

Monash University
Department of Econometrics and Business Statistics
ETC1000/ETW1000 Business and Economic Statistics
UNIT OUTLINE
Semester 2, 2017

Synopsis: Presentation and analysis of grouped and ungrouped data using tables, charts and measures of location and dispersion; standardisation techniques, including index numbers, with application to share price indices and the CPI; analysis of relationships between variables using simple and multiple regression; extensions to multiple regression, including nonlinear and categorical explanatory variables and time series data with applications to forecasting; main ideas of probability theory as a foundation for statistical inference; concept of sampling as a way of capturing uncertainty about data; estimators and their properties; constructing and interpreting confidence intervals; fundamentals of hypothesis testing, testing hypotheses about the mean, difference between means and the slope, including analysis of variance.

Weekly Contact Hours: 2-4 pre-recorded videos, a 1.5-hour lecture (most weeks) and a 1.5-hour Computer Laboratory class

Prerequisites: A study score of at least 25 in two units of mathematics chosen from units 3 and 4 of Mathematical Methods, Specialist Mathematics or equivalent.



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Lecturers

Brett Inder (Chief Examiner), Daniel Melser (Lecturer) and Andrea Vinh (Unit Co-ordinator)

Moodle

All unit and lecture materials, plus other information of importance to students, are available through the Moodle site, accessed via the my.monash dashboard or app: my.monash.edu.

Structure of this Unit

The content of this unit comes from several sources. The table below shows you what will take place in each week of the Semester. This table is very important – make sure you refer to it often!

Week	Live Lecture	Prerecorded Videos	Homework	Lab Class
1	Introduction to Unit	Videos 1,2,3,4	Week 1	
2	Case Study: Descriptive Analytics	Videos 5,6,7,8	Week 2	Lab 1
3		Videos 9,10	Week 3	Lab 2
4	Introduction to Project: What we expect	Videos 11,12	Week 4	Lab 3
5		Videos 13,14	Week 5	Lab 4
6	Case Study: Diagnostic Analytics	Videos 15,16	Week 6	Lab 5
7		Videos 17,18	Week 7	Lab 6
8	Guidance for Project Presentations	Videos 19,20	Week 8	Lab 7
9	Case Study: Prescriptive Analytics			Lab 8
10				Project presentations
11	Exam Revision			
12	Exam Revision			

Blank spaces in the Live Lecture or Lab Class columns indicate the class does not run that week.

Here are more details about each component

Live Lectures

- These lectures take place in 8 of the 12 weeks of semester.
- Where there are multiple streams, each is taught by the same person, with identical content.
- You do not need to attend the stream you were allocated to – attend any one of the streams.
- Lectures are recorded using Monash's Learning Capture recording system, accessible through Moodle.

Pre-recorded Video Lectures

- For the first 8 weeks of semester, there will be a few short Video Lectures to watch.
- The videos can be found on the ETC1000 YouTube channel, or on Moodle.
- You can work out which videos to watch by consulting the Weekly Schedule above.
- Each video is based on notes from a .pptx file. You can download these files from Moodle. It will be helpful to have a printed version of the slides with you as you watch the videos, so you can make notes as you watch.
- You may find it useful to re-watch some of the Video Lectures at a later date.

Homework

- The Homework comprises a small set of exercises with step-by-step instructions.
- It is closely related to the Computer Lab work for the following week.
- You will need to complete the Homework as preparation for the next Computer Lab Class.
- If you have trouble understanding or completing the Homework, you should contact the Helpdesk, look at Frequently Asked Questions on Moodle, read the relevant sections of the textbook, or contact ETC1000.Clayton-x@monash.edu.
- Note the homework is not submitted.
- The homework also refers to the relevant textbook chapters, so you have additional resources and exercises there.

Computer Lab Classes

- Computer Lab classes commence in the **second** week of semester.
- They run most weeks – see the Weekly Schedule for details of which weeks they run.
- During Lab 1 – Lab 8, you will be asked to complete a set of exercises using Excel, and answer some questions via a Moodle quiz.
- Results of the quiz will be released after all computer labs have concluded for the week.

Assessment

Submitted Computer Lab Work:	24.5%
Group Project and Presentation:	15.5%
Final Exam:	60%

The Pass mark in this unit is 50% overall, however, students must score at least 40% in the final examination in order to qualify for a Pass in the unit. The final mark for this unit will be determined by the Board of Examiners on the recommendation of the Chief Examiner and taking into account all aspects of assessment.

All fails in the final examination that contribute to an overall Fail result will be second marked. Other pieces of assessment will not normally be second marked.

If you feel you have grounds for special consideration, you should consult the following webpage for the appropriate procedure and forms: <http://www.monash.edu.au/exams/special-consideration.html>

Submitted Computer Lab Work

You will be required to submit your quiz answers in the Computer Labs in Weeks 2-9 of semester. The Computer Lab work will involve using Excel to analyse data using the techniques covered in the unit.

You will submit your answers to the quiz questions electronically via Moodle at the end of the particular Computer Lab. When you submit your work, you will be required to sign a Submission Declaration attesting:

- This work is original and has been undertaken wholly in this class.
- You have and will continue to take proper care of safeguarding this work and make all reasonable efforts to ensure it cannot be copied.
- You have not plagiarised the work of others or participated in unauthorised collusion when preparing this work, pursuant to the university's statement on cheating and plagiarism.

You must sign the Declaration as instructed by your lab supervisor during the class in each of the assessment weeks. Failure to do so will result in zero marks being awarded for the corresponding assessment task.

It is your responsibility to ensure that you have successfully submitted your quiz before leaving the class.

If you cannot attend your regular allocated Computer Lab class, you must attend another one that week to complete and submit the task, or risk scoring zero for that week's task. Email ETC1000.Clayton-x@monash.edu beforehand to obtain permission to attend an alternative class – there may not always be space in another class.

Results of the quiz and general feedback will be released as soon as possible, via the *Grades* section in Moodle.

Your best 7 out of 8 pieces of work will go towards your final mark (best 7, worth 3.5% each, totalling 24.5%).

Group Project and Presentation

- This project will be undertaken in small groups, involving analysis of a set of data using the techniques you will learn in this unit.
- The final product will be a short group presentation during your Computer Lab class in Week 10.
- Groups will be allocated in the Computer Lab class in Week 4 of semester. All group members will be enrolled in the same Computer Lab class. There will be 3-4 members to each group.
- The project purpose and data sets will be made available in Week 4 of semester, and the Live Lecture that week will involve some explanation of the tasks we expect you to undertake.
- The project is worth 15.5% of your final mark.
- The project is assessed based on the quality and content of your presentation slides (PowerPoint or equivalent) and your oral presentation.
- All group members must contribute to the oral presentation. There will also be opportunity to give feedback on the contributions of other members of your group, and this feedback will be taken into account when allocating the final mark for this assessment.

Exam

- This unit has a single closed-book examination held during the University's examination period.
- All material covered in lectures and computer lab classes throughout the unit are examinable.
- Calculators are NOT permitted in the exam.
- Past exams can be accessed on Moodle.

Consultation

- Your first point of call for any queries regarding the unit or material should be the Frequently Asked Questions (FAQs) on Moodle. These FAQs will be updated progressively throughout the semester.
- For help with course material a regular helpdesk / drop-in centre is available throughout the semester – refer to Moodle for details of time and venue of the Consultation Helpdesk, as it is subject to change.
- If you have queries or concerns about any other aspect of the unit, you can send an email to ETC1000.Clayton-x@monash.edu.
- **Please DO NOT contact your lab supervisor outside of class** – it is not part of their role in this unit to deal with individual students' questions outside of class time.

Textbook

The textbook which best complements the material covered in this unit is:

J. Camm, J. Cochran, M. Fry, J. Ohlmann, D. Anderson, D. Sweeney, T. Williams, *Essentials of Business Analytics*, Cengage Learning, 2015.

On Moodle we have provided a list of relevant chapters, textbook questions and other study resources from this textbook that you may like to make use of throughout the semester. This Unit will be based around Chapters 1-5 of the textbook, and the unit ETC1010 will use the same textbook, covering remaining chapters.

There are a range of other Business Statistics textbooks that cover most of the material relevant to this Unit. You may find it helpful to look at other books for additional resources.

Notes

All videos, documents and notes required for the unit are available on Moodle.

For those that wish to have hard copies of any notes, and wish to avoid printing your own:

- Lecture outlines used during the Live Lectures will be made available at the lecture.
- Some copies of PowerPoint slides for pre-recorded lectures and the weekly homework exercises will be available for collection in the corridor outside Room E853c, Menzies Building.

Computer Lab Allocation

If you have not already enrolled in a Computer Lab class you will need to do so using the online enrolment system, Allocate+, accessed from your my.monash portal. Once allocated to a group, you must obtain permission before attending a different class, even if it is just for one week. To obtain permission, send an email to ETC1000.Clayton-x@monash.edu and explain your situation.

Computer Lab classes commence in the **second** week of semester in your allocated computer laboratory.

Computing and Software

You will use Excel spreadsheet software extensively in this unit. Excel is widely used in the business environment, so you will be learning skills that you can take with you and benefit from in the future.

The computer exercises in the lab classes will assume a basic working knowledge of spreadsheet and graphical functions in Excel. We understand that some students will not have had experience using Excel, or may need to be refreshed on some aspects, and so some Excel primer exercises have been put on Moodle. It is essential that students work through this sheet, beginning at their individual level of Excel literacy **before the first computer lab class**.

Language and Learning Online

Teaching and learning at University is different to how you may have learnt at school and also different from tertiary education in some other countries. The University provides an online language and learning service to help you adjust to new expectations, make a smooth and positive transition to study at Monash, and enhance your academic performance. Browse the collection of language and learning resources at monash.edu/lls/llonline.

Plagiarism

It is plagiarism if you submit work which has been copied, in whole or in part, from someone else or from another source, such as the internet or a published book or journal, and you have not used correct referencing to give the source. For example, any string of five words or more which has been taken from another source must be specifically identified by inverted commas or indentation and the author, date of publication, and page number of quote must be given. Other forms of cheating include using the work of others, submitting work already submitted for this or another unit, and working with other students unless told to do so. Giving your work to another student to copy is also an offence.

If a student is found to have committed plagiarism or another form of cheating, the penalty may include disallowance of the work (zero marks). Alternatively, a student may be referred to the Faculty Discipline Committee. If you do not understand plagiarism it is your responsibility to seek advice and to ensure that you fully understand this important issue.

Schedule of YouTube Videos and Textbook References

	Relevant Textbook sections
1. Data, Information, Decisions	Ch 1
2. Sources of Data	Sec 2.2
3. Preparing Data	Ch 3
4. Describing Categorical Data	
5. Describing Numerical Data with Distributions	Sec 2.4
6. Mean and Variance	Sec 2.5, 2.6
7. Diagnostic Analytics & Categorical Data	
8. Comparing across Groups	
9. Correlation	Sec 2.8
10. Predictive Analytics, Estimation	
11. Confidence Intervals	
12. Sampling Distribution Theory	
13. Differences across Groups	
14. Differences across groups (proportions)	
15. Hypothesis Testing Theory	
16. Models & Analytics	
17. Linear Regression Models	Sec 4.1, 4.2, 4.4, 4.6
18. Regression Models & Estimation	Sec 4.5
19. Evaluating Regression Models	Sec 4.3
20. Regression Models for Prediction	Sec 5.1, 5.4