



UNIVERSITY  
OF TASMANIA

**Economics**

**Faculty of Commerce**

**BEA240**  
**Quantitative Methods 2**

**Semester 1, 2003**

**Unit Outline**

**Dr Hugh Sibly**

CRICOS Provider Code: 00586B

## Contact details

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## Unit details

**School:** Economics  
**Faculty:** Commerce  
**Unit Title:** Quantitative Methods 2  
**Unit Code:** BEA240  
**Prerequisites/  
Corequisites:** Nil  
**Campus &  
Mode:** Hobart, WebCT supported  
**Unit Weight:** 12.5%  
**Teaching  
Staff:** Dr Hugh Sibly

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## Unit description

### Aim

Quantitative methods make many contributions to the development of all areas of Economics and Commerce, e.g. Accounting, Economics, Finance, Management and Marketing. This unit will develop basic quantitative techniques and apply them to problems in Economics. The emphasis of the unit will not be the development of new techniques nor on the techniques for their own sake but on the application of techniques to a variety of economic problems. Many of the mathematical tools covered will already be familiar, to some extent, to students from TCE Mathematics Applied. Since students will bring different mathematics backgrounds to the unit, there will be thorough revision of basic concepts and tools as the unit progresses.

### Learning outcomes

On completion of this unit, you should be able to:

| Unit Objective:                                                                                                                                                        | How this is assessed :                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| <ul style="list-style-type: none"> <li>To revise 'high-school' mathematical tools.</li> </ul>                                                                          | Quiz 1, Mid Semester test                  |
| <ul style="list-style-type: none"> <li>To develop quantitative techniques appropriate for the analysis of problems in Economics and Commerce.</li> </ul>               | All quizzes, Mid Semester test, Final Exam |
| <ul style="list-style-type: none"> <li>To translate economic reasoning into mathematics.</li> </ul>                                                                    | All quizzes, Mid Semester test, Final Exam |
| <ul style="list-style-type: none"> <li>To understand the inter-relationship between mathematical, graphical and verbal arguments in Economics and Commerce.</li> </ul> | All quizzes, Mid Semester test, Final Exam |
| <ul style="list-style-type: none"> <li>To use mathematics to find the optimal outcome for an economic problem.</li> </ul>                                              | Quiz 3 & 4, Final Exam                     |
| <ul style="list-style-type: none"> <li>To model mathematically decisions under constraints.</li> </ul>                                                                 | Quiz 4, Final Exam                         |

## **Prerequisites/corequisites**

### **Assumed skills**

Students are expected to have an understanding of the mathematics equivalent to that required to pass TCE maths applied.

### **Prerequisite/corequisite units**

Nil.

## **Texts, references and learning resources**

### **Prescribed text(s)**

John Shannon, *Mathematics for Business, Economics and Finance*, Wiley, 1995.

### **Recommended readings**

An alternative and more extensive treatment of most topics will be found in:

Gordon Prichett and John Saber, *Mathematics with Applications in Management and Economics*, Seventh Ed., Irwin, 1994.

A more advanced coverage of topics is in:

A.C. Chiang, *Fundamental Methods of Mathematical Economics*, Third Edition, Sydney: McGraw-Hill, 1984.

### **Access to WebCT**

The WebCT entry page is at <http://webct.utas.edu.au:8900/>. Click 'Log on to myWebCT' and enter the same username and password that you use for your University email account. Your personal WebCT page will appear, with the units in which you are enrolled listed at the top left of the screen. Click on the 'Quantitative Methods 2' link to gain access to the home page for this unit. Details about WebCT features are available on <http://www.webct.com/quickstart>. If you run into problems with WebCT, contact the Help Desk on Telephone: 6324 3888, or Email: [HelpDesk@weboffice.utas.edu.au](mailto:HelpDesk@weboffice.utas.edu.au).

## Teaching arrangements

### Lectures

There are two lectures a week during the semester. Lectures introduce the central material of the course. They do not replace study done in student's own time.

Please note amendment to timetable: You will have one Lecture on Tuesday's at 11.00am to 11.50am followed by the workshop (workshop's start week 3). The second lecture will be held on Wednesday's starting at 9.00am to 9.50am. Both lectures will be held in Commerce Lecture Theatre 3.

### Workshops

Workshops are held once weekly beginning in week 3 (i.e. Tuesday 12 March). The workshops are designed to discuss the week's set of exercises. The exercises to be discussed in each workshop will be circulated prior to the workshop. Students are expected to have gone over these exercises and should be able to discuss them in the workshops. Workshops are held on Tuesday's in Commerce Lecture Theatre 3 at 12 noon to 12.50pm.

### Consultation

I will be available for consultation for BEA240 students at 10.00am –11.00am Tuesday mornings during semester. This consultation time has been chosen to allow students time to talk to me before each quiz. Further consultation times may be added later in semester. There will consultation times set for the period between the end of semester and the exam. However inevitably consultation times do not suit some students. Therefore I am happy to arrange individual appointments to discuss any matters relating to the course. An appointment can be made with me during lectures, by calling me, or emailing me.

### 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](http://www.admin.utas.edu.au/hr/ohs/pol_proc/ohs.pdf)

## Unit schedule

| <b>Week:</b> | <b>Topic:</b>                                                                                                                                                                                                  | <b>Text:</b>      |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1            | Review of algebra: <ul style="list-style-type: none"> <li>• Sets</li> <li>• Exponents</li> <li>• Functions</li> <li>• Inequalities</li> <li>• Sigma notation</li> </ul>                                        | Shannon, Ch. 1    |
| 2            | Graphs of linear functions: <ul style="list-style-type: none"> <li>• Applications</li> </ul>                                                                                                                   | Shannon, Ch. 2    |
| 3            | Solutions of systems of linear equations: <ul style="list-style-type: none"> <li>• Applications</li> </ul>                                                                                                     | Shannon, Ch. 3    |
| 4            | Matrix Algebra: <ul style="list-style-type: none"> <li>• Definitions</li> <li>• The Determinant</li> <li>• The inverse Matrix</li> <li>• Cramer's Rule</li> <li>• Applications</li> </ul>                      | Shannon, Ch. 4, 5 |
| 5            | Non-linear functions: <ul style="list-style-type: none"> <li>• Definitions</li> <li>• Applications</li> </ul>                                                                                                  | Shannon, Ch. 6    |
| 6-8          | Differential Calculus: <ul style="list-style-type: none"> <li>• The Derivative</li> <li>• Rules for Differentiation</li> <li>• Optimisation</li> <li>• Applications</li> </ul>                                 | Shannon, Ch. 8    |
| 9-12         | Multivariable Differential Calculus: <ul style="list-style-type: none"> <li>• Partial Derivatives</li> <li>• Unconstrained Optimisation</li> <li>• Constrained Optimisation</li> <li>• Applications</li> </ul> | Shannon, Ch. 10   |
| 13           | Overview and Revision                                                                                                                                                                                          |                   |

## Learning expectations and strategies

### Expectations

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.*

### 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 WebCT for the first time and would like some information on how to use WebCT refer to the following guide: [http://www.utas.edu.au/coursesonline/docs/using\\_webct.pdf](http://www.utas.edu.au/coursesonline/docs/using_webct.pdf)

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>

### Assessment

- **Sixty percent** of the weight in the final mark for this unit is allocated to a 2-hour end-of-semester examination.
- **Twenty percent** of the weight in the final mark for this unit is allocated to the mid-semester test. It will be held during the lecture and workshop sessions in Commerce Lecture Theatre 3 on Tuesday 29 April. Note: The test will begin at 11.00am on Tuesday 29 April.
- **Twenty percent** of the weight in the final mark for this unit is allocated to four quizzes that will be held in workshops. The dates for the quizzes are 18 March, 1 April, 15 April and 18 May. The question on each quiz will be closely related to workshop questions distributed in the previous two weeks.

## Assessment summary

| <b>Component</b>  | <b>Weight/Value</b> | <b>Due date</b>                    |
|-------------------|---------------------|------------------------------------|
| Mid Semester Test | 20%                 | 29 April, 11.00am,<br>Commerce LT3 |
| Quiz 1            | 5%                  | 18 March                           |
| Quiz 2            | 5%                  | 1 April                            |
| Quiz 3            | 5%                  | 15 April                           |
| Quiz 4            | 5%                  | 20 May                             |
| Final exam        | 60%                 | June Examination Period            |

## Academic referencing

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

Baumol, William (1986), "Productivity Growth, Convergence and Welfare", *American Economic Review*, vol. 76, pp. 1072-85.

Maddison, Angus (1970), *Economic Progress and Policy in Developing Countries*, London, Allen and Unwin.

For information on presentation of assignments :

<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.

## Plagiarism

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.

In fact the intentional copying and submission of someone else's work as one's own is a serious offence tantamount to academic fraud. It is a University offence punishable by a range of penalties that may range from a fine or deduction/cancellation of marks and, in the most serious of cases, exclusion from a unit, a course, or the University. **When in doubt consult your lecturer or tutor.** Details of penalties that can be imposed are available in the Ordinance of Student Discipline or at: [www.utas.edu.au/plagiarism](http://www.utas.edu.au/plagiarism)

## 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
- Careers Adviser
- Disability 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 :

<http://www.utas.edu.au/library/about/contact.html#mm>

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

The Learning Development website has a wide range of resources on study skills and learning strategies, visit their site at : <http://www.utas.edu.au/learndev/>

## **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 should 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, then contact the Ombusperson:

**Dr Sarah Jennings**  
**School of Economics**  
**Room 413**  
email [sarah.jennings@utas.edu.au](mailto:sarah.jennings@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://student.admin.utas.edu.au/services/complaints/index.html>

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

## **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://www.admin.utas.edu.au/HANDBOOKS/UTASHANDBOOKS/STUDINFO/studeval.html>