



BEA140

**Quantitative Methods
Summer Semester, 3, 2008**

**School of Economics and Finance
Faculty of Business**

Unit Outline

Mr Leon Jiang

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Contact Details

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Unit Details

Unit Title:	Quantitative Methods
Unit Code:	BEA140
School:	Economics & Finance
Faculty:	Business
Campus & Mode:	Hobart, MyLO (My Learning Online – previously WebCT Vista) Supported
Unit Weight:	12.5%
Prerequisite(s):	TCE MAP5C Mathematics Applied, Mathematics Stage 2 (or equivalent) or be enrolled in UPP090 Bridging Maths or BEA109 Introduction to Quantitative Methods
Teaching Staff:	Mr Leon Jiang

Unit Description

This is a foundation unit in business statistics and the mathematics of finance. It teaches students to describe and analyse business data. It is a compulsory unit in the BEc and BBus degrees.

This unit is intended to provide a background capacity in mathematics of finance and statistical description and analysis, appropriate for a business student. The focus of the unit is on the practical use of data in a business/economic decision environment, especially in an environment of risk and uncertainty. It does not aim to produce experts in analysis and research.

On completion of this unit, students will be able to:

- Use, and appreciate the importance of, sound practices in sampling, data description and presentation in a business environment.
- Apply basic probability concepts and probability distributions as an aid to business decision making.
- Use sample information to draw conclusions about properties of populations from which samples are drawn.
- Understand how an association between two variables can be used to explain variation and improve prediction.
- Demonstrate an understanding of the basic concepts of the time valuation of money, and apply these concepts to common situations in business/personal finance.

Generic Graduate Attributes

This unit adds to the generic attributes of graduates in the following ways:

Knowledge

<p><i>Graduates will have an in-depth knowledge in their chosen field of study and the ability to apply that knowledge in practice. They will be prepared for life-long learning in pursuit of personal and professional development</i></p>	<ul style="list-style-type: none"> • Apply technical and information skills appropriate to their discipline or professional area; • Understand the limitation of, and have the capacity to evaluate, their current knowledge; • Learn both independently and cooperatively; • Learn new skills and apply learning to new and unexpected situations.
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Communication Skills

<p><i>Graduates will be able to communicate effectively across a range of contexts</i></p>	<ul style="list-style-type: none"> • Demonstrate oral, written, numerical and graphic communication; • Present well-reasoned arguments, using technology as appropriate; • Access, organise and present information, particularly through technology-based activity.
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Problem Solving

<p><i>Graduates will be effective problem-solvers, capable of applying logical, critical and creative thinking to a range of problems. They will have developed competencies in information literacy</i></p>	<ul style="list-style-type: none"> • Conceptualise problems and formulate a range of solutions; • Work effectively with others; • Find, acquire, evaluate, manage and use relevant information in a range of media.
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Global Perspective

<p><i>Graduates will be able to demonstrate a global perspective and inter-cultural competence in their professional lives</i></p>	<ul style="list-style-type: none"> • Operate in a multicultural or global context.
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Prior Knowledge/Skills

- Arithmetic Skills
- Basic Algebra Skills
- Basic Calculator Operation

Pre-requisites/Co-requisites Units

- TCE MAP5C Mathematics Applied, Mathematics Stage 2 (or equivalent) or be enrolled in UPP090 Bridging Maths or BEA109 Introduction to Quantitative Methods Maths or BEA109 Introduction to Quantitative Methods.

E- (electronic) resources

MyLO (My Learning Online)

Unit materials are available via the UTAS online learning management system MyLO (previously WebCT Vista).

To access MyLO:

- From the UTAS webpage: www.utas.edu.au > click on Current Students > MyLO.
- This will take you to the Learning Online website where you can:
 - Access important information about setting up your home computer for MyLO
 - Login to MyLO using your UTAS username and email password.
 - Access self-help guides on how to use MyLO.

For technical support contact the Service Desk:

- In person: Morris Miller Library, Hobart or Launceston Campus Library
- Email: servicedesk@utas.edu.au
- Phone: 1818 (if you are off-campus 1300 304903)

For questions relating to unit materials, contact your lecturer.

Prescribed Text(s)

There is no prescribed text for this unit.

Recommended Readings

Some students may find it useful to consult alternative references as part of their study program. Students may wish take advantage of one of these as an additional source of worked examples, and for an alternate presentation of the material. The study schedule refers to readings from the following five references:

- Waters D, Quantitative Methods for Business, 3rd ed, Prentice Hall
- Selvanathan et al, Australian Business Statistics, Abridged 2nd ed, Nelson
- Berenson, Levine & Krehbiel, Basic Business Statistics, 9th ed, Prentice Hall
- Croucher J, Statistics: Making Business Decisions, McGraw-Hill
- Aczel A, Complete Business Statistics, 4th ed, McGraw-Hill

Students should note that notation may vary between references, and that in some cases even different formulae may be used. Students should not concern themselves with any material covered in these references that is beyond what is covered by the lecture notes. In all cases, the lecture notes should be considered the primary reference for any topic.

Most university libraries also contain a number of other suitable texts pitched at the appropriate level. Also, some material in addition to the lecture outline notes is available via MyLO (See heading E-(Electronic) resources MyLO below for more details).

Other Requirements

Calculators

It is essential to have a calculator with minimal abilities to take square roots, raise to powers and with a memory. It is advantageous, but not necessary, to have a calculator with basic inbuilt statistical functions. It is possible to obtain a machine for less than \$30 that will suffice. If in doubt, check with a tutor. It is **essential that students are competent in basic calculator operation**. It is probably wise to avoid buying a secondhand calculator if the original owner has lost the instruction manual.

Microsoft Excel

Students will be shown how to use Excel as a computational tool in several parts of the unit. The ability to interpret a standard Excel regression output is examinable, but beyond this the acquisition of Excel skills is not examinable. However, many students may find Excel a quick and convenient way to check their calculations in assignments and practice problems. Spreadsheet skills are very transferable, both to other subjects and to the workplace.

Teaching Arrangements

Teaching Sessions

Week	Topic
1	<p>Commence Module 1 - Business Mathematics. Introduction to unit. Summation notation. Introduction to mathematics of finance. Interest, present and future values of a single amount, solution for time and interest rate. Effective and equivalent rates.</p> <p>Introduction to simple annuities. Perpetuities. Amortisation. (Including dealing with changes in interest rate, missed/extra payments, annuities due)</p> <p>Sinking funds, "flat rate" problems.</p> <p>Commence Module 2 - Data Properties and Collection - types, sources, sampling (random, non-random). Presenting raw data.</p> <p>Summary – Summary measures for raw data, and for grouped data. (Including interpolation with grouped data)</p> <p>Summary and Presentation with Bivariate Data - scatter diagram, correlation, principle of least squares, determining line of best fit, goodness of fit, explained & unexplained variation, Spearman's Rank Correlation Coefficient</p> <p>Commence Module 3 - Probability Basic Probability – concepts, laws, trees & tables, independence, Bayes rule.</p> <p>Discrete Probability Distributions - expectations, Poisson, binomial.</p> <p>Private Study – students are encouraged to use lecture time to work on the major assignment.</p> <p>Continuous Probability Distributions - normal, z-scores, approximations of the binomial and Poisson by the normal</p>
2	<p>Sampling Distributions – sampling distribution of means, sampling of proportions, Central Limit Theorem, interpreting conditional probabilities. (Including finite population correction factor)the Student's t distribution.</p> <p>Commence Module 4 - Estimation & Inference Estimation - point & interval estimates for population mean.</p> <p>Point & interval estimates for population proportion, determination of optimal sample size, Inference - one sample tests of mean and proportion, types of error, one & two tailed tests, significance</p> <p>Bivariate Inference, - Chi-squared test for independence. tests for existence of linear relationship, confidence interval for slope, test for significance of Spearman Rank Correlation coefficient.</p> <p>Unit Review and Feedback</p>

Lectures

There will be 10 three-hour lecture sessions in the unit. Lectures will cover the core examinable material in the unit. The lectures will present only a part of the unit's content for that week; students are urged to attend these and to have read the week's material in the text before attending the lecture. Lectures will occur in the two weeks (Week 1: 17th December to 21st December 2007; Week 2: 29 January to February 1st 2008) from 1.00pm to 5.00pm in the Commerce Building.

Please note: Monday 29th January is the Australia Day Public Holiday. No classes will be scheduled for this day. So that all the material can be covered for week 2, the lecture material scheduled for Monday 29th January will be available via MyLO as a pre-recorded lecture. Students are strongly encouraged to view the material.

Comprehensive lecture notes are available via MyLO. Many students will find it advantageous to bring these to lectures, and then annotate them as necessary, rather than copying down large quantities of material during lectures.

The unit is divided into four Modules. Detailed lecture overviews for Modules 1 to 4 are available via MyLO. Many students choose to print these prior to lectures and then annotate them during lectures. A document called Extensions.doc is also available via MyLO. This contains some more advanced material beyond what is covered in lectures. Stronger students may wish to study this at their leisure. No more than 5% of the total assessment for the unit will relate to Extension material. For most students it is a more effective use of their time to focus on the core material covered in lectures, and then only move on to extension material if they are confident with the core content.

Workshops

Students are required to attend 10 Workshop sessions. These will be held through the two teaching weeks, commencing in Week 1. Workshops will consist primarily of guided problem solving and are intended to reinforce and extend material covered in lectures. A wide selection of practice problems and answers are available via MyLO. The weekly study schedule will nominate which of these are to be considered in workshop sessions. To benefit most you should prepare rough answers and come prepared to ask your Workshop instructor to explain parts of the subject that you have not fully understood. Workshop session may also be used to provide students with an overview of assignment and mini assignment questions. The allocation of students to Workshops will be done in the first lecture.

Important Dates to Remember

Week	Date	Event
1	17 December	Classes begin
	18 December	Workshops begin
	19 December	Mini-Assignment 1 due
	21 December	Mini-Assignment 2 due
	22 December to 28 January (Monday 29 th January Public Holiday)	Summer Semester Break Private Study & the Major Assignment
2	29 January	Major Assignment due
2	30 January	Mini-Assignment 3 due
2	1 February	Mini-Assignment 4 due
		Study Period
	4 February	Examinations period begins

Office Hours

To be advised

Assessment

Assessment Summary

Component	Weight/Value	Due date
Mini Assignments	4 @ 4% = 16%	19 December, 21 December, 30 January, and 1 February by 4.00pm
Major Assignment	24%	29 January by 4.00pm
<i>Total Internal</i>	40%	
Examination	60%	Between 4 – 8 February, 2008

Your Final Mark / How to Pass this Unit

Your final mark for this unit is determined by your internal assessment (40%) and your examination mark (60%). In order to pass this unit only your final total mark (i.e., the sum of internal plus final examination) must be 50% or higher.

Marks are not scaled or marked to a normal distribution. Some moderation of final marks may occur.

Assessment details

Major Assignment	
Date	29 January (Beginning of week 2), by 4.00pm
Task length	Six to ten multipart questions.
Content	The assignment will consist of preparing answers to a variety of problems, <u>with workings and procedures shown</u> , and for which part marks may be awarded for incorrect answers. It is <u>recommended that students work on the assignment in teams of two or three</u> . Where a student expects to have difficulty working in a team because of work or family commitments (etc) provision will be made for the student to submit the assignment as an individual, but any such student will need to obtain approval from their lecturer.
Format	Students may submit either a hand written or word processed assignment. Only one assignment should be submitted per team. Students should keep a photocopy for study purposes. Students should answer in sufficient detail to allow the marker to follow the logic of their answers. Typically this would be a similar level of detail to the worked examples appearing in the lecture notes. A SIGNED COVER SHEET IS REQUIRED.
Contribution to Final Mark	24%

N.B. Students who require an extension for an assignment need to contact teaching staff well before the due date to make other arrangements. The student is required to fill in the form, "Approval of an extension for an assignment". This blank form can be found on the MyLO site for this unit, or alternatively you can download a copy from the School web page at: www.utas.edu.au/ecofin/home/teaching.htm

Mini-Assignments	
Date	Mini-Assignment 1: 19 December, by 4.00pm Mini-Assignment 2: 21 December, by 4.00pm Mini-Assignment 3: 30 January, by 4.00pm Mini-Assignment 4: 1 February, by 4.00pm
Task length	Ten to fourteen short questions.
Content	These will be individualised (ie. each student will have a unique set of problems derived from that student's enrolment number) and accessed from the network, and done by students in their own time. They will generally comprise quite simple questions, and only the answers will be marked. The aim of mini-assignments is to: <ul style="list-style-type: none"> • test and reinforce acquisition of core computational skills relating to key formulae in each module of the unit. • provide rapid feedback with regard to these core computational skills, • encourage students to check their answers • encourage students to read and understand instructions • require students to practice reporting in a specified format • provide a practically limitless set of practice problems for core computational skills. <p>Their individualised nature is designed to avoid student co-operation in assignment preparation. <u>It is critical that students carefully read the instructions included in mini-assignments.</u> If for any reason a student does not understand an instruction they should check with the lecturer. Failure to follow instructions may result in the loss of marks.</p>
Format	Students <u>write</u> answers on printed individualised Excel worksheets. A COVER SHEET IS NOT REQUIRED
Materials	Required statistical tables provided as attachments for some mini assignments.
Contribution to Final Mark	$4 * 4\% = 16\%$

N.B. If a student is unable to submit a mini assignment on time because of a legitimate documented reason (for example sickness documented by a medical certificate), then they will given a pro-rata mark for that mini assignment based upon their performance on their other mini-assignments. If students have any questions they should contact teaching staff, preferably well before the due date.

Submission of assignments

The major assignment must have the School of Economics and Finance Assignment Cover Sheet attached (but this is not necessary for the mini assignments.) The cover sheet will be available on the unit page on MyLO. Please remember that you are responsible for lodging your written work on or before the due date. We suggest that you keep a copy – photocopying is ideal. Even in the most 'perfect' of systems, items sometimes go astray. Lodge your assignments in the box marked BEA140 on Level 4, Foyer Area, Commerce Building. Work will be returned during classes. Uncollected assignments will be available from the Secretary's office, Room 407

Requests for extensions

Extensions to the major assignment will only be granted on the basis of consultation with your lecturer well before the due date. If you are ill, please provide a medical certificate so that this can be noted. Students are required to fill out the form "Approval of an extension for an assignment". The blank form can be found on the MyLO site for this unit or alternatively you can download a copy from the School web page at: www.utas.edu.au/ecofin/home/teaching.htm.

Late mini assignments will generally not be accepted. (One of the aims of the mini assignments is to provide rapid feedback, with assignments being handed in on a Friday and being handed back the following week. It is not appropriate that hundreds of students be denied this rapid feedback because return of assignments has been delayed by late submissions.) If a student is unable to submit a mini assignment on time because of a legitimate documented reason (for example sickness documented by a medical certificate), then they will given a pro-rata mark for that mini assignment based upon their performance on their other mini assignments. If students have any questions they should contact teaching staff, preferably well before the due date.

Penalties

Late submission of assignments and other forms of assessment will incur a penalty of:

1 business day late	=	10% penalty
2 – 5 business days late	=	25% penalty
More than 5 business days	=	100% penalty

Academic referencing and Plagiarism

Student writers need to back up their ideas by referring to scholarly literature, works of art and inventions that they have used. Failure to do so constitutes academic dishonesty (plagiarism), a matter considered by the University of Tasmania as a serious offence. It is important that students understand how to correctly refer to the work of others and maintain academic integrity. The appropriate referencing style for this unit is the Harvard system. For further information: <http://www.utas.edu.au/library/assist/gpoa/gpoa.html>

Please read the following statement on plagiarism. Should you require clarification please see your unit coordinator or lecturer.

Statement on Plagiarism and Academic Integrity

Plagiarism is a form of cheating. It is taking and using someone else's thoughts, writings or inventions and representing them as your own, for example:

using an author's words without putting them in quotation marks and citing the source;

using an author's ideas without proper acknowledgment and citation; or

copying another student's work.

If you have any doubts about how to refer to the work of others in your assignments, please consult your lecturer or tutor for relevant referencing guidelines, and the academic integrity resources on the web at <http://www.utas.edu.au/tl/supporting/academicintegrity/index.html>.

The intentional copying of someone else's work as one's own is a serious offence punishable by penalties that may range from a fine or deduction/cancellation of marks and, in the most serious of cases, to exclusion from a unit, a course or the University. Details of penalties that can be imposed are available in the Ordinance of Student Discipline – Part 3 Academic Misconduct, see <http://www.utas.edu.au/universitycouncil/legislation/ord9.pdf>

The University reserves the right to submit assignments to plagiarism detection software, and might then retain a copy of the assignment on its database for the purpose of future plagiarism checking.

Unit feedback

The University of Tasmania, on a regular basis, evaluates its teaching and learning environment through the Student Evaluation of Teaching and Learning (SETL) system. The University values feedback from students and from time to time you will be asked to complete a SETL evaluation for a unit of study. For more information on SETL go to <http://student.admin.utas.edu.au/setl/students/index.htm>

Mobile Phone Policy

1. Students should normally turn off their mobile phones while in lectures and workshops.
2. In case of special circumstances, such as sick children, student phones may only be left on in class if in "silent mode". Students who leave their phones on should sit near an aisle. If they receive a call they should quietly get up and leave the lecture before taking the call. This provision is meant to cater for special circumstances. Students' answering their mobile phone is disruptive and all these steps are designed to reduce the cost imposed on all.
3. In test situations mobile phones should be kept out of student hands and preferably in the student's bag or backpack – unless prior arrangement has been made with the lecturer.

Occupational Health and Safety (OH&S)

The University is committed to providing a safe and secure teaching and learning environment. In addition to specific requirements of this unit you should refer to the University's policy at:

http://www.admin.utas.edu.au/hr/ohs/pol_proc/ohs.pdf

Learning Expectations and Strategies

Expectations

University's Expectations of Students

The University is committed to high standards of professional conduct in all activities, and holds its commitment and responsibilities to its students as being of paramount importance. Likewise, it holds expectations about the responsibilities students have as they pursue their studies within the special environment the University offers. The University's Code of Conduct for Teaching and Learning states:

Students are expected to participate actively and positively in the teaching/learning environment. They must attend classes when and as required, strive to maintain steady progress within the subject or unit framework, comply with workload expectations, and submit required work on time.

Teaching Staff's Expectations of Students

You are expected to:

- i) Familiarise yourself with this document, the unit outline.
- ii) Familiarise yourself with MyLO for the electronic delivery of unit material and for various forms of communication.
- iii) To attend all classes. If you must miss a class make sure you read the lecture notes or workshop questions and solutions available on MyLO. Note that quizzes and tests are often held during class time [see assessment for more details].
- iv) Read and attempt the workshop questions [available on MyLO] before they are covered and actively participate in workshop sessions.
- v) To have read the text and attended/read lectures before contacting the teaching staff to explain a concept.
- vi) To check your marked assessment with the solution set [available on MyLO] to determine your errors.
- vii) To check your UTAS email account regularly for message from teaching staff via MyLO. It is also wise to check MyLO regularly for additional material for the unit.
- viii) To check your internal marks once available and contact the teaching staff if there are any errors.

Student's Expectations of Teaching Staff

Students can expect:

- i) To have all appropriate unit material available electronically via MyLO on a week by week basis.
- ii) The teaching staff to be available by pre-arranged appointment and in their nominated office hours to raise issues or discuss issues with the material or student performance in the unit.
- iii) That all relevant notices regarding the administration of this unit will be communicated to all students enrolled in the unit via email to your UTAS account.

Learning Strategies

If you need assistance in preparing for study please refer to your tutor or lecturer. For additional information refer to the Learning Development website: <http://www.utas.edu.au/learndev/>

If you will be using MyLO for the first time and would like some information on how to use MyLO refer to the following guide: <http://uconnect.utas.edu.au>

Some of the units you will study use video conferencing to deliver lectures and tutorials. To enable you to get the best out of a video conference please refer to the following guide.

<http://www.its.utas.edu.au/videoconf/vcstudentguide.pdf>

Additional Assistance

If you are experiencing difficulties with your studies or assignments, have personal or life planning issues, disability or illness which may affect your course of study, you should raise these with your lecturer.

Student Services staff are located in Hobart, Launceston and Burnie and provide a wide range of services to assist students, they include:

- Student Counsellor
- Disability Adviser
- Careers Adviser
- Student Employment Service

Or visit the Student Services website at : <http://student.admin.utas.edu.au/services/>

Should you require assistance in accessing the Library visit their website for more information at <http://www.utas.edu.au/library/>. Your contact Librarian for this unit is: Heather Mitchell (ext 2306)

International Services website provides information on the assistance available to international students, visit their site at : <http://www.international.utas.edu.au>

The Teaching and Learning website has a wide range of resources on study skills and learning strategies, visit their site at: <http://www.utas.edu.au/tl/students/>. For commencing students I suggest you enrol in the UniStart program.

Help resolving concerns about this unit

If you have any concerns or complaints with the administration and/or management in this unit or your BEc course of either a general or personal nature, then you might in the first instance discuss the matter with your lecturer. If you feel that you would rather discuss the issue with an independent person within the School of Economics and Finance, then contact: **Paul Blacklow, School of Economics and Finance, Room 406, email Paul.Blacklow@utas.edu.au**

If the matter is still unresolved and you would like to know who to contact or the procedures for resolving your concern refer to the following website: http://www.admin.utas.edu.au/ac_serv/complaints_info.html

The Hobart based Tasmanian University Union (TUU) or the Launceston/Burnie based Student Association (SA) may also be able to assist.

Bachelor of Economics Course Coordinator

If you require assistance with your course please see:

Course coordinator:	Dr Michael Brooks
Campus:	Hobart, Commerce Building, Level 4, Room 401
Contact	03 6226 2286