

THE UNIVERSITY OF
NEW SOUTH WALES



Australian School of Business
School of Economics

ECON 3202
MATHEMATICAL ECONOMICS

COURSE OUTLINE
SEMESTER 1, 2009

TABLE OF CONTENTS

<u>1. STAFF CONTACT DETAILS</u>	<u>1</u>
<u>2. COURSE DETAILS</u>	<u>1</u>
2.1 Teaching Times and Locations	1
2.2 Units of Credit	1
2.3 Summary of Course	1
2.4 Course Aims and Relationship to Other Courses	1
2.5 Student Learning Outcomes	1
<u>3. LEARNING AND TEACHING ACTIVITIES</u>	<u>2</u>
3.1 Approach to Learning and Teaching in the Course	2
3.2 Learning Activities and Teaching Strategies	2
<u>4. ASSESSMENT</u>	<u>3</u>
4.1 Formal Requirements	3
4.2 Assessment Details	3
4.3 Assessment Format	4
4.4 Late Submission	4
<u>5. ACADEMIC HONESTY AND PLAGIARISM</u>	<u>5</u>
<u>6. COURSE RESOURCES</u>	<u>5</u>
<u>7. COURSE EVALUATION AND DEVELOPMENT</u>	<u>5</u>
<u>8. STUDENT RESPONSIBILITIES AND CONDUCT</u>	<u>5</u>
8.1 Workload	6
8.2 Attendance	6
8.3 Special Consideration and Supplementary Examinations	6
8.4 General Conduct and Behaviour	7
8.5 Occupational Health and Safety	7
8.6 Keeping Informed	7
<u>9. ADDITIONAL STUDENT RESOURCES AND SUPPORT</u>	<u>7</u>
<u>10. COURSE SCHEDULE</u>	<u>8</u>

1. STAFF CONTACT DETAILS

Lecturer-in-charge: Ilke Onur

Email: i.onur@unsw.edu.au

Office: Australian School of Business Building, Room 450

Phone: 9385 3334

Consultation Times: Thursday 1:30pm–3:30pm, or by appointment.

2. COURSE DETAILS

2.1 Teaching Times and Locations

Lecture details:

Monday 2:00-5:00pm at Quadrangle G046

2.2 Units of Credit

The UOC value for the course is six units.

2.3 Summary of Course

This course introduces mathematical tools and demonstrates how these tools can be utilized for analysing economic problems. All techniques introduced are illustrated with mainstream applications such as consumer theory and the neoclassical theory of optimal growth.

2.4 Course Aims and Relationship to Other Courses

This course is offered as part of the economics stream in the B.Com and B.Econ degrees. A prerequisite for this course is ECON 1202. It aims to build on basic theories and knowledge learnt in Quantitative Methods courses.

This course is an introduction to mathematical economics. This course aims to:

- introduce students to the mathematical concepts and methods used by professional economists;
- equip students with the necessary knowledge to express economic ideas with formal mathematical concepts;
- develop students' ability to derive logical implications of formal economic models.

This course develops skills/knowledge that students need if they go on to graduate studies in Economics.

2.5 Student Learning Outcomes

At the end of the course, students should be able to:

1. identify and demonstrate a knowledge and understanding of the mathematical concepts and methods used by professional economists;

2. demonstrate the facility to express economic ideas in the language of mathematics;
3. critically analyse and evaluate economic models by using formal mathematical methods.

Graduate Attributes

This course contributes to your development of the following Australian School of Business Graduate Attributes, which are the qualities, skills and understandings we want you to have by the completion of your degree. The following table outlines the alignment between the abovementioned Learning Outcomes and the Australian School of Business Graduate Attributes.

Course Learning Outcomes	ASB Graduate Attributes
1, 3	1. Critical thinking and problem solving
2	2. Communication
1,2,3	3. In-depth engagement with relevant disciplinary knowledge
1,2,3	4. Professional skills

3. LEARNING AND TEACHING ACTIVITIES

3.1 Approach to Learning and Teaching in the Course

The philosophy underpinning this course and its Teaching and Learning Strategies are based on “Guidelines on Learning that Inform Teaching at UNSW. These guidelines may be viewed at: www.guidelinesonlearning.unsw.edu.au.

Specifically, the lectures, tutorials and assessment have been designed to appropriately challenge students and support the achievement of the desired learning outcomes. A climate of inquiry and dialogue is encouraged between students and teachers and among students (in and out of class). The lecturers aim to provide meaningful and timely feedback to students to improve learning outcome.

3.2 Learning Activities and Teaching Strategies

The examinable content of the course is defined by the references given in the Lecture Schedule, the content of Lectures, and the content of the Tutorial Program.

Lectures

The purpose of Lectures is to provide a logical structure for the topics that make up the course; to emphasize the important concepts and methods of each topic, and to provide relevant examples to which the concepts and methods are applied.

Out-of-Class Study

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

You should study the assigned readings before coming to the lecture each week. The lectures will assume you have a preliminary knowledge of the subject matter and will use the lectures to help you with the material you may find more difficult to learn on your own.

The reading assignments present the mathematical methods with statements and proofs of the main theorems and many examples and problems. The lectures will focus on aspects of the reading that are more difficult to understand or apply with the aim of providing greater comprehension and facility. The readings and the lectures give you an opportunity to learn the concepts and methods, see some simple applications and begin the process of learning to use these models on your own.

You will be given periodic assignments which are an essential part of the course. The assignments will be marked so you will be asked to submit your work. We will discuss the answers in class and you will be expected to participate in the discussion. Since the problems on the exams will be similar in character to the assigned problems, your serious effort on the assignments is a necessary condition for good performance on the exams.

4. ASSESSMENT

4.1 Formal Requirements

In order to pass this course, you must:

- ☐ achieve a composite mark of at least 50; and
- ☐ make a satisfactory attempt at all assessment tasks.

4.2 Assessment Details

Assessment Task	Weighting	Learning Outcomes assessed	ASB Graduate Attributes assessed	Length	Due Date
Mid-session Examination	30%	1,2,3	1,2,3,4	120 minutes	Week 7
Assignments	20%	1,2,3	1,2,3,4	Multiple questions	Weekly
Final Exam	50%	1,2,3	1,2,3,4	2 hours	University Exam Period
TOTAL	100%				

4.3 Assessment Format

Mid-session Examination

The mid-session exam will be held on Monday 27 April (Week 7) at 2-4pm in class. The mid-session exam will cover materials covered in lectures Weeks 1-6 (inclusive).

The mid-session exam will consist of problem solving questions. These exams will ask you to think creatively about how you could apply mathematical methods from the course to particular problems.

The exam format will be advised of in class.

There will be NO supplementary exam offered for the Mid-Session Examination. Students who fail to attend the Mid-Session Examination will need to apply for Special Consideration. Special Consideration applications must be made within 3 days of the Exam through StudentCentral in the Chancellery and NOT through the lecturer-in-charge or course administrator (you should advise the course administrator that you have made an application). You will need to provide full documentation of the reason for the absence (eg, illness). Employment obligations of any kind are not acceptable reasons for absence from any test/examination.

Assignments

Each week you will be given an assignment testing the knowledge discussed during the lecture. Assignments are due at the beginning of each lecture. Note that your lowest assignment mark will be dropped at the end of the semester. Further information on the assignments will be provided on Week 1. See note below on late submission of assignments

Final Examination

The final exam will be held in the University examination period. It will cover the entire course. Further information on the content of the final exam will be provided towards the end of session.

The final exam will consist of problem solving questions. This exam will ask you to think creatively about how you could apply the mathematical concepts and methods you have learned during the entire course to particular problems.

It is important to note that a satisfactory performance in the Final Examination is required to pass this course.

4.4 Late Submission

Assignments are due at the beginning of each lecture. No extensions will be granted and zero marks will be awarded when an assignment is submitted late.

5. ACADEMIC HONESTY AND PLAGIARISM

The University regards plagiarism as a form of academic misconduct, and has very strict rules regarding plagiarism. For UNSW policies, penalties, and information to help you avoid plagiarism see: <http://www.lc.unsw.edu.au/plagiarism/index.html> as well as the guidelines in the online ELISE tutorial for all new UNSW students: <http://info.library.unsw.edu.au/skills/tutorials/InfoSkills/index.htm>.

6. COURSE RESOURCES

The website for this course is on WebCT Vista.

Required Textbook: Alpha C. Chiang & Kevin Wainwright, “Fundamental Methods of Mathematical Economics” McGraw-Hill Education, 2005 (4th ed.) (Referred to as *C & W* hereafter)

Reference Books:

- Simon, Carl P., and Lawrence Blume, “Mathematics for Economists” W. W. Norton, 1994.
- Klein, W. Michael, “Mathematical Methods for Economics” Addison Wesley, 2002.

7. COURSE EVALUATION AND DEVELOPMENT

Each year feedback is sought from students 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 is one of the ways in which student evaluative feedback is gathered. As a result of this feedback the course will be improved according to the students' needs and concerns.

8. STUDENT RESPONSIBILITIES AND CONDUCT

Students are expected to be familiar with and adhere to university policies in relation to class attendance and general conduct and behaviour, including maintaining a safe, respectful environment; and to understand their obligations in relation to workload, assessment and keeping informed.

Information and policies on these topics can be found in the ‘A-Z Student Guide’: <https://my.unsw.edu.au/student/atoz/ABC.html>. See, especially, information on ‘Attendance and Absence’, ‘Academic Misconduct’, ‘Assessment Information’, ‘Examinations’, ‘Special Consideration’, ‘Student Responsibilities’, ‘Workload’ and policies such as ‘Occupational Health and Safety’.

8.1 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, 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.

8.2 Attendance

Your regular and punctual attendance at lectures and seminars 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.

8.3 Special Consideration and Supplementary Examinations

You must submit all assignments and attend all examinations scheduled for your course. You should seek assistance early if you suffer illness or misadventure which affects your course progress. For advice on UNSW policies and procedures for granting special consideration and supplementary exams, see:

‘UNSW Policy and Process for Special Consideration’:
<https://my.unsw.edu.au/student/atoz/SpecialConsideration.html>

The ‘ASB Policy and Process for Special Consideration and Supplementary Exams in Undergraduate Courses’ is available at:
<http://wwwdocs.fce.unsw.edu.au/fce/current/StudentSuppExamProcedure.pdf> .

Further information for undergraduate students is on the ASB website (see [‘Policies and Guidelines for Current Students’](#)).

ASB Policy and Process for Special Consideration and Supplementary Exams in Undergraduate Courses

In the ASB, requests for special consideration are determined by a Faculty wide panel which will advise the Lecturer in Charge of appropriate action. If the Faculty panel (see above) grants a special consideration request, this may entitle the student to sit a supplementary examination. In such cases the following procedures will apply:

- Supplementary exams will be scheduled centrally and will be held approximately two weeks after the formal examination period. Actual date will be advised by mid-semester.
- Where a student is granted a supplementary examination as a result of a request for special consideration, the student’s original exam (if completed) will not be marked and only the mark achieved in the supplementary examination will count towards the final grade.

8.4 General Conduct and Behaviour

You are expected to conduct yourself with consideration and respect for the needs of your fellow students and teaching staff. Conduct which unduly disrupts or interferes with a class, such as 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

8.5 Occupational Health and Safety

UNSW Policy requires each person to work safely and responsibly, in order to avoid personal injury and to protect the safety of others. For more information, see <https://my.unsw.edu.au/student/atoz/OccupationalHealth.html>.

8.6 Keeping Informed

You should take note of all announcements made in lectures, tutorials or on the course web site. From time to time, the University will send important announcements to your university e-mail address without providing you with a paper copy. You will be deemed to have received this information. It is also your responsibility to keep the University informed of all changes to your contact details.

9. ADDITIONAL STUDENT RESOURCES AND SUPPORT

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

- **ASB Education Development Unit (EDU)** (www.business.unsw.edu.au/edu)
Academic writing, study skills and maths support specifically for ASB students. Services include workshops, online and printed resources, and individual consultations. EDU Office: Room GO7, Ground Floor, ASB Building (opposite Student Centre); Ph: 9385 5584; Email: edu@unsw.edu.au
- **UNSW Learning Centre** (www.lc.unsw.edu.au)
Academic skills support services, including workshops and resources, for all UNSW students. See website for details.
- **Library training and search support services:** <http://info.library.unsw.edu.au>
- **UNSW IT Service Desk:** Technical support for problems logging in to websites, downloading documents etc. Library, Level 2; Ph: 9385 1333.
Website: www.its.unsw.edu.au/support/support_home.html
- **UNSW Counselling Service** (<http://www.counselling.unsw.edu.au>)
Free, confidential service for problems of a personal or academic nature; and workshops on study issues such as 'Coping With Stress' and 'Procrastination'. Office: Level 2, Quadrangle East Wing; Ph: 9385 5418
- **Student Equity & Disabilities Unit** (<http://www.studentequity.unsw.edu.au>)
Advice regarding equity and diversity issues, and support for students who have a disability or disadvantage that interferes with their learning.
Office: Ground Floor, John Goodsell Building; Ph: 9385 4734

10. COURSE SCHEDULE

Week 1 (09/3)	Equilibrium Analysis, Linear Models and Matrix Algebra C & W Chapters 3 and 4
Week 2 (16/3)	Linear Models and Matrix Algebra (cont'd) C & W Chapters 4 and 5
Week 3 (23/3)	Comparative Statics and Differentiation C & W Chapters 6 and 7
Week 4 (30/3)	Differentiation and Comparative Statics of General Function Models C & W Chapters 7 and 8
Week 5 (06/4)	Comparative Statics (cont'd) and Optimisation C & W Chapters 8 and 9
Week 6 (20/4)	Exponential and Logarithmic Functions C & W Chapter 10
Week 7 (27/4)	Mid-Session Exam
Week 8 (4/5)	Multi Variable Optimisation C & W Chapter 11
Week 9 (11/5)	Optimisation with Equality Constraints C & W Chapter 12
Week 10 (18/5)	Economic Dynamis and First-Order Differential Equations C & W Chapters 14 and 15
Week 11 (25/5)	First- and Higher-Order Differential Equations C & W Chapters 15 and 16
Week 12 (01/6)	First- and Higher-Order Difference Equations C & W Chapters 17 and 18