

Fundamentals of Actuarial Techniques in General Insurance

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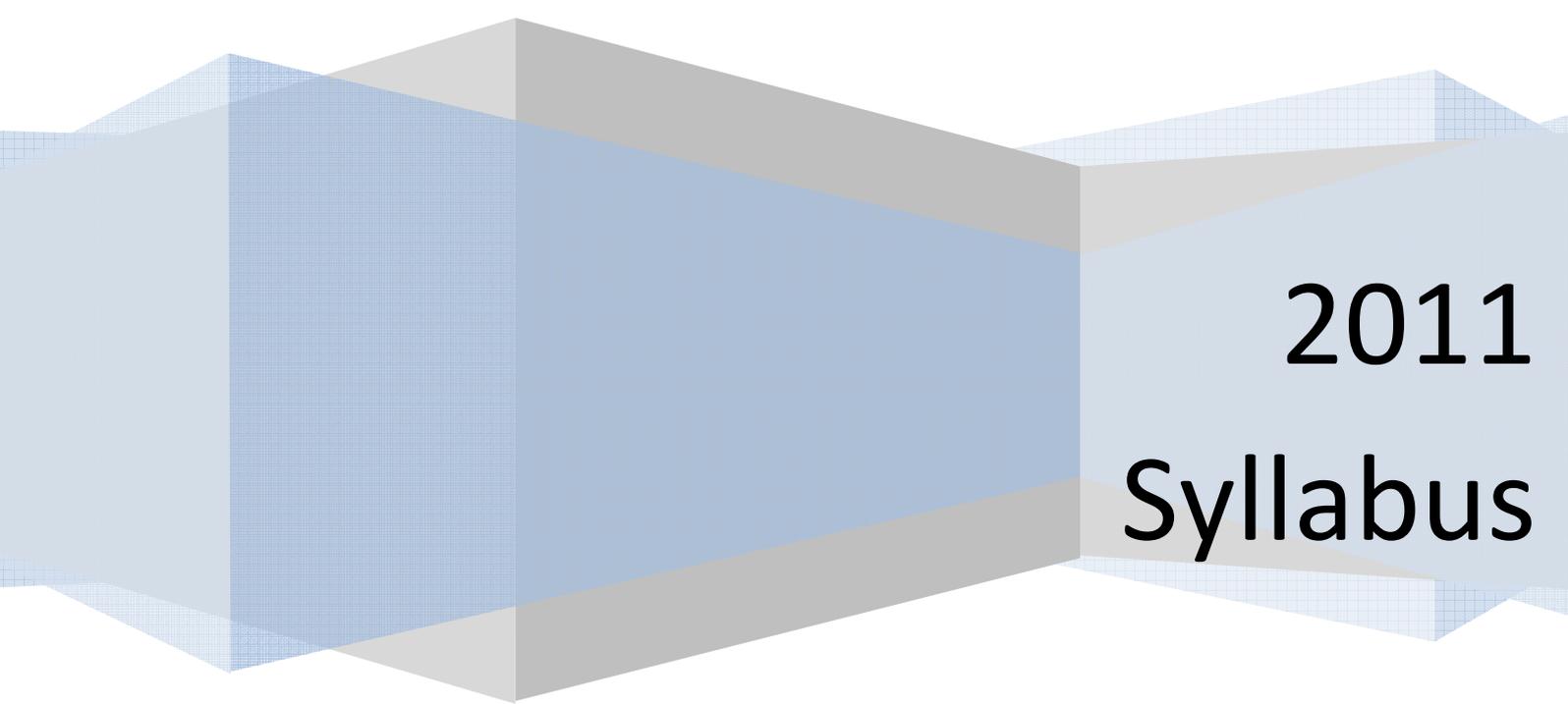


The Actuarial Profession
making financial sense of the future



Matβlas

Actuarial consulting, training
and research



2011
Syllabus

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Foreword

Launching this course and its certification had been on the agenda of the IUA's Education & Training Sub-Committee for many years. In a joint effort between the IUA, The Actuarial Profession and MatBlas we were able to finally bring this initiative to life in 2009...and we are extremely proud to have been chosen as the providers of the course.

Between 2009 and 2010 18 delegates from a wide range of disciplines (underwriting, finance, IT, operations and actuarial) and levels of experience (from graduates to chief operating officers) attended this course. For many, this was their first exposure to actuarial concepts and techniques and for others the course provided the opportunity to gain a deeper understanding of actuarial concepts and methods.

While I would like to describe how great my experience delivering this course has been, I would rather let delegates' feedback speak for itself. The following is a summary of delegates' feedback on a scale of 1 to 5 (with 5 being the most positive).

Category	Rating
Overall content/Syllabus	4.3
Clarity of ideas presented	4.1
Course material	4.2
Balance theory/practice	3.5
Case study instructions	4.3
Homework	4.0
Expectations met	4.1
Course relevance	4.2
Level of difficulty	3.9
Level of usefulness	3.7
Overall rating	4.0

a lot in five days. a subject it fitted s that I knew and verall I feel it has promised and will benefit. I found the ful but very time-have been good to reviewing some of

With Solvency II just around the corner, we expect to see an increased interest in this course from insurance professionals across all disciplines. We are committed to make actuarial concepts and techniques easy to understand to every professional in the insurance industry.

We look forward to welcoming delegates in 2011.

Yours sincerely



Ana J. Mata, PhD, ACAS
Managing Director of MatBlas

Course overview

This course has been designed for insurance professionals who want to acquire a clear understanding of actuarial methods and concepts and their applications to general insurance: Rating, Reporting, Reinsurance, Reserving and Risk / Return.

Delegates will learn through a series of hands on case studies how actuarial methods apply in various practical situations.

Course duration

The course is delivered in five non-consecutive days, with one week between sessions. After each session delegates will complete a series of case studies as homework to practice the learned concepts and clarify any knowledge gaps in the following session.

After the course, all delegates will receive a certificate of attendance. For those delegates interested in attaining a certificate of competency, there will be an optional marked assessment available 2 or 3 weeks after the last module of the course.

Who is this course for?

Although the course does not assume prior knowledge of actuarial concept and methods, it is suggested that delegates will have at least three years of experience in an underwriting or broking role. Delegates will require familiarity (understanding what they are and / or how they are used) of some of these basic concepts:

- Claims cost
- Rate changes or rate monitoring
- Incurred, paid and outstanding claims
- Earned and written premium
- Loss ratios

This course will be most suitable for insurance and reinsurance professionals who often interact with actuaries (internal and external) and want to:

- 1) Have a better understanding of what actuaries do
- 2) Have a better understanding of key assumptions within the actuarial modelling process in all areas of business (rating, reporting, reinsurance, reserving and risk / return)
- 3) Be able to start an actuarial analysis that would serve as the basis of discussions with internal and external actuaries
- 4) Be able to perform basic pricing analysis and incorporate some of the learned concepts in their day to day underwriting and risk selection process

This course and its certification will be most beneficial for:

- Underwriting managers or heads of business units
- Class or line of business underwriters
- Insurance and reinsurance brokers
- Reserving and modelling practitioners
- Claims managers and adjustors
- Finance and accounting practitioners

“This course is highly recommended for graduates with a numerate degree who wish to pursue a career in insurance but do not necessarily wish to take the actuarial examinations. I started this course during my second week of work in the industry. Even though all concepts both actuarial and insurance were new to me, I was able to understand the lectures, follow the case studies and do the homework.”

Frank E. Blasco

Self-assessment

The following self assessment will help interested delegates determine if they have the required level of mathematical knowledge and Microsoft Excel experience to fully benefit from this course.

Level of mathematical knowledge required

- 1) Do you know how to add, subtract, multiply and divide?
- 2) Do you know how to calculate compound interest? And if so, are you comfortable with exponential formulae such as $1.06^8 = 1.06^8$
- 3) Do you know how to calculate the area or surface of a square and a triangle?
- 4) Do you know how to calculate averages?
- 5) Given a formula (no need to understand it in detail), are you comfortable using it with given values to arrive at an answer?

Requirements: Yes to 3 out 5 of the questions above.

Level of Microsoft Excel skills

- 1) Are you generally comfortable using Microsoft Excel for basic tasks?
- 2) Do you know how to perform basic operations (+, -, *, /, ^) in Microsoft Excel?
- 3) Are you comfortable writing function statements in Microsoft Excel, such as IF(), Vlookup(), etc? At least, you should be comfortable following written instructions to type such functions in Microsoft Excel.
- 4) Are you comfortable understanding basic formulae in Microsoft Excel that someone else has written?

Requirements: Yes to 3 out 4 of the questions above.

Format

The course is divided into five modules; each module is split into four sessions of 90 minutes and will feature guest speakers and lecturers. During each session, the trainer will present basic concepts and methods, immediately followed by application to a case study.

For some sessions, delegates will be required to bring their own laptop computer with Microsoft Excel© installed. All case studies will be done using Excel (no special software is required) or a basic handheld calculator.

After each module, delegates will be given some exercises to work on before the following session. The homework and solutions will be discussed during the first hour of the following course day. Delegates will receive sample solutions for revision.

Delegates will have access to the trainer(s) in between sessions either using face-to-face consultation hours or by submitting their questions by e-mail to a dedicated e-mail address.

Course fee per delegate

£2,450+VAT (including refreshments and lunches)

The course fee includes comprehensive course notes (power point slides), files and templates for the case studies, sample solutions for all case studies and face-to-face and e-mail support for homework between sessions.

Delegates who attend at least four days will receive a certificate of attendance.

Certificate of competency (optional)

In order to attain the certificate of competency, delegates will be assessed and graded on the topics covered. The examination will be independently set and assessed by Andrew L. Jackson FIA.

Delegates opting for the certificate of competency will require spending time studying the course material and practicing using the classroom and homework case studies.

The fee to sit the test for this certificate will be £250+VAT

Venue

The course will be held in Central London (EC3 area)

Dates in 2011

The winter/spring course will take place on 2nd, 9th, 16th, 23rd and 30th of March 2010 between 9am and 5pm. The examination will take place on 19th of April between 9am and 12m.

The autumn session will take place on 7th, 14th, 21st and 28th September and 5th October between 9am and 5pm. The examination will take place on 26th October between 9am and 12m.

The course is limited to 10 delegates and we require delegates to register interest indicating their preferred session by sending an e-mail to FATGI@matblas.com or by contacting the IUA directly. Delegates will be contacted to confirm registration.

Module 1: Basic statistics and probabilistic models

The course starts with an invited speaker, usually a member of The Actuarial Profession presenting a one hour session on what actuaries do.

This module builds up the statistical foundation for the rest of the course. After this module, participants will be able to:

- Understand the concept of “volatility” within a statistical framework and its impact in various insurance and reinsurance applications.
- Understand the differences between families of loss distributions and their impact in the rating process.
- Understand the applications of loss distributions to insurance and reinsurance rating
- Perform basic statistical analysis including graphical representation of data

Key topics covered

- Basic statistical concepts
 - Mean, median, mode, variance and standard deviation
 - Histograms, percentiles plots
 - Other graphical representations
- Random variables and probability distributions
- Families of probability distributions, interpretation and general formulae
- Basic measures of risk
- Practical estimation of moments and percentiles
- Derivation of increased limits factors
- Derivation of exposure curves

Module 2: Fundamentals of insurance rating

This module focuses on how actuarial methods are applied to derive rates and rating factors in insurance. After this module delegates will have answers to common practical questions including:

- What is an insurance rate?
- How are insurance rates calculated?
- Where to find the information needed for rate calculation.
- How to get started when putting together a benchmark pricing tool.
- How to make rating models consistent.
- When it comes to benchmark rates, why is consistency more important than accuracy?
- How to monitor new business without the need for expiring information.
- How to deal with market prices that are lower than the model suggests. What would the impact be on the profitability results?
- Why is rate monitoring on its own meaningless for cycle management?
- How to assess the overall rate adequacy of a portfolio of policies.
- How to link and incorporate pricing and reserving.
- How can benchmark pricing be linked to forecasting and business planning?

- How to perform basic experience rating exercises for large accounts.

Key topics covered

- Design of rating plans
 - Components of a rating plan: rating factors vs. exposure base
 - Components of a rate: claim cost, expenses, commissions and profit allowance
 - Increased limit factors and exposure curves
 - Defining a benchmark and its usefulness
 - Deriving rates and rating factors from data
- Experience rating
 - Premium and exposure adjustments
 - Claims adjustments
 - Estimating the burn cost
 - From claims cost to premium
 - Introduction to credibility
 - Loss ratio projection
 - Allowing for claims inflation and rate movements
 - Allowing for new business and business strategy
- Management reporting
 - Rate monitoring on renewal risks
 - Rate monitoring vs. rate adequacy
 - Rate adequacy and new business monitoring
 - Rate adequacy, planning and forecasting

Module 3: Fundamentals of claim reserving

The main purpose of this module is to provide delegates with an in-depth understanding of the importance of loss reserving and how it is linked to pricing and profitability. The concepts covered range from the basics of preparing the data, to performing basic reserving analysis.

After this module, delegates will be able to perform basic reserving analysis, understand key assumptions, strengths and weaknesses of each method and reconcile results between various actuarial methods.

Key topics covered

- Data requirements
 - Allocating losses to years depending on policy basis (claims made/occurrence)
 - Allocating premium to years
 - Data basis: calendar year, accident/exposure year and underwriting year
- Reserving methods
 - Chain ladder
 - Bornhuetter-Ferguson
 - Average cost per claim
- Brief introduction to stochastic claims reserving
- Practical issues and considerations:

- Dealing with reported but not reserved losses
- Separating small, large and CAT losses
- Impact of reinsurance
- Impact of insurance reserving on reinsurers

Module 4: Fundamentals of reinsurance rating

This module presents an introduction to the actuarial methods applied to reinsurance pricing for proportional and excess of loss working layers with a brief introduction to catastrophe modelling.

The module starts with an introduction to reinsurance and common reinsurance structures in practice. We also discuss which reinsurance structure is most common for different classes of insurance products.

After this module, delegates will be able to understand:

- How to adjust premium for rate changes and other exposure changes
- The key assumptions and adjustments in the pricing process
- How sensitive the final results are to ceding companies reserving and pricing practices
- The strengths and weaknesses of each method
- How to decide between various loss cost estimation methods (credibility)
- How to allow for contract terms that depend on losses that have not yet been observed, such as reinstatements
- How to determine the profit margin

Key topics covered

- Experience rating
 - Adjusting premium for rate changes and other exposure changes
 - Adjusting losses for claims inflation
 - Developing losses to ultimate (estimating IBNR)
 - Estimating the gross loss ratio
 - Estimating the burn cost for excess of loss layers
- Exposure rating
 - Increased limits factors and exposure curves
 - Calculating the exposure rating loss cost
- Using aggregate probability distributions to evaluate loss dependent features (this topic builds up from the statistical foundation studied in Module 1).
 - Reinstatements
 - Aggregate deductibles
 - Loss corridors
 - Swing premiums
 - Variable commissions
 - Underwriting net income
- From loss cost to premium
- From premium to profitability

Module 5: Fundamentals of capital modelling in practice

This module presents an overview of capital requirements in general insurance, starting with an overview of current regulatory developments that drive the minimum level of capital requirements for insurance and reinsurance companies.

To set the scene, an invited speaker from the FSA will present an overview of current regulatory requirements and the impact of Solvency II for the insurance industry.

Delegates will also learn further applications of capital modelling techniques for management purposes such as return on equity calculations. The module deals with topics ranging from basic simulation techniques, through to how to build up and understand a simple capital model.

Key topics covered

- Understanding capital requirements
 - ICAS and Solvency II
 - Risk Management
- Understanding sources of risk
 - Underwriting risk
 - Reserving risk
 - The concept of diversification
- Capital modelling in practice
 - Measuring risk
 - Correlations between risks
 - Portfolio aggregation
 - Extreme events and scenario testing
- Cost of capital and return on equity
- Risk measures and capital allocation
 - The need to allocate capital

WHY Matβlas?

Matβlas	Other Alternatives
Basic theory, but focus on implementation and interpretation.	Academics – too theoretical
Training is our core business: clear separation between consulting and training services	Large consulting firms: Not core services: “training” is an avenue to market other services (e.g. consultancy)
Implementation with available tools in the workplace	Seminars usually base on proprietary software – further purchase required
Sample solutions and detailed reference material. Interactive Q&A throughout.	

Who we are?

Ana Mata, our managing director and founder, is a qualified actuary with broad experience developing bespoke rating and underwriting management solutions for London market and commercial insurance companies. Throughout her career she has seen both sides of the coin in all areas:

- Pricing experience both in insurance and reinsurance companies as well as an external consultant.
- Global experience: Ana has worked in the US and the London market (US and international business).
- Training experience: over 15 years of training experience both in academic and industry roles.

With her candid approach to business and extensive experience working with underwriters and actuaries, Ana is able to present the same concepts from different angles to a wide range of insurance professionals including actuaries, underwriters, claims managers and insurance executives.

Our experience

Our trainers are active industry practitioners with significant experience in the topic they lecture. This allows them to provide the most relevant material and course content for today’s insurance market. All courses relate the learned concepts and application to internal and external reporting requirements and current industry trends.

After only two years of operations, we have become the leading training company in the London market providing professional development courses with an actuarial focus to insurance and reinsurance professionals.

Since 2007, we have trained over 240 insurance professionals from 38 companies operating in the London market and Continental Europe.

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