

Exam FM

Study Program Guide

Fall 2009 exams



*Get the most
from your
study
program...*

... see page 7

This document contains important information

Please read this document carefully before starting your study.

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Welcome

We're confident that this BPP Exam FM** study program will have a very positive impact on the way you study for the actuarial exams. We believe that students should spend their time focusing on learning and preparing for the exam, not juggling their time between textbooks, separate solution manuals and then additional study manuals to re-explain those textbooks and solution manuals!

No other provider of actuarial education offers such a wide range of coordinated support, including:

- introductory online lectures
- comprehensive text and course notes
- online multiple choice tests
- exam-style question & answer banks
- email tutor support.

We've designed the course to cover all the learning objectives in an order that's right for you. Our text and course notes provide clear explanations of the syllabus, and include over 430 worked examples and practice questions, all with full solutions.

Our introductory online lectures and online multiple choice tests are fully coordinated with the text and course notes. They will ensure that you can get a good introduction to each topic as well as test your knowledge and understanding.

Our question and answer bank contains over 500 exam-style questions to give you the practice necessary to maximize your opportunity for success in the actual examination.

For BPP, providing a study program means providing a commitment to support students all the way through to the exam. Our full-time tutors will answer any questions you may have by email so that you always have the support you need.

Passing the actuarial exams is difficult enough. We understand that you're competing against some very bright people and that it's always hard to find time for studying between working and spending time with friends and family. BPP's study programs organize your study effectively and provide the very best support. They will help you maximize your chances of success in the exam and to make good progress towards qualification.

As you have more contact with BPP, you'll find us to be a very friendly and proactive company. We are committed to providing high quality study support. We respond quickly to students' requests and will do all we can to meet your specific needs. We look forward to helping you.

Good luck with your studying.



David Wilmot
Director of Education

** Note to CAS students: We know that this subject is called "Exam 2" by the CAS, but we'll use the description "Exam FM" throughout this Study Program Guide. We think this makes the text easier to read than using the rather awkward "Exam FM/Exam 2".

1 About the BPP Exam FM study program

BPP's Exam FM study program has everything you need to know, containing 5 coordinated sources of help. Use our study session planner (in Section 6 of this guide) to make sure you get the most from your BPP study program.

Online lectures

Our introductory online lectures give you a quick start by introducing all of the main topics.

The lectures are coordinated with the BPP course notes to give you the most comprehensive study support available.

You can watch them as many times as you like – as an overview before you study the course notes, or to help you review the material you've just covered.

Either way, together with BPP's text and course notes they will help you to understand even the most difficult areas of the syllabus.

Example

A study of retired teachers shows that:

- 8% suffer from migraines
- 12% have high blood pressure
- 93% of migraine sufferers have high blood pressure.

What is the probability that an individual with high blood pressure will suffer from migraines?

$$\Pr(\text{Migraines} | \text{High BP}) = \frac{\Pr(\text{Migraines})\Pr(\text{High BP} | \text{Migraines})}{\Pr(\text{High BP})}$$

$$= \frac{(0.08)(0.93)}{0.12} = 0.62$$

Text and course notes

The text and course notes are divided into 9 study sessions to help you structure your progress through the period leading to the exam. The first 8 sessions are covered by the text and the remainder by the course notes.

Text		Course Notes	
Session	Title	Session	Titles
1	Interest rates and factors	9	Introduction to derivatives
2	Level annuities	10	Forwards and options
3	Varying annuities	11	Derivative strategies
4	Non-annual interest rates and annuities	12	Risk management
5	Project appraisal and loans	13	Forwards and futures
6	Financial instruments	14	Swaps
7	Duration, convexity and immunization		
8	The term structure of interest rates		
Chapter 9 of the text is not required reading			

Our text and course notes include clear explanations of the main theory, and over 430 worked examples and practice questions (all with full solutions). The full solutions to the end-of-chapter questions are available for free on the FM homepage of our website, www.bpptraining.com.

Online tests

After having read the text or course notes you can quickly check your knowledge and understanding using our online multiple choice tests, which include a wide variety of conceptual, computational, and knowledge-based questions. Their online nature is not conducive to long computational problems and so the online test questions are a little more straightforward than you might expect to see on the actual exam. However, they are a great way to work up to the more difficult questions that appear in the Question and Answer Bank.



BPP's online tests contain original short questions with full solutions. They're coordinated with the BPP text and course notes and are designed to test all the key concepts that you'll need to know and work you towards answering exam-level questions such as those in our Question and Answer Banks.

Question & Answer Bank

The Question & Answer Bank contains over 500 exam-style questions. This includes a mix of past exam questions (taken from Course FM/2 exams) and over 430 original questions written by our team of instructors. We provide a detailed line-by-line solution to every question, to help you learn the techniques required to pass the exam.

The questions are coordinated with the text and course notes through our study session planner in Section 6 of this Study Program Guide.

Email tutor support

Our email support service is designed to help you with the more difficult areas of the course. We'll answer your questions thoroughly and quickly so that you can get on with your studying with no worries. Please refer to the FAQ's section of our website for further guidance regarding email support.

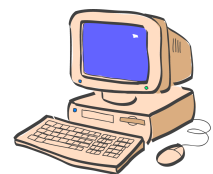
Getting help with your studying by email

Before submitting questions we do expect students to work through the material carefully and to check first the Course FM student mailbag at www.bpptraining.com, as we put answers to **frequently asked questions** about the course material on our website.

If you remain stuck, you can email technical questions about the course material to our team of tutors at: examFMsupport@bpptraining.com

Please help us to help you by stating your name and your question clearly, with page references if appropriate.

If you have any non-technical questions about BPP's study programs, you should send an email to: info@bpptraining.com



2 Additional help from BPP

Practice exams

BPP's practice exams look and feel just like the real thing – they're designed to give you a realistic test of your exam preparation. Our practice exams are available online to help you prepare for the computer-based testing process. Each practice exam contains brand new exam-style questions and is supplied with full solutions. The practice exams are another helpful source of exam-style questions, especially for students who have worked through all the other questions.

Flashcards

BPP offers user-friendly flashcards to supplement the study program. They'll help you review and remember the most important formulas, lists, concepts and other pertinent information. Memorizing the important formulas and knowing how to use them are the most effective exam preparation approach for many students, and our flashcards are very helpful in this regard.

Find out more at www.bpptraining.com

For more information on BPP's full range of products and services, visit our website at www.bpptraining.com.

Our website includes many free samples to download, including course notes, online lectures, and online tests.

You'll also find information on how you can order our products.



3 *Getting the most from your study materials*

Order of study

To help you plan your study, we've divided the course into 14 study sessions. The detail of each session appears later in this Study Program Guide. However, each of your study sessions should include four main activities:

1. Introduction – Watch an online lecture

The online lectures are designed to introduce the main conceptual ideas and to help you towards understanding the most difficult areas. These introductory online lectures are not a replacement for reading the comprehensive text and course notes, but they will help you to study more efficiently by identifying the important topics and explaining how the parts of the course are related.

2. Key learning – Read the related section of the text or course notes

The readings include detailed explanations of the topics covered by the Learning Outcomes, along with over 430 worked examples and practice questions. As you work, you should try to study actively and think about what you're reading. (Active study is discussed in the Study Skills section of this Study Program Guide.)

3. Evaluate learning – Test your understanding

At the end of each reading there are a number of practice questions. In addition, the online tests include a wide variety of conceptual, computational, and knowledge-based questions. These questions are designed to test your understanding of the syllabus. Most of them are shorter and more straightforward than genuine exam-style questions, but every question is designed to test a concept, technique or formula that you will need to know in order to pass the exam.

4. Practice answering exam-level questions – Question & Answer Bank

After learning the important concepts and formulas, the most important way to prepare for the exam is to practice exam-style questions. The other tasks in each study session are designed to help you reach the standard required to attempt these longer and more difficult questions. The Question & Answer Bank contains over 500 relevant past exam and original questions, all with full explanatory solutions plus hints and tips.

It's a fact that people are more likely to remember something if they review it periodically. So, do look over the chapters you have studied so far from time to time. You may also find it useful to review the online lectures and online tests (where purchased).

The secret to success in preparing for actuarial exams is to practice, practice, and then practice some more!

Focus of study

When studying, it is worth remembering that certain areas of the syllabus are more important than others. One measure of importance is the frequency that exam questions appear on each topic. The following table gives you a rough indication of where past exams have focused. Remember, however, that past performance is not always an indicator of the future!

Session(s)	Title	Percentage weight in prior exams
1	Interest rates and factors	4%
2	Level annuities	12%
3	Varying annuities	8%
4	Non-annual interest rates and annuities	8%
5	Project appraisal and loans	12%
6	Financial instruments	20%
7	Duration, convexity and immunization	8%
8	The term structure of interest rates	8%
9 to 14	Derivatives	20%

The above table illustrates that every area is well represented on the exam, with the possible exception of Chapter 1 of the text. The first chapter is not directly tested as frequently, but the material from the first chapter is very important since it is the foundation of the course. Also note the high percentage of questions from Chapter 6. This is due to the large number of bond questions that are frequently asked. To summarize, you should build a strong foundation from Chapters 1 through 4, and allocate extra time for the bond material.

Un-examinable topics

While you study, it is worth bearing in mind that knowledge of proofs is unlikely to be tested within a multiple choice examination. Although memorizing the proofs of key theorems may not be a good use of your time, working through such proofs is worthwhile as it will enhance your understanding and recall of the examinable material. Be careful not to spend too much time with proofs, however, since your time is better spent memorizing formulas and working exam-style problems.

4 Study skills

Overall study plan

A good study plan is one that is:

- developed right at the start of your studies
- realistic
- builds in time for relaxation
- allows for known future busy work periods that will restrict your study time
- allows some time for contingencies.

Once you have set your plan, be determined to stick to it.

Manage your study to allow plenty of time for the concepts you meet in this course to become ingrained in your mind. The most successful students will have completed the course in good time, and left 6-8 weeks for question practice and review. 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 review so that you can concentrate on the important and difficult areas of the course. How often do you think “*I’m just getting the hang of this, I wish the exam was two weeks later*”?

An old rule of thumb that many students use when preparing for actuarial exams is to allocate 100 hours of study time for each hour of exam time. While some students don’t need this much time to prepare, other students require more. It is difficult to actually invest this much time over the study cycle, so it is imperative that you start your studies early and stick to your study plan. We provide a sample study plan in Section 6 of this Study Program Guide. Of course, you should monitor your progress over time so that you can determine whether or not you need to significantly ramp up your study time at some point before the exam.

Study sessions

DO only those activities that will increase your chance of passing, *eg this might not include repeated re-reading of the course notes!*

DO have a specific purpose for each study session, *eg “Read pages 117-126 and attempt questions 35-42 from the Question & Answer Bank”*.

DON’T include non-specific activities, including those using just a time-based target *eg “Three hours studying the material in Chapter 2”*.

DON’T spend too much 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.*

DO study somewhere quiet and free from distractions, *eg a library or a desk at home dedicated to study.*

DO study at the time of day (or night!) when you operate at your peak.

DO 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.*

Active study

Whether you are learning new material or answering questions, you should try to study as actively as possible. This will help you to remain focused on the task, and to ensure that you learn from the process. Here are some techniques that will help you to study actively.

- **Don't believe everything you read!** Good students tend to question everything that they read. They will ask “why, when, how?” when confronted with a new concept, and they will apply their own judgment.
- As you read the course notes, **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. Try to think of possible variations to existing questions too.
- **Annotate your notes** with your own ideas and questions. This will make your study more active and will help when you come to review the material. Do not simply copy out the notes without thinking about the issues.
- Attempt the end-of-chapter questions as you work through the course. Write down your answer before you check against the solution. Attempt other questions on a similar basis, *ie* write down your answer before looking at the solution provided. **Attempt questions under exam conditions** so as to force you to think and act in a way that is similar to how you will behave in the exam.

Review stage

- **Attempt as many exam-style questions as you can** – make sure you write down your answers before looking at the solutions provided! It is crucial at this stage that you attempt questions under exam conditions so as to force you to think and act in a way that is similar to how you will behave in the exam.
- **Take a practice exam** a few weeks before the real exam to identify your weaknesses and work to improve them. You could use a past exam paper or one of the original practice exams written by BPP.

5 *Calculator advice and general exam tips*

Calculator advice

Read our **calculator advice document** in the student resources section of our website, www.bpptraining.com for:

- advice on which calculator(s) to use in the exam
- shortcuts that will help you use your calculator efficiently in the exam
- examples of how to use your calculator with exam-style questions.

A user's guide for the BA-35 and the BA II Plus can be downloaded from the Texas Instruments website (www.TI.com).

While there are many differences between these two calculators (as we discuss in our calculator advice document) one difference that may confuse students initially is the appropriate sign to use when inputting data to determine present values and accumulated values.

For the BA-35, the PV and the FV are usually positive numbers, but the PMT amount may be positive or negative, depending on the calculation. If the payments are discounted back in time, the PMT amount is positive. If payments are accumulated forward in time, the PMT amount is negative.

For the BA II Plus, cash received (*ie*, inflows) should be treated as positive values and cash invested (*ie*, outflows) as negative values. So with the BA II Plus, the signs of the payments and the FV should usually be the same, and the sign of the PV would be the opposite sign. For the typical investment with a negative cash flow at time zero and positive cash flows after time 0, the PV would be entered as a negative number and the PMT and the FV would be entered as a positive number.

In any event, this difference is really no cause for alarm, as long as you use common sense when interpreting the results. Assuming you have entered all of the information correctly, if you then get a negative result from the calculator, you should have the correct answer and it should appear as one of the answer choices, except the answer choices would all be positive numbers. You should still be able to get the correct answer even if you get the signs mixed up.

Examination tables

No exam tables are required for the 2009 sittings of the FM exam.

General exam tips

Our booklet '**The BPP Guide to Exam Success**' contains many great tips for maximizing your chances of success in the exam. Take time to look at this now, so you can practice the appropriate skills throughout your studying, rather than waiting until close to the exam when it will be too late. The booklet is included with BPP's study programs but can also be found on our website. Passing actuarial exams is an acquired skill, and it is much better to learn this skill by reading our suggestions than by trial and error!

Further hints, tips and advice are contained within the individual study session pages in the next section of this Study Program Guide.

6 Your study session planner

Overall study plan

You should set a study plan that is *realistic for you*, based on when you start studying for the exam, your prior knowledge, and other commitments.

Here are two *sample* study plans working towards possible exam dates in 2009. There is a lot of material to get through and a holiday period, so *giving yourself more time would be prudent*. This plan can be modified as needed for students who start on a different date or who desire a different pace, but always keep the exam date in mind since it arrives quickly.

Week #	Week beginning		Activity
1	March 30	July 20	Study session 1
2	April 6	July 27	Study session 2
3	April 13	August 3	Study session 3
4	April 20	August 10	Study session 4
5	April 27	August 17	Study session 5
6	May 4	August 24	Study session 6
7	May 11	August 31	Study session 7
8	May 18	September 7	Study session 8
9	May 25	September 14	Study sessions 9 and 10
10	June 1	September 21	Study session 11
11	June 8	September 28	Study sessions 12
12	June 15	October 5	Study session 13
13	June 22	October 12	Study session 14
14	June 29	October 19	Six-week review period Focus on practicing exam-style questions under time pressure and memorizing key formulas. Attempt the BPP practice exams. Identify your weaknesses and work to eliminate them.
15	July 6	October 26	
16	July 13	November 2	
17	July 20	November 9	
18	July 27	November 16	
19	August 3	November 23	
20	August 10	November 30	Exam FM examination

The following pages are designed to help you plan each of your study sessions in order to make steady progress through the course.

It is **critically important** to get through all of the material, reviewing it several times, and to work through a lot of exam-style questions. A potential trap is to get bogged down in one area with the result that you then don't have time for a thorough review of the rest of the material.

Study record

Use this table to record your progress. Enter the date you complete each task and study session.

	Study Session													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<p>Online lectures</p> <p>Watch BPP's online lecture for each study session. Each lecture provides an overview of the relevant topics.</p>														
<p>Reading</p> <p>Read the relevant section of the text or course notes (the session pages that follow tell you what to read). Work through end-of-chapter questions to test your understanding. We recommend saving the questions marked SOA/CAS for the 6-week review period.</p>														
<p>Online multiple choice tests</p> <p>Attempt BPP's multiple choice test for each study session. The tests focus on the key concepts you'll need to pass the exam through a series of short, multiple choice questions.</p>														
<p>Question & Answer Bank</p> <p>Attempt questions from the Question & Answer Bank. The Question & Answer Bank contains exam-style questions, including a mixture of past exam and brand new questions. We recommend saving the questions marked SOA/CAS for the 6-week review period.</p>														

Study session 1

This study session covers the following Exam FM Learning Outcomes:

1. Key terms of financial mathematics:

- Definitions of: rates of interest, simple, compound (interest and discount), effective, force of interest (constant and varying), equivalent measures of interest, present value, future value, current value, accumulation function, discount function.

2. Key procedures of financial mathematics: $h(i)$ *

* see Section 7 of this Study Program Guide for the full syllabus.



Required reading: Chapter 1 of the BPP text.

Guidance, hints, tips and advice

Only 4% of the questions on an average FM exam might be expected to come from this part of the syllabus. But don't let this low number fool you into simply skimming this chapter. The first chapter is the foundation for the subsequent chapters, so you will need to have a strong understanding of this chapter.

As you read the material from this chapter, you'll learn about interest rates, discount rates, and the force of interest. Keep in mind that these rates are just different ways to measure interest - much in the same way that speed can be measured in either miles per hour, kilometers per hour, feet per second, or light-years. As such, it will be very useful during the exam to understand the inter-relationships between these measures so that you are able to convert between interest rates, discount rates, and the force of interest. These relationships will also be very useful in later chapters.

Important topics (*ie* most examined) in this area are:

1. simple interest and simple discount
2. compound interest and compound discount
3. force of interest
4. accumulated value and present value.

In the text, we've placed a box around the important formulas to help you identify them for your review. (During the exam, you won't have time to derive many formulas, so by the exam date it is important to have memorized most of the important ones!).

Less important topics:

- Don't spend time memorizing proofs, but bear in mind that working through them will help you prepare for the exam by giving you an understanding of the formulas and any underlying assumptions. It will also ease your subsequent memorization of the formulas concerned.

References to prior knowledge that is assumed and used in this area:

- basic calculus.

Techniques, shortcuts and suggestions:

1. Every question should be read carefully before you begin your work. With so many terms (simple vs. compound, interest vs. discount, rate vs. force, *etc*) it is important to know exactly what is being asked in order to get the correct answer.
2. When converting between a simple interest rate and a simple discount rate, be aware that the result is only appropriate for that specific time. That is, the result is not appropriate to use across time. When converting between a compound interest rate and a compound discount rate, the result is appropriate across time.
3. The accumulated value factor is the reciprocal of the present value factor, and vice versa.
4. It is very important to understand references regarding the timing of cash flows. A cash flow that occurs at the end of year t occurs at time t years, and a cash flow that occurs at the beginning of year t occurs at time $t - 1$ years.
5. With varying force of interest, some basic integration is required, but the SOA/CAS only tests a few types of integration and derivatives. As you work the problems, you will see the typical functions that the SOA/CAS expects students to be able to integrate and differentiate. If your calculus is a bit rusty, the good news is that the calculus required by this exam is not very advanced, and we show the work in our solutions.