

2017 Study Guide

Subject CT7

Introduction



This Study Guide contains all the information that you will need before starting to study Subject CT7 for the 2017 exams. **Please read this Study Guide carefully before reading the Course Notes**, even if you have studied for some actuarial exams before.

When studying for the UK actuarial 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 often referred to as simply the “Yellow Tables”
- a “permitted” **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.

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1 The Subject CT7 course structure

There are four parts to the Subject CT7 course. The parts cover related topics and have broadly equal lengths. The parts are broken down into modules.

The following table shows how the parts, the modules and the syllabus items relate to each other. The end columns show 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	Syllabus objectives	2 full days	3 full days
1	1	Economic concepts	12	(i)	1	1
	2	Demand and supply	20	(ii) 1,2,3		
	3	Elasticity and uncertainty	20	(ii) 4,5,6		
	4	Consumer demand and uncertainty	18	(iii)		
	5	Production and costs	21	(v) 1,2,3,4,5		
	6	Revenue and profit	13	(v) 6,7,8,9		
2	7	Perfect competition and monopoly	22	(vi)	1	1
	8	Imperfect competition	29	(vii)		
	9	Products, marketing and advertising	11	(iv)		
	10	Growth strategy	19	(viii)		
	11	Pricing strategies	20	(ix)		
3	12	Government intervention in markets	24	(x)	2	2
	13	Government and the firm	15	(xi)		
	14	Supply-side policy	13	(xix)		
	15	International trade	24	(xii), (xiii)		
	16	The balance of payments and exchange rates	24	(xv)		
4	17	The macroeconomic environment	37	(xiv), (xvii) 1,2	2	3
	18	Money and interest rates	32	(xvi), (xvii) 3		
	19	Business activity, unemployment and inflation	27	(xvii) 4,5,6,7,8		
	20	Demand-side macroeconomic policy	27	(xviii)		

2 **ActEd study support**

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 learn 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. Note that not all products are available for all subjects.

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

The products and services available for Subject CT7 are described below.

“Learning” products

Course Notes

The Syllabus for Subject CT7 has been written by the Institute and Faculty of Actuaries to state the requirements of the examiners. The relevant individual Syllabus Objectives are included at the start of each module and a complete copy of the Syllabus is included in Section 6 of this Study Guide.

One textbook is used for the Core Reading: “Economics for Business” by Sloman, J., Garratt, D., Guest, J., and Jones, E. (Seventh Edition, 2016). Additional Core Reading covering the application of utility theory to the setting of insurance premiums is given in Module 4. The relevant chapters of the textbook are specified in the table on the following page and at the start of each module.

The ActEd Course Notes accompany the textbook and are designed to guide you through your studies. Each module of the Course Notes includes the Syllabus, summaries of the main points made in the textbook, supplementary material where required, advice about the examination, a list of relevant questions from the Q&A Bank and a checklist of important concepts, formulae and diagrams.

As stated above, the Course Notes are complementary to the Core Reading in the textbook and are designed to help you learn and understand that Core Reading. ***They are not intended to replace the Core Reading.*** Instead the Course Notes aim to *summarise* the main points in the Core Reading, in order to make it easier for you to see what those points are and then to learn them. In doing so, the Course Notes do not aim to provide a full explanation of all of the concepts in the Core Reading to the level that is required to pass the exam. ***It is important that you read through the textbook carefully and thoroughly*** (in the order suggested in the ActEd Course Notes) ***including the boxes containing the case studies.***

More information about the Course Notes and their relationship to the Core Reading is provided in the introduction to the course.

The Course Notes and the Core Reading

Part	Module	Title	Chapter	No of pages (textbook)
1	1	Economic concepts	2	9
	2	Demand and supply	4	16
	3	Elasticity and uncertainty	5	17
	4	Consumer demand and uncertainty	6 (Sections 1 and 2) Extra Core Reading	15
	5	Production and costs	9	20
	6	Revenue and profit	10	10
2	7	Perfect competition and monopoly	11	17
	8	Imperfect competition	12	19
	9	Products, marketing and advertising	8	14
	10	Growth strategy	15	19
	11	Pricing strategies	17	16
3	12	Government intervention in markets	20 (Sections 1-4)	15
	13	Government and the firm	21 (Sections 1 and 2)	13
	14	Supply-side policy	31 (Sections 2 and 3)	9
	15	International trade	23 (Section 1), 24	16
	16	The balance of payments and exchange rates	27	16
4	17	The macroeconomic environment	26 including appendix, 29 (Section 1) and 31 (Section 1)	37
	18	Money and interest rates	28, 29 (Section 3)	31
	19	Business activity, unemployment and inflation	29 (Sections 2, 4-6)	23
	20	Demand-side macroeconomic policy	30, 31 (Section 1)	26

“Learning & revision” products

Question and Answer Bank

The Question and Answer Bank provides a comprehensive bank of questions (including some past exam questions) with full solutions and comments.

At the end of every module in the Course Notes, we provide a list of relevant questions from the Q&A Bank. We recommend that you attempt some of these questions before moving on to the next module. This will help you to consolidate what you have learned and it will give you an idea of the types of questions that could be asked in the assignments and the examination. You can then attempt the remainder of the questions as part of your revision.

The Question and Answer Bank is divided into five parts. The first four parts include a range of short and long questions to test your understanding of the corresponding part of the Course Notes. Part five consists of 100 marks of exam-style questions.

Each of the first four parts is divided into two sections: Section A, which contains questions that aim to develop the required skills; and Section B, which contains questions that are more typical of exam questions (a mixture of multiple-choice questions, short questions and long questions). For each part, the questions may require knowledge from earlier parts of the course.

X Assignments

The four Series X Assignments (X1 to X4) cover the material in Parts 1 to 4 respectively. Assignments X1 and X2 are 80-mark tests and should take you two and a half hours to complete. Assignments X3 and X4 are 100-mark tests and should take you three hours to complete. The actual Subject CT7 examination will have a total of 100 marks.

Combined Materials Pack (CMP)

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

The CMP is available in **eBook** format for viewing on a range of electronic devices. eBooks can be ordered separately or as an addition to paper products. Visit **www.ActEd.co.uk** for full details about the eBooks that are available, compatibility with different devices, software requirements and printing restrictions.

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, Question and Answer Bank and X Assignments, it is not practical to produce a full upgrade, and the upgrade will only *outline* the most significant changes. This is the case for Subject CT7 and therefore 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 from our website at **www.ActEd.co.uk**. Alternatively, if the upgrade contains a large number of pages, you may prefer to purchase a hard copy from us at a minimal price to cover production and handling costs.

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. We recommend that you submit your script by email. Your script will be marked electronically and you will be able to download your marked script via a secure link on the internet.

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 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.

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 send out 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 on the internet 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 in information provided with the assignments. 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 with the assignments.

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 from 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** (two or three days) spread over the session.
- **A Block Tutorial** (two or three consecutive days) held two to eight weeks before the exam.

Online Classroom

The Online Classroom acts as either a valuable add-on or a great alternative to a face-to-face or Live Online tutorial.

At the heart of the Online Classroom in each subject is a comprehensive, easily searched collection of over 100 tutorial units. These are a mix of:

- teaching units, helping you to really get to grips with the course material, and
- guided questions, enabling you to learn the most efficient ways to answer questions and avoid common exam pitfalls.

The best way to discover the Online Classroom is to see it in action. You can watch a sample of the Online Classroom tutorial units on our website at **www.ActEd.co.uk**.

“Revision” products

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, Sound Revision and MyTest are inexpensive options 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

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.

Flashcards are available in **eBook** format for viewing on a range of electronic devices. eBooks can be ordered separately or as an addition to paper products. Visit **www.ActEd.co.uk** for full details about the eBooks that are available, compatibility with different devices, software requirements and printing restrictions.

Sound Revision

It is reported that only 30% of information that is read is retained but this rises to 50% if the information is also heard.

Sound Revision is a set of audio files, designed to help you remember the most important aspects of the Core Reading.

The files cover the majority of the course, split into a number of manageable topics based on the modules in the Course Notes. Each section lasts no longer than a few minutes so it's perfect for the train, tube, or car journey on the way to work, or where taking folders and course notes is not practical.

MyTest

MyTest is a revision product containing over 400 questions specially written for actuarial students. There are some multiple-choice questions and some requiring a longer answer. The more you use it, the more it learns about the gaps in your knowledge and understanding. Questions become ever more focused onto these gaps, until they are filled. In a recent study, it was found that students who focus on questions testing the areas of the course they find most difficult have significantly higher pass rates.

MyTest is only available online. Registration runs for one exam session and will automatically expire after the exam. Visit our website at www.ActEd.co.uk for information on how the programme works and details of how to place an order for MyTest.

Choice of revision product

For most students, using one or two of these products will be more effective than using all three and different students will have preferences for different products.

So, what might influence your choice between these three study aids? The following questions and comments might help you to choose the revision products that are most suitable for you:

Flashcards

- 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.

Sound Revision

- Do you have some regular time where carrying other materials isn't practical, eg commuting, at the gym, walking the dog?

Sound Revision is an ideal "hands-free" revision tool.

- Do you have a preference for auditory learning, eg do you remember conversations more easily than emails?

Sound Revision will suit your preferred style and be especially effective for you.

MyTest

- Do you tend to avoid studying topics you find difficult?

MyTest tracks your progress and tailors future tests to reflect this.

- Do you want to fit in some study at work?

MyTest is ideal for regular bursts of revision at the start of the day or at lunchtime.

- Do you like being at your computer?

If you're not tired of looking at a screen after a day at work, then MyTest may be for you.

Choosing more than one revision product

As there is some degree of overlap between revision products, we do not necessarily recommend using them all simultaneously. However, if you are retaking a subject, then you might consider using a different product than on a previous attempt to keep your revision fresh and effective.

"Revision & rehearsal" products

Revision Notes

Our Revision Notes have been designed with input from students to help you revise efficiently. They are suitable for first-time sitters who have worked through the ActEd Course Notes or for retakers (who should find them much more useful and challenging than simply reading through the course again).

The Revision Notes are a set of six A5 booklets – perfect for revising on the train or tube to work. Each booklet covers one main theme or a set of related topics from the course and includes:

- relevant past exam questions with concise solutions from the last ten years
- detailed analysis of key past exam questions (selected for their difficulty), and
- other useful revision aids.

ActEd Solutions with Exam Technique (ASET)

The ActEd Solutions with Exam Technique (ASET) contains our solutions to the previous four years' exam papers, *ie* eight papers, plus comment and explanation. In particular it will highlight 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.

A “Mini-ASET” will also be available in the summer session covering the April Exam only.

Revision Tutorials

Revision Tutorials are intensive one-day face-to-face or Live Online tutorials in the final run-up to the exam.

They give you the opportunity to practise interpreting and answering past exam questions and to raise any outstanding queries with an ActEd tutor. These courses are most suitable if you have previously attended Regular Tutorials or a Block Tutorial in the same subject.

Details of how to apply for our tutorials are set out in our *Tuition Bulletin*, which is available from our website at www.ActEd.co.uk.

“Rehearsal” products

Mock Exam A

Mock Exam A is a 100-mark mock exam paper and is a realistic test of your exam preparation. It is based on Mock Exam A 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 B and Mock Exam C. This is ideal if you are retaking and have already sat Mock Exam A, or if you just want some extra question practice.

Mock / AMP Marking

We are happy to mark your attempts at Mock Exam A or the mock exams included within the AMP. The same general principles apply as for the X Assignment Marking. In particular:

- Mock Exam Marking is available for Mock Exam A and it applies to a specified subject, session and student
- Marking Vouchers can be used for Mock Exam A or the mock exams contained within the AMP; please note that attempts at the AMP can **only** be marked using Marking Vouchers.

Recall that:

- marking is not included with the products themselves and you need to order it separately
- you should submit your script by email
- your script will be marked electronically and you will be able to download your marked script via a secure link on the internet.

Queries and feedback

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 **CT7@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 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.

If you find an error in the course, please check the corrections page of our website (**www.ActEd.co.uk/Html/paper_corrections.htm**) to see if the correction has already been dealt with. Otherwise please send details via email to **CT7@bpp.com** or send a fax to **01235 550085**.

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 **CT7@bpp.com** or fax them to **01235 550085**.

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**.

3 ***How to study to pass the exams***

The CT Subject exams

The Core Reading and exam papers for these subjects tend to be very technical. The exams themselves have many calculation and manipulation questions. The emphasis in the exam will therefore be on *understanding* the mathematical techniques and applying them to various, frequently unfamiliar, situations. It is important to have a feel for what the numerical answer should be by having a deep understanding of the material and by doing reasonableness checks.

Subjects CT2 and CT7 are more “wordy” than the other subjects, including an “essay-style” question or two in Subject CT7.

As a high level of mathematics is required in the courses it is important that your mathematical skills are extremely good. If you are a little rusty you may wish to consider buying the Foundation ActEd Course (FAC). This covers all of the mathematical techniques that are required for the CT Subjects, some of which are beyond A-Level (or Higher) standard. It is a reference document to which you can refer when you need help on a particular topic.

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 the CT Subjects 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 their exams on the first sitting.

Unprepared students find that they are under time pressure in the exam. Therefore it is important to find ways of maximising your score in the shortest possible time. Part of your preparation should be to practise a large number of exam-style questions under timed exam conditions as soon as possible. This will:

- help you to develop the necessary understanding of the techniques required
- highlight the key topics, which crop up regularly 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 Question and Answer Bank (which includes many past exam questions), assignments, mock exams, the Revision Notes and ASET.

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

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 a month 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.

A sample CT subject study plan is available on our website at:

www.ActEd.co.uk/Html/help_and_advice_study_plans.htm

It includes details of useful dates, including assignment deadlines and tutorial finalisation dates.

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.

Ideally, each study session should have a specific purpose and be based on a specific task, eg "*Finish reading Module 3 and attempt Questions 1.4, 1.7 and 1.12 from the Question and Answer Bank*", 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 on page 1 of each module.
2. Read the 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. As you study, pay particular attention to the listing of the Syllabus Objectives and to the Core Reading.
4. Read the 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.

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 Summaries again a few days after reading the module itself.

You may like to attempt some questions from the Question and Answer Bank when you have completed a part of the course. 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 Question and Answer Bank (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 questions as you can from the Question and Answer Bank and past exam papers.

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. Attempt some questions from the Question and Answer Bank as you work through the course. Write down your answer before you refer to the solution.
5. 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.

6. 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.

4 **Frequently asked questions**

Q: *I have an older edition of the textbook, rather than the current seventh edition. How does the new version differ from the old versions and what should I do to prepare for the new exam?*

A: There are many changes and additions to the textbook. The 2017 exams will be based on the seventh edition of the textbook, so we recommend that you use it.

Q: *What knowledge of earlier subjects should I have?*

A: No knowledge of earlier subjects is required.

Q: *What level of mathematics is required?*

A: There is some use of basic arithmetic and algebra in Subject CT7 and you may also need to use basic calculus.

Q: *What other skills are required?*

A: Diagrams are part of an economist's toolkit, so you need to be able to draw clear and accurate diagrams. You might want to buy a ruler and some fine-nib pens!

You also need to use language precisely. For example, the observation that "prices are falling" is not the same as: "the inflation rate is falling".

Q: *Should I read the case studies in the textbook?*

A: Ideally yes, because they will help you to apply your knowledge and understanding to real-life situations, which is a particular aim of the new syllabus. However, your focus should be on the main body of the text.

Q: *Should I do the Review Questions in the textbook?*

A: Only if you find them interesting and *have the time*. It is probably more sensible to concentrate on practising the questions in the Q&A Bank, the assignments and, most importantly, the past exam papers. This is because these questions have been designed specifically to prepare you for the CT7 exam and/or represent the types of questions you will actually need to answer in the CT7 exam.

Q: *What calculators am I allowed to use in the exam?*

A: Please refer to www.actuaries.org.uk for the latest advice.

5 Core Reading and the Syllabus

Core Reading

The Syllabus for Subject CT7, and the Core Reading that supplements it, has been produced by the Institute and Faculty of Actuaries. The relevant individual Syllabus Objectives are included at the start of each course chapter and a complete copy of the Syllabus is included in Section 6 of this Study Guide. We recommend that you use the Syllabus as an important part of your study. The purpose of the Core Reading is to assist in ensuring that tutors, students and examiners have a clear, shared appreciation of the requirements of the Syllabus. 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.

Core Reading deals with each syllabus objective. Core Reading covers what is needed to pass the exam but the tuition material that has been written by ActEd enhances it by giving examples and further explanation of key points. The textbook covers most of the CR but additional CR is given in Module 4. 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.**

Note that 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 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

Core Reading accreditation

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

The Core Reading consists of references to material from:

Economics for Business. Sloman, J., Garratt, D., Guest, J., Jones, E. 7th ed. Prentice Hall 2016. ISBN: 978-1-292-08210-3 (print), ISBN: 978-1-292-08211-0 (PDF), ISBN: 978-1-292-08217-2 (EPub)

Changes to the Syllabus and Core Reading

The Syllabus and Core Reading are updated as at 31 May each year. The exams in April and September / October 2017 will be based on the Syllabus and Core Reading as at 31 May 2016.

We recommend that you always use the up-to-date Core Reading to prepare for the exams.

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

Past exam papers

You can download some past exam papers and Examiners' Reports from the profession's website at www.actuaries.org.uk.

Further reading

The exam will be based on the relevant Syllabus and Core Reading. The textbook used for the Core Reading (“Economics for Business” by Sloman, J., Garratt, D., Guest, J., and Jones, E. (Seventh Edition, 2016)) and the ActEd course material will be the main sources of tuition for students.

However, some students may find it useful to obtain a different viewpoint on a particular topic covered in Subject CT7. The following list of further reading for Subject CT7 has been prepared by the Institute and Faculty of Actuaries. This list is not exhaustive and other useful material may be available. If you wish to borrow any of the following books, please email libraries@actuaries.org.uk.

Business economics. Perman, R.; Scouller, J. Oxford University Press, 1999. 336 pages. ISBN: 978-0198775249

Economics. Begg, D. K. H.; Fischer, S.; Dornbusch, R. 9th ed. McGraw-Hill, 2008. ISBN: 978-0077117870

Economics. Lipsey, R. G.; Chrystal, K. A. 12th ed. Oxford University Press, 2011. xix, 677 pages. ISBN: 978-0199563388 [Earlier editions held: 11th ed. 2007; 10th ed., 2004]

Economics: international edition. Krugman, P.; Wells, R. 3rd ed. Worth; Macmillan, 2013. xliii, 1014, 19, 42, 15, 16 pages. ISBN: 978-1464128738

Economics. Mankiw, N. G.; Taylor, M. P. 3rd ed. Cengage, 2014. xiii, 828 pages. ISBN: 978-1408093795 [Library holds earlier edition: 2nd ed., 2010]

Economics. Sloman, J. 8th ed. FT Prentice Hall, 2012. xxxxiv, 835, 18, 3, 21, 23 pages. ISBN: 978-0273763123 [Earlier edition held: 6th ed., 2006] (eBook available via the Athens portal, contact the library service for details)

Economics for business. Begg, D. K. H.; Ward, D. 4th ed. McGraw-Hill, 2013. xxiii, 451 pages. ISBN: 978-0077139452 [Library holds earlier edition: 2nd ed., 2009]

Economics for business. Sloman, J.; Hinde, K; Garratt, D.. 6th ed. Pearson, 2013. xxvii, 557, 4, 3, 14, 16 pages. ISBN: 978-0273792468 [Earlier edition: *Economics for business*. Sloman, J.; Hinde, K; Garratt, D.. 5th ed. FT Prentice Hall, 2010. xxxiii, 742 pages. ISBN: 978-0273722335 (eBook available via the Athens portal, contact the library service for details)]

Essentials of economics. Sloman, J.; Garratt, D. 5th ed. FT Prentice Hall, 2010. 502 pages. ISBN: 978-0273722519

Foundations of economics. Bade, R.; Parkin, M. 6th ed. Pearson Education, 2012. xxxviii, 898, 15, 22, 2 pages. ISBN: 978-0132984874

6 **Syllabus**

The full Syllabus for Subject CT7 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 Business Economics subject is to introduce students to the core economic principles and how these can be used in a business environment to help decision making and behaviour. It provides a grounding in the fundamental concepts of microeconomics and macroeconomics as they affect the operation of insurance and other financial systems, both from the point of view of individuals and their requirements for financial security, and from the point of view of financial institutions and their ability to provide products that meet individual and institutional clients needs.

Links to other subjects

Subjects CT2 – Finance and Financial Reporting, CT8 – Financial Economics, CT9 – Business Awareness Module, CA1 – Actuarial Risk Management, ST5 – Finance and Investment Specialist Technical A and ST6 – Finance and Investment Specialist Technical B complement and develop the material introduced in this subject.

Other Specialist Technical subjects and all the Specialist Application subjects require the use of economic judgement.

Objectives

On completion of the subject the trainee actuary will be able to:

- (i) Appreciate the relevance of economics to the world of business. (Module 1)
 - 1. Describe what is meant by opportunity cost and scarcity and their relevance to economic choice.
 - 2. Understand the core economic concepts involved in choices made by businesses relevant to the selection of outputs, inputs, technology, location and competition.
 - 3. Distinguish between microeconomics and macroeconomics.

(ii) Discuss the workings of competitive markets. (Modules 2, 3)

1. Describe how markets operate, explain the role of the price mechanism in a free market and discuss the behaviour of firms and consumers in such markets.
2. Describe the factors which influence market demand and supply and describe and discuss how market equilibrium quantity and price are achieved.
3. Discuss how markets react to changes in demand and supply.
4. Define and calculate price and income elasticities of demand and price elasticity of supply. Calculate elasticities of demand using both original and average quantities. Discuss the factors that affect elasticity.
5. Explain the effect of elasticity on the workings of markets in the short and long run.
6. Understand how firms deal with risk and uncertainty about future market movements.

(iii) Discuss consumer demand and behaviour. (Module 4)

1. Understand the concept of utility and describe how it affects consumers' purchasing decisions.
2. Describe how insurance companies help to reduce or remove risk.
3. Explain what is meant by the terms "moral hazard" and "adverse selection".
4. Analyse simple insurance problems in terms of utility theory.

(iv) Understand the importance of a firm's decision on product selection and marketing and advertising strategies. (Module 9)

1. Describe what is meant by product differentiation.
2. Explain various marketing strategies that firms can adopt and the elements that could be involved in a marketing strategy.
3. Explain the effects of advertising and features of a successful advertising campaign.

- (v) Gain a knowledge of the production function, costs of production, revenue and profit in order to understand a firm's price and output decisions. (Modules 5, 6)
1. Explain how the production function reflects the relationship between inputs and outputs in the short and long run.
 2. Define average and marginal product.
 3. Understand the meaning and measurement of costs and explain how these vary with output in the short and long run.
 4. Define total, average and marginal costs.
 5. Describe what is meant by "economies of scale" and explain the reasons for such economies and how a business can achieve efficiency in selecting the level of its inputs.
 6. Understand revenue and profit and explain how both are influenced by market conditions.
 7. Define and calculate average and marginal revenue.
 8. Describe how profit is measured, and explain how the firm arrives at its profit maximising output.
 9. Explain what is meant by the "shut-down" point in the short and long run.
- (vi) Describe profit maximisation under perfect competition and monopoly. (Module 7)
1. Explain what determines the market power of a firm.
 2. Describe the main features of a market characterised by perfect competition and explain how firms in such markets determine output and price in the short and long run.
 3. Describe how monopolies emerge, how a monopolist selects its profit-maximising price and output and how much profit a monopolist makes.
 4. Describe the barriers to entry in an industry and a contestable market and explain how these affect a monopolist's profit.

(vii) Describe profit maximisation under imperfect competition. (Module 8)

1. Describe the behaviour of firms under monopolistic competition and explain why in this type of market only normal profits are made in the long run.
2. Describe the main features of an oligopoly and explain how firms behave in an oligopoly.
3. Discuss what determines competition and collusion of firms in an oligopoly and how the strategic decisions of such firms can be explained by game theory.
4. Discuss if firms in an oligopoly act in consumer's interest.

(viii) Understand the role of a firm's growth strategy on its profitability and survival. (Module 10)

1. Describe why businesses want to grow larger and explain the relationship between growth and profitability.
2. Describe the constraints on a firm's growth and alternative growth strategies open to a firm.
3. Describe the growth strategy of internal expansion, and explain how the firm may pursue vertical integration, product differentiation or diversification to achieve internal expansion.
4. Explain why a firm may adopt the strategy of merging with, or taking over, other firms.
5. Explain under what circumstances a firm might want to form a strategic alliance with other firms.

(ix) Understand various pricing strategies that firms can adopt. (Module 11)

1. Describe how prices are determined in practice and factors that affect the ability of a firm to determine its prices.
2. Describe average cost pricing and price discrimination.
3. Understand pricing strategy for multiple products and explain how pricing varies with the stage in the life of a product.

- (x) Understand the reasons for government intervention in the market. (Module 12)
1. Explain and discuss the extent to which businesses meet the interests of consumers and society in general.
 2. Explain in what sense perfect markets are “socially efficient” and why most markets fail to achieve social efficiency.
 3. Describe the ways in which governments intervene in markets in order to influence business behaviour and explain the drawbacks of such intervention.
 4. Explain and discuss whether taxation or regulation could be more useful in correcting markets’ shortcomings.
- (xi) Understand the relationship between the government and the individual firm. (Module 13)
1. Describe the main targets of “competition policy” and explain the extent to which it is effective.
 2. Understand and explain why a free market fails to achieve the optimal amount of research and development.
 3. Describe the various forms of intervention that the government can undertake in order to encourage technological advance and innovation.
- (xii) Understand globalisation and multinational business. (Module 15)
1. Understand what is meant by globalisation and describe its impact on business.
 2. Explain what is driving the process of globalisation and whether the world benefits from globalisation of business.

(xiii) Understand the importance of international trade. (Module 15)

1. Describe the growth of international trade and its benefits to countries and firms.
2. Explain the advantages of specialisation.
3. Discuss the arguments for trade restriction and protection of domestic industries.
4. Explain the role of the World Trade Organisation (WTO) in international trade.

(xiv) Understand the macroeconomic environment of the business. (Module 17)

1. State and describe the main macroeconomic variables that governments seek to control.
2. Explain what determines the level of economic activity and hence the overall business climate.
3. Describe the effect on business output if a stimulus is given to the economy.
4. Distinguish between actual and potential growth.
5. Describe why economies experience periods of boom followed by periods of recession and explain factors which influence the length and magnitude of the phases of a business cycle.
6. Describe the causes and costs of unemployment and how unemployment relates to the level of business activity.
7. Understand the determination of the price level in the economy by the interaction between aggregate supply and aggregate demand in a simple AS-AD model.
8. Describe the causes and costs of inflation and how inflation relates to the level of business activity.
9. Explain what is meant by GDP and describe how it is measured.
10. Understand the representation of the economy as a simple model of the circular flow of income.

- (xv) Understand what is meant by the balance of payments and how exchange rates are determined. (Module 16)
1. Describe what is meant by “the balance of payments” and how trade and financial movements affect it.
 2. Explain how exchange rates are determined and how changes in exchange rates affect business.
 3. Explain the relationship between the balance of payments and the exchange rates.
 4. Discuss the advantages and disadvantages of fixed and floating exchange rates.
 5. Explain how governments and/or central banks seek to influence the exchange rates, and describe the implications of such actions for other macroeconomic policies and for business.
- (xvi) Understand the role of money and interest rates in the economy. (Module 18)
1. Describe the function of money.
 2. Describe what determines the amount of money in the economy, what causes it to grow and what is the role of banks in this process.
 3. Describe how interest rates are determined.
 4. Explain the relationship between money and interest rates.
 5. Explain why central banks play a crucial role in the functioning of the economies.
 6. Describe how a change in the money supply and/or interest rates affects the level of business activity.

(xvii) Understand what determines the level of business activity and how it affects unemployment and inflation. (Modules 17, 18, 19)

1. Understand how the equilibrium level of income is determined within a simple Keynesian model.
2. Understand the concept of the multiplier and calculate its value.
3. Describe the effect of a rise in money supply on output and prices.
4. Describe the relationship between unemployment and inflation and whether the relationship is stable.
5. Understand how business and consumer expectations affect the relationship between unemployment and inflation and explain how such expectations are formed.
6. Describe how a policy of targeting inflation affects the relationship between unemployment and inflation.
7. Describe what determines the course of a business cycle and its turning points.
8. Discuss whether the business cycle is caused by changes in aggregate demand, or changes in aggregate supply (or both).

(xviii) Understand how macroeconomic policies impact on businesses. (Module 20)

1. Describe the types of macroeconomic policy that are likely to impact on business and explain the way in which this impact takes effect.
2. Describe the impact of fiscal policy on the economy and business, and factors that determine its effectiveness in smoothing out economic fluctuations.
3. Describe the fiscal rules adopted by the government and discuss if following these rules is a good idea.
4. Explain how monetary policy works in the UK and the Eurozone and describe the roles of the Bank of England and the European Central Bank.
5. Explain how targeting inflation influences interest rates and hence economic activity.

6. Discuss the merits of following a simple inflation target as a rule for determining interest rates, and offer an alternative rule.
- (xix) Understand how supply-side policies impact on businesses. (Module 14)
1. Describe the effect of supply-side policies on business and the economy.
 2. Describe the types of supply-side policies that can be pursued and examine their effectiveness.
 3. Explain the impact on business of a policy of tax cuts.
 4. Describe the major types of policy open to governments to encourage increased competition.

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