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1 Introduction

Welcome to Quantitative Methods for Business. This subject will introduce you to the principles and practices of collecting, presenting and analysing data. It illustrates the application of quantitative methods to the choices, decisions and problems faced by business managers, analysts and policy-makers. It introduces students to software used to analyse data, and provides an overview of the basic principles of statistics and the use of those principles in the context of business and policy analysis.

2 Subject Aims

The overall aim of this subject is to provide an overview of the basic principles for applying statistics to decision-making, insights into some important theoretical and practical issues concerning business statistics, and to demonstrate the value of business statistics in decision-making. While undertaking this subject, students will develop:

- the capacity to interpret and analyse both primary and secondary sources of data
- the ability to make rational decisions based on the weight of statistical evidence
- an understanding of the role statistical analysis plays in individual business decisions
- a familiarity with the role statistical analysis plays in the wider economic and policy framework within which businesses operate.

3 Prescribed References

The required textbook for this subject is:

*Business Statistics: Australia New Zealand*
by Eliyathamby A. Selvanathan, Saroja Selvanathan, and Gerald Keller

All students are encouraged to purchase a copy of this textbook, as we will use it throughout the semester. The text is available for purchase at the University Bookstore. Copies are also available on reserve at the Baillieu Library.

4 Learning Outcomes

4.1 Subject Objectives

On successful completion of this subject, students should be able to:

- explain how statistical theory applies to decision-making,
- explain how data is sampled, collected and presented using a range of summary measures,
- construct and analyse relevant measures of the random variation of data,
- construct and explain the implications of hypothesis tests and estimates of regression equations,
• explain some forecasting methods, and
• evaluate evidence to inform decision making.

To view the learning goals, generic skills and graduate attributes for your degree, please locate the University Handbook entry for your degree at: http://handbook.unimelb.edu.au

4.2 Generic Skills
In this subject you will have the opportunity to develop important generic skills. These include:

• evaluation of ideas, views and evidence,
• synthesis of ideas, views and evidence,
• strategic thinking,
• critical thinking,
• application of theory to economic policy and business decision making,
• accessing economic and other information,
• summary and interpretation of information,
• application of Windows software,
• problem solving skills,
• negotiation and bargaining, and
• written communication.

4.3 Awareness Issues
At a broader level, studying this subject will increase your awareness of issues such as:

• the use and misuse of statistics in business, politics and the media;
• the importance of encouraging rational, evidence-based decision making in business and politics, and the vital role statistics plays in that process; and
• the value of empirical research as a complement to theoretical analysis in both academia and the business world.

5 Prerequisites
Entry into the Master of Management is the only prerequisite for this subject.
6 Academic Staff Contact Details

6.1 Seminar Lecturer Contact Details

The coordinator for Quantitative Methods for Business is Dr. Kevin Staub.

E-mail: kevin.staub@unimelb.edu.au
Room: FBE Building, office 344
Department of Economics
111 Barry Street
The University of Melbourne 3010 VIC.
Phone: 03 903 53776
Web: http://www.kevinstaub.com
Consulation Hours: Tuesdays, 11:00 am to 12:30 pm during teaching weeks.
Please schedule appointments in advance by e-mail.

6.2 E-mail Protocol

While academic staff endeavor to address queries received via email, it is more appropriate to resolve substantive questions during seminars and during normal consultation hours. Students are encouraged to attend all seminars and to familiarise themselves with the consultation hours offered by the lecturer in this subject.

Please note that we are only able to respond to student emails coming from a University email address. Emails from non-University email addresses may be filtered by the University’s spam filter, which means that we may not receive your email. All correspondence relating to this subject will only be sent to your University email address. Note that you must first activate your University email address before you can send or receive emails at that address. You can activate your email account at this link: http://accounts.unimelb.edu.au/.

Please observe basic email etiquette when writing to staff (use greetings, closings, sign with your name, etc.).

7 Seminars

7.1 Seminar Times

<table>
<thead>
<tr>
<th>Stream</th>
<th>Time</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mondays</td>
<td>6:15pm – 8:15pm</td>
<td>MSD-B121 (The Malaysian Theatre)</td>
</tr>
<tr>
<td>Wednesdays</td>
<td>11:00am – 1:00pm</td>
<td>FBE-G06 (Prest Theatre)</td>
</tr>
</tbody>
</table>

7.2 Seminar Participation Requirements

Students are expected to attend all seminars in their allocated stream (either Monday evenings or Wednesday mornings) throughout the semester.
### 7.3 Seminar Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Descriptive Statistics I</td>
<td>Ch. 1, 2, 4, 5</td>
</tr>
<tr>
<td>2</td>
<td>Descriptive Statistics II</td>
<td>Ch. 3, 4, 5</td>
</tr>
<tr>
<td>3</td>
<td>Probability and Discrete Distributions</td>
<td>Ch. 6, 7</td>
</tr>
<tr>
<td>4</td>
<td>Continuous Probability Distributions and Sampling Distributions</td>
<td>Ch. 8, 10</td>
</tr>
<tr>
<td>5</td>
<td>Estimation</td>
<td>Ch. 11, 15.1</td>
</tr>
<tr>
<td>6</td>
<td>- - - One week non-teaching period (3rd April - 12th April) - - -</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Hypothesis Testing</td>
<td>Ch. 13</td>
</tr>
<tr>
<td>8</td>
<td>Two-Sample Tests, Categorical Tests</td>
<td>Ch. 12, 15.2</td>
</tr>
<tr>
<td>9</td>
<td>Correlation and Regression Analysis</td>
<td>Ch. 21</td>
</tr>
<tr>
<td>10</td>
<td>Multivariate Regression Analysis I</td>
<td>Ch. 22, 23</td>
</tr>
<tr>
<td>11</td>
<td>Multivariate Regression Analysis II</td>
<td>Ch. 22, 23</td>
</tr>
<tr>
<td>12</td>
<td>Time Series Analysis</td>
<td>Ch. 25</td>
</tr>
<tr>
<td></td>
<td>Review</td>
<td></td>
</tr>
</tbody>
</table>

The required readings are taken from the prescribed textbook. Students with a limited background in quantitative techniques are encouraged to read the relevant chapters prior to the seminar each week.

### 7.4 Seminar slides

Seminar slides will be available for download from the subject’s LMS page prior to each seminar. The seminar slides are located under the heading "Seminars".

### 7.5 Echo360

Audio recordings of the Wednesday morning seminars delivered in this subject will be made available to students in the days following each Wednesday seminar.

Recorded seminars can be accessed by clicking on the "Seminar Recordings" menu item in the LMS section for this subject. To listen to these recordings, you must install QuickTime 7 (or a later version) on your computer.

Lecture recordings are not a substitute for seminar attendance. On occasion the recording system can fail to record a seminar due to technical reasons. In such cases, the recording will not be made available.

### 8 Tutorials

#### 8.1 Tutorials Schedule

Students are expected to attend a one hour tutorial each week. Tutorials scheduled for Fridays will commence in the first week of the semester (week beginning Monday 2nd March, 2015). Tutorials taking place on other days will start in the second week of semester (week beginning Monday, 9th March, 2015). The tutorials are a fundamental component of the subject, and will give students the opportunity to practice the skills covered during seminars in the previous week.

Students should check the Student Portal (http://portal.unimelb.edu.au) to find out the particular tutorial time and location that they are allocated to, and should attend their allocated tutorial only.
Students are able to change their tutorial allocation via the Student Portal up to the end of the second week of semester (by Friday, 13th March, 2015). You can only change into a particular tutorial if there is available space. For assistance with your enrolment, feel free to contact the Melbourne Business School student centre (http://mbs.unimelb.edu.au).

8.2 Tutorials Participation Requirements

A set of Preparation Questions are to be answered by students prior to the tutorial each week. Students are to download these Preparation Questions from the subject’s LMS page. The Preparation Questions will be available on the LMS prior to each relevant tutorial, under the menu item "Tutorials". The Preparation Questions include both theoretical and applied questions relating to the topic covered in the seminar in the previous week, and require students to discuss the data and the methods they are using to analyse data. Students are to bring their answers to the Preparation Questions to the tutorial each week.

In the tutorials, students will work in groups to answer a set of Tutorial Questions provided by the tutor. These Tutorial Questions require students to discuss and compare their different findings for some of the Preparation Questions, as well as attempting new questions in their groups. Solutions to the tutorial questions will be posted on the LMS after the end of each week, i.e. after all tutorials that week have been completed.

9 Assessment

9.1 Assessment Overview

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Due Date</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>Sunday, 29th March (week 4)</td>
<td>10%</td>
</tr>
<tr>
<td>Mid-semester exam</td>
<td>Tuesday, 21st April (week 7)</td>
<td>10%</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>Sunday, 10th May (week 9)</td>
<td>10%</td>
</tr>
<tr>
<td>Assignment 3</td>
<td>Sunday, 31st May (week 12)</td>
<td>10%</td>
</tr>
<tr>
<td>Final exam</td>
<td>Assessment period</td>
<td>60%</td>
</tr>
</tbody>
</table>

9.2 Assignments

Detailed information on the contents of the three assignments will be provided during the semester via the LMS. You will have about 10 days to complete assignments. The assignments may include written-answer questions requiring both calculation and discussion, as well as questions requiring the use of software (Excel). The due dates for the three assignments are provided in the table above. Assignments not submitted by the due date and time (11:59 pm) will count as zero for assessment purposes, unless an extension has been granted by the Melbourne Business School prior to the due date.

Assignment answers can be submitted by a group of up to four students. All group members must be enrolled in the same tutorial. Students will choose and form their own groups. All students in a group will receive the same mark for the assignment. Students submitting an assignment with a group that is not in their own tutorial, or in a group with more than four members, will not receive any credit for that assignment. While students may choose to work and hand in their assignments on their own, they are strongly encouraged to work collaboratively.

Students must submit their assignment answers electronically via the Assignment Tool. See below for details of how to submit assignments using this Tool. Each group will choose one group member to submit the assignment answers on behalf of the group. Assignments may involve
undertaking quantitative analyses of real-world data using a spreadsheet package such as Excel. When including graphs or charts in assignments, students should use patterns rather than colours to distinguish each data series in the graph or chart, as assignments will be printed in black and white for marking by tutors. To get full credit, students are expected to obtain correct numerical results and also to be able to explain clearly in words how those results were arrived at, what confidence we can have in them and what the results imply for management action or for policy. Unnecessary calculations, estimates or statistical tests should be avoided.

9.3 Mid-Semester Exam

The mid-semester exam contains only written-answer questions requiring both calculation and discussion. The exam duration is 1 hour, including reading time, and is a closed-book exam. Critical value tables for each distribution required to complete the exam will be provided to students in the exam package, as will a formula sheet. The exam will cover all material presented in seminars 1 to 5 inclusive. This exam will take place on Tuesday, 21st April, at 12.15pm. The venue the exam will take place in will be communicated closer to the date on the LMS and during the lecture.

Students should bring a standard scientific calculator with them to this exam, i.e. a calculator with the ability to take square roots and work with logarithms. Calculators that allow the user to retrieve text are not permitted.

9.4 Final Exam

The end of semester final exam for this subject will cover all the material covered during seminars and tutorials throughout the semester. This exam will take place during the University’s normal end of semester assessment period, with the specific time, date and location provided by the University’s administration later in the semester. The exam will be 2 hours in duration, and will have written-answer questions requiring both calculation and discussion. Critical value tables for each distribution required to complete the exam will be provided to students in the exam package, as will a formula sheet.

Students should also bring a standard scientific calculator with them to this end of semester exam. Calculators that allow the user to retrieve text are not permitted.

9.5 Exam Policy

The end of semester examination period for this semester is from Tuesday 9th June to Friday 26th June, 2015.

The Faculty requires that students are available for the entire examination period. Supplementary exams will not be provided in cases of absence during the examination period, unless the absence is due to serious illness or other serious circumstances. See the Special Consideration web site for more information: http://fbe.unimelb.edu.au/csc/assistance/special_consideration

9.6 Using the Assignment Tool

The Assignment Tool allows students to submit assignments online from home or from any of the student computer laboratories on campus. Students will be asked to submit assignments in electronic format into the Assignment Tool. The Assignment Tool can be accessed by clicking on the Assignment Tool menu item from the LMS page for this subject.
A student guide providing instructions on how to submit individual assignments, how to form groups and how to submit group assignments can be downloaded here: http://fbe.unimelb.edu.au/__data/assets/pdf_file/0006/708342/Students_Guide_Assignment_Tool_Feb2013.pdf

9.7 Plagiarism and Collusion
Plagiarism is the presentation by a student of an assignment as his or her own work even though it has been copied in whole or in part from another student’s work, or from any other source (e.g. published books, web-based materials or periodicals), without due acknowledgement in the text.

Plagiarism is heavily penalised. Penalties can include a mark of zero for the piece of assessment or a fail grade for the subject.

Collusion is the presentation by a student of an assignment as his or her own work when it is, in fact, the result (in whole or in part) of unauthorised collaboration with another person or persons. Both the student presenting the assignment and the student(s) willingly supplying unauthorised material are considered participants in the act of academic misconduct. See the following website for more information: http://academichonesty.unimelb.edu.au/advice.html

9.8 Late Submission
Where a student’s capacity to prepare a piece of assessment has been affected by factors beyond their control, such as illness or some other unexpected occurrence, students may apply for an extension. To apply for an extension, contact the Melbourne Business School (MBS) student centre. Students should make such applications well before the assignment is due.

Assignments in this subject submitted after the due date and without the student being granted an extension by the MBS, will count as zero for assessment purposes.

9.9 Special Consideration
Students who have been significantly affected by illness or other serious circumstances during the semester may be eligible to apply for Special Consideration. The following website contains detailed information relating to who can apply for Special Consideration and the process for making an application: http://fbe.unimelb.edu.au/csc/assistance/special_consideration

Applications for special consideration must generally be made within 3 working days of the assessment for which special consideration is being requested.

9.10 Group Work
Working in groups can sometimes be more difficult than working individually. However, teamwork and organisational skills associated with group work are highly valued by employers. With careful management and ongoing communication, you can have a successful and rewarding experience working in a team.

Exchange names, phone numbers, and email addresses with your group members straight away. If you have difficulty with a member of your group, contact your tutor as soon as possible. Do not leave issues unresolved until just before or after your group assignment is due.
10 Other Subject Resources

10.1 Tutors
Tutorials provide an opportunity to ask questions of your tutor. If there is not enough time during tutorials to have all your questions answered, ask your tutor to meet with you at a mutually convenient time for a further consultation.

10.2 Past exams
A copy of the 2014 mid-semester exam will be made available to students via the LMS in the week prior to the mid-semester exam. Brief solutions to this exam will also be provided.

A copy of the 2014 end-of-semester exam will be made available to students via the LMS towards the end of semester. Brief solutions for this past exam will also be provided.

10.3 FBE Centre for Excellence in Learning and Teaching
The FBE Centre for Excellence in Learning and Teaching (CELT) provides services and resources to enhance your learning in Business and Economics.

Maximise your academic success by taking part in CELT services that develop:

- skills in research, referencing and academic writing;
- mastery of different assignment types;
- effective study techniques;
- abilities to learn effectively with your peers; and
- the ability to transition to the faculty and understand academic expectations.

The Centre also provides an extensive range of helpsheets that can enhance your academic performance in Business and Economics. These are available online or at the Centre.

Visit the CELT site to learn more and get involved: \texttt{http://www.fbe.unimelb.edu.au/celt}