

# QUALITY ASSURANCE: The Actuarial Model

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# 9th International CONAHEC Conference

- GUADALAJARA, MEXICO
- MARCH 16-21, 2004

# Source

- This talk is based on information collected for my career guide for actuaries,
- *Actuaries' Survival Guide*,
- published by Elsevier Academic Press, Boston, in January 2004.



Szabo

Actuaries' Survival Guide

# Actuaries' Survival Guide

*How to succeed in one of the  
most desirable professions*

Fred E. Szabo





# Actuaries' Survival Guide

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# Quality Assurance and Mobility

- I would like to talk to you today about a model for professional quality assurance and global mobility.
- A story of what it takes for a community of experts to achieve and maintain professional excellence and transferable recognition of credentials across national borders. It's a remarkable story.

# Why Actuaries?

- In the strict sense, actuaries are applied mathematicians who advise insurance companies, financial consulting firms, and governments.
- In a broader sense, however, they are representative of a family of skilled experts,
- organized into national and international professional organizations,
- with admission to the profession tightly managed by exemplar mechanisms for quality assurance and mobility.
- This is why I want to talk about actuaries today.

# Topics

- Actuarial Education
  - University programs
  - Professional examinations
  - Combined programs
- Actuarial Accreditation
  - Student, Associate, Actuary
- Actuarial Societies
  - SOA, CAS, CIA, IAA, CNA, etc.

# What is an Actuary?

- Actuaries can be grouped in at least five ways:
  - valuation actuaries
  - pricing actuaries
  - consulting actuaries
  - pension actuaries, and
  - financial actuaries

# Valuation Actuaries

- Insurance companies deal with events that are uncertain in time and amount. Therefore they must put aside what they consider to be the most likely amount of money they will need to pay future claims and expenses.
- Valuation actuaries determine the appropriate funds required and propose the price of insurance.
- They also certify the adequacy of financial reserves to government agencies.

# Pricing Actuaries

- Pricing actuaries are responsible for predicting how much money a company is likely to make on a product.
- A product can be life insurance, health insurance, or other types of insurance benefits.
- Pricing actuaries generally do not certify anything to anyone outside of the company.

# Consulting Actuaries

- Consulting actuaries spend a good deal of their time advising on defined benefit pension plans.
- These are trusts set up to fund tax-assisted retirement benefits at a rate spelled out in legally certified documents.

# Consulting Actuaries in the US

- Consulting actuaries in the US must be
- *Fellows* or *Associates* of the Society of Actuaries or the Casualty Actuarial Society,
- *Enrolled Actuaries*, or
- *Fellows* of the Canadian Institute of Actuaries, the Faculty of Actuaries, or the Institute of Actuaries; or
- *Members* of the American Academic of Actuaries, the Asociacion Mexicana de Actuarios Consultores, the Asociacion Mexicana de Actuarios, or the Colegio Nacional de Actuarios.



# Pension Actuaries

- Pension actuaries look at all members of a pension plan, their ages and salaries, and project how much each would receive at retirement on average.
- *The work of pension actuaries is usually country-specific and requires additional local certification.*

# Financial Actuaries

- As the worlds of banking, insurance, and finance become more entwined, a new breed of actuary is emerging, known as a financial actuary.
- Here is an example.
- An advertisement for a senior financial actuary on the Internet described one of the novel roles of actuaries in business.
- A company was looking for a senior actuary whose responsibilities included developing models for Internet credit card processing systems. product pricing and consumer credit.

# How do You Become an Actuarial Fellow?

- The SOA model: 8 examinations
- The CAS model: 9 examinations
- Each examination requires about 400 hours of preparation.
- The success rates in these examinations is approximately 40%.
- In addition, there are usually professional development requirements.

# Professional Education

- There are basically three educational models for actuaries:
- **The University model:** Actuaries are certified by completing an accredited university program of studies.
- **The Professional model:** Actuaries are certified by passing a specified set of examinations organized by actuarial societies.
- **The Combined model:** Actuaries are certified by a combination of the two previous processes.

# Europe and Latin America

- In Europe and Latin America, actuaries have tended to qualify by completing a course of actuarial study,
- usually up to the Master's level,
- at universities accredited by actuarial societies or governments, and
- by meeting certain professional requirements.

# Great Britain and Commonwealth Countries

- In Great Britain and Commonwealth countries, the Faculty of Actuaries of Scotland and the Institute of Actuaries of England have defined an actuarial syllabus and sets of examinations based on this syllabus.
- Students in many parts of the world take these examinations to become actuaries in their countries.
- Certain university courses at designated universities can be credited towards this process.

# USA and Canada

- In the United States, the Society of Actuaries and the Casualty Actuaries Society have defined a syllabus and sets of examinations that must be taken to become an actuary.
- No university programs or courses are credited toward these examinations.
- Most American and Canadian actuaries and many others around the world become actuaries by passing these examinations.

# The IAA Syllabus

- The International Actuarial Association surveyed its members some time ago about their educational practices.
- The survey identified a number of academic topics that essentially describe the repertoire of common scientific knowledge and competency areas of actuaries around the world.
- The list summarizes the understanding of leading actuaries as well as the core tools of their profession.



# Core Topics

- The identified core topics consist of Financial Mathematics, Probability and Mathematical Statistics, Economics, Accounting, Modeling, Statistical Methods, Actuarial Mathematics, Investment and Asset Management, Principles of Actuarial Management, and
- **Professionalism**

# Theory and Practice

- In Canada and elsewhere, some universities offer undergraduate programs in the co-operative format.
- Students alternate between study terms (on campus) and work terms (in the workplace).

# Benefits of a Coop Education

- Work experience at time of graduation (sometimes even international)
- Better grades because of links between theory and practice
- Faster completion of professional examinations
- A deeper sense of professional ethics and appreciation of global corporate values



# Actuarial Societies



**SOCIETY  
OF  
ACTUARIES**



**FIND**

## Links to Other Sites

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Updated – March 11, 2004

- ▶ [Actuarial Organizations](#)
- ▶ [Actuarial Science Programs](#)
- ▶ [Actuarial State & Local Clubs](#)
- ▶ [Publications & News](#)
- ▶ [Resources — Canadian](#)
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[The Actuarial Board for Counseling and Discipline](#)

[The Actuarial Foundation](#)

[The Actuarial Society of Hong Kong](#) 

[Actuarial Society of Malaysia \(ASM\)](#)

[Actuarial Society of South Africa](#)

[AERF](#)

[The Actuarial Standards Board](#)

[American Academy of Actuaries](#)

[American Society of Pension Actuaries](#)

[Canadian Institute of Actuaries](#)

[Casualty Actuarial Society](#)

[Colegio Nacional De Actuarios, A. C.](#)

[Conference of Consulting Actuaries](#)



# COLEGIO NACIONAL DE ACTUARIOS, A.C.

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**CONVOCATORIA**

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**EVENTOS**

**CONTACTANOS**



# The Actuarial Profession in Mexico

*by*

- *Pablo Noriega and Luis Miguel Rodríguez*
- **Colegio Nacional de Actuarios, México**

# Mexico - 1

- Actuaries in Mexico form a closely-knit community. They are different than actuaries in Canada or the United States on two main accounts.

# Mexico - 2

- First they become actuaries through an academic program, not through peer-recognition.

# Mexico -3

- Second, they have established a diversified practice where a significant number of actuaries work in non-traditional areas such as Finance, Government, Planning and Informatics.

# Mexico - 4

- Nevertheless, Mexican actuaries are very much like actuaries in other parts of the world.
- They are trained in the same skills and techniques, they share the same problem-solving orientations and a similar mind-set.

# Mexico - 5

- In an ever more interdependent world, and in face of an eventual signing of a North American Free Trade Agreement [*now a reality, of course*], new opportunities to work, collaborate and compete are becoming a reality every day.
- Actuaries of the three countries will probably profit from a better knowledge of each other and of each other's perspectives.
- [*That's why we're here! Thanks, CONAHEC.*]



# Other Societies in Mexico

## Liga a otras Asociaciones



Asociación Mexicana de  
Actuarios Consultores



Asociación Mexicana de  
Actuarios



**Informes al 5598-7690**

## **Noticias**

---

★ 11 de Noviembre del 2003

### **Circular sobre Certificación Provisional**

Para bajar la circular y conocer los pormenores [Haz clic aquí](#)

★ 6 de Octubre del 2003

### **Programa de Certificación Profesional**

Consulta la Presentación del Act. Roberto Bonilla del "Programa de Certificación Profesional" realizada durante el XXI Congreso Nacional de Actuarios que contiene el **Calendario de Cursos y Exámenes** [Haz clic aquí](#)

29 de Mayo del 2003

## **★ Nueva Sección del Programa de Certificación Profesional**

Haz clic en el documento que te interese

[Reglamento de Certificación](#)

[Preguntas Frecuentes](#)

[Cursos de Capacitación](#)

[Fecha y lugares de Exámenes](#)

[Solicitud Curso / Examen](#)

# Quality Assurance (Ethics)

- La ética es el cuerpo de principios y valores morales que gobiernan la conducta interna del individuo.

*Colegio nacional de actuarios.*

# Quality Assurance - 2

- Como parte integral de lo que es la ética, existen ciertos principios generales de conducta profesional que deben regir las acciones y decisiones que en cumplimiento de sus deberes desarrollan cotidianamente los Actuarios.

# Quality Assurance - 3

- Al observar preceptos de ética profesional, el Actuario asegura el más alto profesionalismo en su desarrollo y garantiza a la sociedad una fiel y positiva orientación de sus acciones, buscando siempre la justicia social y su realización personal.

# Quality Assurance - 4

- El Actuario tiene una importante función social; como hombre de su tiempo y como profesionalista está comprometido a serle útil a su país y a sus semejantes,
- encauzando a este fin la ciencia y la técnica que le han sido entregadas, y defendiendo orgullosamente la imagen externa e interna de su profesión.

# Quality Assurance - 5

- A través del enunciamiento de estos preceptos los Actuarios están reiterando su más celoso respeto hacia ellos mismos y hacia los demás.



# More Actuarial Societies



**CAS**  
*Online*

**Casualty Actuarial Society**







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Continuing Education

Regional Affiliates

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Standards and Guidelines

Admissions

Academic Community

Be An Actuary

Media Relations

Publications

Research

Classifieds

Discussion Forums

*probabilités*

*modèles financiers*

*statistiques assurances avantages sociaux*

*gestion des risques*

Canadian  
Institute of  
Actuaries



Institut  
Canadien des  
Actuaires



English

Français

*probability*

*statistics financial modelling*

*insurance employee benefits*

*risk management*

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**Welcome to The Actuarial Profession**

*making financial sense of the future*

Actuaries provide commercial, financial and prudential advice on the management of assets and liabilities - most especially where long term management and planning are critical factors.



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**MAP (Guidance Notes)**

**Careers and jobs**

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**CPD**

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**Resource centre**

**Members**

## Welcome to the International Actuarial Association

▶ Members

▶ Public

## Bienvenue à l'Association Actuarielle Internationale

▶ Membres

▶ Public

## Bienvenidos Asociación Internacional de Actuarios

▶ Miembros

▶ Público

## Willkommen zur Internationalen Aktuarvereinigung

▶ Mitglieder

▶ Öffentlichkeit

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Preferred/Préférence/Preferencia/Bevorzugt:

Netscape 4.x + or MSIE 4.x +  
JavaScript and Cookies enabled  
Screen resolution 800 x 600,  
in 256 colours or better.

Webmaster:

[webmaster@actuaries.org](mailto:webmaster@actuaries.org)



[www.ica2006.com](http://www.ica2006.com)



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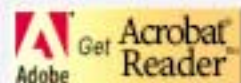
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### The Groupe Consultatif

The Groupe was established in 1978 to bring together the actuarial associations in the European Union to represent the actuarial profession in discussion with the European Union institutions on existing and proposed EU legislation which has an impact on the profession.

The Groupe also now provides a forum for discussion amongst all actuarial associations throughout Europe. Thirty actuarial associations from twenty-seven European countries are represented on the Groupe.

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[E-Newsletter](#) - November 2003

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The Groupe's **Continuing Professional Development (CPD)** strategy document is now available to download from the [Publications](#) page.



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Publications, surveys  
and presentations

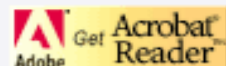
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## Information about the Groupe

For further information on the Groupe please contact:

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[Member Associations](#)

[Contact details for secretariats of member associations](#) (pdf, 88 kb)

**Chairman** - Maria da Luz Fialho (Portugal)

**First Vice Chairman** - Paul Grace (UK - Faculty)

**Second Vice Chairman** - Costa Koutsopoulos (Greece)

**Honorary Treasurer** - Alf Guldberg (Sweden)

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## Agreements and Statutes

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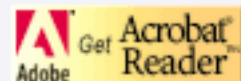
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### Documents

The Groupe has a number of official documents available to be viewed online or downloaded onto your computer

Select a document below:

- [Statutes](#) (pdf, 24kb)
- [Committees' Terms of Reference](#) (html, 10kb)
- [Code of Conduct](#) (pdf, 11kb)
- [Guidance notes](#) (pdf, 30.8kb)
- [Agreement on Mutual Recognition](#) (pdf, 12kb)
- [Core Syllabus for actuarial training in Europe](#) (pdf, 93kb)

# Mobility

- The Faculty and Institute have signed mutual recognition agreements with several actuarial organizations:
- the Institute of Actuaries of Australia,
- the Canadian Institute of Actuaries,
- the Society of Actuaries of the United States,
- the Institute of Actuaries of Japan, and
- the Groupe Consultatif of the European Union.

# The Agreement

- The agreement describes the process, country by country, by which actuaries in the countries involved can become members of the actuarial societies in the other participating countries.

# Practicing Abroad

- *The agreement says, in essence, that*
- actuaries who have become Fellows of a national actuarial society by the normal route (having passed the necessary examinations), and
- who are members in good standing (having paid the annual membership fee in their home country),
- meet the professionalism requirements of the guest country,
- fulfill the necessary residency requirements, and
- intend to practice in the guest country,
- *can do so by reciprocity.*

# For details, please consult:

**Actuaries' Survival Guide**  
Fred E. Szabo

What would you like to do with your life? What career would allow you to fulfill your dreams of success? If you like mathematics, consider becoming an actuary.

Szabo's *Actuaries' Survival Guide* explains what actuaries are, what they do, and where they do it. It describes exciting combinations of ideas, techniques, and skills involved in the day-to-day work of actuaries.

- Based on curricula and examination of Society of Actuaries' (SOA) and Casualty Actuarial Society (CAS)
- Presents an overview of career options and details on working conditions and the nature of employment in different industries.
- Provides a link between theory and practice. Helps readers understand the blend of qualitative and quantitative skills and knowledge required to succeed in actuarial exams.
- Includes insights provided by over 50 actuaries and actuarial students about the actuarial profession
- Author Fred Szabo has directed the Actuarial Co-op Program at Concordia for ten years

*"I found this material to be the most helpful thing for anyone contemplating an Actuarial Profession. The early material motivates and familiarizes a person with the profession in a casual but real way. The middle material gives a person the tools to plan and attack a program to pass the exams. The latter part of the book gives great guidance on job opportunities.... Bravo to both the book's concept and realization".*

—Murray Lieb, New Jersey Institute of Technology

*"The book is extremely well written. Actuaries need good communication skills and this book provides an excellent example of such skills at work."*

—Charles Moore, Kansas State University

**Actuaries' Survival Guide**

How to succeed in one of the most desirable professions

**Fred E. Szabo**

MATHEMATICS: Applied  
MATHEMATICS: Reference  
BUSINESS & ECONOMICS  
Insurance/Risk Management

ISBN: 0-12-560146-0

9 780126 801460

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- **Muchas gracias.**
- **Merci beaucoup.**
- **Thank you.**

*Fred Sato*