

Division of Economic and Financial Studies
Department of Actuarial Studies



ACST344 SURVIVAL MODELS
FIRST SEMESTER 2004
UNIT OUTLINE

Teaching Staff Involved in the Unit

The staff involved in the teaching of this unit are

Staff Member	Room	Consultation Hours
Piet de Jong (unit coordinator)	C5C 495	To be advised
Leonie Tickle	C5C 488	Wed 2-3, Fri 2-3 (Weeks 1 – 4 only)
David Pitt	To be advised	To be advised

Questions relating to the administration of the unit should be directed to the Unit Coordinator, Piet de Jong. Questions relating to the unit content should be directed to your lecturer for that section of work, preferably during the tutorial or during consultation hours.

Unit Details

Unit Name: Survival Models Credit Points: 4 Prerequisites: ACST243

Please consult with the Unit Coordinator if you do not meet the prerequisites and have not received a waiver.

Unit Description

Much actuarial work relies on analysing and managing financial risks which depend on probabilities of survival or termination. This unit looks at the models which can be used to analyse these processes. It examines the collection of suitable demographic and social data, such as rates of mortality, ill-health retirement, etc, and their conversion to a useable format, as well as the application of the resulting rates to the valuation of contracts such as insurance. The unit also examines the sources of publicly available demographic data and techniques for assessing the reliability and suitability of such data for the task at hand.

Lectures

Lectures are held at the following times:

Day	Time	Location
Tuesday	11-1	E7B T5
Wednesday	9-11	E7B T3

Student Resource Centre
Division of Economic & Financial Studies
MACQUARIE UNIVERSITY

Any alterations to the lecture times or locations will be advised in lectures.

Tutorials

There is a one hour tutorial session each Thursday at 1-2 in W5C 220. This time is intended as an opportunity for you to ask questions of the lecturer about the material covered that week.

Any alterations to the tutorial times or locations will be advised in lectures and via the website.

Unit Timetable

Week Number	Week Beginning	Topic Covered	Assignment /Test	Lecturer
1	1 March	1 Introduction to Survival Models		LT
2	8 March	1 (cont); 2A Binomial Model		LT
3	15 March	2B Kaplan-Meier/Nelson Aalen Estimators 2C Cox Proportional Hazards Model		LT
4	22 March	3 Introduction to Markov Models		LT
5	29 March	4 Estimation for Markov Models		LT
6	5 April	5 Exposed to Risk	Test	DP
STUDY BREAK	12 April 19 April			
7	26 April	6 Actual vs Expected		DP
8	3 May	7A Graduation Part 1		DP
9	10 May	7B Graduation Part 2		DP
10	17 May	8 Introduction to Financial Contracts		PdJ
11	24 May	9 Assurances and Accumulations	Assignment	PdJ
12	31 May	10 Premiums and Policy Values		PdJ
13	7 June	No lectures		

Please note that changes to the timetable may occur and that any alterations will be advised in lectures and on the unit webpage.

Textbook

There is no textbook for this unit. Lecture materials will be available for purchase from the Co-op bookshop.

In the class test and examination you will be provided with a copy of *Formulae and Tables for Actuarial Examinations*, published by the Institute of Actuaries and Faculty of Actuaries. You will be able to download the basic data used to construct the tables from the web site and you will learn how to use a spreadsheet to generate all the functions you need for exercises during the semester. **However, it is very important** that you have a good idea of how the tables are laid out before you have to use them under examination conditions. You should look at the copies that are available in ERIC and in the library, where there are copies in Reserve, 3-day loan and unrestricted (HG8067.F67).

Note also that the green copies (in the library) have more formulae in the front section than the blue copies (in ERIC). The books supplied for the class test and examination will be the blue version. The layout of the tables, which is the important part, is the same in both versions.

EFS Resource and Information Centre (ERIC)

The EFS Resource and Information Centre is located in room C5C 244 and offers photocopying facilities, reading areas and reference material.

The ACST344 Web Site

The web site will be used as an integral part of this unit. The main components of the site are:



Unit Outline

You can download this unit outline from here.



Unit Announcements

You should check this section regularly to be up-to-date with announcements made in class.



Class Discussion

You should use the Discussions facility, along with the tutorial time, as your resource for asking questions about the content of the unit. You are able to post messages anonymously if you wish, although I would prefer that you reveal your identity. The option to remain anonymous will be removed if it is abused in any way (eg. used to make offensive remarks). You should consult the Discussions frequently, at least once a week, to see answers to queries and also any administrative announcements.



Private Mail

You should use the Mail facility to contact the lecturer about administrative matters. I will also use it to contact you individually, if necessary. Check your mailbox regularly for messages.



Download Unit Notes

Unit notes, exercises and solutions will be posted here.



Download Exams and Tests

Previous examinations and tests for ACST344, ACST397 (now discontinued) and ACST231 (now discontinued) are available here.



Assignment

All material to do with the computing assignment, including the assignment itself, data, the cover sheet etc. will be available here.



Software

Graduation software which will be used throughout the course is available here.



Mortality Tables

Tables required for this unit are available here.

Additional pages may be made available throughout the semester.

Accessing the Web Site

You may access the web site from your home computer if you are connected to the internet. You can also access it from computers in the library and the computer laboratories.

To access this web site go to the ACST344 main page at <http://online.mq.edu.au/public/ACST344/>

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.

Before logging in to this site, you should follow the link labelled "Technical Information" and read all the information there, including the Computer and Communications Security Policy and the Computer and Communications 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.

At the bottom of the page, click the login button and enter your username and password. Once you have logged in you will see the ACST344 main menu. If you have not yet changed your password, use the link labelled "Change Password" to do so. You may now use the other features accessible from the ACST344 main page.

When you have finished using the site, close your browser. If you don't, another person can use the still running browser to access the web site with your account.

This web site uses software called WebCT. If several of your units use this software, you might find it more convenient to go to <http://online.mq.edu.au/student/> and use the "login" link on that page. This leads you to a page which lists all Macquarie University WebCT sites to which you have access.

ACSTINFO Web site

To access the site, go to: <http://online.mq.edu.au/pub/ACSTINFO/> (the address is case-sensitive.) 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.

When you login to this site, please read the section labelled "How to use this site." This contains useful information which will help you determine when there is new information on the site which you should read.

Assessment

The following table gives an indication of the relative weighting of the assessment components:

Class Test	10%
Group Assignment	10%
Final Examination	80%

Class Test

There is one class test scheduled for Thursday 8 April at 1 pm. The test will cover weeks 1 to 5 inclusive (sections 1 to 4 inclusive). The *Formulae and Tables for Actuarial Examinations* book will be provided in the class test, if necessary. Please note that the class test date, time and coverage may be subject to change, and that any alterations will be advised in lectures and via the website.

Normal examination rules apply to the conduct of the class test. These rules are set out under the heading "Rules governing student's conduct in examinations" in the Student Information – Assessment section of the current Macquarie University Handbook. Students are responsible for familiarising themselves with these rules prior to the class test.

Group Assignment

The group assignment will involve a graduation and test of some mortality data, with an accompanying report. The assignment is due Thursday 27 May at 5 pm.

Late assignments will be penalised except in exceptional circumstances and by **prior** arrangement with the Unit Coordinator. The penalty will be one mark (10% of the total mark) per day (or part day).

Please take careful note of the policy of the Department of Actuarial Studies regarding the use of computers for coursework, which is set out later in this outline. Please also take careful note of the section of this unit outline titled Cheating and Plagiarism in relation to your assignment. You will be issued with an assignment cover sheet; please ensure that you sign and submit the cover sheet with your assignment, after reading the notes on plagiarism.

Final Examination

The final examination will be a three-hour written paper with ten minutes reading time.

You will be provided with a copy of the book *Formulae and Tables for Actuarial Examinations* in the final examination.

The final examination may include multiple choice questions. You should ensure that you bring several 2B pencils and an eraser to the examination.

Reference Material in Exam and Test

You may take into the class test and the final examination one A4 sheet of paper containing any notes you wish on both sides. It can be handwritten, typed or photo-reduced.

Legibility of Handwriting

You should ensure that your handwriting in the class assessment tasks and in the final examination is legible. Sections of work that are not legible will not be marked. For true/false questions, answers that are not clearly legible as either T or F will be assumed to be wrong and marked accordingly.

Grading

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 of the Bachelor Degree Rules on p 88 of 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. In particular, note that the mark ranges mentioned on p. 40 of the Handbook of Undergraduate Studies are not the raw marks. 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 indicating your approximate position amongst students assigned that grade.

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 6(3) and 8 in the current Macquarie University Handbook. **All requests for special consideration should be made in writing to the Registrar's Office.**

Applications for special consideration in respect of a class test or other class assessment task 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.

Applications in respect of the final 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.

Applications based on medical grounds (whether for a class test or other class assessment task, or for the final examination) **must** be accompanied by the Professional Authority Form. **Applications omitting this form (such as those which only supply a doctor's certificate) may be automatically rejected.**

The application forms are also online at <http://www.reg.mq.edu.au/Forms/APSCons.pdf>

Exemptions

The unit ACST344 corresponds to the professional subject 104. You require a HD, D or Credit grade in this unit to receive the exemption.

For the professional subjects 101, 107 and 108, two Macquarie units count for exemption, and if you have been awarded a Pass grade in one of the relevant subjects you will need to apply for exemption. A form is available from http://www.actuary.mq.edu.au/current_students/index.shtml or from the Department of Actuarial Studies, and this should be **submitted to the Department Administrators within two weeks of receiving your results** for the semester.

The Institute of Actuaries of Australia

Please refer to http://www.actuary.mq.edu.au/current_students/join_institute.shtml for information on the advantages of joining the Institute of Actuaries of Australia as a student.

Mobile Phones

Academic Senate has resolved that mobile phones should not be used in classrooms or be brought into examination rooms. Communication devices, including but not restricted to mobile phones, text message receivers, pagers and wireless-equipped calculators, may not be brought into the class tests or exam.

Calculators/Computers

Calculators will be allowed in the class test and the final examination provided they are portable, silent and battery operated, but a clear indication of the steps involved in every calculation must be shown. Any machines 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 class tests and final exam, and the make/model may be recorded.

Use of Computers for Coursework

The computer laboratories available to you are the labs on the ground floor of C5C. Please take careful note of the policy of the Department of Actuarial Studies regarding the use of computers, which follows.

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.