German Insurance Association (GDV). The course is suited to all those who want to become acquainted with the main questions and methods in non-life insurance mathematics. It is also of interest to experienced practitioners. Basic stochastic knowledge is required. Please find the structure of the course below.
- Course fees:** €444 without hotel accommodation, €714 with 3 overnight accommodations (from Friday to Saturday) in the Castellani Parkhotel including breakfast. Coffee breaks are included in the fees for all participants.
- Information:** For further information, please contact Sarah Lederer by fax (+43 662 8044 155) or 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 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 12<sup>th</sup> February 2010:

Salzburg Institute of Actuarial Studies (SIAS)  
IBAN: AT 792 040 400 000 012 021 BIC: SBGSAT2S

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

## Course Structure

### 1. Risk models

- Individual model (distribution and moments of the aggregate loss, Cantelli's inequality, probability of ruin)
- Collective model (distribution and moments of the aggregate loss, recursions of Panjer and De Pril)
- Hierarchical modelling

### 2. Risk sharing and reinsurance

- Proportional reinsurance (quota share and surplus)
- Non-proportional reinsurance (excess-of-loss per risk, excess-of-loss per event, stop-loss)
- Reinsurance programme (combination of different types of reinsurance)

### 3. Premium calculation

- Construction of a multiplicative tariff
- Bonus-malus systems (construction based on Markov chains, stability)
- Safety loadings and premium principles (quantile principle, standard deviation principle, principle of zero utility, and others)

### 4. Loss reserving

- Run-off triangles and the chain-ladder method
- Development patterns and the Bornhuetter-Ferguson principle (comparison and extension of elementary methods)
- Loss prediction in a linear model (correlation between different lines of business, prediction, prediction error)