



# Society of Actuaries

## Education 2000

# TWO AGENCIES

- SOA – Life Based
- CAS – General Insurance
- 1<sup>st</sup> Four Exams in Common
- Nine Modules to Fellowship

# North American E & E

- Nine Modules to Fellowship
- Purely Exam Based
- No Credit for University Courses
  - 150 Programs
  - Very Large Variance in Quality
- Much Less True in Canada
  - Seven Good Programs

# Course 1

## Mathematical Foundations of Actuarial Science

### Topics Tested

- Calculus
- Probability
- Risk Management

### Level Tested

2+ semesters of a college  
level course

1 semester of college  
level course

some background  
through reading or  
course work

3 hour multiple-choice exam

# Course 2 - Interest Theory, Economics and Finance

## Topics Tested

- Microeconomics
- Macroeconomics

## Level Tested

- 1 semester introductory college course
- 1 semester intermediate level price theory course
- 1 semester introductory college course

# Course 2 - Interest Theory, Economics and Finance (cont.)

## Topics Tested

- Interest Theory
- Finance

## Level Tested

1/2 semester college  
level course

2 semesters senior level  
course

# Course 3 - Actuarial Models

## Topics Tested

- Classification of Models
- Contingent Payment Models
- Survival Models
- Frequency, Severity and Aggregate Loss Models
- Stochastic Process Models
- Ruin Models
- Simulation of Models

# Course 4 - Actuarial Modeling

## Topics Tested

- The Modeling Process
- Estimation and Fitting of Frequency, Severity and Survival Models
- Regression, Forecasting and Time Series
- Credibility Theory
- Simulation in Estimating and Fitting



# Course 5 – Application of Basic Actuarial Principles

## Topics Tested

- Principles of Design
- Principles of Risk Classification
- Principles of Pricing/Ratemaking/Funding
- Principles of Valuation

# Course 6 – Finance and Investments

## Topics Tested

- Characteristics of Various Investments
- Modern Portfolio Theory
- Option Pricing
- Embedded Options
- Interest Rate Risk Management
- ALM
- Portfolio Management Techniques

# North American E & E

Courses 1 to 6 plus

Associateship Admission Course

Qualifies Student for ASA

# Course 7 - Applied Actuarial Modeling

## Topics Evaluated

- The Context of Modeling
- Model Design, Selection & Setup
- Input Data Selection & Analysis
- Analysis of Results
- Communicating the Modeling Process

# **Course 7 - Applied Actuarial Modeling (cont.)**

Intensive Seminar Format

Will contain an Objective Evaluation

Some seminars will be  
Practice Area Specific

# Course 8 - Advanced Actuarial Practices

## Practice Area Specific:

- Finance
- Health, Group Life & Managed Care
- Individual Insurance
- Investment
- Retirement Benefits

# Professional Development

## Education Objectives

- Expand knowledge/competency in chosen practice area
- Integrate concepts and techniques and apply to current business, academic or research environment
- Demonstrate ability to effectively communicate results

# Professional Development

## Major Components

- Formal Professional Development programs
  - seminars, meetings, exams, courses
- Project demonstrating extensive analysis of issue within practice area
- Presentation of project
  - purpose, scope, results & conclusions



# Professional Development Project

- Define issue relevant to chosen practice area
- Research & investigation
  - literature search
  - data collection
  - analysis
  - conclusions and recommendations
- Communication - oral or written - opportunity for peer review and comment
- A written report on the project submitted to the SOA for review.

# Professional Development

## Process

- Candidate selects FSA as advisor
- Identifies goals and develops Professional Development plan or adopts Model Plan
- Advisor explicitly agrees to inclusion of formal programs not SOA approved, or goes to SOA for guidance
- File plan after passing Courses 1-8
- Must complete 50 units within 25-months

# North American E & E

- Nine Modules to Fellowship, plus
- Fellowship Admissions Course
- Equals FSA

# Issues

- CAS & SOA jointly administer Courses 1 through 4
- Controversy about Courses 3 and 4
- Controversy about Nation Specific Training
- Controversy about Placement of ASA/FSA

# The Future

- Education Models will converge
- Reasons
  - Shrinking of world
  - IAA (e.g. minimum education guidelines)
  - QRA
  - Groupe Consultatif
  - Mutual Recognition Agreements
  - Globalization of profession

# E & E in 2007

- China will have its own system
- Pure University Programs will add Professional Exams
  - (Germany, Switzerland, Mexico)
- QRA will be widely adopted
- Canada will have University waivers



# **Society of Actuaries**

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