School of Economics

ECON5257

INTRODUCTORY STATISTICS AND DATA ANALYSIS

Course Outline
Semester 1, 2017

Part A: Course-Specific Information

Students are also expected to have read and be familiar with **Part B Supplement to All Course Outlines**. This contains Policies on Student Responsibilities and Support, Including Special Consideration, Academic Misconduct and Plagiarism, and Key Dates. It also contains the BUSINESS SCHOOL PROGRAM LEARNING GOALS.

Table of Contents

1 STAFF CONTACT DETAILS

Lecturer-in-charge: Chris Carter
Office: Room 404, School of Economics
Telephone Number: 02 9385 9696
Email: chris.carter@unsw.edu.au
Consultation Times: Thursday 2-5 pm

A full list of tutors will be posted on the Course Website.

1.1 Communication with Staff

The Lecturer-in-charge is responsible for the overall direction and content of the course. You should feel free to contact your lecturer about any academic matter. However, it is strongly encouraged, for efficiency purposes, that all enquiries about the subject material should be made at lectures or tutorials or during consultation times. Emails are not suitable for discussing course material related matters.

Email correspondence on administrative matters (e.g. advising inability to attend tutorial) will receive a reply within 24 hours (excluding weekends).

2 COURSE DETAILS

2.1 Teaching Times and Locations

2.1.1 Class Hours

This is a <u>half-semester</u> course. There is a 2-hour lecture per week (either Stream A or Stream B) and 1-hour tutorial per week, running from 24 April to 2 June, 2017, inclusive.

2.1.2 Lecture and Tutorial Times and Location

Lectures (the first lecture will be on 26 April, 2017)

Stream A Wednesday 18:00-20:00 Macauley Theatre (Quad 1027)
Stream B Wednesday 14:00-16:00 Colombo Theatre B

Tutorials

There will not be any tutorial classes in the first week of lectures. The first tutorial classes will be held on Monday 1 May, 2017 and the last tutorial classes will be held on Thursday 1 June, 2017. Locations and times for tutorials can be found by using the following link: http://www.timetable.unsw.edu.au/current/ECON5257.html.

2.2 Units of Credit

This is a 3 unit credit course. There are two parallel lecture streams for this class.

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2.3 Summary of Course

Topics covered include: understanding data, probability and probability distributions, sampling distributions, statistical inference, correlation and regression analysis. The course also aims to provide familiarity with the use of Excel spreadsheet software for statistical data analysis and problem solving.

2.4 Course Aims and Relationships to Other Courses

The aim of this course is to provide students with an introduction to basic statistical tools and quantitative methods that are useful in understanding the type of data encountered in business. Importantly, it will provide a framework for approaching business and economic problems, and experience in learning from associated data.

2.5 Student Learning Outcomes

The Course Learning Outcomes are what you should be able to do by the end of this course if you participate fully in learning activities and successfully complete the assessment items.

The Learning Outcomes in this course also help you to achieve some of the overall Program Learning Goals and Outcomes for all postgraduate coursework students in the UNSW Business School. Program Learning Goals are what we want you to be or have by the time you successfully complete your degree (e.g. 'be an effective team player'). You demonstrate this by achieving specific Program Learning Outcomes - what you are able to do by the end of your degree (e.g. 'participate collaboratively and responsibly in teams').

For more information on the Postgraduate Coursework Program Learning Goals and Outcomes, see Part B of the course outline.

The following table shows how your Course Learning Outcomes relate to the overall Program Learning Goals and Outcomes, and indicates where these are assessed (they may also be developed in tutorials and other activities):

Program Learning Goals and Outcomes		Course Learning Outcomes	Course Assessment Item
This course helps you to achieve the following learning goals for all Business School Postgraduate coursework students:		*On successful completion of the course, you should be able to:*	*This learning outcome will be assessed in the following items:*
1	Knowledge	Explain the concepts, theories and techniques of statistical analysis. Use statistical skills to present data and apply all relevant statistical tools to business and economic problems.	• Weekly Assignments • Final Exam
2	Critical thinking and problem solving	Use the standard statistical techniques to interpret and analyse real problems encountered in the world of business.	• Weekly Assignments • Final Exam

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3a	Written communication	Construct written work which is logically and professionally presented.	• Weekly Assignments • Final Exam
3b	Oral communication	Not specifically addressed in this course.	Not specifically assessed.
4	Teamwork	Not specifically addressed in this course.	Not specifically assessed.
5a	Ethical, environmental and sustainability considerations	Not specifically addressed in this course.	Not specifically assessed.
5b	Social and cultural awareness	Not specifically addressed in this course.	Not specifically assessed.

3 LEARNING AND TEACHING ACTIVITIES

3.1 Approach to Learning and Teaching in the Course

The philosophy underpinning this course and its Teaching and Learning Strategies are based on "Guidelines on Learning that Inform Teaching at UNSW". These guidelines may be viewed at: www.guidelinesonlearning.unsw.edu.au. Specifically, the lectures, tutorials and assessment have been designed to appropriately challenge students and support the achievement of the desired learning outcomes. A climate of inquiry and dialogue is encouraged between students and teachers and among students (in and out of class). The lecturers and tutors aim to provide meaningful and timely feedback to students to improve their learning outcomes.

3.2 Learning Activities and Teaching Strategies

The examinable content of the course is defined by the content of lectures, the corresponding textbook references given in the lectures, and the content of the tutorial program.

Lectures

The purpose of lectures is to provide a logical structure for the topics that make up the course; to emphasise the important concepts and methods of each topic; to provide relevant real life examples to which the concepts and methods can be applied, and to revisit topic according to student feedback.

Tutorials

The purpose of tutorial meetings is to enable students to obtain feedback on their assignments and raise questions about difficulties encountered in their studies. *Students should not expect another lecture, but must come prepared with questions and contributions of their own.* To facilitate this, a set of exercises is assigned each week. It is fundamental that students attempt all the questions every week. The students will be required to hand in part of the assignment exercises for marking according to a suitable workload.

<u>Students are encouraged to collaborate on tutorial exercises. The students can submit the solutions to the marked exercises in pairs.</u>

The tutorial exercises will give a good indication of the kind of questions that can be expected in the final examinations.

Out-of-Class Study

While students may have preferred individual learning strategies, it is important to note that most learning will be achieved outside of class time. Lectures can only provide a structure to assist your study, and tutorial time is limited. Active learning is fundamental for this course.

An "ideal" strategy (on which the provision of the course materials is based) might include:

1. Reading of the relevant chapter(s) of the text and any readings**.** This will give you a general idea of the topic area.
2. Attendance at lectures. Here the context of the topic in the course and the important elements of the topic are identified. The relevance of the topic should be explained.
3. **Attempting all the tutorial questions before going to class.**
4. Making use of the feedback available to you at the tutorials and consultation times.

Computing

During this course, students will use the spreadsheet program EXCEL to solve statistical problems on topics discussed in lectures. EXCEL output will be discussed in tutorials and lectures and will be required in order to complete the assignments. Computing is an integral component of this course and you are expected to become proficient in EXCEL.

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4   ASSESSMENT

4.1   Formal Requirements

In order to pass this course, you must achieve a composite mark of at least 50 percent. That is, the sum total of all assessments must reach at least 50 marks out of a possible 100 marks to pass the course.

4.2   Assessment Details

Assessment Task	Marks	Length	Due Date
Tutorial exercises	40		**By the beginning of tutorials 2, 3, 4 and 5.**
Final Exam	60	Two hours	
Total	100		

4.3   Tutorial exercises

The students will be required to hand in solutions to a selection of exercises at the beginning of tutorials 2, 3, 4 and 5, which will be marked. The tutorial questions will be posted on Moodle the day after each lecture. The students can submit their solutions in pairs. If this is the case the **two students need to be from the same tutorial section**.

4.4   Final Exam

The **two hour** final exam of the course will be held during the University's final examination period.

The final exam will contain short and long written questions focusing on statistical concepts, interpretation and application of statistical techniques. **All material covered in the lectures and tutorial program is examinable.**

The students will be allowed to bring a front and reverse A4 **handwritten** cheat sheet. The students will also be allowed to bring approved calculators (the ones that do not have memory). It is recommended that the students familiarise themselves with the use of the relevant functions in their calculators prior to the exam.

4.5   Quality Assurance

The Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential and will not be related to course grades.

5   COURSE EVALUATION AND DEVELOPMENT

Each year, we seek feedback from students and other stakeholders about the courses we offer in the School of Economics. In this course we evaluate and use your course-level feedback, both quantitative and qualitative, to guide our continued review and redesigning of the course.

Our teaching team reflects on a range of feedback sources over time. This continuous improvement process can affect one or more particular areas of the course, whether this has to do with structure, content, resources, delivery or assessment. Thus, the ECON5257 course you are doing this Session reflects changes we have made in responses to feedback from students and the teaching team last year. The UNSW myExperience Survey Tool is one of the ways in which we gather student evaluative feedback. As in this case, we communicate significant changes within the course to subsequent cohorts of students.

6   COURSE RESOURCES

The website for this course is on UNSW Moodle at: http://moodle.telt.unsw.edu.au

The textbook for this course is:

Gerald Keller (2015), *Statistics for Management and Economics*, 10th Ed.,
          Abbreviated Edition, South-Western Cengage Learning.

Finally, weekly lecture notes will be posted on the course web site prior to each lecture.

7   COURSE SCHEDULE

7.1   Lecture Schedule

LECTURE SCHEDULE		
Lecture	Topic	Reference
Lecture 1 26 April	**Course Introduction and Descriptive Statistics** Basic Statistical Concepts. Graphical and Numerical Techniques for Dealing with Statistical Data. Data Collection and Sampling: A Word of Caution.	**Keller 1.1 - 1.4; 2.1 – 2.2; 3.1; 4.1 – 4.3; Chapter 5**
Lecture 2 3 May	**Probability Theory and Probability Distributions** Probability Definitions. Assigning Probabilities to Events. Joint, Marginal and Conditional Probability. Probability Rules. Bayes' Law. Probability Distributions. Expected Value and Variance of a Random Variable. Binomial Distribution. Poisson distribution. Normal Distribution.	**Keller 6.1 – 6.4; 7.1– 7.2; 7.4– 7.5; 8.1 – 8.2;**
Lecture 3 10 May	**Statistical Inference I: Sampling Distributions and Estimation** Sampling distribution of the sample mean. Estimators and their properties.	**Keller 9.1; 10.1 – 10.3;**

	Interval Estimation of the Population Mean.	
Lecture 4 17 May	**Statistical Inference II: Hypothesis Testing** Concepts of Hypothesis Testing. Testing Hypotheses for the Population Mean using the Normal Distribution. The 't' Distribution. Statistical Inference for the Population Mean using the t-distribution.	**Keller 11.1 - 11.4; 8.4, p.291 – 296; 12.1;**
Lecture 5 24 May	**Correlation and Regression Analysis I** Describing relationships between two variables. Covariance and correlation. An introduction to regression. The Simple Linear Regression Model(SLRM). Statistical Inference for the SLRM.	**Keller 2.3; 3.3; 4.4; 16.1 – 16.4;**
Lecture 6 31 May	**Correlation and Regression Analysis II** Using the SLRM for Prediction Purposes. Further examples and discussions of the SLRM.	**Keller 16.5**

7.2 Tutorial Schedule

TUTORIAL SCHEDULE		
DATE	Topic	Reference
1-4 May	Tutorial 1 Exercises	Lecture 1 Material
8-11 May	Tutorial 2 Exercises	Lecture 2 Material
15-18 May	Tutorial 3 Exercises	Lecture 3 Material
22-25 May	Tutorial 4 Exercises	Lecture 4 Material
29 May – 1 June	Tutorial 5 Exercises	Lecture 5 Material

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