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 3, 2015

COURSE OUTLINE

Lecturer:	John Randal, RWW119, 463-5558
	email: john.randal@vuw.ac.nz
Administrator:	Pinky Shah, RH319, phone 463-5818
	email: pinky.shah@vuw.ac.nz
Coordinator:	John Randal, contact as above
Lecture times:	Tuesday, Wednesdays, and Thursday, 9:00-10:50, KKLT303
Tutorial sign-up:	Sign up online: https://student-sa.victoria.ac.nz
	Tutorial sign-up opens at 11:00 on Thursday 12 November 2015
Course website:	http://www.blackboard.vuw.ac.nz/.
	If you have a smart phone, please install the *Blackboard Learn* app.

Who to contact:

Academic problems (difficulty with material): contact John, ask your tutor during
tutorial, or use Blackboard Discussion Board

Administrative problems (blackboard, assignment marks, tutorial scheduling, medical certificates):
contact Pinky Shah, who will refer you to the course coordinator if necessary

Trimester Dates

Teaching Period: Monday 16 November to Friday 18 December 2015 (inclusive) covers the period
from the first lecture to the final examination.

Withdrawal dates:

1. Your fees will be refunded if you withdraw from this course on or before one full week after
the first class.

2. The standard last date for withdrawal from this course is Wednesday 9 December 2015.

After Wednesday 9 December, 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
Facultys Student Customer Service Desks.

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.

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 three 2-hour lectures per week and two tutorials per week. There will be four assignments, two tests, and one final examination.

Expected workload

You should expect to spend 8 hours in class per week (3 x 2-hour lectures and 2 x 1 hour tutorials) and 20 to 25 hours per week reading, studying, completing assignments, and most importantly, practising statistics. Overall it is expected that you will spend approximately 150 hours on completing this course.

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 VicBooks for $83.95. The first edition of this book is not suitable, however *exercises and solutions from the first edition are available on Blackboard.*

The VUW library web page http://www.victoria.ac.nz/library contains detailed information about library resources and has links to other sites. Many alternative introductory business statistics books are available.

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.

Course 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.

Date	Lecture	Topic	Text	Tutorial
17 Nov	1	Variables; processing data; stemplots	2	
17 Nov	2	Summary statistics	3.1, 3.2	
18 Nov	3	Standard deviation; boxplots	3.2.3, 3.4	
18 Nov	4	Scatterplots; correlation	4.1-4.2	
19 Nov	5	Regression (estimation and assumptions)	4.3	
19 Nov	6	Regression (prediction)	4.3	
20 Nov		Tutorial 1		L1-4
23 Nov		Tutorial 2, *Assignment 1 due. To be handed in at tutorial*		L5-6
24 Nov	7	Introduction to probability	6.1-6.2	
24 Nov	8	Probability trees	6.3	
25 Nov		*Test 1, 60 minutes, 9:00am, content: Lectures 1-6*		
26 Nov	9	Bayes' rule	6.4	
26 Nov	10	Distributions; binomial experiments	6.4, 7.1	
27 Nov		Tutorial 3		L7-8
30 Nov		Tutorial 4, *Assignment 2 due. To be handed in at tutorial*		L9-10
1 Dec	11	Binomial distribution	7.2-7.3	
1 Dec	12	Normal distribution	8.1	
2 Dec	13	Central limit theorem	8.2	
2 Dec	14	Sampling distribution	8.3	
3 Dec	15	Introduction to inference; intervals for a mean	9.1	
3 Dec	16	Testing for a single mean	9.1	
4 Dec		Tutorial 5		L11-14
7 Dec		Tutorial 6, *Assignment 3 due. To be handed in at tutorial*		L15-16
8 Dec	17	Small sample inference for a single mean	9.2	
8 Dec	18	Comparing two means	10.1, 10.2	
9 Dec		*Test 2, 60 minutes, 9:00am, content: Lectures 7-14*		
10 Dec	19	Paired comparisons	10.5	
10 Dec	20	Inference for a proportion; margin of error	9.4, 9.6	
11 Dec		Tutorial 7		L17-18
14 Dec		Tutorial 8, *Assignment 4 due. To be handed in at tutorial*		L19-20
15 Dec	21	Comparing proportions; contingency tables	10.6	
15 Dec	22	Contingency table testing	12.2	
16 Dec	23	p-value approach to testing	9.1.3	
16 Dec	24	Revision		
17 Dec		Revision		
18 Dec		*Examination, see http://www.victoria.ac.nz/timetables/*		

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, 10.4, 10.7, 11, 12.1, 12.2.2, 13. In 10.2, we do *not* used 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.

Tutorials

To view and sign up to tutorials go to https://student-sa.victoria.ac.nz. This will open at 11.00am on Thursday 12 November. Sign up as early as possible to get your first choice day/time.

You should attend two tutorials per week - one on Monday and one on Friday, starting on the Friday of week 1 (Friday 20 November). They will cover material from the preceding lectures. There will be a total of 8 tutorials across the 5 teaching weeks.

Attendance at tutorials is not compulsory, however, it is highly recommended. You must attend the tutorial group to which you are assigned. If, because of work or timetable clashes, you are no longer able to attend your allocated tutorial, you must notify the course administrator to assist you to find a suitable tutorial time.

Tutorial exercises from the textbook will be listed on Blackboard, and these should be attempted *before* the tutorial you attend. Bring your textbook (or a photo or scanned image of relevant questions) and a calculator.

Assignments

There will be four short assignments, covering all nine CLOs, due weekly (as indicated above), at your Monday tutorial. Assignments will be issued on Blackboard and will consist of exercises from the *second edition* of the Clark and Randal textbook. The assignments will be given one of four marks:

- 0, indicating the assignment shows little evidence of learning and/or effort
- 1, indicating reasonable understanding/accuracy, but some major flaws or omissions
- 2, indicating a complete assignment with some minor errors
- 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 Complete and attach* an assignment coversheet to the front of each assignment (these will be distributed in lectures, and posted on Blackboard). This includes your name and student ID number, your tutor's name, and the day/time of your tutorial.
- *DO* staple all sheets together.
- *DO* submit your assignment to your tutor at your Monday tutorial on the due date.
- *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 Monday tutorial of the following week unless otherwise advised on Blackboard. 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

Examinations

You are obliged to attend the examination for this course at the University. The QUAN 102 exam is scheduled to take place on Friday 18 December.

Assessment Requirements

The Assessment Handbook will apply to all VUW courses: see
http://www.victoria.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf.

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

Two 60 minute multi-choice tests, *each worth 20% of your final grade*, will be held on:

- Wednesday 25 November, 9:00-10:00am (based on lectures 1-6, CLOs 1-3); and
- Wednesday 9 December, 9:00-10:00am (based on lectures 7-14, CLOs 4-6).

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.*

Past tests and exams, with answers, are available on Blackboard (under the "Old Tests and Exams" tab). It is strongly recommended that you use these in your preparation.

In summary:

Assessment item	%	Details
Assignments (four)	10%	See course schedule on page 3 for details.
Test 1 (multi-choice)	20%	Wednesday 25 November, 9:00-10:00am
Test 2 (multi-choice)	20%	Wednesday 9 December, 9:00-10:00am
Exam (long answer)	50%	Friday 18 December (time TBC), 2 hours, closed book

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

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.ac.nz/home/study/exams-and-assessments/aegrotat.
NB: if your exam is affected by ill-health or other personal circumstances, an aegrotat pass for the course is unlikely to be approved *unless you have demonstrated sufficient learning in the second half of the course via Assignments 3 and 4.*

Penalties

Late assignments will not be marked unless by prior arrangement with the Course Coordinator.

Mandatory course requirements

None.

Class representative

A class representative for each stream will be elected in the first week, and that person's name and contact details will be made available to the class via Blackboard, and will also be sent to VUWSA. The class representative provides a communication channel to liaise with the Course Coordinator on behalf of students.

Communication of additional information

Blackboard will be the authoritative location of any information about this course.

We may use Blackboard to send email to you. This will go to your official university email address. Should you prefer to receive these to your personal email address, you can set up your VUW account to forward email. Instructions for doing so are available on Blackboard, in Course Resources.

Student feedback

Course and tutor evaluations will be conducted for this course in the final week (i.e. week beginning 14 December).

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

Information on resources and support services are available at
http://www.victoria.ac.nz/students/support.