Actuaries Institute.

Fellowship Program

General Insurance and Health Pricing and Portfolio Analytics

Subject Syllabus 2026

1. Overview and aim

This subject aims to provide students with an understanding of how actuarial judgement (i.e. Critical thinking) is required when considering general and health insurance pricing and portfolio analytics. Implications of different processes, methods, models and assumptions are discussed through considering different pricing and portfolio management requirements.

2. Student outcomes

After successfully completing this subject, students will be able to:

- Develop the business planning and product development processes for a general or health insurer;
- Analyse both the underwriting process and key considerations undertaken in the construction of general insurance and health insurance products;
- Construct an appropriate actuarial pricing approach for any general or health insurance class of business or group of risks;
- Propose an appropriate pricing technique for each of portfolio underwritten business and case underwritten business;
- Explain the practical considerations involved in catastrophe modelling;
- Explain the main types of reinsurance and when they might be used by a general insurer;
- Construct a portfolio analytics framework for an insurer; and
- Explain the nature, impact, causes and effects of the insurance cycle.

3. Prerequisites

Students will have attempted (but not necessarily passed) all Foundation Program subjects and all Actuary Program subjects.

It is recommended that students have attempted (but not necessarily passed) General Insurance and Health Valuation (GIHV), prior to attempting General Insurance and Health Pricing and Portfolio Analytics (GIHPPA). For students who have not attempted GIHV, it is recommended they familiarise themselves with its concepts, specifically the different patterns of claims development that can arise from various general insurance products as represented by the construct of claims triangles and the importance of considering claims development when using data for pricing purposes.

4. Assessment skill levels

Assessment of this subject will be split across the following skill levels:

- Simple application (25%): demonstration of a detailed knowledge and understanding of the topic;
- Application (50%): demonstration of an ability to apply the principles underlying the topic within a given context; and
- Higher-order (25%): demonstration of an ability to perform deeper analysis and assessment of situations, including forming judgements, taking into account different points of view, comparing and contrasting situations, suggesting possible solutions and actions and making recommendations.

5. Assessment method

The subject is assessed via a three-hour (plus 15-minute reading time) examination, worth 80% of the mark, and an assignment, worth 20% of the mark.

6. Learning objectives

The following is a list of the learning objectives for this subject. A mapping to the relevant subject chapter is indicated in brackets after each learning objective (e.g. C02 refers to Chapter 2 for this subject).

1 Discuss the business planning and product development processes for a general and health insurer

1.1 Describe the operating environment and the participants in the general and health insurance markets (C02)

1.2 Discuss the short-term and long-term objectives of an insurer (C02)

1.3 Discuss how profitability and capital requirements are determined for an insurer (C02)

1.4 Describe the organisational structure typically adopted by an insurer (C02)

1.5 Outline the information systems typically adopted by an insurer (C02)

1.6 Describe the product development process for an insurer (C02)

1.7 Discuss the control cycle typically in place for product management (C02)

1.8 Identify the role of actuaries in the business planning and product development processes (C02)

2 Analyse both the underwriting process and key considerations undertaken in the construction of general insurance and health insurance products

2.1 Explain the key features of an insurance policy (C03)

2.2 Assess whether a risk meets the criteria for insurability (C03)

2.3 Describe for the more common types of products, how consumer needs are met, including (C03):

- What the product is intended to cover;
- Why the risk is insurable;
- What indemnity agreement is applicable to the product;

- Any underwriting considerations such as restrictions to prevent moral hazard, rating factors, limits, sub-limits, exclusions, deductibles, waiting periods and other general conditions;
- What the premium term is;
- What entities and exposures are covered;
- What protections against insured perils and ancillary covers are provided; and
- What the basis of settlement is.

3 Construct an appropriate actuarial pricing approach for any general and health insurance class of business or group of risks

3.1 Construct various components of a technical premium and other pricing components, including (C04):

- Risk premium;
- Expense loading(s);
- Reinsurance costs and benefits;
- Profit margin;
- Capital requirements and capital cash flows;
- Investment return; and
- Return on capital.

3.2 Construct various types of experience investigations and demonstrate an allowance for considerations such as (C04):

- Data inaccuracy, scarcity or incompleteness;
- Various exposure measures;
- Risk relativities;
- Low frequency and high severity risks;
- High frequency and low severity risks;
- Seasonality of claims;
- Net margin changes;
- Large losses and catastrophe events; and
- Analysis by peril or type of claim.

3.3 Explain how to adopt a pricing technique to allow for frequency and severity distributions (C04)

3.4 Explain the practical considerations that relate to insurance pricing and the limitations of various techniques (C04)

3.5 **Explain how the pricing of competitor products influences price setting (C04)**

3.6 **Explain how the concepts of segmentation, adverse selection and regulations influence pricing (C04)**

3.7 **Explain the need to price for different levels of risk and the consequences for portfolio performance if no risk based pricing is employed (C04)**

3.8 **Explain the concept of "Sound Rating" and construct Sound Rating calculations, including forecasting the components of technical premiums (C04)**

3.9 **Explain the difference between "short tail" and "long tail" business for pricing purposes, and to construct practical examples of risk/class breakdown for different types of business (C04)**

3.10 **Explain relevance of risk and non-risk assessments and considerations, including selection of risk-rating factors in pricing algorithms and incorporation of underwriting views into a vigorous pricing framework (C04)**

4 Propose an appropriate pricing technique for portfolio underwritten business

4.1 **Evaluate the usage of different pricing techniques, including (C05):**

- Simple tabular analysis;
- Generalised linear models ("GLMs");
- Generalised additive models ("GAMs");
- Gradient boosting machines ("GBMs") and
- Other machine learning / non-parametric approaches.

4.2 **Evaluate the appropriateness and limitations of various pricing techniques for a given scenario, product or set of data (C05)**

4.3 **Evaluate pricing analysis, including (C05):**

- How models can be practically used in pricing analysis;
- Selection of appropriate error structures and link functions (GLMs);
- Interpretation of residual charts, parameter estimates (where applicable) and other model outputs; and
- Identification and correction of errors for given model outputs.

4.4 Conduct calculations relating to a range of pricing matters, including (C05):

- Allowance for excesses and deductibles;
- Treatment of granular rating factors such as geography, vehicle characteristics and occupation; and
- Treatment of natural hazards and catastrophes.

4.5 Explain how to adopt a pricing technique to allow for government mandated or monitored rates (C05)

4.6 Explain pricing under the community rating system (C05)

4.7 Assess the key features that relate to long tailed business pricing, including (C05):

- Linkage with liability for incurred claims analysis;
- Exposure analysis;
- Setting and application of economic assumptions; and
- Other product specific features.

5 Propose an appropriate pricing technique for case underwritten business

5.1 Evaluate the usage of different pricing techniques, including (C06):

- Credibility theory;
- Retrospective rating; and
- Other experience rating techniques such as profit share and burner terms.

5.2 Evaluate the appropriateness and limitations of various pricing techniques for a given scenario, product or set of data (C06)

5.3 Conduct calculations relating to a range of pricing matters, including (C06):

- Allowance for aggregate deductibles and limits;
- Allowance for loss-responsive policy conditions such as those specified in the retrospective rating plans;
- Treatment of self-insured retentions;
- Claims sharing arrangements; and
- Incorporation of underwriting views in a rigorous pricing framework.

6	**Explain the practical considerations involved in catastrophe modelling**
6.1	**Explain the components of a catastrophe model, including event, hazard, exposure, vulnerability and financial analysis (C07)**
6.2	**Explain key perils that can be modelled in a catastrophe model (C07)**
6.3	**Explain outputs from catastrophe modelling, including event distributions and simulations (C07)**
7	**Explain the main types of reinsurance, risk equalisation and risk pools and when they might be used**
7.1	**Explain the more common types of reinsurance, risk pools and risk equalisation and how to value these from an insurer and reinsurer's perspective**
7.2	**Explain reinsurance cover considerations when differentiating a Losses Occurring basis and Risks Attaching basis**
7.3	**Explain reinsurance cover considerations for catastrophe covers**
8	**Construct a portfolio analytics framework for an insurer**
8.1	**Construct suitable mechanisms to monitor business growth for an insurer (C09)**
8.2	**Construct an appropriate experience monitoring framework (C09)**
8.3	**Construct appropriate compliance monitoring mechanisms for an insurer (C09)**
8.4	**Construct an appropriate price monitoring framework (C09)**
8.5	**Explain the rationale and practical considerations that apply in measuring price elasticity and cross-selling opportunities (C09)**
8.6	**Explain the rationale and practical considerations that apply in exposure management (C09)**

9 Explain the nature, impact, causes and effects of the insurance cycle

9.1 Explain what an insurance cycle is (C10)

9.2 Examine the features of different stages of an insurance cycle (C10)

9.3 Explain what causes the insurance cycle (C10)

9.4 Consider the implications of the insurance cycle for an actuary (C10)

About the Actuaries Institute and the profession

As the peak professional body for actuaries in Australia, the Actuaries Institute represents the profession to government, business and the community. Our members work in a wide range of fields including insurance, superannuation and retirement incomes, enterprise risk management, data analytics and AI, climate change and sustainability, and government services.

Actuaries use data for good by harnessing the evidence to navigate into the future and make a positive impact. They think deeply about the issue at hand, whether it's advising on commercial strategy, influencing policy, or designing new products. Actuaries are adept at balancing interests of stakeholders, clients and communities. They're called upon to give insight on complex problems and they'll look at the full picture. Actuaries analyse the data and model scenarios to form robust and outcome-centred advice.

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