

Invitation to a Course on Fundamental Statistical Methods in Insurance

29th September 2010 to 2nd October 2010
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
Member of the Extended Management Board
Wiener Städtische Versicherung AG – Vienna Insurance Group, Vienna
Visiting professor at Salzburg University
- Dates:** Wednesday, 29th September, 9.00 – 17.30
Thursday, 30th September, 9.00 – 17.30
Friday, 1st October, 9.00 – 17.30
Saturday, 2nd October, 9.00 – 12.30
- Contents:** The course covers all aspects of basic statistical methods in insurance required to become a fully qualified actuary according to the core 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. The methods and models will be illustrated by specific applications (e.g. analysis of insurance portfolios, modelling risk and claims structure, bonus-malus systems, life tables). The emphasis will be on a practical and data oriented approach. The course is suited to all those who want to acquire knowledge of fundamental statistical methods in insurance. A basic stochastic knowledge is sufficient. Please find the structure of the course below.
- Course fees:** €480 without hotel accommodation, €840 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 by fax (+43 662 8044 155) or e-mail (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 27th August 2010. 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 10th September 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 Introduction

Motivation, principles of data analysis, non-life insurance in Austria, data bases and basic figures

2 Descriptive statistics

Describing data with tables and graphs, descriptive measures for location and variability, techniques of exploratory data analysis

3 Probability theory

Introduction to probability, stochastic independence, conditional probabilities, Bayes' theorem

4 Theoretical probability distributions

Concept of random variables, discrete random variables (uniform, binomial, Poisson, geometric, negative binomial), continuous random variables (uniform, normal, exponential)

5 Statistical inference

Theoretical background, parameter estimation from samples (method of moments, maximum likelihood), estimation of confidence intervals (proportion, mean), theory of hypothesis testing (type I and type II error, p-value), classical test statistics (significance tests for proportions, means), calculation of power and sample size, comparison of two groups

6 Empirical data and theoretical models

Comparison of empirical data with theoretical models (measures and tests for goodness of fit, graphical techniques), probability distributions of specific relevance in insurance business, examples: MTPL claims distribution, claims controlling

7 Measures of dependency and their application

Bivariate probability distributions, measures of association in contingency tables, correlation, linear regression (least squares principle), examples: churn prediction, cross-/up-selling

8 Stochastic risk models

Solvency, time series models, Markov processes, application to bonus-malus systems (model simulations, comparison of bonus-malus systems)

9 Principles of biometric calculations

Life tables, methods of life table analysis (curve fitting and interpolation, parametric modelling)