



STAT170 – Introductory Statistics

First Semester 2004 – 12

Unit Information

Student Resource Centre
Division of Economic & Financial Studies
MACQUARIE UNIVERSITY

You should read this document carefully. Answers to most questions regarding the unit can be found here. Other information will be posted on the Stat170 Web page.

Introduction

Stat170 is a three credit point unit offered by the Statistics department in the Division of Economic and Financial Studies. It can be taken either day or evening in either semester or as a full year unit. There are no pre-requisites nor co-requisites for this unit.

This unit is a pre-requisite for all 200 and 300 level statistics units and will usually be the first statistics unit taken by students intending to major in Statistics. It is also a requirement for many other areas of study and, as such, is a core unit for a number of courses at Macquarie University.

Stat170 provides a broad introduction to statistical practice and data analysis techniques. It aims to equip the student with a basic understanding of statistics such that appropriate methods of analysis can be used in various circumstances. The techniques learnt are widely used in the sciences, social sciences, business areas and many other fields of study. Topics covered include study design, data manipulation, statistical inference, regression and analysis of categorical data.

Unit Objectives

Learning Outcomes:

By the end of this unit students should be able to:

- ★ organise and summarise data graphically and numerically
- ★ analyse data using appropriate techniques
- ★ draw conclusions from the results of data analysis

Generic Skills:

University study aims, not only to provide you with knowledge and skills in a particular academic discipline, but also to equip you with some generic skills. By the end of this unit students should:

- ★ be able to manipulate and analyse data using **Excel** and the statistical package **EcStat**
- ★ have enhanced their problem solving ability
- ★ have improved their written communication skills, particularly report writing skills
- ★ be confident in the use of the Internet for obtaining information and communicating with others in Online Discussions
- ★ have improved their ability to work co-operatively as a team member

Lecturer in Charge:

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Contact details of other members of staff involved in the unit can be found on the Stat170 Half Year web site.

Contact Hours

Lectures

Lectures begin in Week 1. Students should attend **ONE** 2-hour session per week. The Study Guides package should be brought to lectures each week as it contains copies of the lecture slides.

Tutorials

Tutorials begin in Week 2. The aim of tutorials is to practise techniques learnt in lectures. They are designed so that students work together in groups. The emphasis on group work is to explore ideas, devise and ask questions, and plan ways to answer them. We believe that working within a group framework will be beneficial for the educational and personal development of students.

Practicals

Practicals begin in Week 2. Each practical session is based on work from the previous week's lecture. During these sessions you will use a computer, the statistical package **EcStat** and the techniques learnt during lectures to help solve statistical problems.

Non-Contact Hours

While attendance at classes is important it is only a small proportion of the total workload for the unit: reading, research in the library, working with other students in groups, completing assignments, using the computer and private study are all part of the work involved. At Macquarie it is expected that the average student should spend four hours per week per credit point. So a typical Stat170 student should expect to spend eight hours per week on independent work.

Assessment

COURSEWORK

Assignments	15%
GNATS	10%
WASPS	<u>5%</u>
	30%

EXAMINATIONS

Class Test	15%	(or not counted)
Final Examination	<u>55%</u>	(or 70% if Class Test not counted)
	70%	

If you gain **less than 15** marks in the coursework, the highest grade you can receive is a **P**.
If you gain **less than 10** marks in the coursework, the highest grade you can receive is a **PC**.
Note that **you must pass the final examination** in order to pass the unit.

Class test and examination

Your final mark will be made up of a combination of the Coursework and the Examinations. Your Examination mark will be calculated as the better of your Class Test mark (out of 15) plus the Final Examination mark (out of 55) **OR** your Final Examination mark only (out of 70).

Grading

Your final grade will be based on both the formative assessment section of the unit and the examination section. In order to attain a particular grade in the unit, the requirement for that grade must be met in **both of these sections**. The grades allocated are as set out in the Bachelor Degree Rules 10 (2) as follows:

HD – High Distinction	Denotes a performance that meets all unit objectives in such an exceptional way and with such marked excellence that it deserves the highest level of recognition.
D – Distinction	Denotes performance that clearly deserves a very high level of recognition as an excellent achievement in the unit.
C – Credit	Denotes performance that is substantially better than would normally be expected of competent students in the unit.
P – Pass	Denotes performance that satisfies unit objectives.
PC – Conceded Pass	Denotes performance that meets unit objectives only marginally.
F – Fail	Denotes that a candidate has failed to complete a unit satisfactorily.

Once your final grade has been decided you will be awarded a standardized 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.

Textbooks and other reference material

Students will need to purchase, from the Co-op Bookshop, a copy of:

- **Stat170 Introductory Statistics Study Guides (includes a compact disc)**
- **Modern Statistics: A Graphical Introduction** by McNeil et al QA276.M22

The CDROM includes the following materials:

- ☐ a learning package containing lecture material with examples and quizzes
- ☐ a copy of **EcStat**, an add-in to **Excel**
- ☐ some data files needed for this unit

Suggested additional material:

STATPAC - An audio-visual tutorial package is available at the Co-op bookshop.

The following texts are recommended reading:

- ☐ **Statistics without Tears** by Rowntree (Penguin) QA276.R66
- ☐ **The Basic Practice of Statistics** by Moore (W.H. Freeman, 2000) QA276.12.M648
- ☐ **Mind on Statistics** by Utts & Heckard (Duxbury, 2002) QA276.12.UT8

Calculators

A calculator with statistical mode is essential. You are advised to bring your calculator to lectures, practicals and tutorials. You will also need it for the class test and the final examination.

Text-returnable calculators cannot be used in the class test or the final examination.

Help with Stat170

Extra help is available for students enrolled in Stat170. In particular, if you are having problems with the content of the unit you can seek help from the following:

Staff office hours

Most members of the Statistics Department have office hours each week when they are available to help students enrolled in Introductory Statistics. These office hours are listed on the doors of the Statistics staff located on the 4th floor of C5C. This list will also be available on the Web.

Numeracy Centre

The Numeracy Centre was set up in 1989 to help students having difficulties with numeracy based subjects. Any student who lacks the knowledge of mathematics needed for Stat170 is encouraged to seek the help of the Centre. The centre is located in C5A 225. The Centre offers a number of services including individual help, supplementary workshops which are run each week and an opportunity to meet with other students to discuss problems.

CDRom

The CDROM has a Learning package which includes lectures quizzes and examples. The CDROM lecture material includes different examples to those presented in lectures and thus gives you a further opportunity to work through the material. The quizzes and examples accompanying these help to test and reinforce your knowledge of the material covered.

Audiovisual program

The *Against all Odds* series provides an additional explanation of the material. This video series is available in the audio-visual section in the Library. Individuals or groups may view these in the cubicles or viewing rooms provided and arrangements to do so should be made with the audio-visual section of the library. You will need your student ID card to borrow these videos.

Unit Coordinators

For help with administrative matters students should see the Unit Coordinators. They are available **Monday - Friday 1.30pm to 2.30pm** in the EFS Resource & Information Centre (ERIC), C5C244.

Computing

The **Excel** Add-in, **EcStat**, which is included on the CDROM will be used in practical sessions and for assignments. Computers with **EcStat** are available in the computing laboratories on the ground floor of C5C. Assignments, **GNATs** and **WASPs** can be completed in these rooms. You will need to bring a floppy disk when using these computers. **GNATs** and **WASPs** can be completed on any PC that has access to the Internet. Computers in the library also have Internet access.

Opening hours of computing laboratories

During semester: 8am - 10pm Mon-Fri
9am - 5pm Sat, Sun

For opening hours during semester breaks see notices outside the rooms. Look for additional information on the whiteboards in the rooms.

Please note that computing labs may be booked for classes. Check the timetable on the door of the lab to make sure that the room is free.

Web address

Information relating to Stat170 can be found by visiting the Macquarie University Statistics Department web site. The URL for this site is <http://www.stat.mq.edu.au>

1. From this site you can access the Stat170 Home page by clicking **Units** then **Stat170**. General information relating to Stat170 is available here. From here, select the half-year offering of the unit where you will find information relevant to this offering. This includes **Login** to the GNATs and WASPs.
2. Alternatively, the URL to access Gnats & Wasps directly is <http://online.mq.edu.au>

Use the **Chat Room** on WebCT to communicate with other students and the lecturers.

Plagiarism

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

Misadventure

Any student who is prevented by illness or misadventure from sitting for the final examination, or whose performance is affected by illness or misadventure as outlined in Bachelor Degree Rule 9 (Handbook of Undergraduate Studies), must report the circumstances in writing to the **Registrar**, supplying necessary medical and other information. Note that you will need your doctor or employer or some other relevant professional person to fill in a Professional Authority Form, which can be obtained from the University's Website. **Note that, the offer of a supplementary examination is available only to those students who have performed satisfactorily in the formative assessment section of the unit. A mark of 15/30 or higher is considered satisfactory.**

Withdrawal

Students who decide to discontinue their studies must complete the required CHANGE OF PROGRAM FORM to avoid being given an FA grade, which could jeopardize future study opportunities. If you withdraw before **31 March** no record of your enrolment is indicated on your result sheet. If you withdraw after **31 March** you will be academically penalized and liable for HECS charges.

PART A (FORMATIVE)

Coursework (30). If you gain less than 15 marks in the coursework, the highest grade you can receive is a P. If you gain less than 10 marks in the coursework, the highest grade you can receive is a PC.

Part A of the assessment is primarily designed to aid your learning during the semester and is a compulsory part of the unit. The unit schedule includes due dates for the assessment components.

General Network Assessed Tests (GNATs)

10 marks

Ten General Network Assessed Tests (**GNATs**) should be completed, **in your own time**, in the computer rooms in C5C, or on any PC that is connected to the Internet. This material is designed to give you practise in the mechanical aspects of statistics. **GNAT7** is designed for revision. All tests are worth 1 mark. You are allowed **two** attempts at each **GNAT** and the higher mark of the two will be recorded. To determine which browsers are supported by WebCT go to <http://online.mq.edu.au/uw/software.html>.

Please note that other important information regarding GNATs is outlined in the GNATs document (green) in the Stat170 Study Guides.

WEB Assessment using a Statistical Package (WASPs)

5 marks

In practical sessions you will use the beige worksheets provided in the Study Guides package. These have spaces to write your answers to the questions and exercises. These answers need to be transferred to **WASPs** on the Internet and will be assessed here. Each of these tests is worth ½ mark. Questions should be answered carefully as there is only **one** attempt allowed at each **WASP**. Information on how to access **WASPs** is given in Practical 0.

Assignments

15 marks

There are three assignments, which should be submitted in the relevant assignment boxes located in ERIC (C5C 244), by the due time and date. Assignments are to be submitted on the answer sheets provided or as word-processed documents where indicated. They give you an opportunity to develop good statistical practice and to reinforce and apply the concepts covered in lectures and the skills learned in practical sessions. Assignments must be submitted as a group, where a group should consist of three students from the same tutorial class. It is important that each member of the group contribute equally to the assignment. Each student should attempt all the problems. The group should then meet to discuss everyone's ideas and a final solution written up. Marks allocated to that assignment will be awarded to each student in the group. Please see the front cover of the assignment for information on penalties.

PART B (SUMMATIVE)

Final Examination & Class Test

70 marks

The class test will be held in your tutorial in **Week 10**. It will cover all material up to and including Lecture 8. **Note: you must sit the test during your allocated tutorial.**

A closed-book final examination will be held during the examination period. **Text-returnable calculators are not permitted in the class test or the final examination.**

Students **MUST** perform satisfactorily in the final examination in order to pass the unit regardless of their performance throughout the semester. Note that your mark for this section of the unit will be calculated as the better of either your class test (15%) plus the examination (55%) **OR** as the examination only, in which case it is worth 70%.

A page of formulae, used throughout the unit, will be attached to the class test and final examination paper.

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UNIT SCHEDULE

WEEK	LECTURE TOPIC	TEXT Chapter	Assessment Due (Note that all Gnats and Wasps are due by 10pm)
1 March W1	Introduction Study Design Simple Displays	1, 2	Obtain Study Guides from Bookshop.
8 March W2	Graphical Displays of continuous data	2	DEMO GNAT: 8/3 – 13/6 DEMO WASP: 8/3 – 13/6
15 March W3	Numerical Summaries & Distributions	3, 4	GNAT 1: 15/3 – 28/3 WASP 1: 15/3 – 26/3
22 March W4	Normal Distribution	4	GNAT 2: 22/3 – 4/4 WASP 2: 22/3 – 2/4
29 March W5	Sampling	5	GNAT 3: 29/3 – 11/4 WASP 3: 29/3 – 9/4
5 April W6	Confidence Interval & Hypothesis Test (σ known) Note: No Friday classes	6, 7	GNAT 4: 5/4 – 2/5 WASP 4: 5/4 – 30/4 Assignment 1 due
SEMESTER BREAK: 9 April – 26 April			
26 April W7	Confidence Interval & Hypothesis Test (σ unknown) Note: No Monday classes	6, 7, 8	GNAT 5: 26/4 – 9/5 WASP 5: 26/4 – 7/5
3 May W8	Comparisons: Two-sample Tests	8	GNAT 6: 3/5 – 16/5 GNAT 7: 3/5 – 23/5 WASP 6: 3/5 – 14/5
10 May W9	Examining Relations	9	WASP 7: 10/5 – 21/5 Assignment 2 due
17 May W10	Testing and Assessing Relations	9	GNAT 8: 17/5 – 30/5 WASP 8: 17/5 – 28/5 CLASS TEST
24 May W11	Categorical Data Analysis One Variable	5, 6, 10	GNAT 9: 24/5 – 6/6 WASP 9: 24/5 – 4/6
31 May W12	Categorical Data Analysis Two Variables	10	GNAT 10: 31/5 – 13/6 WASP 10: 31/5 – 13/6 Assignment 3 due
7 June W13	Unit summary		

After completing a quiz you must **View Results** in order that your quiz is graded. If any of your quizzes appears as **UNGRADED** then you should select **View Scores for Quizzes** from the Gnats and Wasps page and press Go. Click on the attempt that has not been graded and when you return to **Scores** your quiz will have been graded.

Due dates for Gnats and Wasps: Note that you have at least 11 days to complete each quiz. You should complete these early, particularly your first attempt at each Gnat. If left until the last day then you may find that you have access problems and will lose the marks for that quiz.