

Subject SP9

2021 Study Guide

Introduction

This Study Guide has been created to help you navigate your way through Subject SP9. It contains all the information you will need before starting to study Subject SP9 for the 2021 exams and you may also find it useful to refer to throughout your Subject SP9 journey.

The guide is split into two parts:

- Part 1 contains specific information about Subject SP9
- Part 2 contains general information about the Specialist Principles subjects.

Please read this Study Guide carefully before reading the Course Notes, even if you have studied for some actuarial exams before. While you may have already read (the majority of) the Part 2 material in previous subjects, the information in Part 1 is unique to this course.

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1.1 Subject SP9 – background and contents

History

The Specialist Principles subjects were introduced in the Institute and Faculty of Actuaries 2019 Curriculum.

Subject SP9 is *Enterprise Risk Management*.

Predecessors

The Specialist Principles subjects cover content that was previously in the equivalent Specialist Technical subjects. So:

- Subject SP9 replaces Subject ST9.

Exemptions

In order to be eligible for a pass in Subject SP9, you will need:

- to have passed or been granted an exemption from Subject ST9 during the transfer process
- to have met the profession's requirements based on the current curriculum.

See the profession's website for further details:

www.actuaries.org.uk/studying/exam-exemptions

Links to other subjects

- Subject CS2 – Risk Modelling and Survival Analysis
- Subject CM2 – Financial Engineering and Loss Reserving
- Subject CP1 – Actuarial Practice.

Contents

There are six parts to the Subject SP9 course. The parts cover related topics and are broken down into modules. At the end of each part there is an assignment testing the material from that part.

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

Part	Module	Title	No of pages	X Assignment	Tutorial – 3 days
1	1	What is ERM?	15	X1	1
	2	Why (E)RM?	14		
	3	Risk taxonomy	33		
	4	How to do ERM – internal risk frameworks	28		
	5	Risk frameworks (mandatory)	29		
	6	Risk frameworks (advisory)	15		
	7	Risk frameworks (proprietary)	28		
2	8	ERM processes and structures	19	X2	1
	9	Risk policy	27		
	10	Monitoring and communication of risk	21		
	11	Stakeholders	25		
	12	Governance functions and the role of the CRO	30		
	13	Business analysis, risk id and initial assessment	36		
	14	Introduction to risk measurement	38		
3	15	Introduction to risk modelling	35	X3	2
	16	Statistical distributions	47		
	17	Time series analysis	36		
	18	Copulas	50		
	19	Fitting models	37		
4	20	Extreme value theory	31	X4	2
	21	Use of models in ERM	24		
	22	Assessment of market risks	27		
	23	Assessment of credit risks	35		
	24	Assessment of operational risks	25		
	25	Assessment of other risks	23		
5	26	Risk optimisation and risk responses	37	X5	3
	27	Management of market risk	42		
	28	Management of credit risk	33		
	29	Management of operational and other risks	31		
6	30	Capital management	51	X6	3
	31	ERM implementation	23		
	32	Case studies	44		
	33	Principal terms	22		
	34	References and Further reading	4	N/A	

1.2 Subject SP9 – Syllabus and Core Reading

Syllabus

The Syllabus for Subject SP9 is given here. To the right of each objective are the module numbers in which the objective is covered in the ActEd course.

Aim

The aim of the Enterprise Risk Management (ERM) Specialist Principles subject is to instil in successful candidates the key principles underlying the implementation and application of ERM within an organisation, including governance and process as well as quantitative methods of risk measurement and modelling. The student should gain the ability to apply the knowledge and understanding of ERM practices to any type of organisation.

Competences

On successful completion of this subject, a student will be able to:

1. understand the main principles and techniques that are relevant ERM
2. apply these principles to given situations, for both financial and non-financial organisations
3. analyse hypothetical scenarios, including using judgement to assess the implications of possible actions and to develop appropriate proposals or recommendations in relation to ERM.

Syllabus topics

- | | | |
|----|---|-------|
| 1. | ERM concept and framework | (15%) |
| 2. | ERM process | (10%) |
| 3. | Risk categories and identification | (10%) |
| 4. | Risk modelling and aggregation of risks | (15%) |
| 5. | Risk measurement and assessment | (15%) |
| 6. | Risk management tools and techniques | (20%) |
| 7. | Capital management | (15%) |

The weightings are indicative of the approximate balance of the assessment of this subject between the main syllabus topics, averaged over a number of examination sessions.

The weightings also have a correspondence with the amount of learning material underlying each syllabus topic. However, this will also reflect aspects such as:

- the relative complexity of each topic, and hence the amount of explanation and support required for it
- the need to provide thorough foundation understanding on which to build the other objectives
- the extent of prior knowledge which is expected
- the degree to which each topic area is more knowledge or application based.

Detailed syllabus objectives

1. ERM concept and framework (15%)
 - 1.1 Explain the principal terms in Enterprise Risk Management (ERM). (Modules 1 to 5)
 - 1.2 Describe the concept of ERM. (Modules 1 and 2)
 - 1.2.1 Define what is meant by ERM.
 - 1.2.2 Describe the role of the following concepts in ERM:
 - the holistic approach
 - downside and upside risks
 - measurement of risk
 - unquantifiable risks
 - responses to risk, and risk management.
 - 1.2.3 Describe the benefits of ERM.
 - 1.3 Discuss the framework for risk management and control within a company. (Modules 4, 10, 13, 13 and 31)
 - 1.3.1 Recommend an appropriate framework for an organisation's ERM.
 - 1.3.2 Propose best practice ERM approaches in compliance and corporate governance.
 - 1.3.3 Discuss governance issues including market conduct, audit, and legal risk.
 - 1.3.4 Evaluate an organisation's risk management culture, including risk awareness, accountabilities, collaboration, incentive compensation, communication and the problem of bias.

- 1.4 Demonstrate an understanding of risk frameworks in regulatory environments. (Modules 5 and 6)
 - 1.4.1 Explain the role of regulators in ERM and effective management of the supervisor relationship.
 - 1.4.2 Describe the Basel Accord and Solvency II frameworks, including their underlying principles and approaches to risk measurement.
 - 1.4.3 Outline the requirements of Sarbanes-Oxley and other regulatory risk frameworks and their underlying principles.
 - 1.4.4 Demonstrate an awareness of how different parts of an organisation and different parts of a portfolio may be subject to different capital adequacy standards.
- 1.5 Demonstrate an understanding of the perspectives of credit rating agencies. (Module 7)
 - 1.5.1 Describe the role of credit rating agencies in the evaluation of risk management functions, including the risk management grading criteria used.
 - 1.5.2 Assess the relevance of these criteria.
- 2. ERM process (10%)
 - 2.1 Demonstrate an understanding of the relevance of ERM to all stakeholders. (Modules 3 and 11)
 - 2.1.1 Compare the relevance of risk measurement and management to various stakeholders.
 - 2.1.2 Explain contagion and how it affects different stakeholders.
 - 2.1.3 Explain the risks arising from any misalignment of interests between different groups of stakeholders.
 - 2.2 Demonstrate how to determine and articulate risk appetite, risk capacity, risk tolerances, desired risk profile and risk objectives. (Modules 9 and 10)
 - 2.3 Evaluate the elements and structure of a successful risk management function. (Modules, 8, 11 and 12)
 - 2.3.1 Describe the ERM roles and responsibilities of the people within an organisation and how the different groups should interact.
 - 2.3.2 Recommend a structure for an organisation's risk management function.
 - 2.4 Assess the implications of financial and other risks and opportunities for strategic planning and the selection of strategy. (Module 8)
 - 2.5 Demonstrate the application of the risk management control cycle, including the relevance of external influences and emerging risks. (Modules 8, 10, 13 and 26)

- 2.6 Describe methods for the identification of risks and their causes and implications. (Module 13)
- 2.7 Discuss important past examples of both good risk management practices and of risk failures, for financial and non-financial entities, including proposing solutions for how better risk management might have prevented these failures. (Module 32)
- 2.8 Propose an ERM process that creates value for an organisation. (Module 32)
- 3. Risk categories and identification (10%)
 - 3.1 Explain what is meant by risk and uncertainty, including different definitions and concepts of risk. (Modules 3 and 13)
 - 3.2 Demonstrate an understanding of risk categories. (Module 3)
 - 3.2.1 Identify the risks faced by an entity, including market risk, economic risk, interest rate risk, foreign exchange risk, basis risk, credit risk, counterparty risk, liquidity risk, insurance risk, operational risk, environmental risk, legal risk, regulatory risk, political risk, agency risk, reputational risk, project risk, strategic risk, demographic risk, moral hazard.
 - 3.2.2 Analyse the financial and non-financial risk exposure arising from an organisation's current and emerging risks within a given context.
 - 3.2.3 Discuss risk taxonomy, including an awareness of how individual risks might be categorised in different ways.
 - 3.3 Describe the relationship between systematic risk, non-systematic or specific risk, and concentration of risk. (Module 3)
- 4. Risk modelling and aggregation of risks (15%)
 - 4.1 Assess the extent to which each of the risks in 3.2.1 can be amenable to quantitative analysis. (Module 15)
 - 4.2 Demonstrate an understanding of the use of correlation measures. (Module 15)
 - 4.2.1 Demonstrate enterprise-wide risk aggregation techniques incorporating the use of correlation.
 - 4.2.2 Comment on the relative merits and implications of different correlation measures.
 - 4.3 Discuss the use of scenario analysis and stress testing in the risk measurement process, including the advantages and disadvantages of each.

- 4.4 Demonstrate understanding of the use of copulas as part of the process of modelling multivariate risks. (Module 18)
- 4.4.1 Evaluate different types of copula for a given purpose.
- 4.4.2 Recommend an appropriate copula for a given situation.
- 4.5 Explain the importance of the tails of distributions, tail correlations and low frequency / high severity events. (Module 20)
- 4.6 Demonstrate how extreme value theory can be used to help model risks that have a low probability. (Module 20)
- 4.7 Demonstrate an understanding of model and parameter risk. (Module 21)
- 4.8 Discuss the use of models in the overall ERM decision-making process. (Module 21)
- 4.8.1 Describe the development and use of models for decision-making purposes in ERM.
- 4.8.2 Explain how the decision-making process takes account of the organisation's risk appetite and corporate governance, and builds on the results of stochastic modelling, scenario analysis, stress testing and analysis of model and parameter risk.
- 4.8.3 Evaluate different types of model for a given purpose.
5. Risk measurement and assessment (15%)
- 5.1 Demonstrate an understanding of common risk measures. (Module 14)
- 5.1.1 Describe the properties and limitations of the following:
- Value at Risk (VaR)
 - Tail Value at Risk (TVaR)
 - Probability of ruin
 - Expected shortfall.
- 5.1.2 Determine risk exposures and tolerances using these measures.
- 5.2 Describe how to choose a suitable time horizon and risk discount rate. (Module 14)
- 5.3 Analyse univariate and multivariate financial and insurance data (including asset prices, credit spreads and defaults, interest rates and insurance losses) using appropriate statistical methods. (Modules 16 and 17)
- 5.4 Recommend a specific choice of model based on the results of both quantitative and qualitative analysis of financial or insurance data. (Modules 16, 17 and 19)

- 5.5 Assess different types of market risk. (Module 22)
- 5.6 Assess credit risk. (Module 23)
 - 5.6.1 Describe what is meant by a credit spread and its components.
 - 5.6.2 Discuss different approaches to modelling credit risk.
- 5.7 Assess operational, liquidity and insurance risks. (Modules 24 and 25)
- 6. Risk management tools and techniques (20%)
 - 6.1 Demonstrate risk optimisation and responses to risk. (Module 26)
 - 6.1.1 Explain how to optimise an objective, possibly subject to constraints.
 - 6.1.2 Demonstrate risk optimisation and responses to risk using illustrative examples.
 - 6.1.3 Analyse the risk and return trade-offs that result from changes in the organisation's risk profile.
 - 6.2 Recommend approaches, which balance benefits against inherent costs, that can be used to manage an organisation's overall risk profile. (Module 26)
 - 6.2.1 Describe how to reduce risk by transferring it.
 - 6.2.2 Describe how to reduce risk without transferring it.
 - 6.2.3 Analyse the residual risks and new risks arising following risk mitigation actions.
 - 6.2.4 Explain how an organisation's ability to manage risk is affected by regulatory, capacity and cost constraints.
 - 6.2.5 Explain how an organisation will choose to accept certain risks, and the controls it might adopt for these retained and residual risks.
 - 6.3 Demonstrate strategies for the management of market risk. (Module 27)
 - 6.3.1 Recommend strategies for the reduction of market risk using financial derivatives.
 - 6.3.2 Demonstrate an awareness of the practical issues related to market risk hedging, including dynamic hedging.
 - 6.4 Demonstrate the use of tools and techniques for identifying and managing credit and counterparty risk. (Module 28)
 - 6.5 Demonstrate possible strategies for the management of operational, liquidity, insurance and other key risks. (Module 29)

7. Capital management (15%)
- 7.1 Demonstrate an understanding of capital calculations. (Module 30)
- 7.1.1 Describe the concept of economic measures of value and capital, and their uses in corporate decision-making processes.
- 7.1.2 Evaluate different risk measures and capital assessment approaches.
- 7.1.3 Demonstrate the ability to develop a capital model for a representative financial firm.
- 7.2 Propose techniques for allocating capital across an organisation. (Module 30)
8. Solving problems
- 8.1 Analyse hypothetical examples and scenarios in relation to the application of ERM, in both financial and non-financial contexts, covering any or all of the risk types identified in 3.2.1. (Module 31)
- 8.1.1 Propose solutions and actions that are appropriate to the given context and balance benefit with inherent cost, with justification where required.
- 8.1.2 Suggest possible reasons why certain actions have been chosen.
- 8.1.3 Assess the implications of actions within a given scenario.
- 8.1.4 Discuss the advantages and disadvantages of suggested actions, taking into account different perspectives.

Core Reading

The Subject SP9 Course Notes include the Core Reading in full, integrated throughout the course.

Accreditation

The Core Reading makes extensive reference to the following Textbooks:

- *Enterprise Risk Management From Incentives to Controls* – Second edition – James Lam. Wiley, 2014. ISBN: 9781118413616
- *Financial Enterprise Risk Management – Second edition – Paul Sweeting.* Cambridge University Press, 2017. ISBN: 9781107184619

Additionally, the following papers are required reading for Subject SP9. These papers are reproduced in full in the CMP and can be found on the Institute and Faculty of Actuaries website.

- *Note on Enterprise Risk Management for Capital and Solvency Purposes in the Insurance Industry* – International Actuarial Association
Published 31 March 2009
- *Insurance Criteria: Evaluating the Enterprise Risk Management Practices of Insurance Companies* – Standard & Poor's

Further reading

The exam will be based on the relevant Syllabus and Core Reading and the ActEd course material will be the main source of tuition for students.

However, some students may find it useful to obtain a different viewpoint on a particular topic covered in Subject SP9. A list of suggested further reading for Subject SP9 has been prepared by the Institute and Faculty of Actuaries and can be found on their website. This list is not exhaustive and other useful material may be available.

- *Integrated Risk Management: Techniques and Strategies for Reducing Risk* – Neil A. Doherty
ISBN: 9780071358613
- *Risk Management* – Crouhy, Galai and Mark
McGraw-Hill, 2000. ISBN: 9780071357319
- *The Essentials of Risk Management (Second edition)* – Crouhy, Galai and Mark
McGraw-Hill, 2014. ISBN: 9780071429665
- *Simple Tools and Techniques for Enterprise Risk Management* – Robert J Chapman.
Wiley, 2006. ISBN: 0-470-01466-0
- *Quantitative Risk Management: Concepts, Techniques and Tools* – McNeil, Frey and Embrechts.
Princeton University Press, 2005. ISBN: 0-691-12255-5

Occasional references to other reading and websites that you may find interesting or useful are also given in the Course Notes.

1.3 Subject SP9 – summary of ActEd products

The following products are available for Subject SP9:

- 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
- Flashcards
- ASET (2014-17 papers) – four years of exam papers, *ie* eight sittings, covering the period April 2014 to September 2017
- ASET (2019-20 papers) – two years of exam papers, *ie* four sittings, covering the period April 2019 to September 2020
- 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 www.ActEd.co.uk for full details about available eBooks, software requirements and restrictions.

The following tutorials are typically available for Subject SP9:

- Regular Tutorials (three days)
- Block Tutorials (three days).

Full details are set out in our *Tuition Bulletin*, which is available on our website at www.ActEd.co.uk.

1.4 Subject SP9 – skills and assessment

Exam skills

Exam question skill levels

In the Specialist Principles subjects, the approximate split of assessment across the three skill types is:

- Knowledge – 25%
- Application – 50%
- Higher Order skills – 25%.

Assessment

The Specialist Principles examinations are in the form of 3¼-hour examinations.

1.5 Subject SP9 – frequently asked questions

Q: *What is covered by the SP9 syllabus?*

A: The full Syllabus for Subject SP9 is included earlier in this guide.

Q: *How technical is the SP9 course?*

A: Although largely a discursive course, SP9 does contain some highly technical material relating to quantitative risk measurement. This material builds on some material in earlier subjects (CS2, CM2 and CP1), but is more complex and theoretical and you may be required to understand the derivations of the results used.

Additionally, you may be required to apply formulae and techniques described in the course. There are a number of other less technical areas that offer some scope for numerical questions, eg Value at Risk and capital management.

Q: *Where do I start studying for SP9?*

A: The introduction to each module lists the relevant reading for that module and this approach will take you through the course step-by-step.

If you prefer to get a rapid introduction to ERM and see the big picture from the start, we suggest you read Lam first in its entirety without worrying about learning it or taking extensive notes. You can then review the relevant sections of Lam as you meet them in the course.

Q: *Do I have to memorise all the formulae?*

A: The Core Reading References section outlines the extent to which formulae, theorems and proofs are examinable in SP9. It states that:

'It should be noted that the focus of the examination will be on testing candidates' understanding of the material and their ability to apply the techniques described in the Core Reading in practical situations and scenarios.

Formulae for any required probability distributions (including means and variances, generator functions and expressions of copulas), if not already given in the Formulae & Tables book, will be provided in the question.

Other formulae that form part of a definition are examinable and should be known. The remainder of formulae contained in the required reading are examinable but will be provided in the question if they are needed.'

Q: *Do I need to study all of the recommended texts and additional readings?*

A: The Core Reading References section states: *'For many syllabus objectives more than one of the above source texts is recommended. As part of the analysis of the subject, students are expected to be able to compare and contrast the views of different authors.'*

Additional reading recommended within the source texts (eg 'Further reading' references in Sweeting) does not form part of the required reading for SP9 and is not examinable (unless it is explicitly listed elsewhere within this Core Reading, eg Lam).

The questions at the end of each Chapter of Sweeting are also not part of the required reading and are not intended to represent possible SP9 examination questions.'

Q: *Do I need to study the end of chapter questions in Sweeting?*

A: Only if you want to. As mentioned above, the Core Reading References section states that *'questions at the end of each Chapter of Sweeting are also not part of the required reading and are not intended to represent possible SP9 examination questions.'*

Q: *What should I do if I discover an error in the course?*

A: If you find an error in the course, please check our website at:

www.ActEd.co.uk/paper_corrections.html

to see if the correction has already been dealt with. Otherwise please send details via email to **SP9@bpp.com**.

Q: *Who should I send feedback to?*

A: We are always happy to receive feedback from students, particularly details concerning any errors, contradictions or unclear statements in the courses.

If you have any comments on this course in general, please email to **SP9@bpp.com**.

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

2.1 Before you start

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

- a copy of the **Formulae and Tables for Examinations of the Faculty of Actuaries and the Institute of Actuaries, 2nd Edition (2002)** – these are referred to simply as the *Tables*
- an 'authorised' **scientific calculator** – you will find the list of permitted calculators on the profession's website. Please check the list carefully, since it is reviewed each year.

These are both available from the Institute and Faculty of Actuaries' eShop. Please visit www.actuaries.org.uk.

2.2 Core study material

This section explains the role of the Syllabus, Core Reading and supplementary ActEd text. It also gives guidance on how to use these materials most effectively in order to pass the exam.

Some of the information below is also contained in the introduction to the Core Reading produced by the Institute and Faculty of Actuaries.

Syllabus

The Syllabus for Subject SP9 has been produced by the Institute and Faculty of Actuaries. The relevant individual syllabus objectives are included at the start of each course module and a complete copy of the Syllabus is included in Section 1.2 of this Study Guide. We recommend that you use the Syllabus as an important part of your study.

Core Reading

The Core Reading has been produced by the Institute and Faculty of Actuaries. The purpose of the Core Reading is to ensure that tutors, students and examiners understand the requirements of the Syllabus for the qualification examinations for Fellowship of the Institute and Faculty of Actuaries.

The Core Reading supports coverage of the Syllabus in helping to ensure that both depth and breadth are re-enforced. It is therefore important that students have a good understanding of the concepts covered by the Core Reading.

The examinations require students to demonstrate their understanding of the concepts given in the Syllabus and described in the Core Reading; this will be based on the legislation, professional guidance *etc* that are in force when the Core Reading is published, *ie* on 31 May in the year preceding the examinations.

Therefore the exams in April and September 2021 will be based on the Syllabus and Core Reading as at 31 May 2020. We recommend that you always use the up-to-date Core Reading to prepare for the exams.

Examiners will have this Core Reading when setting the papers. In preparing for examinations, students are advised to work through past examination questions and may find additional tuition helpful. The Core Reading will be updated each year to reflect changes in the Syllabus and current practice, and in the interest of clarity.

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 this Core Reading.

ActEd text

Core Reading deals with each syllabus objective and covers what is needed to pass the exam. 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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Legal action will be taken if these terms are infringed. In addition, we may seek to take disciplinary action through the Institute and Faculty of Actuaries or through your employer.

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

2.3 ActEd study support

This section gives a description of the products offered by ActEd.

Successful students tend to undertake three main study activities:

1. *Learning* – initial study and understanding of subject material
2. *Revision* – learning subject material and preparing to tackle exam-style questions
3. *Rehearsal* – answering exam-style questions, culminating in answering questions at exam speed without notes.

Different approaches suit different people. For example, you may like to revise material gradually over the months running up to the exams or you may do your revision in a shorter period just before the exams. Also, these three activities will almost certainly overlap.

We offer a flexible range of products to suit you and let you control your own learning and exam preparation. The following table shows the products that we produce. Not all products are available for all subjects.

LEARNING	LEARNING & REVISION	REVISION	REVISION & REHEARSAL	REHEARSAL
Course Notes	X Assignments Combined Materials Pack (CMP) X Assignment Marking Tutorials Online Classroom	Flashcards	Revision Notes ASET	Mock Exam Additional Mock Pack (AMP) Mock Marking

The products and services are described in more detail below.

‘Learning’ products

Course Notes

The Course Notes will help you develop the basic knowledge and understanding of principles needed to pass the exam. They incorporate the complete Core Reading and include full explanation of all the syllabus objectives, with worked examples and questions (including some past exam questions) to test your understanding.

Each module includes:

- the relevant syllabus objectives
- a module summary
- practice questions with full solutions.

‘Learning & revision’ products

X Assignments

The Series X Assignments are written assessments that cover the material in each part of the course in turn. They can be used to develop and test your understanding of the material.

Combined Materials Pack (CMP)

The Combined Materials Pack (CMP) comprises the Course Notes and the Series X Assignments.

CMP Upgrade

The purpose of the CMP Upgrade is to enable you to amend last year’s study material to make it suitable for study for this year.

Wherever possible, it lists the changes to the syllabus objectives, Core Reading and the ActEd material since last year that might realistically affect your chance of success in the exam. It is produced so that you can manually amend your notes. The upgrade includes replacement pages and additional pages where appropriate.

However, if a large number of changes have been made to the Course Notes and X Assignments, it is not practical to produce a full upgrade, and the upgrade will only *outline* the most significant changes. In this case, we recommend that you purchase a replacement CMP (printed copy or eBook) or Course Notes at a significantly reduced price.

The CMP Upgrade can be downloaded free of charge on our website at **www.ActEd.co.uk**.

A separate upgrade for eBooks is not produced but a significant discount is available for retakers wishing to re-purchase the latest eBook.

X Assignment Marking

We are happy to mark your attempts at the X assignments. Marking is not included with the Assignments or the CMP and you need to order it separately. You should submit your script as an attachment to an email, in the format detailed in your assignment instructions. You will be able to download your marker's feedback via a secure link.

Don't underestimate the benefits of doing and submitting assignments:

- Question practice during this phase of your study gives an early focus on the end goal of answering exam-style questions.
- You're incentivised to keep up with your study plan and get a regular, realistic assessment of your progress.
- Objective, personalised feedback from a high quality marker will highlight areas on which to work and help with exam technique.

In a recent study, we found that students who attempt more than half the assignments have significantly higher pass rates.

There are two different types of marking product: Series Marking and Marking Vouchers.

Series Marking

Series Marking applies to a specified subject, session and student. If you purchase Series Marking, you will **not** be able to defer the marking to a future exam sitting or transfer it to a different subject or student.

We typically provide full solutions with the Series X Assignments. However, if you order Series Marking at the same time as you order the Series X Assignments, you can choose whether or not to receive a copy of the solutions in advance. If you choose not to receive them with the study material, you will be able to download the solutions via a secure link when your marked script is returned (or following the final deadline date if you do not submit a script).

If you are having your attempts at the assignments marked by ActEd, you should submit your scripts regularly throughout the session, in accordance with the schedule of recommended dates set out on our website at **www.ActEd.co.uk**. This will help you to pace your study throughout the session and leave an adequate amount of time for revision and question practice.

The recommended submission dates are realistic targets for the majority of students. Your scripts will be returned more quickly if you submit them well before the final deadline dates.

Any script submitted *after* the relevant final deadline date will not be marked. It is your responsibility to ensure that we receive scripts in good time.

Marking Vouchers

Marking Vouchers give the holder the right to submit a script for marking at any time, irrespective of the individual assignment deadlines, study session, subject or person.

Marking Vouchers can be used for any assignment. They are valid for four years from the date of purchase and can be refunded at any time up to the expiry date.

Although you may submit your script with a Marking Voucher at any time, you will need to adhere to the explicit Marking Voucher deadline dates to ensure that your script is returned before the date of the exam. The deadline dates are provided on our website at **www.ActEd.co.uk**.

Tutorials

Our tutorials are specifically designed to develop the knowledge that you will acquire from the course material into the higher-level understanding that is needed to pass the exam.

We run a range of different tutorials including face-to-face tutorials at various locations, and Live Online tutorials. Full details are set out in our *Tuition Bulletin*, which is available on our website at **www.ActEd.co.uk**.

Regular and Block Tutorials

In preparation for these tutorials, we expect you to have read the relevant part(s) of the Course Notes before attending the tutorial so that the group can spend time on exam questions and discussion to develop understanding rather than basic bookwork.

You can choose **one** of the following types of tutorial:

- **Regular Tutorials** spread over the session
- **A Block Tutorial** held two to eight weeks before the exam.

‘Revision’ products

Flashcards

For most subjects, there is **a lot of material** to revise. Finding a way to fit revision into your routine as painlessly as possible has got to be a good strategy. Flashcards are an inexpensive option that can provide a massive boost. They can also provide a variation in activities during a study day, and so help you to maintain concentration and effectiveness.

Flashcards are a set of A6-sized cards that cover the key points of the subject that most students want to commit to memory. Each flashcard has questions on one side and the answers on the reverse. We recommend that you use the cards actively and test yourself as you go.

The following questions and comments might help you to decide if flashcards are suitable for you:

- Do you have a regular train or bus journey?
Flashcards are ideal for regular bursts of revision on the move.
- Do you want to fit more study into your routine?
Flashcards are a good option for ‘dead time’, eg using flashcards on your phone or sticking them on the wall in your study.
- Do you find yourself cramming for exams (even if that’s not your original plan)?
Flashcards are an extremely efficient way to do your pre-exam memorising.

If you are retaking a subject, then you might consider using flashcards if you didn't use them on a previous attempt.

'Revision & rehearsal' products

ActEd Solutions with Exam Technique (ASET)

The ActEd Solutions with Exam Technique (ASET) contains our solutions to a number of past exam papers, plus comment and explanation. In particular, it highlights how questions might have been analysed and interpreted so as to produce a good solution with a wide range of relevant points. This will be valuable in approaching questions in subsequent examinations.

'Rehearsal' products

Mock Exam

The Mock Exam is a 100-mark mock exam paper that provides a realistic test of your exam readiness.

It is based on the Mock Exam from last year but it has been updated to reflect any changes to the Syllabus and Core Reading.

Additional Mock Pack (AMP)

The Additional Mock Pack (AMP) consists of two further 100-mark mock exam papers – Mock Exam 2 and Mock Exam 3. This is ideal if you are retaking and have already sat the Mock Exam, or if you just want some extra question practice.

Mock Marking

We are happy to mark your attempts at the mock exams. The same general principles apply as for the X Assignment Marking. In particular:

- Mock Exam Marking applies to a specified subject, session and student
- Marking Vouchers can be used for each mock exam paper. Marking vouchers have to be used for marking the AMP mocks and can be used for marking the Mock Exam.

Recall that:

- marking is not included with the products themselves and you need to order it separately
- you should submit your script via email in the format detailed in the mock exam instructions
- you will be able to download the feedback on your marked script via a secure link.

2.4 Study skills and the assessment

The Subject SP exams

It is important to recognise that the SP subject exams are very different from the Core Principles subject exams in both the nature of the material covered and the skills being examined.

Both the Core Reading and the exam papers themselves are generally much less numerical and more 'wordy' than the Core Principles subjects. The exam will primarily require you to explain a particular point in words and sentences, rather than to manipulate formulae or do calculations. Numerical questions typically account for only a small part of each exam paper. If you haven't sat this type of exam for some time, you need to start practising again now. Many students find that it takes time to adjust to the different style of the SP subject exam questions. As ever, practice is the key to success.

The aim of the exams is to test your ability to apply your knowledge and understanding of the key principles described in the Core Reading to specific situations presented to you in the form of exam questions. Therefore your aim should be to identify and understand the key principles, and then to practise applying them. You will also need a good knowledge of the Core Reading to score well and quickly on any bookwork questions.

Study skills

Overall study plan

We suggest that you develop a realistic study plan, building in time for relaxation and allowing some time for contingencies. Be aware of busy times at work, when you may not be able to take as much study leave as you would like. Once you have set your plan, be determined to stick to it. You don't have to be too prescriptive at this stage about what precisely you do on each study day. The main thing is to be clear that you will cover all the important activities in an appropriate manner and leave plenty of time for revision and question practice.

Aim to manage your study so as to allow plenty of time for the concepts you meet in this course to 'bed down' in your mind. Most successful students will probably aim to complete the course at least six weeks before the exam, thereby leaving a sufficient amount of time for revision. By finishing the course as quickly as possible, you will have a much clearer view of the *big picture*. It will also allow you to structure your revision so that you can concentrate on the important and difficult areas of the course.

You can also try looking at our discussion forum, which can be accessed at www.ActEd.co.uk/forums (or use the link from our home page at www.ActEd.co.uk). There are some good suggestions from students on how to study.

Study sessions

Only do activities that will increase your chance of passing. Try to avoid including activities for the sake of it and don't spend time reviewing material that you already understand. You will only improve your chances of passing the exam by getting on top of the material that you currently find difficult.

In particular, you may already be familiar with the content of some of the modules (from the Core Principles (CS, CM or CB subjects), Subject CP1 or other SP subjects). Try to cover these modules quickly to give yourself more time on the material with which you are less comfortable. Where modules refer back to material from the Core Principles subjects, you don't have to follow these links up unless you are feeling curious or clueless.

Ideally, each study session should have a specific purpose and be based on a specific task, eg *'Finish reading Module 3 and attempt Practice Questions 3.4, 3.7 and 3.12'*, as opposed to a specific amount of time, eg *'Three hours studying the material in Module 3'*.

Try to study somewhere quiet and free from distractions (eg a library or a desk at home dedicated to study). Find out when you operate at your peak, and endeavour to study at those times of the day. This might be between 8am and 10am or could be in the evening. Take short breaks during your study to remain focused – it's definitely time for a short break if you find that your brain is tired and that your concentration has started to drift from the information in front of you.

Order of study

We suggest that you work through each of the modules in turn. To get the maximum benefit from each module you should proceed in the following order:

1. Read the syllabus objectives. These are set out in the box at the start of each module.
2. Read the Module Summary at the end of each module. This will give you a useful overview of the material that you are about to study and help you to appreciate the context of the ideas that you meet.
3. Study the Course Notes in detail, annotating them and possibly making your own notes. Try the self-assessment questions as you come to them. As you study, pay particular attention to the listing of the syllabus objectives and to the Core Reading.
4. Read the Module Summary again carefully. If there are any ideas that you can't remember covering in the Course Notes, read the relevant section of the notes again to refresh your memory.
5. Attempt (at least some of) the Practice Questions that appear at the end of the module.

It's a fact that people are more likely to remember something if they review it several times. So, do look over the modules you have studied so far from time to time. It is useful to re-read the Module Summaries or to try the Practice Questions again a few days after reading the module itself. It's a good idea to annotate the questions with details of when you attempted each one. This makes it easier to ensure that you try all of the questions as part of your revision without repeating any that you got right first time.

Once you've read the relevant part of the notes and tried a selection of questions from the Practice Questions (and attended a tutorial, if appropriate) you should attempt the corresponding assignment. If you submit your assignment for marking, spend some time looking through it carefully when it is returned. It can seem a bit depressing to analyse the errors you made, but you will increase your chances of passing the exam by learning from your mistakes. The markers will try their best to provide practical comments to help you to improve.

To be really prepared for the exam, you should not only know and understand the Core Reading but also be aware of what the examiners will expect. Your revision programme should include plenty of question practice so that you are aware of the typical style, content and marking structure of exam questions. You should attempt as many past exam questions as you can.

Active study

Here are some techniques that may help you to study actively.

1. Don't believe everything you read. Good students tend to question everything that they read. They will ask 'why, how, what for, when?' when confronted with a new concept, and they will apply their own judgement. This contrasts with those who unquestioningly believe what they are told, learn it thoroughly, and reproduce it (unquestioningly?) in response to exam questions.
2. Another useful technique as you read the Course Notes is to think of possible questions that the examiners could ask. This will help you to understand the examiners' point of view and should mean that there are fewer nasty surprises in the exam room. Use the Syllabus to help you make up questions.
3. Annotate your notes with your own ideas and questions. This will make you study more actively and will help when you come to review and revise the material. Do not simply copy out the notes without thinking about the issues.
4. As you study each module, condense the *key points* (not whole chunks of text) on to a double side of A4 or less. This is essential as otherwise, when you come to revision, you will end up having to re-read the whole course again, and there won't be time.
5. Try to use memory aids, such as mind maps and acronyms, to help remember the material when you come back to it later.
6. Attempt the questions in the notes as you work through the course. Write down your answer before you refer to the solution.

7. Attempt other questions and assignments on a similar basis, *ie* write down your answer before looking at the solution provided. Attempting the assignments under exam conditions has some particular benefits:
 - It forces you to think and act in a way that is similar to how you will behave in the exam.
 - When you have your assignments marked it is *much* more useful if the marker's comments can show you how to improve your performance under exam conditions than your performance when you have access to the notes and are under no time pressure.
 - The knowledge that you are going to do an assignment under exam conditions and then submit it (however good or bad) for marking can act as a powerful incentive to make you study each part as well as possible.
 - It is also quicker than trying to write perfect answers.
8. Sit a mock exam four to six weeks before the real exam to identify your weaknesses and work to improve them. You could use a mock exam written by ActEd or a past exam paper.

You can find further information on how to study in the profession's Student Handbook, which you can download from their website at:

www.actuaries.org.uk/studying

Revision and exam skills

Revision skills

You will have sat many exams before and will have mastered the exam and revision techniques that suit you. However it is important to note that due to the high volume of work involved in Subject SP9, it is not possible to leave all your revision to the last minute. Students who prepare well in advance have a better chance of passing the exam on the first sitting.

We recommend that you prepare for the exam by practising a large number of exam-style questions under exam conditions. This will:

- help you to develop the necessary knowledge and understanding of the key principles described in the Core Reading
- highlight exactly which are the key principles that crop up time and time again in many different contexts and questions
- help you to practise the specific skills that you will need to pass the exam.

There are many sources of exam-style questions. You can use past exam papers, the Practice Questions at the end of each module (which include many past exam questions), assignments, mock exams, the Revision Notes and ASET.

Exam question skill levels

Exam questions are not designed to be of similar difficulty. The Institute and Faculty of Actuaries specifies different skill levels that questions at which questions may be set.

Questions may be set at any skill level:

- Knowledge – demonstration of a detailed knowledge and understanding of the topic
- Application – demonstration of an ability to apply the principles underlying the topic within a given context
- Higher Order – 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.

Command verbs

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 profession has produced a document, ‘Command verbs used in the Associate and Fellowship examinations’, to help students to understand what each command verb is asking them to do.

It also gives the following advice:

- The use of a specific command verb within a syllabus objective does not indicate that this is the only form of question which can be asked on the topic covered by that objective.
- The examiners may ask a question on any syllabus topic using any of the agreed command verbs, as are defined in the document.

You can find the relevant document on the profession’s website at:

www.actuaries.org.uk/studying/prepare-your-exams

Past exam papers

You can download some past exam papers and Examiners’ Reports from the profession’s website at **www.actuaries.org.uk**. However, please be aware that the majority of these exam papers are for the pre-2019 syllabus and so not all questions will be relevant.

The examination

IMPORTANT NOTE: The following information was correct at the time of printing, however it is important to keep up-to-date with any changes. See the profession’s website for the latest guidance.

For the written exam, the examination room will be equipped with:

- the question paper
- an answer booklet
- rough paper
- a copy of the *Tables*.

Remember to take with you:

- black pens
- an authorised scientific calculator – please refer to www.actuaries.org.uk for the latest advice.

2.5 Queries and feedback

Questions and queries

From time to time you may come across something in the study material that is unclear to you. The easiest way to solve such problems is often through discussion with friends, colleagues and peers – they will probably have had similar experiences whilst studying. If there's no-one at work to talk to then use our discussion forum at www.ActEd.co.uk/forums (or use the link from our home page at www.ActEd.co.uk).

Our online forum 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. You could also use it to get ideas for revision or for further reading around the subject that you are studying. ActEd tutors will visit the site from time to time 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 relevant subject email address (see Section 1.5), 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 away from the office 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. Information about personal tuition is set out in our current brochure. Please email ActEd@bpp.com for more details.

Feedback

If you find an error in the course, please check the corrections page of our website (www.ActEd.co.uk/paper_corrections.html) to see if the correction has already been dealt with. Otherwise please send details via email to the relevant subject email address (see Section 1.5).

Each year our tutors work hard to improve the quality of the study material and to ensure that the courses are as clear as possible and free from errors. We are always happy to receive feedback from students, particularly details concerning any errors, contradictions or unclear statements in the courses. If you have any comments on this course please email them to the relevant subject email address (see Section 1.5).

Our tutors also work with the profession 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 education.services@actuaries.org.uk.