TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI

VICTORIA
UNIVERSITY OF WELLINGTON

School of Economics and Finance
QUAN 102 STATISTICS FOR BUSINESS
Trimester 2, 2014
COURSE OUTLINE

Lecturers:	• Yiğit Sağlam, RH312, 463-9989 (weeks 1-6)
	contact: yigit.saglam@vuw.ac.nz
	• John Randal, RWW115, 463-5558 (weeks 7-12)
	contact: john.randal@vuw.ac.nz
Administrator:	Pinky Shah, RH319, phone 463-5818
	email: pinky.shah@vuw.ac.nz
Coordinator:	John Randal, RWW115, phone 463-5558
	email: john.randal@vuw.ac.nz
Lecture times:	Tuesday and Thursday, 2:10-3:00, KKLT303 (CRN 16016)
	Tuesday and Friday, 9:00-9:50, KKLT303 (CRN 5010)
Tutorial time:	Sign up online at https://signups.vuw.ac.nz/
Course website:	http://www.blackboard.vuw.ac.nz/

Who to contact:

Academic problems (difficulty with material): contact your lecturer or ask your tutor
Administrative problems (blackboard, assignment marks, tutorial scheduling, medical certificates): contact Pinky Shah, who will advise the course coordinator if necessary.

Trimester Dates

Teaching Period: Monday 14 July - Friday 17 October
Study Period: Monday 20 October - Thursday 23 October
Examination Period: Friday 24 October - Saturday 15 November (inclusive)

Withdrawal dates:

1. Your fees will be refunded if you withdraw from this course on or before Friday 25 July 2014.

2. The standard last date for withdrawal from this course is Friday 26 September.

After this date, students forced to withdraw by circumstances beyond their control must apply for permission on an *'Application for Associate Dean's Permission to Withdraw late'* including supporting documentation. The application form is available from either of the Faculty's Student Customer Service Desks.

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, 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:

C1 Process data, using simple graphical techniques.
C2 Evaluate for univariate data a range of sample statistics, including mean, standard deviation, and percentiles.
C3 Evaluate and interpret a linear relationship between two variables.
C4 Use basic rules of probability to solve problems with up to three stages.
C5 Obtain probabilities from the binomial and normal distributions.
C6 State the central limit theorem, and discuss its applicability.
C7 Implement a range of hypothesis tests, and use them to draw conclusions about population parameters from sample data.
C8 Form confidence intervals for a range of population parameters, and interpret these intervals.
C9 Interpret the output of statistical software for hypothesis tests via p-values.

All assessment gives an opportunity to demonstrate these objectives.

Course delivery

This course will be delivered by two lectures per week and a tutorial in 9 out of the 12 weeks. There will be two tests and four assignments.

Prescription

An introduction to techniques useful in business research or practice. Topics include graphs and diagrams, measures of location and dispersion, index numbers, probability, sampling, estimation and testing (z,t, chi-square, sign and Mann-Whitney tests), correlation and simple regression.

Readings

The text is: Clark and Randal (2010), *A First Course in Applied Statistics*, Pearson, ISBN 978-1-4425-4151-1. This is available from the Victoria Book Centre for $84.30. The first edition of this book is not suitable. *Exercises and solutions from the first edition are available on Blackboard.*

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. Many alternative introductory business statistics books are available.

Course schedule

The numbers indicated in the following table refer to the numbered lectures in the Lecture content section.

Week of	Lectures	Tutorial	Assignment content	Test content
14-18 July	1-2	Signup		
21-25 July	3-4	L1-2		
28 Jul-1 Aug	5-6	L3-4		
4-8 August	7-8	Duty	L1-4, Monday, 5pm	L1-6, Weds 6:30pm
11-15 August	9-10	L7-8		
18-22 August	11-12	L9-10		
Mid-trimester break, 25 August - 7 September				
8-12 September	13-14	L11-12	L5-10, Monday, 5pm	
15-19 September	15-16	Duty		L7-14, Weds 6:30pm
22-26 September	17-18	L15-16	L11-14, Monday , 5pm	
29 Sept-3 Oct	19-20	L17-18		
6-10 October	21-22	L19-20		
13-17 October	23-24	L21-22	L15-20, Monday, 5pm	

Lecture content

Chapter references are to *the second edition* of Clark and Randal. You should prepare for each lecture by going over the indicated text book sections - do not try to read it in detail until *after* the lecture.

Lecture	Topic	Text
1	Variables; processing data; stemplots	2
2	Summary statistics	3.1, 3.2
3	Standard deviation; boxplots	3.2.3, 3.4
4	Scatterplots; correlation	4.1-4.2
5	Regression (estimation and assumptions)	4.3
6	Regression (prediction)	4.3
7	Introduction to probability	6.1-6.2
8	Probability trees	6.3
9	Bayes' rule	6.3.2
10	Distributions; binomial experiments	6.4, 7.1
11	Binomial distribution	7.2-7.3
12	Normal distribution	8.1
13	Central limit theorem	8.2
14	Sampling distribution	8.3
15	Introduction to inference; intervals for a mean	9.1
16	Testing for a single mean	9.1
17	Small sample inference for a single mean	9.2
18	Comparing two means	10.1, 10.2
19	Paired comparisons	10.5
20	Inference for a proportion; margin of error	9.4, 9.6
21	Comparing proportions, contingency tables	10.6
22	Contingency table testing	12.2
23	p-values	9.1.3
24	Revision	

The following textbook content is not covered in this course: § 2.3.2, 4.2.2. 5, 8.4, 9.3, 9.4.3, 9.5, 10.3, 10.4, 10.7, 11, 12.1, 12.2.2, 13. In 10.2, we do not use pooled variance.

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 the problems in advance of attending the tutorial. The assignment will allow further practice of these skills.

Expected workload

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

You should expect to spend an additional 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.

Tutorials

To view and sign up to tutorials go to https://signups.victoria.ac.nz/. You should attend one tutorial per week. Tutorial allocation is done on a first-come, first-served basis, so you should sign up as early as possible, and definitely during the first week of class.

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.

A duty tutor will be available in EA 119 just before the two tests, as follows:

Monday 4 August, 11am to 1pm	Monday 15 September, 11am to 1pm
Tuesday 5 August 10am to midday	Tuesday 16 September, 10am to midday

Assignments

There will be four short assignments, due roughly fortnightly as indicated above. Assignments will be issued on Blackboard and will consist of exercises from the *second edition* of Clark and Randal. 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 near-perfect assignment
- 3, all attempted, all correct.

A mark of less than 4/12 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. Assignment feedback will be posted by all tutors on Blackboard Discussion Forum.

- *DO* head your assignments with
  - ⋆ your **NAME**,
  - ⋆ your **TUTOR'S NAME**, and
  - ⋆ the **TIME** 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.

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	2	3	4	5	6	7	8	9	9	10	10	10

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, RRP approx $30). Graphics calculators and programmable calculators are permitted, but not necessary. All programmable calculators must be reset prior to the test and exam.

Assessment

From Trimester 1, 2014, a revised Assessment Handbook will apply to all VUW courses: see http://www.victoria.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf. In particular, there will be a new grade scheme, in which the A+ range will be 90-100% and 50-54% will be a C-.

Assignments are worth 10% of your final grade (see above). You must submit at least two of them.

Two 60 minute multi-choice tests will be held on: Wednesday 6 August, 6:30pm (based on lectures 1-6, CLOs 1-3); and Wednesday 17 September, 6:30pm (based on lectures 7-14, CLOs 4-6). *These are each worth 20% of your final grade.*

The final exam will be two hours, will be long-answer (not multi-choice) and will be based primarily on lectures 15-24, although some material from earlier lectures may also be assessed (CLOs 1, 2, 5-9). *This will be worth the remaining 50% of your final grade.* You are obliged to attend this examination at the University at any time during the formal examination period. It will be scheduled at some time during Friday 24th October - Saturday 15th November (inclusive).

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 VBS programmes. All material used for such processes will be treated as confidential, and the outcome will not affect your grade for the course.

Penalties

Late assignments will not be accepted.

Mandatory course requirements

In addition to obtaining an overall course mark of 50% or better, students must attend both tests, and submit at least two assignments.

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. If you cannot complete an assignment or sit a test or examination, refer to http://www.victoria/home/study/exams-and-assessments/aegrotat.

Class representative

A class representative will be elected in the first week, 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.

Student feedback

Student feedback on University courses may be found at:
http://www.cad.vuw.ac.nz/feedback/feedback_display.php.

Link to general information

For general information about course-related matters, go to
http://www.victoria.ac.nz/vbs/studenthelp/general-course-information