

School of Economics and Finance  
**QUAN 102 STATISTICS FOR BUSINESS**

Trimester One 2008

**COURSE OUTLINE**

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**Lecturers:**

- Cushla Thomson, RH402, phone 463-6855 (4pm stream)  
email: [cushla.thomson@vuw.ac.nz](mailto:cushla.thomson@vuw.ac.nz)
- Adrian Slack, RH315, phone 463-5233 ext 8571 (5pm, L1-16)  
email: [adrian.slack@vuw.ac.nz](mailto:adrian.slack@vuw.ac.nz)
- John Randal, RH308, phone 463-5558 (coordinator, 5pm L17-36)  
email: [john.randal@vuw.ac.nz](mailto:john.randal@vuw.ac.nz)

**Administrators:**

- Penelope de Boer, RH319, phone 463-5818, or EA128, phone 463-7449 (until 7 March), email: [penelope.deboer@vuw.ac.nz](mailto:penelope.deboer@vuw.ac.nz)
- Francine McGee, RH319, phone 463-5818 (after March 13)  
email: [francine.mcgee@vuw.ac.nz](mailto:francine.mcgee@vuw.ac.nz)

**Lecture times:** Mon, Tues, Thurs, 16:10-17:00, MC LT103 (4pm stream, CRN 4501)  
Mon, Tues, Thurs, 17:10-18:00, MC LT101 (5pm stream, CRN 1482)

**Tutorial time:** Sign up online at <http://signups.vuw.ac.nz/>

**Course website:** <http://www.blackboard.vuw.ac.nz/>

The course administrators will handle the allocation of students to tutorial groups and the recording of information such as assignment, test and exam marks. All administrative queries concerning assignments or tutorials should be directed to the course administrator via email. You must not send the same email separately to the course coordinator.

The Course Coordinator is John Randal. He has overall responsibility for the course. You should see him if you are having difficulties that you have been unable to resolve by first speaking to your lecturer or tutorial supervisor (for academic problems), or to the course administrator (for administrative problems).

If you are unsure who to contact, try the course administrator first.

If QUAN 102 does not appear on your Blackboard home page, please email the course administrator immediately with your SCS username.

## Course Objectives

The course is an introduction to techniques of probability and statistics which are useful in business research or practice. The emphasis is on applications, rather than proofs, but some understanding of the concepts and an ability to communicate the meaning of the results is vital. By the end of the course students should be able to:

- Identify the relevant statistical approach(es) for a wide variety of practical problems.
- Conduct basic statistical analysis as required to address particular questions.
- Communicate the conclusions from an analysis to people who are unfamiliar with statistical terminology.
- Display an awareness of the assumptions on which particular statistical techniques depend and communicate that awareness to non-specialists.

## Expected workload

You should expect to spend 4 hours in class per week (3 lectures and 1 tutorial) and to spend 7 - 10 hours per week reading, studying and completing assignments.

## Readings

The text is:

Clark and Randal (2004), *A First Course in Applied Statistics*, ISBN 1877258903 (VUW Library call number QA276 C594 F). This is available from the Victoria Book Centre for \$52.99. Tutorial and assignment problems will be set from this book, and it contains tables which will be essential during the course. Second hand copies may be available.

Complementary books which might provide useful alternative explanations and practice exercises are:

- P. Belgrave and C. Jeffcoat (2004) *"Statistics for Business"*, Thomson (HF1017 B429 S).
- D.S. Moore and G.P. McCabe (2003) *Introduction to the Practice of Statistics* (4th ed.) W.H. Freeman: New York (QA276.12 M821 I 4ed).
- D.A. Lind, W.G. Marchal and S.A. Wathen (2005) *Statistical Techniques in Business and Economics* (12th ed.) Irwin: Homewood, Illinois (HA29 L742 S 12ed).

The VUW library has a web page that contains detailed information about library resources and has links to other sites. Its URL is <http://www.vuw.ac.nz/library>

## Materials and Equipment

You must have a calculator that evaluates powers and has statistical options, including the evaluation of means and standard deviations. Correlation and regression options are useful, but not vital. (The recommended model is a modern Casio fx-82 - older versions of this model did not do regression, RRP approx \$30). Calculators will be essential for the test and the final exam, however, they must be silent in operation and have their own power source. Graphics calculators and programmable calculators are permitted, but the advanced features of these models will not be necessary or useful in this course. All programmable calculators must be reset prior to the test and exam.

## Assessment Requirements

Your course mark will be a weighted average, made up as follows:

Perdisco exercises: 10% Test: 20% Exam: 70%

A 60 minute test covering lectures 1–16 (Monday 25 February to Thursday 3 April inclusive) will be held at 6:30pm on Wednesday 9 April. The final exam will be scheduled by the university in the trimester one examination period, 2–25 June, 2008.

## Tutorials

Weekly tutorials will be held throughout the course, except for weeks 1 and 5. They will cover material from the lectures from the previous week. Attendance at weekly tutorials is not compulsory, however, it is recommended that you prepare for the tutorial nonetheless. Preparation consists of reviewing the lecture material, and answering a short series of online questions provided by Perdisco. Tutorial exercises from the textbook will be listed on Blackboard, and these should be attempted before the tutorial you attend. Bring your textbook and calculator.

## Perdisco's e-workbook

The e-workbook offers:

- The chance to practice, revise and focus on each topic until you completely understand it
- Step-by-step feedback explaining why each answer you have given was correct or incorrect
- Virtual tutoring available anywhere, anytime (even outside of normal class hours)
- At a glance, you can see the areas you need to focus on.

The e-workbook costs \$39.90 for unlimited access throughout the semester and can be purchased online by credit card or by mail using a personal or bank cheque. Payment instructions are provided after registration.

From Perdisco: *As you can appreciate, a great deal of time and effort has gone into the development of this extensive and useful learning resource. Students who have regularly engaged with the e-workbook content in previous semesters have performed exceptionally well and have found that the benefits far outweigh the cost. Indeed, students who use the e-workbook and do not pass the unit are guaranteed a refund under Perdisco's "Guaranteed Pass Program".*

To start using the e-workbook, visit <http://www.perdisco.com/students> and click on "Create a new account". This service is being trialed for permanent use in QUAN102, so any feedback will be greatly appreciated.

## Perdisco e-workbook exercises

The e-workbook is also being used to deliver tutorial assignments that will contribute to your overall assessment marks for this course. The online tutorial exercises can be submitted (online) from anywhere, are marked instantly and give you immediate feedback on your performance.

In the interest of student access and equity, a limited number of free "library copies" are provided in Electronic Special Reserve (ESR) for students who cannot afford to purchase the e-workbook to complete their tutorial assignments. To access these, you must

first create an account, add this course's e-workbook to it and click on "ESR login". For more information, click "ESR info" after registration. The ESR accounts are subject to a maximum number of simultaneous users, and a time limit.

The Perdisco exercises should be done *before* your tutorial for maximum benefit. Consequently, you will be unable to complete past exercises beyond the week of the respective tutorials.

### **Assignments**

Ten weekly assignments will be issued, which should be submitted before midday on the Wednesday in the appropriately labelled slot in the cabinet outside MY 221 on the second floor of Murphy. These will assess deeper understanding of the course material than the tutorial preparation exercises will. There will be TEN weekly assignments, the first of which will be due in week 3. The questions will generally be taken directly from the textbook, and will be listed on Blackboard. The assignments will be given one of three marks:

- 0, indicating the assignment is of unacceptable quality
- 1, indicating reasonable understanding/accuracy, but some flaws or omissions
- 2, indicating a perfect or near-perfect assignment.

While a total of 5/20 is *required* for completion of the course, a mark of less than 10/20 would indicate that you may struggle to pass the test and/or final exam. Discussion of assignments with other students is allowed, but submitted work should be your own. Copied work (for all involved parties) is unacceptable and will not only count as having been missed, but may also initiate disciplinary action against the students concerned.

Head your assignments with your NAME, and the TIME of your tutorial. SECURE all sheets together and DO NOT FOLD your assignments or seal them shut. DO NOT put your work in a plastic sleeve. Marked assignments will be returned at the tutorial of the following week. Uncollected assignments will be disposed of at the end of the course.

### **Penalties**

Missed Perdisco exercises or late assignments will be given a zero mark.

### **Mandatory course requirements**

A provisional list of those who have met the mandatory course requirements will be posted on Blackboard by Friday 30 May. To be on this list you must:

- receive at least 5 out of 20 for the ten assignments
- satisfactorily complete a set of computer exercises by Wednesday 14 May (these will be distributed prior to the mid-trimester break, and submitted via Blackboard). These are NOT the Perdisco exercises...
- sit the term test

If your performance in the test or assignments is affected by ill health you should take a medical certificate to the course administrator as soon as possible. If you do not meet the mandatory requirements, you may appeal to Dr Randal. For your appeal to have

any chance of success, you must present evidence of special circumstances that caused you to fail. If you are denied and sit the final exam, you will still fail the course.

### Course content

The following is the timetable for the course. The lecture schedule is as follows, with chapter references to Clark and Randal. You should prepare for each lecture by scanning the indicated text book sections - do not try to read it in detail until *after* the lecture. (Note: A = Assignment due, P = Perdisco exercise due, T = Tutorial)

Date	Lecture	Topic	Text	Prep
25 Feb	1	Introduction; motivation; examples of statistics in use	1	
26 Feb	2	Variables; processing data; stemplots	2	
28 Feb	3	Histograms; barcharts	2	
3 Mar	4	Summary statistics; mean and standard deviation	3	T1
4 Mar	5	Summary statistics for grouped data	3	
6 Mar	6	Percentiles; boxplots	3.4	
10 Mar	7	Scatterplots; correlation	4.1-4.2	P1, T2
11 Mar	8	Regression	4.3	
13 Mar	9	Regression	4.3	A1
17 Mar	10	Introduction to probability	5.1-5.2	P2, T3
18 Mar	11	Probability trees	5.3	
20 Mar	12	Bayes' rule	5.4	A2
24 Mar		No lecture, Easter Monday		
25 Mar		No lecture, Easter Tuesday		
27 Mar	13	Probability distributions; binomial experiments	6	A3
31 Mar	14	Binomial applications; proportions	6	P3, T4
1 Apr	15	Normal distribution	7	
3 Apr	16	CLT; application to binomial	7	A4
7 Apr	17	Intro to inference; intervals for a single mean	8.1	P4, T5
8 Apr	18	Testing for a single mean	8.1	
9 Apr		<i>Term test, 60 minutes, 6:30pm</i>		
10 Apr	19	Small sample tests for a mean	8.2	A5
<i>Mid-trimester break, 2 weeks</i>				
28 Apr	20	Sign test	8.3	P5, T6
29 Apr	21	Inference for a proportion	8.4	
1 May	22	FPCF; margin of error	8.5-8.6	A6
5 May	23	Comparing two means, large samples	9.1	P6, T7
6 May	24	Comparing two means, small samples	9.2	
8 May	25	Comparing two variances	9.3	A7
12 May	26	Mann-Whitney	9.4	P7, T8
13 May	27	Paired comparisons	9.5	
15 May	28	Comparing proportions; 2 populations and FPCF	9.6-9.7	A8
19 May	29	One-way chi-square; goodness of fit	11.1	P8, T9
20 May	30	Contingency table testing	11.2	
21 May	31	Regression testing	12.1-12.2	A9
26 May	32	Prediction and prediction intervals	12.4	P9, T10
27 May	33	<i>F</i> -tests in a regression context	12.3	
29 May	34	Wrap-up and revision	13	A10

Lecture materials will be supported by the online e-workbook, practice in the weekly tutorials, and through the assignments. Specific tutorial and assignment exercises will

be distributed via Blackboard, and will be available prior to the Wednesday lecture each week. You should try the problems in advance of attending the tutorial. The assignment, due the following Wednesday, will allow further practice of these skills.

### **Communication of additional information**

Additional information or information on changes will be posted on Blackboard. Some information may be emailed to you via your SCS address, so check this regularly. (This is your University email address.)

### **General University policies and statutes**

Students should familiarise themselves with the University's policies and statutes, particularly the Assessment Statute, the Personal Courses of Study Statute, the Statute on Student Conduct and any statutes relating to the particular qualifications being studied; see the Victoria University Calendar or go to:

<http://www.victoria.ac.nz/policy>

For information on the following topics, see the full version of the course outline available on the course's Blackboard site:

- Academic Grievances
- Academic Integrity and Plagiarism
- Staff and Student Conduct
- Meeting the Needs of Students with Impairments
- Student Support