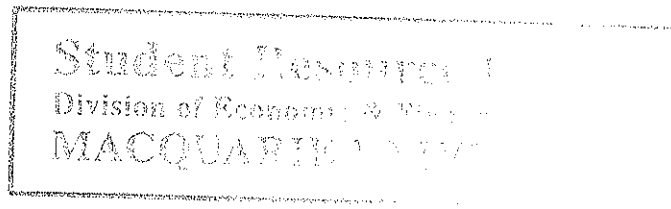




## **STAT170 – Introductory Statistics**

Full Year Offering 2004 – 13

### Unit Information



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 during the day or the 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 learned 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 to not only provide students with knowledge and skills in a particular academic discipline, but also to equip them 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:

Anne Karpin

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phone: 9850 8559

email: akarpin@efs.mq.edu.au

Contact details for other members of staff involved in the unit can be found on the Stat170 Full 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. Some of these classes will be held in a computing room and some will be held in a tutorial room. 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 to the educational and personal development of students.

## Non-Contact Hours

While attendance at classes is important it constitutes only a small part 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 full year student should expect to spend six hours per fortnight on independent work.

## Assessment

### COURSEWORK

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

### EXAMINATIONS

Class Tests	15%	( <i>or</i> 5% if only Test 1 counted <i>or</i> 10% if only Test 2 counted <i>or</i> 0% if neither test counted. Students <i>must</i> attempt both class tests.)
Final Examination	55%	( <i>or</i> 60% <i>or</i> 65% <i>or</i> 70% depending on which, if any, tests are counted)
	<u>      </u>	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 examination mark will be calculated using a combination of marks from your coursework and your examinations. It will be calculated as outlined above. Individual totals will be calculated for each student and the highest of these will be used to calculate the examination mark.

### 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:

<b>HD – High Distinction</b>	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.
<b>D – Distinction</b>	Denotes performance that clearly deserves a very high level of recognition as an excellent achievement in the unit.
<b>C – Credit</b>	Denotes performance that is substantially better than would normally be expected of competent students in the unit.
<b>P – Pass</b>	Denotes performance that satisfies unit objectives.
<b>PC – Conceded Pass</b>	Denotes performance that meets unit objectives only marginally.
<b>F – Fail</b>	Denotes that a candidate has failed to complete a unit satisfactorily.

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

## 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 also 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 tests and the final examination.

**Text-returnable calculators cannot be used in tests or examinations.**

## 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 4<sup>th</sup> floor of C5C. This list is also available on the Web.

### Numeracy Centre

The Numeracy Centre was set up in 1989 to help students having difficulties with numerically based subjects. Any student who lacks the knowledge of mathematics needed for Stat170 is encouraged to seek the help of the Centre 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 contains a learning package which includes lectures, quizzes and examples. The CDROM lecture material include different examples to those presented in lectures, and thus provide 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. 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 **WASP**s can be completed in these rooms. You will need to bring a floppy disk when using these computers. **GNATs** and **WASP**s 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 times 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 **Full 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 only students who have performed satisfactorily in the formative assessment section of the unit will be granted a supplementary examination. 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 awarded an FA grade, which could jeopardise 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 penalised and liable for HECS charges.

## PART A (FORMATIVE)

**Coursework (30 marks)** 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 practice 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 of the two marks 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

Some of your tutorial classes will be held in a computing room. For these 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  $\frac{1}{2}$  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 five 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 contributes equally to the assignment. Each student should attempt all the problems. The group should then meet to discuss everyone's ideas and to write up a final solution. Marks allocated to the 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 first class test will be held in your tutorial in **Week 13 of semester 1**. It will cover all material up to and including Lecture 5. The second class test will be held in your tutorial in **Week 10 of semester 2**. It will cover all material up to and including Lecture 10.

A closed-book final examination will be held during the examination period. **Text-returnable calculators are not permitted in the class tests 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. The mark for this section will be calculated as the better of either class tests plus examination mark **OR** as the examination only. (*See assessment weightings given on page 3.*) Formulae used throughout the unit will be provided in examinations.

## STAT170 I3 (2004) Introductory Statistics

### PROGRAMME FOR FIRST SEMESTER

WEEK	LECTURE TOPIC	TEXT Chapter	Assessment Due (Note that all Gnats and Wasps are due by 10pm)
1 March <b>W1</b>	Introduction Study Design Simple Displays	1, 2	Obtain <b>STUDY GUIDES</b> from Bookshop
8 March <b>W2</b>			<b>DEMO WASP:</b> 8/3 – 12/11
15 March <b>W3</b>	Graphical Displays of Continuous Data	2	<b>DEMO GNAT:</b> 15/3 – 12/11
22 March <b>W4</b>			<b>WASP 1:</b> 22/3 - 11/4
29 March <b>W5</b>	Numerical Summaries & Distributions	3, 4	<b>GNAT 1:</b> 29/3 – 25/4
5 April <b>W6</b>	Normal Distribution	4	<b>Assignment 1 due</b> <b>WASP 2:</b> 5/4 – 9/5
<b>SEMESTER BREAK: 9 April - 26 April</b>			
26 April <b>W7</b>	No lecture Public holiday		
3 May <b>W8</b>			<b>GNAT 2:</b> 3/5 – 16/5
10 May <b>W9</b>	Sampling	5	<b>WASP 3:</b> 10/5 – 23/5
17 May <b>W10</b>			<b>Assignment 2 due</b> <b>GNAT 3:</b> 17/5 – 30/5
24 May <b>W11</b>	Confidence Interval & Hypothesis Test ( $\sigma$ known)	6, 7	<b>WASP 4:</b> 24/5 – 6/6
31 May <b>W12</b>			<b>GNAT 4:</b> 31/5 – 8/8
7 June <b>W13</b>	Class Test		<b>FIRST CLASS TEST</b> <b>WASP 5:</b> 7/6 – 15/8

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. When you return to **Scores** your quiz will have been graded.

**Due dates for Gnats and Wasps:** Note that you have at least 13 days to complete Gnats and Wasps. You should complete these early, particularly your first attempt at each Gnat. If left until the last day, you may find that you have access problems and will lose the marks for that quiz.

## STAT170 I3 (2004) Introductory Statistics

### PROGRAMME FOR SECOND SEMESTER

WEEK	LECTURE TOPIC	TEXT Chapter	Assessment Due
2 August <b>W1</b>	Confidence Interval & Hypothesis Test ( $\sigma$ unknown)	6, 7, 8	
9 August <b>W2</b>			<b>GNAT 5:</b> 9/8 – 22/8
16 August <b>W3</b>	Comparisons: Two-sample Tests	8	<b>WASP 6:</b> 16/8 – 29/8
23 August <b>W4</b>			<b>Assignment 3 due</b> <b>GNAT 6:</b> 23/8 – 5/9 <b>GNAT 7:</b> 23/8 – 3/10
30 August <b>W5</b>	Examining Relations	9	<b>WASP 7:</b> 30/8 – 12/9
6 September <b>W6</b>	Testing and Assessing Relations	9	
13 September <b>W7</b>			<b>GNAT 8:</b> 13/9 – 10/10 <b>WASP 8:</b> 13/9 – 24/10 <b>WASP 9:</b> 13/9 – 24/10
<b>MID SEMESTER BREAK: 18 September – 4 October</b>			
4 October <b>W8</b>	No lecture Public holiday		<b>Assignment 4 due</b>
11 October <b>W9</b>	Categorical Data Analysis One Variable	5, 6, 10	<b>GNAT 9:</b> 11/10 – 31/10
18 October <b>W10</b>	Class Test		<b>SECOND CLASS TEST</b>
25 October <b>W11</b>	Categorical Data Analysis Two Variables	10	
1 November <b>W12</b>			<b>Assignment 5 due</b> <b>GNAT 10:</b> 1/11 – 14/11 <b>WASP 10:</b> 1/11 – 14/11
8 November <b>W13</b>	Review of STAT170		

**Due dates for Gnats and Wasps:** Note that you have at least 13 days to complete Gnats and Wasps. You should complete these early, particularly your first attempt at each Gnat. If left until the last day, you may find that you have access problems and will lose the marks for that quiz.