THE UNIVERSITY OF
NEW SOUTH WALES

Faculty of Commerce and Economics
School of Economics

ECON1202/ECON2291(ARTS)
QUANTITATIVE METHODS A

COURSE OUTLINE
SESSION 2, 2006

1. Course Staff

The Lecturer-in-charge of this course is **Judith Watson**. She is responsible for the overall direction, planning and assessment of the course and is the co-ordinator of the PASS program. If you have questions relating to your mathematical background knowledge, assessment issues or special consideration you should contact Judith.

Room: JG 210
Telephone: 9385 3285
Email: J.Watson@unsw.edu.au

The Lecturer for this course is **Simon Angu**s. He is responsible for writing and delivering the lectures. If you have any queries about the lecture notes, or lectures themselves or wish to clarify a topic or concept from the course, feel free to visit Simon during his consultation times.

Room: JG 113
Telephone: 9385 3334
Email: S.Angus@unsw.edu.au

The Tutorial Co-ordinator for this course is **Frank Yi**. You should contact him if you need to be allocated to a tutorial or laboratory when online access is closed.

A list of QMA tutors will be provided on the course website.

1.1 Consultation with staff

Consultations are an opportunity for you to ask questions. You may need to ask about the material introduced in lectures, the problems you have attempted or questions that were not fully answered in tutorials. Consultations with the individuals mentioned above can be made in their offices. A list of consultation times will be posted on the course website.

Tutors may be consulted in the Economics Drop-in Centre (commonly known as Pitstop), room JG G18 from Week 4 onwards. A timetable will be placed on the door of the room and on the QMA website.

2. Course Website

This course uses a WebCT Vista website which may be accessed at
http://vista.elearning.unsw.edu.au
All important course information will be posted on this site including lecture notes, announcements, copies of handouts, tutorial answers and past exam papers. You will also use this site to complete the online assessment.

3. Information about the course

3.1 Units of credit

This course is worth 6 units of credit.

3.2 Lecture times and locations

You should attend two lectures per week. Lectures will be held at these times:
Tuesday 2.00-3.00 p.m. in Mathews Theatre A
Wednesday 2.00-3.00 p.m. in Keith Burrows Theatre

3.3 Relationship of this course to other course offerings

Quantitative Methods A is one of the six core courses undertaken by students in Commerce and Economics. It is a prerequisite for Quantitative Methods B which will build on the probability area of QMA as well as introducing new statistical techniques. After completing both of these first year courses your use of mathematics and statistics will vary depending on the major(s) you choose. If you choose majors such as Economics, Financial Economics and Business Statistics you will study further courses in econometrics. These majors are designed to equip students with statistical and other quantitative skills that are widely used and increasingly demanded by employers in commercial fields and the public sector.

If you choose other majors where quantitative skills are needed, such as Finance and Marketing, a good understanding of concepts taught in QMA and QMB will be valuable.

3.4 Assumed knowledge

The level of assumed knowledge in mathematics required for this subject is the New South Wales (NSW) HSC Mathematics. As is stipulated in the UNSW Undergraduate Handbook 2006, under the headings ECON1202 and ECON2291

> **Assumed knowledge: A level of knowledge equivalent to achieving a mark of at least 60 in HSC Mathematics. Students who have taken General Mathematics will not have achieved the level of knowledge which is assumed for this course.**

If you have not studied HSC mathematics in New South Wales, knowledge of the following topics is essential: algebra (including logarithms, exponentials, functions and graphs), derivatives and differentiation rules, and simple integration.

If you have not studied any or all of these topics previously, i.e., an appropriate level of mathematics at high school, you should bring this to the attention of the lecturer-in-charge as soon as possible, as remedial work will be necessary. This may imply not taking Quantitative Methods A this session but taking a Mathematics Skills Program offered by the University instead. For further details about the Mathematics Skills Program, you should contact the Admissions Office of the University.

If you meet the assumed knowledge requirement, but feel the need for a refresher course in elementary algebra and calculus, you may wish to purchase the following

book available at the UNSW bookshop: Managing Mathematics: A Refresher Course for Economics and Commerce Students by Judith Watson, 2nd edition, 2002.

You can also examine a copy of the book in the Open Reserve Section of the Library.

If there is sufficient demand, two special revision classes will be given by the Lecturer-in-charge in Week 2 to go over the some important introductory concepts. They are aimed at refreshing knowledge of Logarithms and Exponentials and of Limits. If you feel you would benefit from this revision and are able to attend the times below make sure that you register by completing the form that is available at Lectures 1 and 2.

Topic	Place	Time
Logarithms and Exponentials	Mathews 308	3.00-4.00 Wednesday August 2
Limits	Quad G045	2.00-3.00 Thursday August 3

4. Course Aims and Outcomes

4.1 Course aims

In this course we build on mathematical knowledge which you should have gained in high school. You will not only learn new mathematical skills that will be useful for later courses but you will gain experience in areas which every business person needs such as dealing with money, problem solving and using a spreadsheet. Besides developing your ability to perform calculations the course aims to extend your skills in analysis and oral and written communication.

4.2 Approach to learning and teaching

This is not a course where you can become proficient just by observing. You will need to get involved in class - evaluating information, asking and answering questions. You also must learn to organise your independent study and practise enough problems to gain a thorough understanding of concepts and how to apply them.

Some significant changes are taking place in the content and assessment of Quantitative Methods A this session to improve learning outcomes. In particular we are hoping that students will now

- put a consistent effort into learning activities throughout the session by preparing for the more regular assessment tasks
- take a more responsible role in preparing for tutorials and participating in them
- develop better communication skills through engaging in classroom discussions and preparing an assignment
- concentrate more on understanding how and why to use formulas and less on memorising them

- be able to concentrate more on the uses of matrix algebra as we focus less on learning the mechanical steps
- learn to work effectively with other students in order to complete a computer-based business assignment
- make continuous improvements by using the feedback from assessments that will now be provided more often

Further information on the Guidelines on Learning that Inform Teaching at UNSW, can be obtained at www.guidelinesonlearning.unsw.edu.au.

4.3 Student learning outcomes

By the end of this course you should have a good grasp of the basic principles of financial mathematics. You should have developed your understanding of probability and learned how use matrix algebra to represent and solve systems of equations. You should also be able to use linear programming and calculus to solve optimisation problems. You should understand how to apply both single variable and multivariable calculus to business and economics problems. You should gain a level of proficiency in using the Excel spreadsheet and be able to use it to analyse data and make correct interpretations of the program's output. You should also develop skills in written and oral communication. Such skills in analytical thinking and effective communication are attributes that UNSW seeks to foster in its graduates.

4.4 Classes and other teaching strategies

In this course there are two types of formal classes: lectures and tutorials. There is also an Excel computing component which you may choose to undertake independently using your home computer or by obtaining the assistance of a tutor in a computer laboratory on campus. There are also peer assisted study groups (PASS) which you can attend on a voluntary basis. In addition you will be expected to spend a considerable amount of extra time working with group members on your assignment and working on your own to attempt tutorial preparation and self study questions.

4.4.1 Lectures

Lectures will introduce and emphasise the course content. They will include explanation of relevant topics and theory together with the use of worked examples to demonstrate the theory in practice. Where possible, lectures will show the relevance and application of the quantitative techniques covered in this course to business, economic, and financial applications.

To get the most out of the lectures, students are strongly encouraged to familiarise themselves with the prescribed text readings as given in the course outline prior to attending each lecture, and to be prepared to take notes during the lecture itself. A lecture outline with space for working will be made available on the course website in the week preceding each lecture. Whilst some students prefer to take their own notes, others prefer to use the outline as a template for their notes, annotating or emphasising points as they wish.

Due to the size of lecture classes, and the large amount of course material to be covered, there is only a very limited time for questions to be answered during the lectures themselves. However, the smaller tutorial classes (see below) are ideal forums for students to test their understanding and seek further instruction. Additionally, consultation times with lecturers can be used by students to clarify the lecture material.

You should attend two one-hour lectures per week, except during Week 8 when the mid-session exam is scheduled.

4.4.2 Tutorials

The purpose of tutorials is to help increase your understanding of the material covered in lectures once you have tried to work through some numerical problems yourself.

- **Focus**

The focus of tutorials is changing this session. We are putting more emphasis on the development of communication skills and the ability to construct arguments. Discussions, both in small groups and between the whole class, will be an opportunity for you to examine your understanding of concepts and applications before working on numerical examples. There will also be a change in the preparation expected for tutorials and the access to solutions for tutorials. These changes are being made to give the tutorial a greater purpose and make it a venue where students and staff can explore ideas and share knowledge.

- **Preparation**

Each week you will be given two sets of questions to work on. **Tutorial questions must be prepared for your tutorial**. Expect that your tutor or another student will check that you have attempted these. **Self study questions** will also be set for each week. Attempting these will assist you in answering the tutorial questions and will form a necessary part of the practice you will need to do to successfully complete this course. You will not need to take the **self study questions** to your tutorial as solutions for them will be available on the QMA website. Further help in understanding the solutions can be obtained through consultations with staff.

- **Discussion**

The first part of your tutorial will involve discussion questions related to the numerical questions you have prepared. These will help you improve your understanding of concepts and mathematical methods and assist you to see the relevance of these in business and economics. In some weeks you may also discuss topics such as how to approach your group assignment. During this part of the tutorial, you may also suggest topics you would like to be discussed, for example areas where you are confused or need more explanation

- **Numerical solutions**

During the second part of the tutorial the students and tutor working together will examine the solutions to the prepared questions. If time permits extra questions may be attempted. In the case where there is not time to work through all the prepared questions, answers to these questions (but not complete solutions) will be made available at the end of each week on the QMA website.

Tutorials take place every week except Weeks 1 and 8. Students enrolled in ECON2291 should see the tutorial co-ordinator as soon as possible to be assigned to a tutorial.

4.4.3 Computing component

This session we are also making are taking a new approach to the development of computer literacy. Now that most students have access to their own personal computers and the Excel program we are not insisting that you attend laboratory sessions on campus in order to become proficient in using this program. You will have the opportunity to either work through a set of computing exercises on your own at home or to attempt them at university with the assistance of a lab supervisor. The exercises will be training for the Excel tasks required in your computing assignment as well as showing you other applications related to the course that may be required for tutorial work.

From the QMA website you will be able to download the computing exercises as pdf files. Handouts of the exercises will also be available at the university laboratories should you choose to work there.

You may also use the laboratories during times booked for QMA to work with your group on your assignment. In the case of there being excess demand for computers in a lab, preference will be given to students who have enrolled to be at the lab at that time and in that week.

Attendance records will be kept at labs for the purposes of future planning. Make sure that you complete the attendance form before logging on.

If you need to print at your university lab you should first obtain a printing card from the machine outside Quad Lab 4. The card costs $5 and has $3.35 of printing credit, enough for approximately 25 pages. Extra funds may be added to the card as needed.

4.4.4 PASS groups

PASS (the Peer Assisted Support Scheme) is a system of study groups available to QMA students. The groups are each led by senior students and are an opportunity to practise problems, develop study methods, ask questions, and consolidate your knowledge in a friendly informal environment.

The PASS timetable will be distributed in lectures in week 2 and be placed on the QMA website.

4.4.5 Independent study

Outside the classroom you need to undertake several hours a week of independent study. While these tasks have been referred to in other sections it is good to focus here on what a typical week might need. You should expect to carry out these tasks:

- Read sections of the textbook and or reference texts and read lecture notes before/after the lecture

- Attempt the self study problems and compare your methods with the online solutions, try the online practice problems to prepare for quizzes or the past exam papers to prepare for exams, try extra problems from the textbook if required
- Prepare tutorial questions
- Develop skills in using Excel by attempting the computing exercises
- Take the online quiz, look at your results and if necessary carry out further preparation before re-attempting it
- Work with other group members on the computing assignment
- Seek assistance from staff, pass leaders or fellow students to have queries answered

5. Student responsibilities and conduct

5.1 Workload

It is expected that you will spend at least ten hours per week studying this course. This time should be made up of reading, research, working on exercises and problems, and attending classes. In periods where you need to complete assignments or prepare for examinations, the workload may be greater.

Over-commitment has been a cause of failure for many students. You should take the required workload into account when planning how to balance study with employment and other activities.

5.2 Attendance

Your regular and punctual attendance at lectures and tutorials is expected in this course. University regulations indicate that if students attend less than eighty per cent of scheduled classes they may be refused final assessment.

You have also been allocated to a laboratory session every four weeks. Attendance at these will depend on your level of proficiency using Excel and the extent you wish to work on your computing assignment with other group members on campus. Lab tutors will be available to guide you through the use of Excel commands and formulas. However they will not do your assignment for you.

5.3 General Conduct and Behaviour

You are expected to conduct yourself with consideration and respect for the needs of your fellow students and teaching staff. Mobile phones should be switched to silent mode or turned off before class begins. Conduct which unduly disrupts or interferes with a class, such as carrying on conversations with other students or ringing or talking on mobile phones, is not acceptable and students may be asked to leave the class. More information on student conduct is available at: www.my.unsw.edu.au

5.4 Keeping informed

You should take note of all announcements made in lectures, tutorials or on the course website. From time to time, the University will send important announcements to your university email address without providing you with a paper copy. You will be deemed to have received this information.

6. Learning Assessment

6.1 Formal Requirements

In order to pass the course, you must obtain a total mark of at least 50 out of a maximum of 100. Each student is expected to make a satisfactory attempt at all assessment tasks (see below). In cases where a student's grades for online quizzes 1 and 2 differ substantially from their grade for the mid-session exam the student may be required to complete quizzes 3 and 4 under supervision.

6.2 Assessment Details

The assessment for this course is made up of the following components:

Online quizzes	4 2%	8%
Group computing assignment	Part A 4%, Part B 8%	12%
Mid-session examination		20%
Final examination		60%
TOTAL		100%

6.2.1 Four online quizzes

The online quizzes have been designed to assist you to learn, so you can practise, check your understanding of topics and improve on your first attempt if necessary. Before completing each quiz you will have the opportunity to try online self check practice questions that are similar in content to the topics to be examined. The format of the practice questions will be a mixture of multiple-choice and true-false questions. You can try them as many times as you like at different times through the session.

Each of the online quizzes will consist of eight to ten questions. You will need to perform calculations similar to those in the practice set but enter numerical answers rather than checking a box. In order t o avoid rounding errors you should try to store as much information in you calculator's memory as possible. You will be allocated a time limit of one hour to complete each attempt and you may have two attempts at each quiz.

For each quiz your highest mark will be recorded and will count towards 2% of your assessment total.

These are the dates between which quizzes will be available online:
Quiz 1 - Monday 14/8/06 to Sunday 20/8/06
Quiz 2 - Monday 28/8/06 to Sunday 3/9/06
Quiz 3 - Monday 2/10/06 to Sunday 8/10/06
Quiz 4 - Monday 30/10/06 to Sunday 5/11/06

You can access the quizzes at the QMA website
http://vista.elearning.unsw.edu.au/webct/

by clicking on the quizzes link. It is a good idea to save each answer as you progress through the questions in case your internet connection fails.

6.2.2 Group computing assignment

The purpose of this assignment is to let you experience some of the decision making that is commonly undertaken in business situations. It will help you to build skills in using Excel spreadsheets and in analysing results. We hope that you will also develop skills in working with other students and time management, which are valuable for future employment.

Assignment timeline

Week 2	July 31-August 4	The assignment question and instructions will be placed on the QMA website. Formation of groups will be discussed in tutorials. Groups must contain 1-4 persons from the same tutorial. While students may elect to complete the assignment by themselves, learning to work with others and complete it as a group of 2-4 would be beneficial.
Week 3	August 7-11	Registration of group members must be made in each tutorial.
Week 7	September 4-8	Assignment Part A should be submitted to your tutor during your tutorial. Any late submissions should be given to the Lecturer-in-charge in JG 210.
Week 9	September 18-22	Feedback on Part A and extra information for Part B to be handed out in each tutorial.
Week 12	October 16-20	Assignment Part B should be submitted to your tutor during your tutorial. Any late submissions should be given to the Lecturer-in-charge in JG 210.
Week 14	October 30-November 3	Marked assignments will be returned to students in tutorials.

Although it is intended that the same members of a group will complete both Parts A and B of the assignment, if your group is unable to function effectively you may seek permission to change the group composition at the time Part A is submitted. If you tutor agrees the group may be split into smaller subgroups for the attempt on Part B.

Marks will be awarded for you use of Excel, correctness of interpretation of your individual data and ability to explain the decisions you have taken. Each group member will be asked to provide peer and self assessment of the input they have provided for the assignment. Keeping diary records of the times and dates you were working on the assignment and the tasks you performed will be useful for this purpose. The tutor will decide if all members should be awarded the same assignment mark or some proportion of the overall mark on the basis of their input and the group's output. The Lecturer-in-charge may make the final decision in the case of any disagreement over mark allocation.

Penalty for late submission of either Part A or Part B will be one mark per working day.

6.2.3 Mid-session Examination

The Mid-session Exam will be held in Week 8 of session on Friday August 15. The time and location will be announced in due course both in lectures and on the QMA website. Students are expected to arrive at their exam room **no later than 15 minutes** before the start of the exam.

The exam will contain 20 multiple-choice questions to be answered in 75 minutes on topics from lectures 2-12 and is worth 20 % of total marks. No marks will be deducted for incorrect answers.

The main purpose of the mid-session exam is to test knowledge of the topics covered so far, the ability to use formulas appropriately and to perform calculations with speed and accuracy. Feedback from the exam can be used to improve performance in these areas.

There is no supplementary or replacement exam for the mid-session exam. If you miss the mid-session exam because of illness or other valid reason, you must contact the Lecturer-in-charge, Judith Watson, and provide documentary evidence. Adjustments will then be made to the final exam mark on a pro-rata basis. Failure to do so will result in a mark of 0 being recorded for the mid-session.

6.2.4 Final Examination

The final will be a three hour examination held during the period November 10-28. It will consist of six written questions worth 60% and will cover material from the entire course.

6.3 Special Consideration and Supplementary examinations

If you believe that your performance in an assessment, either during session or in an examination, has been adversely affected by sickness or other adverse circumstances, you should formally apply for special consideration following the process below.

UNSW policy and process for Special Consideration applies (see https://my.unsw.edu.au/student/atoz/SpecialConsideration.html). Specifically:

- Applications for special consideration (including supplementary examinations) must be submitted to UNSW Student Central, lower ground floor of the Chancellery building (within 3 working days of the assessment to which it refers);
- Applying for special consideration does not automatically mean that you will be granted additional assessment or that you will be awarded an amended result;
- If you are making an application for special consideration (through UNSW Student Central) please notify your Lecturer-in-charge, Judith Watson. You should also give her a copy of your application as only a very brief summary is forwarded by Central Administration.
- Please note: a register of applications for Special Consideration is maintained. History of previous applications for Special Consideration is taken into account when considering each case.

If a supplementary examination for QMA is required it will be held during the period December 11-15. This will be the only opportunity offered for supplementary assessment so you need to be available on this date. To be eligible to sit for this exam you must have had satisfactory attendance at tutorials and have completed assessment tasks through the session.

7. Academic Honesty and Plagiarism

The University regards plagiarism as a form of academic misconduct, and has very strict rules regarding plagiarism. For full information regarding policies, penalties and information to help you avoid plagiarism see:
http://www.lc.unsw.edu.au/plagiarism/index.html

Plagiarism is the presentation of the thoughts or work of another as one's own.*
Examples include:

- direct duplication of the thoughts or work of another, including by copying work, or knowingly permitting it to be copied. This includes copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and,

- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

Submitting an assessment item that has already been submitted for academic credit elsewhere may also be considered plagiarism.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does *not* amount to plagiarism.

Students are reminded of their Rights and Responsibilities in respect of plagiarism, as set out in the University Undergraduate and Postgraduate Handbooks, and are encouraged to seek advice from academic staff whenever necessary to ensure they avoid plagiarism in all its forms.

The Learning Centre website is the central University online resource for staff and student information on plagiarism and academic honesty. It can be located at:

www.lc.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle
† Adapted with kind permission from the University of Melbourne.

8. Student Resources

8.1 Course Resources

Prescribed text	Comment
Haeussler, E.F. Paul, R.S and Wood, R.J., *Introductory Mathematical Analysis for Business, Economics and the Life and Social Sciences* 11th ed., 2005	Text and (optional) student solution manual, which contains solutions to the odd numbered questions, are both available at the UNSW bookshop and in MyCourse reserve in the library.

Pearson PrenticeHall, Upper Saddle River , NJ.	

Reference texts	**Comment**
Knox, D.M. Zima, P. and Brown, R.L., *Mathematics of Finance,* 2nd ed , 1999 McGraw-Hill, Sydney.	This book is highly recommended reading for the financial maths section and in particular for topics from lectures 8 and 9 which are not in the textbook. Available in MyCourse reserve and at the UNSW Bookshop..
Morris, C., *Quantitative Approaches in Business Studies,* 6th ed. 2003. Financial Times Prentice Hall, New York	This book has an easy to read style. It is an excellent resource for the linear programming and decision theory topics. Available in MyCourse reserve and at the UNSW Bookshop.
Shannon, J *Mathematics for Business Economics and Finance* 1995 John Wiley & Sons, Brisbane.	Useful for the matrix algebra section. Available in MyCourse reserve and at the UNSW Bookshop.
Watson, J. *Managing Mathematics: A Refresher Course for Economics and Commerce Students* 2nd ed. 2002 , School of Economics, UNSW.	Recommended for those who have previously gained the assumed knowledge of mathematics, but who now need to refresh algebra or calculus. Available at the UNSW Bookshop for $11.

Note that in the Lecture Schedule below and in the Tutorial Booklet these texts are referred to according to the initials of their authors as HPW, KZB, CM and JS.

8.2 Calculator

A basic scientific calculator is required for this course. Usually the calculator you used at school will be satisfactory. It must be able to perform logarithmic and exponential calculations such as ln x and x^y. The calculator must not be a programmable one (i.e. have a full alphabetic keyboard) or a financial one.

If you need to purchase a new calculator, keep in mind that for Quantitative Methods B, it will be desirable to have a two variable statistical mode to perform linear regression (LR) calculations.

8.3 Software

If you wish to complete the computing requirements of this course using your own computer rather than the university laboratories you will need to have the Microsoft Excel program installed. Make sure that you install the full version that enables

add-ins to be used.

8.4 Other Resources, Support and Information

The University and the Faculty provide a wide range of support services for students, including:

- **Learning and study support**

  FCE Education Development Unit (http://education.fce.unsw.edu.au)

  UNSW Learning Centre (http://www.lc.unsw.edu.au)

  EdTec – WebCT information (http://www.edtec.unsw.edu.au)

- **Counselling support** - http://www.counselling.unsw.edu.au

- **Library training and support services** - http://info.library.unsw.edu.au

- **Disability Support Services** – Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the Course Coordinator or the Equity Officer (http://www.equity.unsw.edu.au/disabil.html). Early notification is essential to enable any necessary adjustments to be made.

In addition, it is important that all students are familiar with University policies and procedures in relation to such issues as:

- **Examination procedures** and advice concerning illness or misadventure https://my.unsw.edu.au/student/academiclife/assessment/examinations/examinationrules.html

- **Occupational Health and Safety** policies and student responsibilities; http://www.riskman.unsw.edu.au/ohs/Policies%20&%20Procedures/UNSW%20OHS%20Accountability.pdf

9. Continual Course Improvement

Each year feedback is sought from students and other stakeholders about the courses offered in the School and continual improvements are made based on this feedback. UNSW's Course and Teaching Evaluation and Improvement (CATEI) Process (http://www.ltu.unsw.edu.au/ref4-5-1_catei_process.cfm) is one of the ways in which student evaluative feedback is gathered. Significant changes to courses and programs within the School are communicated to subsequent cohorts of students.

Additional customised surveys may also be used to provide information to course staff. A major survey in 2005 has assisted staff in making the changes to the course that are being implemented this session.

10. Lecture Schedule

Week	*Lecture*	*Main Topic*	*Sub-topic*	*Refs*
1	1	Introduction	Introduction to QMA	n.a.
	2	Functions	Functions of one variable Simple functions Exponential & logarithmic functions*	HPW 2.1-2.5 HPW 4.1-4.4
2	3		Simple & compound interest Continuous compounding Effective rate of interest	HPW 5.1, 10.3 KZB 1.1, 2.1-2.2, App.D,
	4		Present value Future value Equations of value	HPW pp.222-225 KZB 1.4, 2.3, 2.6
3	5	Time Value	Net present value Internal rate of return	HPW pp.225-226 KZB 8.1, 8.2
	6	of Money	Geometric progressions Ordinary annuities Annuities due	HPW 5.3 KZB 3.1-3.4, App.B
4	7		Sinking funds Loan amortisation	HPW pp.235-236, 5.4 KZB 6.1-6.3,7.8
	8		General annuities Perpetuities Deferred annuities	KZB 3.5-3.7, 5.1-5.4
5	9		Depreciation Methods Linear, constant percentage, sinking fund	KZB 8.4
	10	Probability	Introduction to Probability Permutations Combinations	HPW 8.1- 8.2
6	11		Probability Trees Decision theory Bayes' Formula	HPW 8.5- 8.7 CM 8
	12		Introduction to matrices Transpose, diagonal, identity, zero Matrix algebra: addition, subtraction Multiplication: scalar, matrix	HPW 6.1- 6.3 JS 4.1-4.4
7	13	Matrices	Small matrices: Matrix Inversion, Adjoint method Solving systems of Linear Equations Consistency, types of solutions	HPW 6.6 JS 4.6-4.7, 4.9
	14		More on matrix algebra Large matrices: Computing methods Arrays, inversion, other methods	HPW 6.1-6.3
8			*... no lectures ...* *Mid-session exam*	

* Note extra lecture available on this topic. See Assumed Knowledge section above.

Week	*Lecture*	*Main Topic*	*Sub-topic*	*Refs*
9	15	Linear	Introduction to linear programming Graphical approaches	HPW 7.1 CM 19
	16	Programming	Changes in the constraints Changes in the objective function Applications	HPW 7.3
... mid-session break ...				
10	17		Limits*, Continuity Differentiation by the limit Differentiation rules Applications (marginal c/r, elasticity)	HPW 10.4, 11.1-11.6, 12.3
	18		Logarithmic and exponential differentiation Implicit differentiation Differentials Higher derivatives	HPW 12.1-12.2, 12.4- 12.5, 12.7, 14.1
11	19		Relative extrema Concavity, convexity Local, global extrema Inflection points	HPW 13.1, 13.3- 13.4, 13.6
	20	Calculus	Introduction to integration The indefinite integral Integration rules The definite integral	HPW 14.2-14.5, 14.7-14.8, 14.10
12	21		Introduction to differential equations Method of separation of variables Exponential growth	HPW 15.5
	22		Limited growth Logistic growth Applications	HPW 15.6
13	23		Introduction to multivariable calculus Level curves Partial & total derivatives	HPW 17.1-17.6
	24		Unconstrained optimisation in 2 variables Constrained optimisation	HPW 17.7, 17.8
14	25		Further examples in optimisation	HPW 17.8
	26	Revision	Revision	

* Note extra lecture available on this topic. See Assumed Knowledge section above.