

Course No. 1829

Actuarial Modelling for Insurance & Risk Management Training Course

ACTUARIAL SCIENCE & INSURANCE ANALYTICS
INSURANCE & RISK MANAGEMENT

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Actuarial Modelling for Insurance & Risk Management Training Course provides an advanced practical framework for understanding, developing, interpreting, and applying actuarial models across insurance and risk management functions. The course focuses on how quantitative models can support pricing, reserving, claims forecasting, risk assessment, capital planning, portfolio management, and strategic decision-making.

Participants will explore the foundations of actuarial modelling, including probability distributions, frequency and severity modelling, statistical assumptions, loss development, predictive analysis, and scenario-based modelling. Particular emphasis is placed on understanding how insurance data is transformed into analytical models and how model assumptions influence business outcomes.

The course also addresses the application of actuarial models to insurance pricing, claims reserves, loss forecasting, risk segmentation, portfolio performance, and financial risk. Participants will learn how to interpret model outputs, assess uncertainty, conduct sensitivity and scenario analysis, and identify limitations that may affect the reliability of actuarial estimates.

Through practical exercises, insurance datasets, case studies, and modelling workshops, participants will strengthen their ability to evaluate actuarial models and translate quantitative results into meaningful business decisions. The course is designed to support stronger collaboration between actuarial, underwriting, claims, finance, risk, and management functions while improving the quality and governance of insurance analytics.

Objectives

- By the end of the course, participants will be able to:
- Explain the principles and structure of actuarial models used in insurance and risk management.
- Analyze insurance data and identify variables suitable for actuarial modelling.
- Develop appropriate frequency and severity models for insurance losses.
- Apply statistical and probability concepts to insurance risk modelling.
- Evaluate actuarial assumptions, model parameters, and data quality.
- Apply actuarial modelling concepts to insurance pricing and premium adequacy.

- Analyze claims development and apply modelling approaches to reserving.
- Evaluate portfolio risk, loss trends, profitability, and financial exposure.
- Apply scenario analysis, sensitivity analysis, and stress testing to actuarial models.
- Interpret model outputs and communicate their implications to management and non-technical stakeholders.
- Identify model limitations, uncertainty, bias, and potential sources of model risk.
- Strengthen actuarial model governance, validation, documentation, and ongoing monitoring.

Who Should Attend

This course is designed for actuaries, actuarial analysts, insurance analysts, pricing professionals, reserving specialists, underwriters, claims professionals, risk managers, financial professionals, and insurance data specialists who work with quantitative analysis, insurance risk, or actuarial information.

It is also suitable for insurance executives, senior managers, portfolio managers, product managers, finance teams, internal auditors, model governance professionals, compliance specialists, and decision makers who need to understand how actuarial models support insurance and risk management decisions.

The program is particularly valuable for professionals who need to interpret actuarial models and outputs without necessarily being advanced mathematical specialists, as well as professionals seeking to strengthen their ability to assess model assumptions, uncertainty, performance, and business relevance.

Learning Outcomes

- Upon successful completion of the course, participants will be able to:
- Describe the architecture and purpose of actuarial models used in insurance.
- Prepare and assess insurance data for actuarial modelling.
- Select appropriate modelling approaches based on the nature of the insurance risk.
- Analyze claim frequency, severity, distributions, and loss patterns.
- Interpret actuarial assumptions, parameters, coefficients, and model outputs.

- Apply modelling principles to insurance pricing and premium adequacy.
- Evaluate claims development and reserve modelling approaches.
- Assess portfolio risk, profitability, exposure, and emerging trends using quantitative techniques.
- Conduct sensitivity analysis, scenario analysis, and stress testing.
- Evaluate uncertainty and limitations associated with actuarial estimates.
- Identify sources of model risk, data bias, overfitting, and inappropriate assumptions.
- Assess actuarial model performance through validation and monitoring.
- Communicate modelling results and recommendations clearly to technical and executive audiences.
- Apply actuarial modelling insights to practical insurance and risk management decisions.

Course Outline

DAY 01

Foundations of Actuarial Modelling

- Purpose, structure, and applications of actuarial models in insurance
- Probability distributions and statistical concepts for insurance modelling
- Insurance data preparation, exposure measures, claims data, and data quality
- Model assumptions, parameters, variables, and model selection principles

PRACTICAL APPLICATION

Review an insurance dataset and identify variables and assumptions for model development

DAY 02

Loss Modelling, Frequency & Severity Analysis

- Modelling claim frequency and claim severity
- Selecting and interpreting probability distributions for insurance losses
- Understanding dependency, variability, volatility, and extreme losses
- Evaluating model fit, assumptions, and statistical reliability

DAY 02 — CONTINUED

PRACTICAL APPLICATION

Develop and interpret a simplified frequency and severity modelling exercise

DAY 03**Actuarial Modelling for Pricing & Reserving**

- Applying actuarial models to insurance pricing and premium adequacy
- Risk segmentation and analysis of loss experience
- Claims development and reserve modelling fundamentals
- Evaluating ultimate losses, reserve uncertainty, and claims projections

PRACTICAL APPLICATION

Analyse a simplified pricing and reserving case and interpret model results

DAY 04**Risk Modelling, Scenario Analysis & Model Uncertainty**

- Applying actuarial models to portfolio risk and financial exposure
- Scenario analysis, sensitivity analysis, and stress testing
- Modelling emerging risks, changing claims patterns, and extreme events
- Identifying model risk, data limitations, bias, uncertainty, and inappropriate assumptions

PRACTICAL APPLICATION

Conduct a scenario and sensitivity analysis for an insurance portfolio

DAY 05**Model Validation, Governance & Strategic Application**

- Actuarial model validation, performance assessment, and monitoring
- Model documentation, governance, controls, and review processes
- Interpreting and communicating actuarial model results to management

DAY 05 — CONTINUED

- Using actuarial modelling to support strategic insurance and risk management decisions

FINAL WORKSHOP

Develop an integrated actuarial modelling framework covering data, risk modelling, pricing, reserving, scenario analysis, validation, and management recommendations

Register or Request More Information

Course page: <https://quest-training.com/courses/actuarial-modelling-for-insurance-risk-management-training-course>

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