

School of Economics and Finance  
**QUAN 102 STATISTICS FOR BUSINESS**  
Trimester Two 2010  
**COURSE OUTLINE**

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**Lecturers:** Adrian Slack, RH315, phone 463-5233 x 8571  
email: [adrian.slack@vuw.ac.nz](mailto:adrian.slack@vuw.ac.nz) (weeks 1-6)  
Office hours: EA128, Tuesday, Friday 10-10.45 (weeks 1-6)

Kate Hill, RH315, phone 463-5233 x 8571  
email: [kate.hill@vuw.ac.nz](mailto:kate.hill@vuw.ac.nz) (weeks 7-12)  
Office hours: EA128, Tuesday, Friday 10-10.45 (weeks 7-12)

**Administrator/Course coordinator:**

Francine McGee, RH319, phone 463-5818  
email: [francine.mcgee@vuw.ac.nz](mailto:francine.mcgee@vuw.ac.nz)  
Office hours: 8.00am - 4.30pm, Monday to Friday

Leigh Roberts, RH323, phone 463-5937 (course coordinator)  
email: [leigh.roberts@vuw.ac.nz](mailto:leigh.roberts@vuw.ac.nz)

**Duty tutor:** Simon Anastasiadis  
EA005, Tuesday 10.00-11.00 (from the 2nd week of trimester)  
EA005, Friday 12.00-1.00 (from the 2nd week of trimester)

**Lecture times:** (CRN 5010) Tues, Fri, 9:00 - 9:50, HMLT 206  
(CRN 16016) Tues, Fri, 11:00 - 11:50, KKLT 303

**Tutorial time:** Sign up online at <https://signups.victoria.ac.nz/>

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

The Course Coordinator, with overall responsibility for the course, is Leigh Roberts. You should see him if you are having difficulties that you have been unable to resolve by first speaking to your lecturer or tutor (for academic problems), or to the course administrator (for administrative problems).

The Course Administrator will handle 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: your email will be passed on to him if necessary.

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

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

### **Trimester Dates**

Teaching Period: Monday 12 July to Friday 15 October 2010

Study Period: Monday 18 October to Thursday 21 October 2010

Examination Period: Friday 22 October to Saturday 13 November 2010 (inclusive)

Note: Students who enrol in courses with examinations should be able to attend an examination at the University at any time during the formal examination period.

### **Withdrawal from the course:**

Information is available via

**Withdrawal dates: Late withdrawals with Associate Dean (Students) permission (See Section 8: Withdrawals - from the Personal Courses of Study Statute)**  
<http://policy.vuw.ac.nz/Amphora!~~policy.vuw.ac.nz~POLICY~000000001743.pdf>

**Withdrawal dates: refunds**

<http://www.victoria.ac.nz/home/admisenrol/payments/withdrawalsrefunds.aspx>

### **Course Learning 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; and an understanding of concepts and an ability to communicate the meaning of results is vital. By the end of the course students should be able to:

- Process data, using simple graphical techniques.
- Evaluate a range of sample statistics for univariate data, including mean, standard deviation, and percentiles.
- Evaluate and interpret a linear relationship between two variables.
- Use basic rules of probability to solve problems with up to 3 conditional events.
- Obtain probabilities from the binomial and normal distributions.
- State the central limit theorem, and discuss its applicability.
- Implement a range of hypothesis tests, and use these to draw conclusions about population parameters from sample data.
- Form confidence intervals for a range of population parameters, and interpret these intervals.
- Interpret the output of statistical software for advanced hypothesis tests via  $p$ -values.

### **Course delivery**

The course will be delivered by two lectures per week and a tutorial in 8 out of the 12 weeks. There are to be two tests and four assignments.

See below for timetabling and more details.

## Course content

Chapter and section references are to the course textbook by Clark and Randal. You should prepare for each lecture by scanning the indicated text book sections.

wk	Date	Lect	Topic	Text	Tutorial	
1	Tues 13 July	1	Variables; processing data; stemplots	2		
	Fri 16 July	2	Summary statistics	3.1, 3.2		
2	Tues 20 July	3	Standard deviation; boxplots	3.2.3, 3.4	L1-2	
	Fri 23 July	4	Scatterplots; correlation	4.1-4.2		
3	Tues 27 July	5	Regression (estimation and assumptions)	4.3	L3-4	
	Fri 30 July	6	Regression (prediction)	4.3		
4	Mon 2 Aug	<i>Assignment 1 due, 5.00pm, content: Lectures 1-4</i>				L5-6
	Tues 3 Aug	7	Introduction to probability	5.1-5.2		
	Fri 6 Aug	8	Probability trees	5.3		
5	Tues 10 Aug	9	Bayes' rule	5.4		
	Weds 11 Aug	<i>Test, 60 minutes, 6.30pm, content: Lectures 1-6</i>				
	Fri 13 Aug	10	Distributions; binomial experiments	6		
6	Tues 17 Aug	11	Binomial distribution	6	L7-10	
	Fri 20 Aug	12	Normal distribution	7		
<i>Mid -trimester break, 21 August – 5 September, 2 weeks</i>						
7	Mon 6 Sep	<i>Assignment 2 due, 5.00pm, content: Lectures 5-10</i>				
	Tues 7 Sep	13	Central limit theorem	7.2		
	Fri 10 Sep	14	Sampling distribution	7.3		
8	Tues 14 Sep	15	Introduction to inference; intervals for a single mean	8.1	L11-14	
	Fri 17 Sep	16	Testing for a single mean	8.1		
9	Mon 20 Sep	<i>Assignment 3 due, 5.00pm, content: Lectures 11-14</i>				L15-17
	Tues 21 Sep	17	Small sample testing for a single mean	8.2		
	Fri 24 Sep	18	Inference for a proportion; margin of error	8.4, 8.6		
10	Tues 28 Sep	19	Comparing two means	9.1-9.2		
	Weds 29 Sep	<i>Test, 60 minutes, 6.30pm, content: Lectures 7-14</i>				
	Fri 1 Oct	20	Pooled variance, testing for common variance	9.2-9.3		
11	Tues 5 Oct	21	Paired comparisons	9.5	L18-20	
	Fri 8 Oct	22	Comparing proportions, contingency tables	9.6, 11.2		
	Fri 8 Oct	<i>Assignment 4 due, 12.00 midday, content: Lectures 15-20</i>				
12	Tues 12 Oct	23	Contingency table testing	11.2	L21-22	
	Fri 15 Oct	24	Revision			
<i>Examination, see <a href="http://www.victoria.ac.nz/timetables/index.aspx">http://www.victoria.ac.nz/timetables/index.aspx</a></i>						

The following textbook content is not covered in this course: §§ 2.3.2, 2.3.3, 2.4, 3.3, 4.2.2, 7.4, 8.3, 8.4.3, 8.5, 9.4, 9.7, 10, 11.1, 11.2.2, 12, 13.3, 13.4.

There are to be no tutorials in weeks 1, 5, 7 and 10.

Lecture materials will be supported by practice in the tutorials, and through the assignments. Specific tutorial and assignment exercises will be distributed via Blackboard. You should try tutorial problems in advance of attending the tutorial. The assignment will allow further practice of these skills.

## Tutorials

To view and sign up to tutorials go to <https://signups.victoria.ac.nz/>. You should attend one tutorial per week. Tutorial sign up closes on Friday 16 July 2010 at 5.00pm.

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 to tutorials.

## Assignments

There will be four short assignments, due as indicated in the Course Content section above. These are marked out of 3, as follows:

- 0, not submitted, or less than two thirds attempted
- 1, two thirds or more attempted, mostly incorrect
- 2, two thirds or more attempted, mostly correct
- 3, all attempted, all correct.

A mark of less than 5/12 would indicate that you may struggle to pass the test and/or final exam. Assignment feedback will be posted by all tutors on the Blackboard Discussion Forum.

- *DO* head your assignments with
  - \* your **NAME**,
  - \* your **TUTOR'S NAME**, and
  - \* the **TIME and DAY** of your tutorial.
- *DO* staple all sheets together.
- *DO NOT* fold your assignments or seal them shut.
- *DO NOT* put your work in a plastic sleeve.
- Submit into your tutor's assignment boxes next to (Murphy) MY221.

Marked assignments will be returned at the tutorial of the following week. Uncollected assignments will be disposed of at the end of the course. Missed or late assignments will be given a *zero mark*.

The assignments are *worth 10% of your final grade, determined as follows:*

Assignment total	0	1	2	3	4	5	6	7	8	9	10	11	12
Grade contribution	0	1	2	3	4	5	6	7	8	9	10	10	10

## Expected workload

In weeks when there is a tutorial (see the course content above) you should expect to spend 3 hours in class per week (2 lectures and 1 tutorial); in the remaining weeks you should expect to spend 2 hours in class per week (2 lectures).

You should expect to spend 6 - 8 hours per week reading, studying and completing assignments. Overall it is expected that you will spend approximately 150 hours on completing this course.

## Readings

The course textbook, available from the Victoria Book Centre for about \$60, is: M. J. Clark and J. A. Randal (2004), *A First Course in Applied Statistics*, Pearson, ISBN 1877258903 (VUW Library call number QA276 C594 F).

Second hand copies may be available; but you should only buy the second printing in 2009 (as listed on the page opposite the Table of Contents): earlier printings may be slightly different in pagination and numbering of questions.

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

A calculator is essential for the tests and the final exam, in addition to which it is needed for tutorials and assignments.

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 essential.

Graphics calculators and programmable calculators are permitted, but not necessary. All programmable calculators must be reset prior to the tests and exam.

The recommended model is a modern Casio fx-82, price approximately \$30. Older versions of this model are less suitable, since they do not have a regression capability.

## Assessment Requirements

Assignments are worth 10% of your final grade (see above).

Two 60 minute multi-choice tests will be held on:  
Wednesday 11 August, 6.30pm (based on lectures 1-6); and  
Wednesday 29 September, 6.30pm (based on lectures 7-14).  
*These are each worth 20% of your final grade.*

The final exam will be two hours, and will be based primarily on lectures 15-24, although some material from earlier lectures may also be used. This exam will be scheduled by the university in the second trimester examination period (see below).  
*The final exam will be worth 50% of your final grade.*

Your assessed work may also be used for quality assurance purposes, such as to assess the level of achievement of learning objectives as required for accreditation and audit purposes. The findings may be used to inform changes aimed at improving the quality of FCA programmes. All material used for such processes will be treated as confidential, and the outcome will not affect your grade for the course.

## **Examinations**

Students who enrol in courses with examinations are obliged to attend an examination at the University at any time during the formal examination period.

The final examination for this course will be scheduled at some time during the period from Friday 22 October to Saturday 13 November 2010 (inclusive).

## **Penalties**

Late assignments are not accepted. For tests, see the section headed Mandatory Course Requirements.

## **Mandatory course requirements**

You must sit for both tests.

If your performance in the tests 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 Roberts. For your appeal to have any chance of success, you must present evidence of special circumstances that caused you to miss a test. If you are denied and sit for the final exam, you will still fail the course.

## **Class representative**

A class representative will be elected in the first class, whose name and contact details will be made available to VUWSA, the Course Coordinator and the class. The class representative provides a communication channel to liaise with the Course Coordinator on behalf of students.

## **Communication of additional information**

Additional information will be conveyed to students via Blackboard and/or email.

Emails may be sent to the address that you supplied with your enrolment; but they may also be sent to your SCS email address, which is your official university email address. You should keep an eye on both email addresses.

**For the following important information follow the links provided:**

### **Academic Integrity and Plagiarism**

<http://www.victoria.ac.nz/home/study/plagiarism.aspx>

### **General University Policies and Statutes**

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

### **AVC (Academic) Website: information including: Conduct, Academic Grievances, Students with Impairments, Student Support**

[http://www.victoria.ac.nz/home/about\\_victoria/avcadademic/Publications.aspx](http://www.victoria.ac.nz/home/about_victoria/avcadademic/Publications.aspx)

### **Faculty of Commerce and Administration Offices**

<http://www.victoria.ac.nz/fca/studenthelp/>

### **Manaaki Pihipihinga Programme**

[http://www.victoria.ac.nz/st\\_services/mentoring/](http://www.victoria.ac.nz/st_services/mentoring/)