

Introduction to Statistics – 6540

Unit Outline 1/2009

Faculty of Information Sciences & Engineering

University of Canberra

Australian Government Higher Education (CRICOS)
Registered Provider number: #00212K

This Unit Outline must be read in conjunction with:

- a) *Studying at the University of Canberra: A Guide to Policies and Procedures*, which sets out University-wide policies and procedures, including information on matters such as plagiarism, grade descriptors, moderation, feedback and deferred exams, and is available at <http://www.canberra.edu.au/student-services>
- b) *Guide to Student Services at the University of Canberra*, and is available at <http://www.canberra.edu.au/student-services>
- c) Any additional information specified in section 6f.

1: General Information

- 1a **Unit title:** *Introduction to Statistics*
- 1b **Unit number:** 6540
- 1c **Semester and year offered:** *Semester 1, 2009*
- 1d **Credit point value:** 3
- 1e **Unit level:** 1
- 1f **Name of Unit Convener and contact details (including telephone and email)**
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2: Academic Content

2a Unit description and learning outcomes

This unit introduces students to statistical techniques in a wide range of fields, with a concentration on the biological, health and social sciences. The focus of the unit is the collection, description and analysis of data with an emphasis on exploratory and graphical methods. Students are introduced to the statistical package SPSS. Topics include surveys and experiments; tables and graphs; measures of location and dispersion; basic probability; the scientific method; estimation; hypothesis testing; linear regression modelling and linear correlation.

A student will be expected to be able to understand the nature and consequences of natural variability in data; express a problem in statistical terms; summarise data graphically and statistically, either manually or using SPSS; estimate and test parameters in simple situations; model data by fitting straight lines and understand basic statistical terminology in published material.

This unit primarily addresses the UC graduate attributes stated in the following terms.

1. Information Literacy and Numeracy

Graduates are expected to be able to locate, identify, collate, analyse, manipulate, evaluate, interpret and present information and numerical data.

2. Information and Communication Technology

Graduates are expected to be able to select and use appropriate information and communication technology to retrieve, manipulate and present information.

3. Problem Solving

Graduates are expected to be able to:

- (a) identify problems and analyse the main features of problems relevant to their professional field;
- (b) apply appropriate problem solving processes, arguments, critical and creative thinking;
- (c) implement and evaluate strategies for the resolution of problems;

2b Prerequisites and/or co-requisites

Familiarity with mathematics to Year-12 level.

3: Delivery of Unit and Timetable

Standard face-to-face teaching at UC Bruce campus.

	Day	Time	Room
Lecture A	Monday	10:30 – 12:30	6C34
Lecture B	Friday	09:30 – 10:30	7A52
Tutorial/Lab	Thursday	11:30 – 12:30	*2B3/ **11B39

* Week 2, 4, 6, 10, 12, 14

** Week 3, 5, 7, 11, 13, 15

Each student should attend 3 hours of lectures and 1 tutorial/laboratory session per week. The lectures alone are the definitive guide to the unit and will define what appears on the tests and final exam. The website, textbook and other unit materials do not provide this.

3b Schedule of topics/lectures/tutorials/practicals/field classes by week

	Week	Activity. Minor variations to the sequence of activities may occur.
23 rd February 2009	1	Introduction to Statistics Picturing distributions with graphs
2 nd March 2009	2	Picturing distributions with numbers The normal distribution
9 ^h March 2009	3	<i>Canberra Day: no lecture</i> Scatterplots and correlation
16 th March 2009	4	Regression Test 1 (Weeks 1-4)
23 rd March 2009	5	Producing data: sampling Introduction to probability
30 th March 2009	6	Producing data: experiments The Binomial distribution
6 th April 2009	7	Sampling distributions <i>Good Friday: no lecture</i>
13 th April 2009	8	<i>Mid-semester break (also include Easter Monday: no lecture)</i>
20 th April 2009	9	<i>Mid-semester break</i>
27 th April 2009	10	<i>ANZAC Day: no lecture</i> Test 2 (Weeks 5 & 6)
4 th May 2009	11	Confidence intervals: the basics Tests of significance: the basics Inference about a population mean
11 th May 2009	12	Two sample problems Test 3 (Weeks 7-11)
18 th May 2009	13	Inference for regression One-way analysis of variance: comparing several means
25 th May 2009	14	One-way analysis of variance: comparing several means Test 4 (Weeks 12 & 13)
1 st June 2009	15	Inference about a population proportion Revision

4: Unit Resources

4a Lists of required texts/readings

Moore, D.D. (2007). *The Basic Practice of Statistics*, 4th edition. New York: W.H. Freeman & Company.

Morton, R.H. (1978). *Comprehensive Statistical Tables, Volume 1, 3rd edition*. Canberra: University of Canberra.

Supplementary reading:

Coakes, S.J. and Steed, L.G. (2007). *SPSS analysis without anguish*. Milton, QLD: John Wiley & Sons.

4b Materials and equipment

Scientific calculator; access to Building 11 PC laboratories.

4c Unit website

The unit website is accessed through Moodle.

5: Assessment

5a Assessment overview

Assessment Item (including exams held in the exam period)	Date	Weighting (total to equal 100%)
Test 1	20 March (weeks 1-4)	Up to 20%
Test 2	1 May (weeks 5 & 6)	Up to 20%
Test 3	15 May (weeks 7-11)	Up to 20%
Test 4	29 May (weeks 12 &13)	Up to 20%
Online quizzes, labs and tutorials	Every Friday (weeks 2-7, 10-15)	Up to 20%
Final Exam	Exam period	(#)

(#) Weightings are explained below. Role of the final exam in relation to unit assessment is explained below.

5b Details of each assessment item

Assessment will be based on a combination of continuous assessment and final examination.

Continuous assessment mark (up to 100%)

i. Four tests: 60%

There will be four 45-minute tests, each worth 20%, held in the lectures on the following days

Friday 20 March

Friday 1 May

Friday 15 May

Friday 29 May

Students should bring their pens, rulers, calculators and student ID cards to each of these tests. No other materials are allowed. Formulae and statistical tables will be supplied.

Absences from any one of the four in-class tests need to be explained. Contact the unit lecturer as soon as you know you will be unable to attend any of the tests. You are required to contact the unit lecturer within three days of a missed test with an acceptable explanation and supporting documents. A deferred test will be made available by arrangement, as soon as possible after the original date of the test.

ii. Online quizzes and tutorials (up to 20%)

Tutorial questions, laboratory exercises or online quizzes will be made available on a weekly basis, and should be completed by 17:00 each Friday. Practice questions, to be discussed during the tutorial/laboratory will also be issued on a weekly basis.

A mark of **60%** or more in the continuous assessment component will ensure a **pass** in this unit, **without further testing**.

End-of-semester examination:

This three-hour examination will be held in the University examination period. In this examination calculators may be used, statistical tables will be supplied but **NOT** formulae. **TWO SIDES OF ORIGINAL HANDWRITTEN A4 NOTES** are permitted.

There are two possible assessment paths depending upon whether your continuous assessment mark is **less than 60%** or **at least 60%**.

If you have obtained 60% or more in the continuous assessment component and do not seek a grade higher than P (pass) then you **do not need** to take the final examination. Taking the examination cannot lower your grade from a pass to a fail. Each student who takes the examination will take **one** of two final exams: Exam Part A or Exam Part B.

PART A:

You may do Exam Part A if you have a mark of less than 60% in the continuous assessment component. If you choose to do Exam Part A then your **composite score** for the semester will be calculated by taking 60% of the Exam Part A mark and 40% of your continuous assessment mark. Your composite score will then be scaled to a numerical grade consistent with the descriptors for P and Fail, as follows:

<i>Grade</i>	<i>Numerical Grade</i>
P	50 - 100
Fail	0 - 49

Students who do not take Part A and have scored less than 60% in their continuous assessment will achieve a Fail result for this unit.

PART B:

If you obtain 60% or more in the continuous assessment component then you have already passed the unit and you need not do the final exam. However, if you elect not to do a final exam then your grade for the unit will be a pass (P) and no higher. A higher grade in this unit can only be obtained by scoring at least 60% in the continuous assessment and sitting for Exam Part B.

In summary then, if you score 60% or more in the continuous assessment:

- You have already achieved a pass in this unit
- You may attempt a final examination if you wish to receive a higher grade.
- You must attempt only Exam Part B.
- Your grade will be determined on the basis of a composite score obtained by taking 40% of the continuous assessment component and 60% of the Exam Part B mark. This composite score will then be scaled to a numerical grade consistent with the descriptors:

<i>Grade</i>	<i>Numerical Grade</i>
Pass (P)	50-64
Credit (CR)	65-74
Distinction (DI)	75-84
High Distinction (HD)	85-100

Thus, Exam Part B is used ONLY for students who have already passed on the basis of continuous assessment and who are eligible for grades of credit or higher. If you score at least 60% in the continuous assessment you may NOT attempt Exam Part A but you may attempt Exam Part B. If you score less than 60% in the continuous assessment you may NOT attempt Exam Part B but you may attempt Exam Part A.

5c Special assessment requirements

See 5b.

5d Supplementary assessment

Students are referred to the University policy at <https://guard.canberra.edu.au/cocoon/policydb/downloadSelect?DocumentReferenceId=388>.

5e Text-matching software

It is not expected that text-matching software will be used in this unit.

6: Student Responsibility

6a Workload

The amount of time you will need to spend on study in this Unit will depend on a number of factors including your prior knowledge, learning skill level and learning style. Nevertheless, in planning your time commitments you should note that for a 3cp Unit the total notional workload over the fifteen week semester is assumed to be 150 hours or an average of 10 hours per week. These hours include time spent in classes. The total workload for Units of different credit point value should vary proportionally. For example, for a 6cp Unit the total notional workload over a fifteen week semester is assumed to be 300 hours or an average of 20 hours per week.

6b Special needs

Students who need assistance in undertaking the unit because of disability or other circumstances should inform their Unit Convener or the Disabilities Office as soon as possible so the necessary arrangements can be made.

6c Attendance requirements

Attendance at lectures and tutorials is not a condition for receiving a Pass grade or better.

6d Required IT skills

Some familiarity with basic computer use is assumed.

6e Costs

Purchase of the textbook and some printing costs are possible. You will be expected to have or to purchase a basic scientific calculator.

6f Additional information

None

7: Student Feedback

All students enrolled in this Unit will have an opportunity to provide anonymous feedback on the Unit at the end of the Semester via the Unit Satisfaction Survey which will be presented to you on OSIS. Your lecturer or tutor may also invite you to provide more detailed feedback on their teaching through an anonymous in-class questionnaire administered through the University's Teaching and Learning Centre (TLC).

8: Authority of this Unit Outline

Any change to the information contained in Section 2 (Academic content), Section 3 (Delivery of Unit and timetable) and Section 5 (Assessment) of this document, will only be made by the Unit Convener if the written agreement of staff and a majority of students has been obtained; and if written advice of the change is then forwarded to each student enrolled in the Unit at their registered term address. Any individual student who believes him/herself to be disadvantaged by a change is encouraged to discuss the matter with the Unit Convener.