



Stat270: Applied Statistics

Unit Information Second Semester 2004

Student Resource Centre
Division of Economic & Financial Studies
MACQUARIE UNIVERSITY

Read this document carefully! Refer to it when you have questions about the unit, before contacting your lecturer. Also refer to the Stat270 web page, which contains up to date information and announcements.

INTRODUCTION

Stat270, Applied Statistics, is a 3 credit point unit run by the Statistics Department in the Division of Economic and Financial Studies.

This unit aims to extend and broaden the statistical experience you have gained in your first 100 level statistics unit. Topics covered will include statistical inference, data handling, one way and two way analysis of variance and simple and multiple regression.

Stat270 is a core unit in the Statistics program. Together with Stat273, Risk and Chance, this unit leads on to 300 level units such as Stat302, Data Mining and Graphics; Stat320, Modelling and Quality Management; Stat328, Market Research and Forecasting; Stat373, Design of Surveys and Experiments; and Stat395, Biostatistics and Epidemiology.

PREREQUISITES

The prerequisites for this unit are *STAT170 (P) or STAT171(P); STAT172 (P) or STAT175(P) or GPA > 1.5*. Students are expected to be familiar with the material covered in these prerequisites.

UNIT OBJECTIVES

By the end of Stat270, students should

- be able to produce and interpret appropriate visual displays and numerical summaries to explore data
- understand the importance of data organisation
- be able to decide on the appropriate statistical model for a research question and data set
- be able to decide on the appropriate statistical analysis to be used in given situations
- be able to apply and interpret the statistical methods covered in Stat270 to explore data and provide answers to research questions
- to understand the assumptions underlying the models and methods covered in Stat270
- to be able to judge whether or not it is reasonable to make the assumption/s underlying a statistical analysis
- to have improved their problem solving ability
- to have improved their report writing skills
- to have improved their ability to independently use statistical software, and to integrate this with the use of other software

LECTURES

You are required to attend two hours of lectures each week. These are held on Wednesdays from 6-8pm in W5AT2.

Lecturer in charge: Ms Sue Crowe, C5C480, phone 9850 8560
email: scrowe@efs.mq.edu.au

The Course Notes for Stat270, available in the Coop Bookshop, contain copies of the lecture slides.

WEB PAGE

Navigate from www.stat.mq.edu.au/Units/stat270/index.htm

TUTORIALS

You are required to attend a one hour tutorial each week, at one of the following times:
Wednesday 4pm, 5pm or 8pm.

Tutorials commence in the second week of semester. You will have been assigned to a tutorial at enrolment. To ensure that students numbers are equivalent in each of the tutorial groups, you may only attend the tutorial to which you have been assigned. Lists of tutorial allocations will be placed on the web at the end of week one. You may only change tutorials by using e-student (navigate from the Macquarie home page or <https://student1.mq.edu.au/t1tbmain.asp>). A useful link for information about changing your program is <http://www.reg.mq.edu.au/Undergrad/UGStudents/COP/cop.htm>.

The format of tutorials will vary from week to week. While most tutorials will be held in your designated classroom, in some weeks they will be held in the computing labs in C5C.

INDEPENDENT WORK

In Stat270 you are expected to spend some time each week working on your own. This may include revision of lecture and tutorial material, attempts at extra examples (from lectures, your textbook or other text books) and completion of homework tasks and assignments.

WORKLOAD

At Macquarie University it is expected that the average student would spend approximately 4 hours per week for each credit point in a unit. This means that for Stat270 you should expect to spend approximately 12 hours per week in both formal classes and independent work.

HELP with STAT270

For administrative queries, please contact Sue Crowe. For assistance with the material in Stat270, your lecturer and tutors are available during their consultation hours ('Office Hours'), or at other times by appointment. A list of office hours will be posted around the Statistics Department after Week 1, and a list of the contact details and consultation times for Stat270 will be available from the Stat270 web page. The Numeracy Centre (C5A 225) may also be able to offer assistance.

It is recommended that you check the Stat270 web page regularly, as this contains the most up to date information about the unit. Of course it is also recommended that you attend lectures and tutorials, as these will also give you up to date information!

Many of the assessment tasks will have solutions available: check the web site, and ERIC (C5C244)

During lectures in Week 1 we will discuss some 'helpful hints' for Stat270 - consult the copy of this on the web page.

UPDATED INFORMATION and SELECTED HANDOUTS and SOLUTIONS

These will be posted on the Stat270 Home page www.stat.mq.edu.au/Units/stat270/index.htm or on links from this page. You may find it easier to navigate from the main Statistics page: www.stat.mq.edu.au/. It is advisable to check the home page regularly.

TEXTBOOK

Moore, D.S. and McCabe, G. P.(1999) **Introduction to the Practice of Statistics**, Fourth Edition (W.H. Freeman) is the set text for this unit. This book is available in the Coop Bookshop.

Additional references

Anderson, J. and Poole, M. (1994) **Thesis and Assignment Writing** (Wiley)
Chatterjee, S. Hadi, A. and Price, B. (2000) **Regression Analysis By Example** (Wiley)
Devore, J. and Peck, R (2001) **Statistics The Exploration and Analysis of Data** (Brooks/Cole)
Ott, R. L. (1993) **An Introduction to Statistical Methods and Data Analysis** (Wadsworth)
Ramsay, F.L. and Schafer, D.W. (2002) **The Statistical Sleuth** (Wadsworth)
Ryan, B.F. and Joiner, B.L. (1994) **Minitab Handbook**, Third Edition (Duxbury Press)
Utts, J.M. and Heckard, R. F. (2002) **Mind on Statistics**, (Duxbury Press)

ASSESSMENT This unit will be assessed as follows:

1. Assignments	8%
2. Class Tests	12%
3. Tutorial Homework and Participation	10%
4. Final Examination	70%

Assignments There will be two assignments worth 4% each. The weeks in which the assignments are due are given in the unit timetable. Specific details of the day and time due will be listed on the front of the assignments.

Class Tests There will be two class tests held during lecture time in the weeks specified in the unit timetable. Students may bring into the tests **one** A4 sheet, which may have material *handwritten* on both sides. Information about the content and layout of the tests will be given in lectures.

Tutorials and Homework Tasks The tutorial mark will be made up of two components. Attendance and participation will contribute 4% and a mark for completion of homework tasks will contribute 6%. Homework tasks will be set from week to week, and the due date and time will be given on the handout for the homework.

Final Examination This will examine any material covered throughout the unit. Students may bring into the examination **two** A4 sheets, which may have material *handwritten* on both sides.

Students must perform satisfactorily in both the final examination and the other assessment tasks in order to pass the unit.

ILLNESS OR MISADVENTURE

If illness or misadventure prevents you from completing an assessment task *during semester* you should contact Sue Crowe, and submit your documentation with the 'Advice of Absence or Other Circumstances' form to the Student Centre *as soon as possible, and no later than the last teaching day of Semester*. This form is available from <http://www.reg.mq.edu.au/Forms/USSAbsence.pdf>

After the completion of semester, the appropriate form is the 'Request for Special Consideration', available from <http://www.reg.mq.edu.au/Forms/APSCons.pdf> Please note that this form and the appropriate documentation must be submitted *before the end* of the examination period.

Note that there is a Division policy regarding requests for special consideration for examinations and the granting of supplementary examinations on the website: <http://www.efs.mq.edu.au/supexams.htm> Please be aware that you will not be contacted to be advised that you have been granted a supplementary examination - you will need to consult the website for this information.

PLAGIARISM Your attention is drawn to the University's Policy on Plagiarism: <http://www.student.mq.edu.au/plagiarism/> The copying of work from another student can result in very severe penalties.

GRADING

Your final grade in Stat270 will be based on your work during semester and in the final examination, as specified in the Assessment section above. The grades allocated are as set out in the Bachelor Degree Rules 10 (2), as follows:

<i>HD High Distinction</i>	denotes performance which meets all unit objectives in such an exceptional way and with such marked excellence that it deserves the highest level of recognition
<i>D Distinction</i>	denotes performance which clearly deserves a very high level of recognition as an excellent achievement in the unit
<i>CR Credit</i>	denotes performance which is substantially better than would normally be expected of competent students in the unit
<i>P Pass</i>	denotes performance which satisfies unit objectives
<i>PC Conceded Pass</i>	denotes performance which meets unit objectives only marginally
<i>F Fail</i>	denotes performance which does not meet unit objectives

Once your grade has been decided, you are given a *Standardised Numerical Grade*, SNG. SNGs are not marks but are a ranking of students based on marks obtained from all facets of the unit assessment. The SNGs awarded in a particular unit are designed to indicate that the students in each performance band, from HD to PC, have satisfied the criteria for inclusion in that band and ranks them by their performance within that band. Since the ranges of SNGs differ from band to band the relationship between raw marks and SNGs may differ from band to band even within the same unit. The relationship between raw marks and SNGs would almost always differ between units.

CALCULATORS

An electronic calculator is essential and will be required for the final examination. Only non text returnable calculators are permitted in tests and examinations.

COMPUTING

You will be expected to use ACCESS for data handling and MINITAB to perform data analyses. We will have some supervised lab sessions during tutorials, and you can use the software in the C5C labs when they are not booked for classes. You can find more information on Minitab at their web site: <http://www.minitab.com/index.htm> . This includes a link to e-academy, for short term rental of the software.

STAT270 Second Semester, 2004
UNIT Timetable

Note: this is intended as an *approximate* guide to the timing of the topics in this unit. This timing may vary - check the administrative notes on the web page regularly for updated information.

Week (Begins)	Lecture	Work due
1 (2 Aug)	Introduction, Module 1.1: Review of Inference, Confidence Intervals Text: 1.2, 1.3, 6.1, 6.2, 7.1, 7.2	
2 (9 Aug)	Module 1.2: Assumptions, Transformations Text: 1.3, 7.1, 7.2, 7.3	
3 (16 Aug)	Module 1.3: Type I and II errors, Power Text: 6.4	HW3
4 (23 Aug)	Module 1.4: Data Handling, Module 2.1: Introduction to One way ANOVA Text: 12.1	HW4
5 (30 Aug)	Module 2.1: One way ANOVA	Test 1
6 (6 Sep)	Module 2.2: One-way ANOVA - Multiple Comparisons Text: 12.2	
7 (13 Sep)	Module 3.1: Simple Linear regression Text: Chapter 2, 10	Assignment 1
**** Midsemester Break - two weeks **** <i>Note: Monday 4 October is a Public Holiday</i>		
8 (5 Oct)	Module 3.1: Simple Linear regression and transformations	HW8
9 (11 Oct)	Module 3.2: Introduction to Multiple Regression Text: Chapter 11	HW9
10 (18 Oct)	Module 3.2: Introduction to Multiple Regression	Test2
11 (25 Oct)	Module 4.1: Two-way ANOVA Text: Chapter 13	
12 (1 Nov)	Module 4.2: Two-way ANOVA - multiple comparisons	Assignment 2
13 (8 Nov)	Revision	