

Subject SP7

2025 Study Guide

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1 Introduction

This Study Guide has been created to help you navigate your way through Subject SP7. It contains useful information you will need before starting to study Subject SP7 for the 2025 exams. You may also find it useful to refer to throughout your studies.

Further information on study skills can be found on our website at [ActEd.co.uk](https://www.acted.co.uk).

Please read this Study Guide carefully before reading the Course Notes, even if you have studied for some actuarial exams before.

Before you start

When studying for the Institute and Faculty of Actuaries' exams, you may need:

- a copy of the **Formulae and Tables for Examinations of the Institute and Faculty of Actuaries, 2nd Edition (2002)** – these are referred to simply as the *Tables*
- a **scientific calculator** and/or **software package** to help with calculations.

The *Tables* are available from the Institute and Faculty of Actuaries' eShop. Please visit [actuaries.org.uk](https://www.actuaries.org.uk).

2 Subject sequencing and contents

2.1 Links to other subjects

Fellowship Qualification

General Insurance Reserving and Capital Modelling Specialist Principles (Subject SP7), General Insurance Pricing Specialist Principles (Subject SP8) and General Insurance Specialist Advanced (Subject SA3) are a trio of subjects for actuarial work specific to general insurance. Each subject develops a specific set of skills and knowledge needed by actuaries working in or who wish to work in general insurance. The subjects are related as follows:

- General Insurance Reserving and Capital Modelling Specialist Principles (Subject SP7) covers relevant actuarial principles and techniques for reserving and capital modelling within general insurance companies, and how these link to other business processes such as data, business planning, pricing, reinsurance and investment.
- General Insurance Pricing Specialist Principles (Subject SP8) covers relevant actuarial principles and techniques for pricing of general insurance and reinsurance products, and how these link to other business processes such as data, risk management, business planning, reserving, capital setting, reinsurance and catastrophe modelling.
- General Insurance Advanced (Subject SA3) builds upon the skills and knowledge covered in Subjects SP7 and SP8, applied to more complex scenarios. It covers general insurance markets, regulation, legislation, taxation, financial management, monitoring and strategies.

2.2 Subject contents

There are six parts to the Subject SP7 course. The parts cover related topics and are broken down into chapters. At the end of each part there is an assignment testing the material from that part.

The following table shows how the parts and chapters relate to each other. The final column shows how the chapters relate to the days of the regular tutorials. This table should help you plan your progress across the study session.

Part	Chapter	Title	No of pages	X Assignment	Tutorial – 3 days
1	1	Insurance companies	42	X1	1
	2	Insurance products – background	38		
	3	Insurance products – types	68		
	4	Problem solving	16		
	5	Reinsurance products – background	29		
	6	Reinsurance products – types	66		
	7	General insurance markets	34		
	8	Regulation	27		
	9	External environment	52		
	10	The Lloyd’s market	26		
2	11	Risk and uncertainty	39	X2	
	12	Data	59		
	13	Actuarial investigations and analyses	28		
3	14	Reserving bases	30	X3	
	15	Triangulation methods	126		
4	16	Stochastic reserving	46	X4	2
	17	Assessment of reserving results	33		
	18	Reserving uncertainty	31		
	19	Investment principles and asset liability matching	48		
5	20	Capital modelling – methodologies	52	X5	
	21	Capital modelling – risk types	56		
	22	Capital modelling – diversification	25		
	23	Capital modelling – practical considerations	21		
6	24	Determining appropriate reinsurance	35	X6	3
	25	Reinsurance reserving	31		
	26	Accounting methods	40		
	27	Interpreting accounts	48		
		Principal terms	42		

3 Syllabus

The Syllabus for each subject is produced by the Institute and Faculty of Actuaries. It includes information to support the study of this subject. The Syllabus will guide you through what you need to learn, the application of learning as well as the skills that you need to develop.

Students can use the Syllabus as a guide for learning and development. We recommend that you use the Syllabus as an important part of your study.

3.1 Aim

The aim of Subject SP7 is to apply relevant actuarial principles and techniques to reserving and capital modelling within general insurance companies, and understand how reserving and capital modelling link to other business processes within a general insurance company.

3.2 Topics and topic weightings

This subject covers the following topics:

1.	General insurance products and general business environment	(20%)
2.	Risk, uncertainty and regulation	(15%)
3.	Reserving	(30%)
4.	Capital modelling	(17.5%)
5.	Data, investigations, reinsurance and investment	(17.5%)

The topic weighting percentage noted alongside the topics is indicative of the volume of content of a topic within the subject and therefore broadly aligned to the volume of marks allocated to this topic in the examination. For example, if a topic is 20% of the subject then you can expect that approximately 20% of the total marks available in the examination paper will be available on that topic.

Students should ensure that they are well prepared across the entire syllabus and have an understanding of the principal terms used within the course.

Students will be expected to be able to apply knowledge and skills from across the syllabus topics to scenarios and questions proposed by the examiners and produce coherent solutions and actions, including:

- analysing complex problems in terms of actuarial, economic and financial factors to a level where appropriate analytical techniques may be used
- assessing the implications and relevance of such factors, integrating the results into a coherent whole
- evaluating the results critically in a wider context, drawing appropriate conclusions
- proposing solutions and actions, or a range of possible solutions and actions, based on this evaluation.

3.3 Objectives

The detailed syllabus objectives for Subject SP7 are given below. To the right of each objective are the chapter numbers in which the objective is covered in the ActEd course. The relevant individual syllabus objectives are also included at the start of each course chapter.

1. **General insurance products and general business environment** **(20%)**

Understand the main features of general insurance markets and both insurance and reinsurance products, along with consideration of customer needs and risks posed to the insurers. Understand the implications of key aspects of the general business environment on general insurance companies.

1.1 The main types and features of general insurance markets and products considering: (Chapters 2 and 3)

- the needs of customers
- the financial and other risks for the general insurer including their capital requirements and possible effect on solvency.

1.2 The main types of reinsurance products for general insurers and the purposes for which they may be used. (Chapters 5 and 6)

1.3 Implications of the general business environment on general insurers in terms of: (Chapters 7 and 8)

- marketing strategies
- fiscal regimes
- inflation and economic factors
- legal, political and social factors
- climate and environmental factors
- professional guidance
- technological change.

1.4 The key features of the Lloyd's market. (Chapter 10)

2. **Risk, uncertainty and regulation** **(15%)**

Understand the major areas of risk and uncertainty in relation to reserving and capital modelling within general insurance companies as well as the regulatory framework for general insurers.

2.1 The major areas of risk and uncertainty for general insurers with respect to reserving and capital modelling, in particular those that may threaten profitability or solvency. (Chapter 11)

2.2 The regulatory framework for general insurers, including the purpose of regulation and methods of regulation. (Chapter 8)

3. Reserving (30%)

Understand reserving methods, bases and issues, including the evaluation of reserving results and analysis and communication of uncertainty in reserving.

3.1 The reasons for calculating general insurance reserves. (Chapter 15)

3.2 Understand and analyse the issues that can affect reserving work using triangulations and how to manage them. (Chapter 15)

3.3 Appropriate reserving bases for general insurance business including: (Chapter 14)

- different reasons for calculating reserves
- appropriate assumptions in each case
- when to calculate reserves at class level, at individual policy level or at claim event level
- why assumptions may differ from a rating exercise
- allowance for future inflation
- whether or not to discount for investment income
- approach for additional unexpired risk reserve
- communication of the reserving basis.

3.4 Stochastic reserving processes including: (Chapter 16)

- uses of stochastic reserving methods
- likely sources of reserving uncertainty
- types of stochastic reserving methods:
 - analytic methods
 - simulation-based methods.
- Mack's model and the ODP model
- applying bootstrapping to these two models
- issues, advantages and disadvantages of each of the models
- aggregate the results of stochastic reserving across multiple lines of business, and methods of correlation.

3.5 Reserving result analyses. (Chapter 17)

3.5.1 Factors to consider in assessing the reasonableness of the results of a reserving exercise.

3.5.2 Typical diagnostics commonly used to assess the reasonableness of the results of a reserving exercise.

- 3.5.3 Factors to consider in assessing the reasonableness of changes in results of a reserving exercise over time.
- 3.5.4 Analysis of experience in the context of a reserving exercise.
- 3.5.5 How alternative results of reserving exercises can arise and professional issues in resolving them.
- 3.6 Uncertainty and its communication in reserving. (Chapter 18)
 - 3.6.1 'Best estimate' reserve.
 - 3.6.2 Approaches to estimating ranges of reserves:
 - stochastic models
 - scenario tests
 - use of alternative sets of assumptions.
 - 3.6.3 Issues to consider when communicating reserve ranges and uncertainties.

4. **Capital modelling** (17.5%)

Understand capital modelling techniques, parameterisation issues, and methods for assessing different risk types, including considerations relevant to undertaking a capital modelling exercise.

- 4.1 Capital modelling and application of relevant capital modelling techniques for general insurers.
 - Approaches to capital modelling: (Chapter 20)
 - deterministic models
 - stochastic models.
 - Issues with parameterisation of capital models: (Chapter 20)
 - developing assumptions
 - validation.
 - Approaches to assessment of capital requirements for the following risk types: (Chapter 21)
 - insurance risk
 - market risk
 - credit risk
 - operational risk
 - liquidity risk
 - group risk.
- 4.2 The importance of diversification in capital modelling. (Chapter 22)
- 4.3 Practical considerations of undertaking capital modelling. (Chapter 23)

5 Data, investigations, reinsurance and investment (17.5%)

Understand the use of data and key actuarial investigations in reserving and capital modelling. Understand reinsurance programmes including purchasing decisions and reserving. Understand investment and asset-liability management and methods and principles of accounting as applicable to a general insurer.

- 5.1 Data in reserving and capital modelling: (Chapter 12)
- types of data that are used
 - main uses of data
 - requirements for a good information system
 - possible causes of data errors
 - effects of inadequate data.
- 5.2 The major actuarial investigations and analyses of experience undertaken with regard to reserving and capital modelling for general insurers. (Chapter 13)
- 5.3 Factors that influence the choice of an appropriate reinsurance programme for a general insurer. (Chapter 24)
- 5.4 Appropriateness of alternative reinsurance structures for a general insurer. (Chapter 24)
- 5.5 The impact of capital management on reinsurance purchasing decisions. (Chapter 24)
- 5.6 The main approaches to reserving for outwards reinsurance and when to apply them: (Chapter 25)
- gross less net
 - application of standard techniques to reinsurance data
 - use of appropriate factors
 - application of detailed contract terms.
- 5.7 Suitable approaches to reserving for inwards reinsurance. (Chapter 25)
- 5.8 Investment and asset liability management (ALM) considering: (Chapter 19)
- the principles of investment
 - the asset-liability matching requirements of a general insurer
 - how projection models may be used to develop an appropriate investment strategy.
- 5.9 Methods and principles of accounting specific to a general insurance business and interpret the accounts of a general insurer. (Chapters 26 and 27)

4 Core Reading

This section explains the role of the Core Reading and how it links to the Syllabus, supplementary ActEd text and the examination.

4.1 Core Reading

The Core Reading has been produced by the Institute and Faculty of Actuaries. It supports students in their learning and development of this subject by providing information and explanation of the topics and objectives in the Syllabus.

The Core Reading is updated annually to reflect any changes to the Syllabus and current practice, as well as for continuous improvement.

The current version of the Core Reading is up-to-date as of 31 May 2024. It references the version of any legislation, standards, professional guidance, *etc* as of this date. Any known upcoming changes to the references are noted where relevant in the Core Reading.

Accreditation

The Institute and Faculty of Actuaries would like to thank the numerous people who have helped in the development of the material contained in the Core Reading.

Further reading

A list of additional resources to support candidate learning and development for this subject can be found on the Module pages on the Institute and Faculty of Actuaries' website:

actuaries.org.uk/curriculum/

4.2 Links to the Syllabus

Each part of the Core Reading relates directly to the Syllabus.

The relevant syllabus objectives are included at the start of each chapter for reference.

The Core Reading supports coverage of the Syllabus in helping to ensure that both depth and breadth are re-enforced.

4.3 Links to the examination

Examiners can set questions based on any area of the Syllabus within any examination sitting and will consider and draw from the Core Reading when setting examinations questions.

Students will be expected to apply the Core Reading to scenarios and questions proposed by the examiners.

The exams in April and September 2025 will be based on the Syllabus and Core Reading as at 31 May 2024. We recommend that you always use the up-to-date Core Reading to prepare for the exams.

Past papers indicate to students how the examiners apply the Core Reading. The Examiners' Reports provide further insight as to how students answered the questions and how marks were awarded.

4.4 ActEd text

The Core Reading deals with each syllabus objective and covers what is needed to pass the exam, and the Subject SP7 Course Notes include the Core Reading in full, integrated throughout the course.

However, the tuition material that has been written by ActEd enhances it by giving examples and further explanation of key points. Here is an excerpt from some ActEd Course Notes to show you how to identify Core Reading and the ActEd material. **Core Reading is shown in this bold font.**

In the example given above, the index *will* fall if the actual share price goes below the theoretical ex-rights share price. Again, this is consistent with what would happen to an underlying portfolio.

After allowing for chain-linking, the formula for the investment index then becomes:

$$I(t) = \frac{\sum_i N_{i,t} P_{i,t}}{B(t)}$$

where $N_{i,t}$ is the number of shares issued for the i th constituent at time t ;

$B(t)$ is the base value, or divisor, at time t .

This is
ActEd
text

This is Core
Reading

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These conditions remain in force after you have finished using the course.

5 Skills and assessment

5.1 Exam skills

In each examination, students will be expected to demonstrate, through their answers, that they have knowledge of, can apply and use higher order skills in this subject:

- Knowledge will be demonstrated through answering questions that assess understanding of that knowledge as well as through questions that ask for the application of relevant knowledge to scenarios.
- Application will be demonstrated through answering questions that assess the ability to identify and apply relevant concepts and skills to solve problems (both numerical and non-numerical).
- Higher order skills will be demonstrated through questions that will assess the ability to use relevant knowledge, concepts and skills to solve problems, draw appropriate conclusions, and make meaningful and appropriate comments on those conclusions.

In Subject SP7, the approximate split of assessment across the three skill types is:

- Knowledge – 15%
- Application – 60%
- Higher Order skills – 25%.

The Institute and Faculty of Actuaries use command verbs (such as 'Define', 'Discuss' and 'Explain') to help students to identify what the question requires. The examination can be composed of questions drawing from any part of the syllabus and using any command verb.

The Institute and Faculty of Actuaries has produced guidance on 'Command verbs used in the Associate and Fellowship examinations', to help students to understand what each command verb is asking them to do.

You can find the relevant document on the Institute and Faculty of Actuaries' website at:

actuaries.org.uk/qualify/prepare-for-your-exams

5.2 Assessment

Assessment will consist of one 3 hour 20 minute timed, online examination. This time includes reading time.

Students can expect to answer a number of questions of varying marks, using Microsoft Word to construct and type their answers.

5.3 Further information

The Institute and Faculty of Actuaries has produced a number of documents, which it advises students to read and understand. In particular, the:

- Qualification Handbook, which contains information on studying and preparing for exams, as well as available support and resources
- Examinations Handbook, which contains practical assistance on how to sit an Institute and Faculty of Actuaries' examination
- Assessment Regulations document, which includes rules on eligibility, entry and conduct during an online assessment.

The Qualification Handbook can be found at:

actuaries.org.uk/qualify/student-and-associate-exam-news/qualification-handbook

The Examinations Handbook and Assessment Regulations document can be found at:

actuaries.org.uk/qualify/my-exams/ifoa-exams

IMPORTANT NOTE: These documents may be updated and re-published in the weeks leading up to each exam session. It is important that you keep up-to-date with any changes and developments.

6 ActEd study support

An overview of ActEd's products and services, and guidance on how to choose the best ones for you, can be found on our website at [ActEd.co.uk/productguide](https://www.acted.co.uk/productguide).

6.1 Summary of ActEd products and services

Detailed descriptions of all ActEd's products and services can be found on our website at [ActEd.co.uk](https://www.acted.co.uk). However, the specific products and services available for Subject SP7 include:

- Course Notes
- X Assignments – six assignments:
 - X1-X3: 80-mark tests (you are allowed 2¾ hours to complete these)
 - X4-X6: 100-mark tests (you are allowed 3¾ hours to complete these)
- Series X Marking
- Online Classroom – over 40 tutorial units
- Flashcards
- Revision Notes – six A5 booklets
- ASET (2020-23 papers) – four years of exam papers, *ie* eight sittings, covering the period April 2020 to September 2023
- Mini ASET – covering the April 2024 exam paper
- Mock Exam – one 100-mark test
- Additional Mock Pack (AMP) – two additional 100-mark tests
- Mock Exam Marking
- Marking Vouchers.

Products are generally available in both paper and eBook format. Visit [ActEd.co.uk](https://www.acted.co.uk) for full details about available eBooks, software requirements and restrictions.

6.2 Tuition

The following tutorials are typically available for Subject SP7:

- Regular Tutorials (three full days / six half days)
- Block Tutorials (three days).

Tutorials are typically available both face-to-face and live online.

Full details are set out in our *Tuition Bulletin*, which is available on our website at [ActEd.co.uk](https://www.acted.co.uk).

6.3 Questions and queries

From time to time you may come across something in the study material that is unclear to you.

Our online discussion forum at **ActEd.co.uk/forums** (or use the link from our home page at **ActEd.co.uk**) is dedicated to actuarial students so that you can get help from fellow students on any aspect of your studies from technical issues to study advice. ActEd tutors visit the site regularly to ensure that you are not being led astray and we also post other frequently asked questions from students on the forum as they arise.

If you are still stuck, then you can send queries by email to the Subject SP7 email address **SP7@bpp.com**, but we recommend that you try the forum first. We will endeavour to contact you as soon as possible after receiving your query but you should be aware that it may take some time to reply to queries, particularly when tutors are running tutorials. At the busiest teaching times of year, it may take us more than a week to get back to you.

If you have many queries on the course material, you should raise them at a tutorial or book a personal tuition session with an ActEd tutor. Please email **ActEd@bpp.com** for more details.

6.4 Feedback

If you find an error in the course, please check the corrections page of our website (**ActEd.co.uk/paper_corrections.html**) to see if the correction has already been dealt with. Otherwise, please send the details via email to the Subject SP7 email address **SP7@bpp.com**. Our tutors work hard to ensure that the courses are as clear as possible and free from errors.

ActEd also works with the Institute and Faculty of Actuaries to suggest developments and improvements to the Syllabus and Core Reading. If you have any comments or concerns about the Syllabus or Core Reading, these can be passed on via ActEd. Alternatively, you can send them directly to the Institute and Faculty of Actuaries' Examination Team by email to **memberservices@actuaries.org.uk**.

7 General information and support

7.1 Safeguarding

We want you to feel comfortable within our learning environment and safe in the knowledge that if you ever needed support, you know where to go.

If you need support, please contact BPP's Safeguarding team at safeguarding@bpp.com or for urgent concerns call 07464 542 636.

Additional information can be found at ActEd.co.uk/learningsupport.

7.2 BPP learning support

BPP's Learning Support team offers a wide range of support for all students who disclose a learning difficulty or disability. This support is accessible to all ActEd students free of charge.

Please contact BPP's Learning Support team at LearningSupport@bpp.com for more information.

Additional information can be found at ActEd.co.uk/learningsupport.

7.3 The Prevent Duty

The Prevent Duty is to protect people from radicalisation and being drawn into extremist views and terrorism. As a Government-regulated training provider, ActEd has a duty to ensure that our learners are well informed and stay safe, and to empower our students to know what to look for and when to report concerns.

Please report any concerns to a tutor or email safeguarding@bpp.com or for urgent concerns call 07464 542 636.

More information is available at:

- ActEd.co.uk/learningsupport
- officeforstudents.org.uk/advice-and-guidance/student-wellbeing-and-protection/counter-terrorism-the-prevent-duty/

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