

# Statistical Analysis and Decision Making G – 6275

## Statistical Analysis and Decision Making G Outline 2009

### Faculty of Information Sciences and 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: Statistical Analysis and Decision Making G**

**1b Unit number: 6275**

**1c Semester and year offered: Semester 1, 2009**

**1d Credit point value: 3**

**1e Unit level: G**

**1f Name of Unit Convenor and contact details**

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Email: [Judith.Ascione@canberra.edu.au](mailto:Judith.Ascione@canberra.edu.au)

**Name of Unit Moderator and contact details**

Shuangzhe Liu Room 11C17 ph: 6201 2513  
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## 2: Academic Content

### 2a Unit description and learning outcomes

#### Syllabus

This is an introductory unit in statistics designed for students in commerce and management discipline areas. Emphasis is placed on the application of statistical techniques to those disciplines. Topics include populations and samples; the presentation and interpretation of data; measures of central tendency and variability; index numbers; simple linear regression and correlation; an introduction to time series; basic probability; the binomial, Poisson and normal distributions; and estimation and hypothesis testing. Analyses will be carried out using Microsoft Excel.

#### Learning Outcomes

Upon completion of this unit, students will be expected 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 via a computer package; understand and interpret economic index numbers; understand the nature of a time series and how it is analysed; estimate and test parameters in simple situations; and understand basic statistical terminology in published material.

#### Graduate Attributes

This unit primarily addresses the UC graduate attributes on Information Literacy and Numeracy, Information and Communication Technology and Problem Solving which are stated in the following terms....

Graduates are expected to be able to:

1. identify, collate, analyse, manipulate, evaluate, interpret and present information and numerical data.
2. select and use appropriate information and communication technology to retrieve, manipulate and present information.
3. identify problems and analyse the main features of problems relevant to their professional field;
4. apply appropriate problem solving processes, arguments, critical and creative thinking;
5. implement and evaluate strategies for the resolution of problems;

### 2b Prerequisites and/or co-requisites

Basic mathematics, approx to Year-10 High School standard.

## 3: Delivery of Unit and Timetable

### 3a Delivery mode

The delivery of the unit is in traditional mode, that is on-campus in standard semesters with weekly lectures/tutorials throughout the semester that runs from 23<sup>rd</sup> February until 5<sup>th</sup> June. This is followed by the examination period from 10<sup>th</sup> to 26<sup>th</sup> June.

You should attend **three** hours of lectures per week

Tuesday	17:30 – 18:30	14B1
Thursday	17:30 – 19:30	14B1

and a **one** hour tutorial per week.

The tutorial groups each meet for one hour per week at a range of times during the week. You should enrol for the tutorials on-line through OSIS. The tutorial lists may be viewed through OSIS. Consult these lists to find which tutorial you have been allocated to. You do not need to register for a computer lab as you are automatically placed in the computer lab of the same number as the tutorial.

In addition to tutorials this semester we are offering an innovative **PALS (Peer Assisted Learning Sessions)** program, running weekly alongside lectures and tutorials. This new program will be taken by specially chosen senior students who have done well in the unit previously and undergone special training to suit them for their role in facilitating your learning through group activities and discussion, so you will know how and what to learn in this unit. Results and student comments from other universities in Australia and around the world who have implemented this program are very positive.

**There are no tutorials or PALS in week 1 or during the class free period.**

The tutorials in weeks 3, 4 and 5 will be laboratory sessions on the use of Excel. Your usual tutor will give these sessions in a computer laboratory in Building 11. You may use Excel in computer laboratories 11A48, 11A49, 11B37 and 11B39 in Building 11 at any time when they are not being used for classes. The first two labs are available 24 hours a day, 7 days a week.

Each week, there is a set of exercises for you to complete. These exercises are for self-study and are not marked. It is important that you complete these exercises every week. The questions in the tests and examinations will be very similar to these weekly exercises. If you are unable to complete these exercises you should ask your tutor for help. Note that the tutors will not attempt to provide solutions to all the questions in the tutorial exercises, only to those questions requested by the students. A full set of solutions will be posted on the unit website on Moodle after the tutorials.

If you are having difficulties in mastering any of the revision material, preparing for your tutorial or if you still do not understand the material after your tutorial then you should go the Student Resource Centre in 11A33 and 11A34. Statistics tutors will be available at certain times to help you. A timetable can be found on the unit website and at [http://www.canberra.edu.au/faculties/ise/student\\_support/ISE\\_Learning\\_Centre](http://www.canberra.edu.au/faculties/ise/student_support/ISE_Learning_Centre).

### Major dates

February	24	Lectures begin
March	3	Tutorials begin
	27 – 29	On-line test 1 open
	31	Assignment distributed
April	7	In-line test 2
	13 – 24	Class free period
May	1 – 3	On-line test 3 open
	7	Last day for handing in the assignment
	15 – 17	On-line test 4 open
	29 - 31	On-line test 5 open
June	10 – 26	Examination session

### 3b Schedule of topics by week

This should be taken as a guide only. Slight variations may occur.

Week	Starting	Activity	Reference (pages in Black et. al.)
1	Feb 23	Data collection	§1.1-1.3 pp 1 – 7, problems pp 15 – 18, §7.1 pp 228 – 241
2	Mar 8	Tables, charts and graphs	§1.4 pp 8 – 12, §2.1-2.3 pp 19 – 40, problems pp 45 – 52
3	Mar 9	Summarising numerical data on one variable	§3.1-3.4 pp 53 – 82, 84 – 85, 87 – 95, problems pp 101 – 110
4	Mar 16	Summarising the relationship between two variables	§2.3 pp 41 – 44, §3.5 pp 95 – 100, §13.1-13.2 pp 496 – 508, §13.5 pp 518 – 521, §17.6 pp 727 – 731.
5	Mar 23	Probability	Chapter 4 pp 112 – 154
6	Mar 30	Discrete probability distributions	§5.1-5.4 pp 155 – 184, problems pp 189 – 196
7	Apr 6	Continuous probability distributions	Introduction pp197 – 198, §6.2-6.3 pp 202 – 215, problems pp 219 – 225
8 – 9	Apr 13	Class free period	
10	Apr 27	Sampling distributions	§7.2- 7.3 pp 242 – 248, 251–262, §8.1-8.3 pp 269, 271 – 284, §8.5 and problems pp 288 – 300
11	May 4	Hypothesis testing	§9.1-9.4 pp 301 – 330 , problems pp 344– 350
12	May 11	Hypothesis testing	§10.1-10.4 pp 351 – 389, problems pp398– 408 but not confidence intervals
13	May 18	Regression analysis	Chapter 13 pp 495 – 541
14	May 25	Index numbers and time series	§16.6 pp 669 – 679, problems p 683
15	Jun 1	Revision	

## 4: Unit Resources

### 4a Lists of required texts/readings

You should have access to a copy of

- Black, K, Asafu-Adjaye, J, Khan, N, Perera, N, Edwards, P, and Harris, M.  
"Australasian Business Statistics", (ISBN 0470815418) or the on-line version (ISBN 0470814616)
- Morton, RH "Comprehensive Statistical Tables: Volume 1 Basic " U.C.

Both of these texts are available in the University Bookshop. These books are also available in the Library on three-hour loan. While it is not necessary, if you wish to do any supplementary reading you can find some books in the HD30.215 section and many books about basic statistics in the QA276.12 section in the Library.

#### 4b Materials and equipment

A pocket calculator will be useful for routine calculations. Very elaborate calculators are not necessary but it is **essential** to have a model that will calculate standard deviations and simple regressions. Some calculators of this type have keys marked  $\Sigma x$ ,  $\Sigma y$ ,  $\Sigma x^2$ ,  $\Sigma y^2$  and  $s_x$ ,  $s_y$  or  $\sigma_x$  and  $\sigma_y$ .

Each student should have access to the Internet and to a printer. If you do not have a computer at home you can use the computers in Buildings 10 and 11. The unit website is located on Moodle. The website may make use of pdf files. If you are accessing this page from outside the University you will need a copy of the Acrobat Reader plug-in to view the files. You can download it for free at [www.adobe.com](http://www.adobe.com). You should read the notices on the website at least twice a week.

#### 4c Unit website

The unit website can be reached through Moodle. Copies of the notes with similar material to that used in the lectures will be posted to the Statistical Analysis and Decision Making G website. There will be a number of handouts distributed in the lectures throughout the semester. If you miss one of these handouts, you can obtain a copy from the website.

### 5: Assessment

#### 5a Assessment overview

In order to pass this unit you must achieve a mark of at least 45% in the final exam and an overall mark of at least 50 % of the total available marks with the weightings shown as below.

Assessment Item (including exams held in the exam period)	Date	Assessment Weighting
On-line test 1	27 – 29 March	7.5%
In-class test 2	5:30pm 7 April	10%
On-line test 3	1 – 3 May	7.5%
Assignment	5:30pm 7 May	10%
On-line test 4	15 – 17 May	7.5%
On-line test 5	29 – 31 May	7.5%
Final exam	Examination period	50%

#### 5b Details of each assessment item

i. Four on-line tests: 30%

There will be four 50-minute tests, each worth 7.5%, to be done on-line.

ii. One in-class test: 10%

There will be a 45-minute test, each worth 10%, held in the lecture on April 7<sup>th</sup>. Students should bring their pens, pencils etc, calculators and their student id cards to this test. No other materials are allowed. Formulae and statistical tables will be supplied. Absence from this in-class test needs to be explained and must be supported with documentary evidence. You must contact the unit convener within three working days after the missed test.

iii. An Excel assignment: 10%

The assignment will be distributed on Tuesday 31 March and should be submitted by 5:30pm on Thursday 7 May. It should be placed in the unit convenor's mailbox in Building 11 (mailbox 301) or handed to me at the **beginning** of the lecture. Late assignments, without an acceptable reason, will be penalised at a rate of 10% per day or part of day (including weekends) late. Assignments will receive zero marks if submitted after 10:00am on Monday 18 May. Note that the printers being out of paper is not an acceptable reason for a late assignment.

iv. End-of-semester examination: **50%**

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 A4 NOTES** will be permitted.

The combined raw score is scaled to a numerical grade consistent with the descriptors for P, CR, DI and HD

<b>Grade</b>	<b>Numerical Grade Equivalent</b>
NX	0 – 49
P	50 – 64
CR	65 – 74
DI	75 - 84
HD	85 and above

**5c Special assessment requirements**

In the case of illness, misadventure or unavoidable commitments students should contact the unit convenor as soon as possible. Students should consult the guide to student services for details on the Academic Board's Special Consideration policy and the procedures by which a student may seek alternative arrangements.

**5d Supplementary assessment**

To be eligible to undertake supplementary assessment in a unit, a student must:

- be enrolled in their final semester of study;
- have failed a single unit, with a final mark between 45-49% in the unit;
- have passed all other units undertaken in that semester.

The failed unit must be the final unit required to complete the academic requirements of their course. For the University policy on supplementary assessments refer to [https://guard.canberra.edu.au/policy/policy.php?pol\\_id=2901](https://guard.canberra.edu.au/policy/policy.php?pol_id=2901)

**5e Text-matching software**

This is not relevant to Statistical Analysis and Decision Making G.

<b>6: Student Responsibility</b>
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**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**

It is expected that students will attend lectures. Tutorial participation is an assessment item and you need to attend tutorials.

**6d Required IT skills**

It is expected that students have some familiarity with the use of a computer e.g. print unit materials, access the unit website, etc.

**6e Costs**

The two textbooks together cost just over \$100 however using the online version of the textbook is considerably cheaper. A suitable scientific calculator can be purchased for around \$25.

**6f Additional information**

Any announcements made at lectures will also be shown on the **unit** website. These announcements are deemed to be known by all students within two days of being posted to the website.

It is strongly recommended that you make use of the sessions in the Student Resource Centre in Building 11 if you are experiencing any difficulties with Statistical Analysis and Decision Making G. A time-table is available on the unit website.

<b>7: Student Feedback</b>
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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).

<b>8: Authority of this Unit Outline</b>
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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.