

MACQUARIE UNIVERSITY
ACST200 : MATHEMATICS OF FINANCE
1st Semester 2006

This document contains important information about this unit. You should read it carefully. If anything in it is unclear, please ask for clarification before you leave the first lecture.

1. Things you should do as soon as possible after the first lecture

(Or if you are keen enough to find this document on the ACST200 web site prior to the first lecture, you can do them earlier.)

1. Read this unit outline thoroughly. If there is anything you do not understand, seek clarification at the first lecture.
2. Go to the ACST200 web site. (For more detail see section 4 of this document.) Make sure you can login. If you have forgotten your password, proceed immediately to the IT Customer Support Desk on Level 1 of the library to get it reset.
3. On the web site, go to the quiz section. Do the Certification Quiz. After submitting the quiz, view your results and see whether your result is acceptable. If you satisfactorily complete this quiz before 1pm on the Friday in week 1 of term, you will earn a bonus ½ mark on your assessment.
4. When you have completed the certification quiz with satisfactory answers, the Practice Quiz becomes available. Do the Practice Quiz several times. Try getting answers right and wrong to see how it behaves.

Please try to do all these steps before the Friday class in week 1 of term, so that any problems can be resolved at that class.

2. Unit Timetable

Week	Week Begins	Topics Covered
1	27 Feb	1. Compound Interest & Discount; Forces of Interest – Reading Topic
2	6 March	3. Annuities
3	13 March	2. Inflation and Capital Gains Tax – Reading topic 4. Annuities payable m'thly
4	20 March	5. Loans
5	27 March	6. Bonds
6	3 April	7. Unit Pricing Systems – Reading Topic 8. Yields on funds
7	10 April	9. Project Appraisal – Reading Topic (Friday public holiday)
2-week study break		
8	1 May	10. Yield Curves
9	8 May	11. “No Arbitrage” Assumption and Forward Contracts
10	15 May	12. Bond Statistics
11	22 May	13. Immunisation
12	29 May	14. Stochastic Models
13	5 June	

Changes to the timetable may occur and any alterations will be advised in lectures.

3. Unit Details

3.1. Unit Description

The unit develops the techniques required to deal with compound interest problems more complex than those discussed in ACST101.

Topics include the force of interest and its relation with the rate of interest; loans repayable by instalments of principal and interest; the effect of income and capital gains taxes; the use of discounted cash flow techniques in project appraisal; simple stochastic interest rate models; unit-pricing systems; yield curves, matching and immunisation; forward rate agreements; replicating portfolios and hedge portfolios. It is assumed that students are able to use spreadsheets.

Most of the topics in this unit are concerned with cash flows which are certain to occur. In ACST255 you will revisit many ACST200 concepts and apply them to situations where cash flows are no longer certain, but have a probability of occurrence. Some of the models considered in ACST200 may appear to involve unrealistic simplifying assumptions. ACST305 will relax some of these assumptions, giving more realistic models.

3.2. Exemptions – Information for those majoring in actuarial studies

The unit ACST200 corresponds to the professional subject CT1. You require a grade of Credit or better in this unit to receive the exemption.

3.3. Unit Workload

Macquarie University used to publish a guideline that a competent well-prepared student should expect to spend, on average over the semester, about 4 hours per week per credit point on their university studies. This is a 4 credit point unit, so this implies you might spend about 16 hours per week on this unit, including class time.

When surveys showed that on average students weren't spending this long on their studies, the University reduced the guideline from 4 hours per week to 3 hours per week. The logical basis for this decision is unclear, since it seems that there is no evidence that the subset of students *who obtained reasonable results* were working less than 4 hours per week per credit point. You should note that the content of this unit was not arbitrarily reduced by 25% when the guideline was changed and grading standards have not been weakened, so it is probably appropriate to continue using the old guideline.

3.4. Unit Objectives – Learning outcomes

By the end of the unit you should be able to demonstrate competence in the range of techniques described in the unit notes and lectures. Ideally you will be able to demonstrate an understanding of the techniques rather than simply demonstrating the ability to rote learn formulae without understanding. You should also be able to demonstrate ethical behaviour by complying with examination rules and by not colluding on assessment tasks.

In addition to the discipline-based learning objectives, all academic programs at Macquarie seek to develop students' generic skills in a range of areas. One of the aims of this unit is that students develop their problem-solving skills.

3.5. Prerequisites & Assumed Knowledge

The prerequisite includes ACST101(Cr). Students will be assumed to be proficient with the entire maths of finance content of that unit. If necessary, you should carry out suitable revision of that material.

The prerequisite also includes MATH133(P) or MATH136(P), and the prerequisites for those units include certain levels of high school mathematics. While it is difficult to list all the mathematical skills students will require for this unit, Topic 1 of the unit notes includes a brief summary of items students will require but often seem to forget. If necessary, you should revise these items.

While there is no formal Statistics prerequisite on this unit, there is a small amount of assumed knowledge of random variables in one topic. If you are studying STAT272 concurrently with ACST200, (or have previously passed STAT272) you should have no difficulties.

Students are assumed to be able to construct simple spreadsheets. While Excel is the spreadsheet package available in the library and EFS computing labs, students may use whichever package they choose.

4. ACST200 Web Site

The ACST200 web site uses software called WebCT. To access this web site go to <http://online.mq.edu.au> and use the “login” link on that page. This leads you to a page called “MyWebCT” which lists all Macquarie University WebCT sites to which you have access.

If you did not understand the above, you can obtain training on how to use a web browser by contacting the Information Technology Training Unit on Level 1 of the Library. If you can't access the site due to having forgotten your password, contact the Information Technology Customer Support Desk also on Level 1 of the Library.

When you first login, you should follow the link labelled “Technical Information” and read all the information there, including the “Information Technology Security Policy & Rules” and the “Information Technology Usage Rules.” This technical information mentions a number of “plugins” that may be required. Of those listed, in this unit you will only need Acrobat Reader.

If your home computer does not have internet access, you can access this web site from computers in the library. The EFS computer labs in E4A 102, 104, 111, 118, 208 and 214 may also be available for your use at times that they are not being used for classes.

The ACST200 web site contains:

- Readings for some topics.
- Tutorial solutions and solutions to the additional exercises.
- Past exams papers.
- Assessable quizzes.
- A discussion area.

5. ACST200 Discussion Area

The discussion area is part of the web site described above.

If you have any thoughts or questions about the material in ACST200, please raise them either during classes or in the discussion area, so that everyone in the class gets to hear/read your thoughts or has a chance to answer your question.

5.1. Topics

The discussion area is divided into topics. When you view the contents of a topic, you will initially see a list of the “threads” in that topic. Click on the green triangle pointing to the right. This will display the messages in that thread.

There is a discussion area topic for each topic in the unit. There are also topics for discussing past exams and for administration.

The “Testing” topic is your practice area. If you are new to the WebCT software and just want to send a test message saying something like “Hey! I just posted a message”, please send it to the “testing” topic. This topic may be emptied after a few weeks.

5.2. Software Oddities

Here are a few other tips for dealing with the WebCT discussion area. Detailed information is also available from the “help” link near the top right corner of each WebCT page.

If you are posting a reply to someone else’s message, view their message and press the “reply” or “quote” button. Then the software will correctly attach your reply to the same thread as the original message. This makes it easier for others to follow the thread of the argument. (Hence the name “thread”.)

When you are composing your message, clicking on the “Equation Editor” button will take you to a new screen which allows you to write equations involving things like superscripts, subscripts and special mathematical symbols. If you haven’t used an equation editor before it may take some effort to use this part of the software. However, you have chosen a mathematical profession, so now is a good time to learn. If you already use MathType or the Equation Editor in Microsoft Word you will find that the WebCT equation editor isn’t as powerful as those.

For simple mathematical expressions, you may find it easier to just type them as text rather than using the equation editor. When doing this, if you use a “less than” sign or a “greater than” sign, make sure you leave a space after it, as in “ $a < b$ ”. The reasons for this are described in the next 2 paragraphs, but they’re messy so skip them if you aren’t interested in computing.

The WebCT software checks whether your posting contains HTML, the language that web pages are written in. If you know HTML you can use it in your discussion postings. For example, you can make things appear in bold or italics. The HTML tags that do this are typed inside “angled brackets”, which unfortunately means they use the symbols we use for “less than” and “greater than”.

We can type things like $P(X < x)$ without causing any problems. But if you omit the spaces and type $P(X < x)$, the software tries to interpret the “ $< x$ ” as an HTML tag. Since it isn’t valid HTML, WebCT ignores it all as unintelligible, usually resulting in all parts of your posting after the “less than” sign being lost. However, if you happen to use a “greater than” sign somewhere later, it will treat that as the end of the unintelligible HTML tag and correctly display text after that. This problem is only triggered when the character immediately after the $<$ is a letter, so we can write things like $P(X \leq x)$ without problems.

If all the above sounds too hard, then before posting your message use the “preview” button at the bottom of the window in which you are composing your message. This will show how your message will look to others. If you’ve done something to trigger any of the difficulties described above this will make it obvious and you can fix them before you post the message.

If you have access to a scanner, you can also write your algebra by hand, scan it, and post the resulting graphics file to the discussion area. However, please save your file in some compressed format such as jpg rather than a raw format such as bmp. Many of your colleagues are accessing the internet via a modem and are unlikely to want to download a bmp file of several megabytes.

5.3. Etiquette

If you are posting a question, don’t phrase it as a question addressed specifically to the lecturer. Doing that would be implying that you think that none of your colleagues are capable of supplying the answer. This is seldom the case!

Ensure you comply with the “Information Technology Security Policy and Rules” and the “Information Technology Usage Rules” accessible from the Technical Information link on the home page. Breaches of these rules DO result in disciplinary action.

The rules indicate that offensive language is unacceptable. Please be aware that the students in this unit come from a diverse range of cultural backgrounds and that words that you regard as mild expletives may be highly offensive to others. If it helps, the word “crikey” – usually followed by at least one exclamation mark – seems to be a recognised expression of surprise or exasperation that is not known to be offensive to any cultures.

6. ACSTINFO Web site

Your “MyWebCT” page should also show that you have access to the ACSTINFO site.

This site is used to distribute information to all students majoring in actuarial studies. The information supplied may include administrative information and job advertisements. You will retain access to this site during the vacation following the end of this semester.

It is to your advantage to ensure you read information on this web site regularly. You should not assume that information posted there will also be repeated in lectures.

7. Administration Issues

Feedback from students suggests that your colleagues are not interested in helping you read the unit outline and that they resent having their time wasted by people who post messages to the discussion area asking questions which have already been answered in the unit outline.

Similarly, most academics have become academics because they enjoy discussing their area of expertise, rather than because they enjoy carrying out tedious administration. For example, you will find that while the lecturer enjoys arguing maths of finance with you during classes and in the discussion area of the web site, he gains no pleasure from reciting sections of the unit outline to students who were not willing to read it for themselves.

It is your responsibility to read the unit outline and to seek clarification of anything you don't understand before leaving the first lecture.

It has become clear that not all students believe the above points. To stress their importance, a 1 mark penalty will apply for the offence of posting questions in the discussion area which have already been answered in the unit outline or asking the teaching staff such questions after the conclusion of the first lecture.

Administrative questions can be sent to me via the mail tool on the ACST200 web site, provided you are sure the question is not already answered in this unit outline. Do not send email to my university email address. That address is heavily spammed and your email is likely to be lost amongst the spam.

8. Questions about the course material

This is a large class.

The disadvantage of this is that the teaching staff do not have time to provide private consultations, either face-to-face or via email, to all the students in this unit. To give consultations to only some students would give them an unfair advantage. Instead, ask your questions during classes or in the discussion area, so that your colleagues can all hear or read your question and the response.

The advantage of this being a large class is that if everyone contributes to the discussion area and shares their ideas, shares their mistakes and shares the questions they invent themselves, you can collectively generate a large quantity of useful material.

However, be aware of the prerequisite material. In this unit we do not spend time answering ACST101 questions for students who are inadequately prepared to study ACST200. The exception to this is the Week 1 tutorial which is solely concerned with revising ACST101 material.

9. Tutorials

Tutorials will commence in the first week of lectures. The week 1 tute will be spent on the revision exercises available in the discussion area of the web site. For week 1 you should attend the tutorial you selected during the enrolment process.

However, from week 2 onwards you should ignore the tute location that appears on the timetable you received when you enrolled. New tute lists will be prepared. The new lists will be available in the downloads section of the unit's web site around Thursday of week 1.

Tutorial solutions will become available on the unit's web site at the end of the tutorial.

Tutorials are your opportunity to obtain feedback on your level of understanding. They are also an opportunity to present your solutions on the board and get feedback on your methods and your writing style. If you are seeking a high grade, receiving feedback on the style of your answers is invaluable. If your result in this unit is unsatisfactory, you should not expect any assistance in diagnosing the problem if you did not regularly attend and actively participate in tutorials.

10. Additional Exercises

The aim of the tutorial exercises is to expose you to one example of each of most common types of problems that occur for each topic, subject to the constraint that it should be possible for a competent student to get through the week's tutorial exercises in 2 hours. That's an *aim* – we don't always succeed.

By contrast, the additional exercises are a compilation of every other problem we had on hand that looked like it could be useful practice. Hence you'll find they aren't as well balanced as the tutorial exercises. For example, the additional exercises might contain several questions on one part of a topic and contain no questions on another equally important part of the topic.

The additional exercises sometimes also include some spreadsheet exercises which aren't viable as tute exercises since few students come to tutes with a computer or a calculator with a spreadsheet facility.

Solutions to additional exercises become available on the web site on the Thursday in the week following the relevant lectures.

11. Textbooks

The prescribed reading is the "ACST200 Unit Notes", available from the University Co-Op Bookshop.

The following is a list of all textbooks I am aware of that cover material from this unit, with their Macquarie University call numbers. Several of these books have been used as prescribed texts for this unit in the past. However, feedback from students was that (with the exception of the "Knox, Zima, Brown" textbook from ACST101) none of these books gave good value for money. Hence we no longer prescribe a textbook for this unit.

- Broverman, Samuel. "Mathematics of Investment & Credit" Mad River Books. (e-mail: retail@actexmadriv.com) HG4515.3.B76/1996
- Donald D.W.A. "Compound Interest and Annuities Certain" 1970. Heinemann HG8790.D65/1970
- Kellison, Stephen G. "The Theory of Interest" Irwin, HB539.K28/1991
- Knox, Zima and Brown. "Mathematics of Finance" 2nd Edition. McGraw Hill. HF5691.K56/1999 (This book does not cover any significant amount of ACST200 material, but is useful for revising ACST101 material.)

- McCutcheon, J.J. and Scott W.F. “An Introduction to the Mathematics of Finance” Heinemann. 1986. HF5691.M27
- Sherris, Michael. “Money and Capital Markets” 2nd Edition. HG4515.S54
- Course notes for the UK courses may be purchased from ActEd. (<http://www.acted.com.au>)

11.1. Frequently asked questions

“Can you recommend any other books?”

No. If I knew of any other books, I’d have put them in the above list.

“Why are these book and course notes so expensive?”

Because the actuarial profession is small and so there are no economies of scale. Unfortunately, if you plan to continue in the actuarial profession, you’ll have to get used to textbooks being expensive.

12. Assessment

12.1. The Grading Process

Macquarie University uses the grades HD, D, Cr, P, PC and F for grading the achievements of students in units of study. The meaning of each symbol is explained in section 10 of the Bachelor Degree Rules in the current Macquarie University Handbook of Undergraduate Studies.

The numerical marks resulting from assessment of your work in this unit will be used as an initial indicator of the quality of your learning and understanding. The use of these numerical marks is, however, only a starting point in determining the appropriate grade. To obtain a grade you must satisfy the qualitative definition of that grade. Once your grade has been determined, you are allocated a standardised mark in the appropriate range for that grade indicating your approximate position amongst students assigned that grade. This standardised mark is not your raw mark.

The following table gives an indication of the relative weighting of the assessment components. To pass the unit, you must pass the final exam as well as passing on the combined weighting shown below.

Quizzes	10%
Examination	90%

Note also the penalties mentioned above under the heading “Administration Issues”.

12.2. Dangerous misunderstandings are penalised

When you work as an actuary or in any other profession, if you have a dangerous misunderstanding of a concept you may provide incorrect advice to a client possibly with severe financial consequences for your client and yourself. However, if you realise that you don’t understand a concept you may refrain from giving advice on it until you have filled the gaps in your knowledge. That is, dangerous misunderstandings have more serious consequences than a lack of knowledge.

The grading philosophy and marking scales adopted in this unit (and in many other university units) reflect this situation. Correct relevant statements earn marks. Statements revealing dangerous misunderstandings result in the deduction of marks. If your answers reveal that your misunderstandings are very severe or numerous, you might earn a negative mark for a question. If a part of a question is worth x marks, the smallest mark you can be allocated for that part is $-x$ marks.

As an example, a minor error when keying numbers into your calculator is not usually regarded as a dangerous error provided the resulting incorrect answer is plausible. However, if a calculator error

results in an obviously unreasonable answer, such as a present value of a future cash flow which exceeds the size of the that future cash flow, or a monthly loan repayment that exceeds the amount of the loan, and you fail to state that you realise this answer is unreasonable, this would be regarded as a dangerous misunderstanding.

12.3. There are no quotas!

You are not competing against your colleagues for some limited number of good grades. You are competing against objective standards. Thus it is not in your interests to withhold your knowledge from your colleagues. If you all share your knowledge and assist each other you can all get better results.

If everyone gets to the pass standard, we will pass everyone. It has happened. It can happen again.

12.4. Frequently asked question

“So what proportion of the class can you give exemptions to?”

Please reread the previous section. There are no quotas. The only upper limit on this proportion is 100%.

12.5. Special Consideration

If the quality of your work in this unit is adversely affected by illness, accident or other form of unavoidable disruption, you should acquaint yourself with the special consideration provisions in Bachelor Degree Rules 7(3) and 9 which appear in the current year’s Handbook of Undergraduate Studies.

Applications for special consideration in respect of a quiz must be made on the “Advice of Absence or other Circumstances” form. These are available from and should be submitted to the Student Enquiry Service on Level 1 of the Lincoln Building, C8A.

Applications in respect of the exam must be made on the “Request for Special Consideration” form. These forms are available from and should be submitted to the Academic Program Section on Level 4 of the Lincoln Building, C8A.

Applications based on medical grounds must be accompanied by the Professional Authority Form. Applications omitting this form, (such as those which only supply a doctor’s certificate), will be ignored.

The application forms are also online at <http://www.registrar.mq.edu.au/academic-index.htm>

Note that in respect of the final examination special consideration can only be granted if your previous performance in the unit, as assessed by the quizzes, has been satisfactory. Also, if in respect of this unit you are found guilty of breaching any of the examination rules, the Information Technology Security Policy & Rules or the Information Technology Usage Rules you will automatically be regarded as having unsatisfactory performance for the purposes of determining eligibility for special consideration.

By submitting a request for special consideration you are agreeing to be available to sit a Supplementary Examination if required. If a Supplementary Examination is granted as a result of the Special Consideration process then:

- The examination will be scheduled after the conclusion of the official examination period.
- Your performance in that Examination replaces your performance in the original examination (if any). You do NOT have the right to subsequently request that your result be based on the original examination rather than the Supplementary Examination.
- If you fail to attend the Supplementary Examination you will be awarded the grade of “Fail - Absent”.

13. Quizzes

There are 8 quizzes to complete, relating to the first 8 topics. Note that we sometimes cover 2 topics in a week, so sometimes you will need to complete 2 quizzes in a week. The quizzes are accessible on the ACST200 web site. They use the same system used in ACST101.

Quizzes on a topic become available immediately after the tutorial for that topic, 11am Monday, and remain available for 6 days, so the deadline is 11am the following Sunday. With respect to the deadlines, please be aware of the department policy on use of computers, shown later in this document.

For the assessable quizzes, you will not be able to view your results until after the deadline for submitting the quiz has passed. (For the practice quiz, you can view your results immediately, otherwise it wouldn't be useful practice.)

When completing the quizzes, you may refer to any notes, textbooks or other non-human resources, but you must not seek assistance from any humans or offer assistance to any other students. Your results for a quiz become available when the deadline for completing the quiz has passed. You should not discuss the quiz with anyone – including fellow students who claim they have already submitted the quiz – until the deadline has passed. Note that a breach of any of these requirements constitutes a failure to satisfy one of the unit objectives and so would automatically result in a fail grade being awarded.

An exception to the above is that if you believe a question to be ambiguous, you should seek clarification from the lecturer via the mail tool in WebCT. You should do this well ahead of the deadline for the quiz. Don't expect assistance in this regard if for example you only get around to reading the quiz questions on the weekend of the deadline. Seeking clarification of a quiz question from anyone else before the deadline for the quiz has passed constitutes a breach of the quiz requirements. This includes posting an enquiry in the discussion area.

While the final exam may contain multiple choice questions similar to some of the quiz questions, you should not regard the quizzes as indicative of the full range of multiple choice questions that can appear in the exam. The WebCT software is fairly restrictive in respect of the complexity of the formulae that we can input for determining the correct answer, so most of the quiz questions involve relatively simple calculations. Also, in the exam there may be several multiple choice questions about a single complex scenario, and this is something we can't easily achieve within the quizzes.

13.1. Frequently asked questions

“I've submitted my quiz and I've just realised I made a mistake in one of the questions. Can you change my answer?”

No. Would you expect to be allowed to change your answer to an exam question after the exam was over?

“I forgot to do the quiz and the deadline has passed. Can I have another chance?”

No. It is your responsibility to complete the quiz before the deadline.

“I was unable to do the quiz due to illness. What happens?”

Read the section labelled “Special Consideration”.

“It won't let me into the assessable quizzes.”

That's not a question, but did you complete the Certification Quiz? Did you view your results for the Certification Quiz?

“I just submitted an assessable quiz but it isn't showing me my mark. Why not?”

You can't view your mark until after the deadline for completing the quiz.

14. Exam

The exam will be a three-hour paper with ten minutes reading time.

14.1. Exam Rules

The University's examination rules apply to the conduct of the exam. These rules are set out under the heading "Rules governing student's conduct in examinations" on page 43 of the 2006 Handbook of Undergraduate Studies. Students are responsible for familiarising themselves with these rules.

14.2. Material in Exam

You may not bring any notes, textbooks or dictionaries into the exam. The exam will include multiple choice questions. You should bring several 2B pencils and an eraser. The exam paper will include a table of the normal distribution and table listing the day number of every day of the (non-leap) year and various formulae from Topic 14 too ghastly to memorise.

Calculators are allowed in the exam but for written answer questions a clear indication of the steps involved in every calculation must be shown. Calculators that have a text-retrieval capacity, whether or not they have a full alphabet on the keyboard, are not allowed. Calculators may be checked at the commencement of the exam, and the make/model may be recorded.

Communication devices, including but not restricted to mobile phones, text message receivers, pagers and wireless-equipped calculators, may not be brought into the exam. If a student is found to have brought such a device into the examination room, the argument that the device was turned off will NOT be regarded as an acceptable excuse.

14.3. Dates

The University Examination period in first semester 2006 is from Wednesday 14 June to Friday 30 June.

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations.

<http://www.timetables.mq.edu.au/exam>

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration. Information about unavoidable disruption and the special consideration process is available at <http://www.reg.mq.edu.au/Forms/APSCon.pdf>

If a Supplementary Examination is granted as a result of the Special Consideration process the examination will be scheduled after the conclusion of the official examination period.

You are advised that it is Macquarie University policy not to set early examinations for individuals or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, that is the final day of the official examination period.

14.4. Proofs and Derivations

The question of whether proofs and derivations are examinable creates a dilemma.

Actuaries are not people who mindlessly apply formulae from textbooks without understanding why they work. Actuaries are skilled professionals who understand why techniques work, and who thus recognise when they've encountered a scenario where the standard formulae won't work. Thus, unless a derivation is specifically flagged as non-examinable – such as the proof of the moments of the lognormal distribution which requires probability techniques well beyond the prerequisites of this unit – it is examinable. You may also encounter variations on the standard

derivations, such as questions which ask you to consider whether a particular formula can be adjusted to cope with a slightly different scenario.

On the other hand, we try to ensure that getting to exemption standard (credit) in this unit is not significantly harder than passing the corresponding exam of the (UK) Institute of Actuaries. The problem is that in recent years the UK exams have only examined proofs rarely and when they do they restrict themselves to the easiest proofs in the syllabus: derivation of the standard formulae for annuities from topic 3 and the various derivations and proofs in Topic 14. (Topic 14 is mostly proofs and derivations. If we didn't examine them, there isn't much left that we could examine for that topic!)

To resolve this dilemma, we reserve the right to examine the more difficult proofs, but we will regard any such questions as designed to determine the students who deserve the Distinction and High Distinction grades. If you are happy to only receive a credit grade, you only need to master the proofs mentioned in the previous paragraph.

14.5. The common stumbling blocks

Students who fail this unit frequently complain that while the individual questions in the exam were not hard, the exam paper was far too long. By contrast, the markers usually note that failing students seem unfamiliar with the standard techniques that appear in the lecture examples and tutorial exercises for solving routine problems. Thus these students tend to spend half a page or more on some torturous method to solve a problem that takes only 2 lines by the standard technique. Make sure you know the efficient methods for all the standard problems.

The other feature common to many failing students is that they seem to have forgotten their ACST101 material. If necessary, revise.

14.6. Frequently asked question

After the exam is over, we have received questions such as:

“I've just realised I forgot to cross out some wrong working. Can you please ignore it?” “I just realised I crossed out something which was right. Can you please mark it?” “I've just realised I misread a question. Can you please mark my answer assuming the question had instead been ...?” “Can you mark something that I wrote on the blank left page of the answer book?”

No. You are expected to answer the question that was asked. You are assessed solely on the answers as they stand at the end of the exam time, not on how you subsequently decide you would have liked them to look. As explained on the front of the answer booklet, only the answers written on the ruled right hand pages of the answer books are marked.

15. Spreadsheets

Many of the problems you encounter in this unit can also be solved using a spreadsheet. Using a spreadsheet to verify your solutions to tutorial exercises questions may improve your understanding. If you have a portable computer or calculator with a spreadsheet package, you may find it useful to bring it to tutorials. (But also make sure you stay in practice with a calculator which is legal for use in the final exam.) Some of the additional exercises are specifically designed for practicing spreadsheet skills.

Microsoft Excel is available in many computer laboratories on campus, but we do not advocate the use of any particular spreadsheet package. If you are considering buying a spreadsheet package, you might also like to consider free options such as Open Office. (<http://www.openoffice.org>)

Exam questions may ask you for a general description of how you would go about solving a problem if a spreadsheet was available, but since we don't mandate a particular package, we can't ask for details about precisely how to achieve some task in Excel. For example, we may ask

questions requiring general answers like “I would enter the coupon rate in one cell and the yield in another. In a third cell I would calculate the price using the formula Then I would use the ‘goal seek’ tool, telling it to vary the number in the yield cell so as to make the number in the price cell \$120.” But we couldn’t ask you where in the Excel menus the “Goal Seek” tool is hidden. In fact this tool has different names in different spreadsheet packages, so your answer would be quite acceptable if you referred to “the solver tool” or “the back-solver” rather than “Goal Seek”.

If formulae are required, it is quite acceptable to state them in the normal mathematical notation such as $\frac{\sqrt{a}}{b}c^x$. You are not expected to write them in a “spreadsheet notation” such as `SQRT(A1)*C1^D1/B1`, since such details can also vary by package.

16. Mistakes? No problem!

Mistakes are a healthy part of the learning process. You can learn a lot from mistakes. The more mistakes you understand during the learning process, the fewer you’re likely to make during the exam. Understanding why a particular method is wrong is often as enlightening as knowing the right method.

Please post your incorrect solutions to the discussion area and challenge your colleagues to find the errors or write them up on the board during tutorials. It doesn’t matter whether you’ve found the error yet yourself or not. It doesn’t matter whether you made the error accidentally or deliberately concocted a plausible but incorrect solution. Either way, it’s still useful to share errors with the class.

17. Student Support Services

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at <http://www.student.mq.edu.au>.

18. Class Etiquette

Mobile phones and other non-silent devices should be turned off during classes. Offenders may be awarded unpleasant demerits, such as cleaning used overhead projector slides.

19. Department Policy on Computers

Point 1 of the following policy is particularly relevant to the WebCT quizzes.

DEPARTMENT OF ACTUARIAL STUDIES NOTICE TO STUDENTS RE USE OF COMPUTERS FOR COURSEWORK

1. Computers do occasionally break down. This is a normal part of working life. When completing assignments, you should not leave computer work until the last moment, assuming the system will be available when you need it.
2. You are the person responsible for keeping backup copies of any data or files you create on a computer. If you fail to keep backup copies, loss of data or files, for whatever reason, is not an acceptable excuse for failing to complete an assignment on time.
3. You should have at least two backups. If you have only one backup disk, then a computer malfunction while you are updating your backups may simultaneously corrupt both the original version (on the hard disk or network) and your backup disk. Do not store your two backups together. Spread your risks.

4. If you are planning to write a document on one computer (eg. your home computer) and print it from a different computer, you should test well ahead of the due date that the second computer can print your document. This particularly applies if your documents incorporate graphs, tables, unusual fonts or special formatting.

20. Cheating and Plagiarism

The University defines plagiarism in its rules: “Plagiarism involves using the work of another person and presenting it as one’s own.” Plagiarism is a serious breach of the University’s rules and carries significant penalties. You must read the University’s practices and procedures on plagiarism. These can be found in the *Handbook of Undergraduate Studies* or on the web at: <http://www.student.mq.edu.au/plagiarism/>

The policies and procedures explain what plagiarism is, how to avoid it, the procedures that will be taken in cases of suspected plagiarism, and the penalties if you are found guilty. Penalties may include a deduction of marks, failure in the unit, and/or referral to the University Discipline Committee.

21. Other Miscellaneous Frequently Asked Questions

“How should I study this unit?”

I don’t know. Different people think differently. You’re the person who has been using your brain for about 2 decades. *You* are the expert on how your brain works most efficiently.

“Why are there typographical errors in the solutions on the web site, (and in the notes)?”

Because I’m an actuary, not a typist. If I stopped creating more practice questions and stopped improving the notes, I’d also stop creating new typographical errors. Would you prefer that?

“What’s the capital of North Dakota?”

Bismark. And can we please get back to the topic of ACST200?

“Will the ACST200 exam be as much fun as was paper 2 of the Combinatorial Probability exam from last semester?”

Probably not. ACST200 exams tend to spend more time on relatively routine questions. Well-prepared students seem to describe them as “pleasant” or “non-threatening” rather than “fun”.

“Did you make up any of the frequently asked questions, (apart from this one)?”

Surprisingly, no. But the one about North Dakota couldn’t honestly be described as frequent.