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, 2015

COURSE OUTLINE

Lecturers:	• John Randal, RWW119, 463-5558 (weeks 1-3, 7-12)
	email: john.randal@vuw.ac.nz
	• Yiğit Sağlam, RH312, 463-9989 (weeks 4-6)
	email: yigit.saglam@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 and Thursday, 14.10-15:00, SUMT228 (CRN 5010)
	Tuesday and Thursday, 16:10-17:00, KKLT303 (CRN 16016)
Tutorial sign-up:	Sign up online: https://student-sa.victoria.ac.nz
	Tutorial sign-up opens at 10:30 on Thursday 9 July 2015
Course website:	http://www.blackboard.vuw.ac.nz/

Who to contact:

Academic problems (difficulty with material): contact the relevant lecturer, 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 13 July to Friday 16 October
Study Period: Monday 19 October to Thursday 22 October
Examination Period: Friday 23 October to Saturday 14 November (inclusive)

Withdrawal dates:

1. Your fees will be refunded if you withdraw from this course on or before Friday 24 July 2015.

2. The standard last date for withdrawal from this course is Friday 25 September 2015. 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 any of the Faculty's Student Customer Service Desks or online at http://www.victoria.ac.nz/vbs/studenthelp/forms.

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 four assignments, two tests, and one final examination.

Expected workload

In addition to time spent in lectures and tutorials, as above, you should expect to spend an additional 6-8 hours per week revising your notes, reading, preparing tutorial exercises, completing assignments, and most importantly, practising statistics. Overall it is expected that you will spend approximately 150 hours 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
14 Jul	1	Variables; processing data; stemplots	2	None
16 Jul	2	Summary statistics	3.1, 3.2	
20 Jul		Calculator skills workshop		Duty
21 Jul	3	Standard deviation; boxplots	3.2.3, 3.4	L1-2
23 Jul	4	Scatterplots; correlation	4.1-4.2	
28 Jul	5	Regression (estimation and assumptions)	4.3	L3-4
30 Jul	6	Regression (prediction)	4.3	
3 Aug		*Assignment 1 due 5pm, content: Lectures 1-6*		L5-6
4 Aug	7	Introduction to probability	6.1-6.2	
6 Aug	8	Probability trees	6.3	
11 Aug	9	Bayes' rule	6.4	Duty
11 Aug		*Test 1, 60 minutes, 6:30pm, content: Lectures 1-6*		
13 Aug	10	Distributions; binomial experiments	6.4, 7.1	
18 Aug	11	Binomial distribution	7.2-7.3	L7-10
20 Aug	12	Normal distribution	8.1	
21 Aug		*Assignment 2 due 5pm, content: Lectures 7-10*		
		Mid-trimester break, 24 August – 4 September		
8 Sep	13	Central limit theorem	8.2	L11-12
10 Sep	14	Sampling distribution	8.3	
15 Sep	15	Introduction to inference; intervals for a mean	9.1	Duty
17 Sep	16	Testing for a single mean	9.1	
17 Sep		*Test 2, 60 minutes, 6:30pm, content: Lectures 7-14*		
22 Sep	17	Small sample inference for a single mean	9.2	L13-16
24 Sep	18	Comparing two means	10.1, 10.2	
28 Sep		*Assignment 3 due 5pm, content: Lectures 13-16*		L17-18
29 Sep	19	Paired comparisons	10.5	
1 Oct	20	Inference for a proportion; margin of error	9.4, 9.6	
6 Oct	21	Comparing proportions; contingency tables	10.6	L19-20
8 Oct	22	Contingency table testing	12.2	
12 Oct		*Assignment 4 due 5pm, content: Lectures 17-20*		L21-22
13 Oct	23	p-value approach to testing	9.1.3	
14 Oct	24	Revision		
		Examination, see http://www.victoria.ac.nz/timetables/		Duty

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 10.30am on Thursday 9 July. Sign up as early as possible to get your first choice day/time.

You should attend one tutorial per week, starting in week 2. There will be a total of 9 tutorials across the 12 teaching weeks. Each tutorial will cover material from the previous week's lectures.

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.

A duty tutor will be available on Monday of week 2, focussing on calculator skills, and prior to the two tests, as follows:

Monday 20 July, 12-2pm	Monday 14 September, 12-2pm
Monday 10 August, 12-2pm	Tuesday 15 September, 12-2pm
Tuesday 11 August, 12-2pm	Wednesday 16 September, 12-2pm

The location of these will be confirmed on Blackboard closer to the time.

PASS – Peer Assisted Study Support

Research shows that studying with others can improve your grades. The PASS (Peer Assisted Study Support) programme offers optional study sessions, led by students who have successfully passed the course. PASS Leaders promote 'active' learning, and group members meet for one hour a week, working together to develop effective strategies for success. PASS begins in Week 3.

Sign-up online in Week 2 at http://www.victoria.ac.nz/st_Services/slss/whats-on/pass.aspx (NB: you will need to log-in using your student ID and password).

Assignments

There will be four short assignments, covering all nine CLOs, due as indicated above. 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, your tutor's name, and the time of your tutorial.
- *DO* head your assignments with
- *DO* staple all sheets together.
- *DO* submit into the assignment box marked with your tutor's name on Level 2 of Murphy building.
- *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 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 an examination at the University at any time during the formal examination period, Friday 23 October to Saturday 14 November (inclusive).

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:

- Tuesday 11 August, 6:30-7:30pm (based on lectures 1-6, CLOs 1-3); and
- Thursday 17 September, 6:30-7:30pm (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%	Tuesday 11 August, 6:30-7:30pm
Test 2 (multi-choice)	20%	Thursday 17 September, 6:30-7:30pm
Exam (long answer)	50%	Time/date 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.

Penalties

Late assignments will not be marked.

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 which score a mark of 1 or above.

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.*

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.

Course feedback

A course evaluation will be conducted for this course in Week 12. Most tutors will be asking students in their tutorials to complete evaluations during tutorial 4 in teaching week 6 (i.e. week beginning 17 August).

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

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.

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.