Students in this unit should read this unit guide carefully at the start of semester. It contains important information about the unit. If anything in it is unclear, please consult one of the teaching staff in the unit.

**ABOUT THIS UNIT**

The purpose of the unit is:

The purpose of the unit is:

- to teach students about established methods for the valuation and appraisal of investment projects
- Introduce the new “real options approach” to investment appraisal
- learn to use microsoft excel to build the financial models and perform the calculations for these methods
- introduce students to a wide range of excel’s built in financial and statistical functions and other useful tools.
- this unit provides you with skills in financial modelling and spreadsheet calculations that will be useful in other units and be a valuable skill to have when applying for jobs.

**Topics covered include:**

**BASIC FINANCIAL THEORY**

Basic financial mathematics: interest rates, present value, future value, annuities, bond valuation.

Methods for investment appraisal: Net Present Value, Internal Rate of Return, Payback Period, Accounting rate of return.

Analysis of leasing and leveraged leasing using IRR, NPV and other measures. Analysis of lease versus buy, lease versus borrow and buy, sale and leaseback decisions.
CAPITAL BUDGETING BASICS
- Overview of capital budgeting
- Project analysis under certainty: applications of NPV and IRR.
- Estimation of cashflows and discount rates for project appraisal
- Project analysis under risk: risk and uncertainty, the risk adjusted discount rate and certainty equivalent approaches, cost of capital
- estimation of parameters for financial models: quantitative and qualitative approaches
- approaches to dealing with risk and uncertainty in project appraisal: sensitivity and breakeven analysis, Simulation concepts and methods

OPTIONS AND REAL OPTIONS ANALYSIS
- Introduction to options: calls and puts, European and American options,
- Valuation of options using Black Scholes formulae, Monte Carlo Simulation and Binomial Tree methods: The arbitrage free / risk neutral valuation methodology.
- Options embedded in investment projects.
- Flaws in existing methods of project appraisal
- The “real options approach” to project valuation
- Exotic options formulae relevant to real options and project appraisal (compound options, switching options, chooser options, etc)

Excel for financial modelling:
- Introduction to excel
- writing excel formulae, copying and pasting, absolute and relative cell referencing.
- Financial modelling / analysis of leasing and leveraged leasing / Estimating beta factors and the security market line
- elementary methods of forecasting: linear regression, multiple regression, moving averages and weighted moving averages
- Excel functions: statistical functions, financial functions, date functions, array and matrix functions / using excel for simple and multiple linear regression / Monte carlo simulation in excel
- Building and using binomial trees for valuation of contingent claims and options

Visual basic for applications (VBA)
- User defined functions
- Conditional execution: using if and select case statements
- Types and loops
- Arrays: simple, multidimensional and dynamic arrays

TEACHING STAFF
- Tim Kyng, Lecturer in Charge, 98507289, timothy.kyng@mq.edu.au

CONTACTING STAFF

Students can contact the lecturer in charge via email, or by phone, or in person at E4A614.

- Consultation times

Consultation is available with students by appointment. Please contact your lecturer to arrange a mutually agreeable time.
You are encouraged to seek help at a time that is convenient to you from a staff member teaching on this unit during their regular consultation hours. In special circumstances, an appointment may be made outside regular consultation hours. Staff will not conduct consultations by email. You may, however, phone staff during their consultation hours.

In order to gain access to staff located at levels 1, 2 and 3 of building E4A during their consultation hours please ring the staff member from the phones available in the lobby (phone numbers of relevant staff members will be provided on Blackboard and are available next to the phones).

- Other ways of contacting staff

The best way to contact the lecturer in charge is by email.

Students experiencing significant difficulties with any topic in the unit must seek assistance immediately.

**CLASSES**

For campus students:

- A 2-hour lecture will be held each week at E4B 214 on Friday from 9am to 11am.
- A 1-hour tutorial / computer laboratory session will be held each week at E4B 214 on Friday from 11am to 12 noon.

For distance students:

- All lecture and tutorial exercises and solutions will be available on iLearn.
- The timetable for classes can be found on the University web site at: [http://www.timetables.mq.edu.au/](http://www.timetables.mq.edu.au/)

**PRIZES**

- There are no prizes for this unit.

**REQUIRED AND RECOMMENDED TEXTS AND/OR MATERIALS**

**Textbooks:**

There is no specific required text for this unit. However the following books are useful references:

- Capital budgeting: by Dayananda et al (ISBN 0 521 52098 3)

For the novice excel user, the book Teach Yourself Visually Excel 2003 by Maran (ISBN 0-7645-3996-5) is a good way to quickly learn the basics of excel assumed for this unit.
The recommended texts are not available from the Macquarie University Co-op Bookshop.
The recommended texts are not available in the Macquarie Library.

**TECHNOLOGY USED AND REQUIRED**

- Students will require access to the internet to download lecture slides and tutorial solutions.
- The assignment and most tutorial exercises will require the use of word processing and/or spreadsheet programs.
- In most weeks we will be using excel spreadsheets for the various financial calculations needed. Our classes are held in a computer laboratory and all students will have access to a computer with the required software installed on it.
- Students will be instructed in how to use excel for the purposes of the unit

**UNIT WEB PAGE**

- Course material is available on the learning management system (iLearn)
- The web page for this unit can be found at: [URL to be advised]

**LEARNING OUTCOMES**

The learning outcomes of this unit are:

1) to gain an understanding of current established methods for the valuation and appraisal of investment projects, their advantages and disadvantages and the development of financial models for this purpose

2) to gain an understanding of how to implement financial mathematics in an excel spreadsheet and to become adept in using some of excel's built in financial and statistical functions and other useful tools

3) develop an introductory understanding of the “real options approach” to investment appraisal

4) to learn to use microsoft excel to build the financial models and perform the calculations to implement these methods

5) learn how to develop user defined functions using visual basic and use them from within excel

6) learn how to properly document a financial decision making problem and its solution using spreadsheet software and communicate the results to interested stakeholders.

**GRADUATE CAPABILITIES**

In addition to the discipline-based learning objectives, all academic programs at Macquarie seek to develop the capabilities the University's graduates will need to develop to address the challenges, and to be effective, engaged participants in their world.

This unit contributes to this by developing the following graduate capabilities:
1 Discipline Specific Knowledge and Skills: This knowledge and set of skills is outlined in detail above in the list of topics covered.

2 Critical, Analytical and Integrative Thinking: Students should be able to think for themselves and be able to critique, analyse and integrate information in solving problems and analysing situations arising in a capital budgeting / financial modelling context. This includes the issues of the assumptions for a financial model, how parameters may be estimated for them, the reliability of the results and so on.

3 Problem Solving and Research Capability: Students should have the skills to do relevant research and formulate and solve problems relating to capital budgeting investment decisions, including developing spreadsheets for such problem solving. This includes researching the relevant literature and current economic and financial conditions, formulating a model and implementing it in a spreadsheet.

4 Effective Communication: be able to communicate with both specialist and non specialist audiences about capital budgeting theory and practice and financial modelling in this context. This also includes the need for documentation of the financial modelling work done.

**Learning and Teaching Activities**

- The unit is taught via lectures, tutorial exercises and the use of spreadsheet software for implementing models and calculations for the purpose of financial decision making.

- Each lecture is self-contained and structured according to the summary provided in the "weekly curriculum" section below. Students are expected to read the relevant lecture notes prior to the lecture, so that they are familiar with the material to be covered. This will greatly enhance your learning experience.

- Dealing with advanced material in our subject area requires a range of generic skills. This unit aims at developing such skills. The lectures and in particular the assignments and tutorial exercises are tailored to enhance critical analysis, problem-solving and creative thinking, comprehension, computing and writing skills.

- You should take the time to work on the problem sets, since they will tend to be similar in nature to the problems you see on the test and exam. Solutions will be provided.

- We cover many examples of financial valuation and decision making problems and how to solve these using spreadsheets. Our approach is one of learning by example and by practicing using excel to solve financial decision making problems.
**WEEKLY CURRICULUM:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td><strong>Week 1</strong>&lt;br&gt;Beginning 27 February</td>
<td>(1) Basic Financial mathematics: Interest rates, present value, future value, annuities, perpetuities, bonds;&lt;br&gt;(2) Introduction to excel</td>
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<tr>
<td><strong>Week 2</strong>&lt;br&gt;Beginning 5 March</td>
<td>(1) Introduction to capital budgeting.&lt;br&gt;(2) Further topics in financial mathematics: Present value and future value under varying interest rates, loans and leases, loan repayment schedules</td>
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<tr>
<td><strong>Week 3</strong>&lt;br&gt;Beginning 12 March</td>
<td>(1) Project cashflows and methods for their estimation.&lt;br&gt;(2) Examples of asset expansion, retirement and replacement projects</td>
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<td><strong>Week 4</strong>&lt;br&gt;Beginning 19 March</td>
<td>(1) Elementary methods of forecasting.&lt;br&gt;(2) Matrix algebra and implementation in excel</td>
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<td><strong>Week 5</strong>&lt;br&gt;Beginning 26 March</td>
<td>(1) Analysis of leasing decisions, lease vs buy,&lt;br&gt;(2) leveraged leases and their analysis using alternative measures of return.</td>
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<td><strong>Week 6</strong>&lt;br&gt;Beginning 2 April</td>
<td>(1) Project evaluation methods: npv, irr, pp, arr. Application to asset replacement, retirement and expansion projects.&lt;br&gt;(2) Methods for choosing the discount rate for npv analysis.</td>
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<tr>
<td><strong>Mid term break</strong></td>
<td>9 April – 20 April</td>
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<tr>
<td><strong>Week 7</strong>&lt;br&gt;Beginning 23 April</td>
<td>(1) Methods for estimating model parameters&lt;br&gt;(2) Sensitivity and breakeven analysis: implementation in excel</td>
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<tr>
<td><strong>Week 8</strong>&lt;br&gt;Beginning 30 April</td>
<td>(1) Introduction to options and valuation via the black scholes model,&lt;br&gt;(2) monte carlo simulation modelling for stock prices and options</td>
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<td><strong>Week 9</strong>&lt;br&gt;Beginning 7 May</td>
<td>Binomial option pricing methods and implementation in excel</td>
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<td><strong>Week 10</strong>&lt;br&gt;Beginning 14 May</td>
<td>The flaws in the traditional methods of investment appraisal and introduction to the real options approach to valuation of projects with flexibility</td>
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<tr>
<td><strong>Week 11</strong>&lt;br&gt;Beginning 21 May</td>
<td>More on real options analysis: parameter estimation, embedded exotic options, application of exotic option valuation theory to real options examples</td>
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<tr>
<td><strong>Week 12</strong>&lt;br&gt;Beginning 28 May</td>
<td>(1) Introduction to visual basic for the design of user defined functions.&lt;br&gt;(2) Application to the pricing of compound options and other exotic options occurring in a real options context.</td>
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<tr>
<td><strong>Week 13</strong>&lt;br&gt;Beginning 4 June</td>
<td>Revision</td>
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**RESEARCH AND PRACTICE**

- This unit gives you practice in applying research findings in your assignments
- This unit gives you opportunities to conduct your own research
A one hour multiple choice test will be conducted in week 4. The purpose of this test is to allow students to assess their progress and identify those students that are struggling with the subject matter. Where students are identified as being at risk they shall be invited to meet with their lecturer to discuss actions that will be implemented to address any issues. This test will not count for assessment purposes.

<table>
<thead>
<tr>
<th>Description</th>
<th>Assignments</th>
<th>Case Study</th>
<th>Final exam</th>
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<tbody>
<tr>
<td>Due date</td>
<td>Assignment 1: Available Week 4 Due Week 7 Assignment 2: Available week 8 Due week 11</td>
<td>Week 12</td>
<td>TBA</td>
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<tr>
<td>% Weighting</td>
<td>20% each</td>
<td>10%</td>
<td>50%</td>
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<td>Grading method</td>
<td>Against assessment criteria, analysis, judgement, recommendations</td>
<td>Against assessment criteria, analysis, judgement, recommendations</td>
<td>Multiple choice and written answers</td>
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<td>Submission method</td>
<td>In class</td>
<td>By email to lecturer</td>
<td>Centrally conducted Examination</td>
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<td>Feedback (type, method, date)</td>
<td>Assignments and comments returned to students</td>
<td>Major project returned to students in week 14</td>
<td>N/A</td>
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<tr>
<td>Estimated student workload (hours)</td>
<td>14</td>
<td>21</td>
<td>3</td>
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<td>Learning outcomes assessed</td>
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There will be two regular assignments in which we require students to demonstrate their knowledge of capital budgeting and financial modelling applied to standard types of problems.
encountered in the lectures. The major project will be a case study of a capital budgeting problem of higher complexity and will require the development of a spreadsheet solution, documentation of the spreadsheet and the methodology used, and a report explaining the problem and its solution. There will also be a compulsory final exam.

Extension requests: these should be discussed with your lecturer including reasons for the request.

Late submissions: depending on the reason given for the lateness and whether or not the solutions have been made publicly available, late submissions may or may not be accepted. If accepted a penalty for lateness usually won’t be applied.

A final examination is included as an assessment task for this unit to provide assurance that:

i) the product belongs to the student and
ii) the student has attained the knowledge and skills tested in the exam.

A 3 hour final examination for this unit will be held during the University Examination period.

The University Examination period in First Half Year 2012 is from 20 June to 30 June.

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in Draft form approximately eight weeks before the commencement of the examinations and in Final form approximately four weeks before the commencement of the examinations.  
http://exams.mq.edu.au/

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration. The University’s policy on special consideration process is available at http://www.mq.edu.au/policy/docs/special_consideration/policy.html

If a Supplementary Examination is granted as a result of the Special Consideration process the examination will be scheduled after the conclusion of the official examination period. (Individual Faculties may wish to signal when the Faculties’ Supplementary Exams are normally scheduled.)

The Macquarie university examination policy details the principles and conduct of examinations at the University. The policy is available at:  
http://www.mq.edu.au/policy/docs/examination/policy.htm

**ACADEMIC HONESTY**

The nature of scholarly endeavour, dependent as it is on the work of others, binds all members of the University community to abide by the principles of academic honesty. Its fundamental principle is that all staff and students act with integrity in the creation, development, application and use of ideas and information. This means that:

- all academic work claimed as original is the work of the author making the claim
- all academic collaborations are acknowledged
- academic work is not falsified in any way
- when the ideas of others are used, these ideas are acknowledged appropriately.
Further information on the academic honesty can be found in the Macquarie University Academic Honesty Policy at http://www.mq.edu.au/policy/docs/academic_honesty/policy.html

**GRADES**

Macquarie University uses the following grades in coursework units of study:

HD - High Distinction  
D - Distinction  
CR - Credit  
P - Pass  
F - Fail

Grade descriptors and other information concerning grading are contained in the Macquarie University Grading Policy which is available at:  

**GRADING APPEALS AND FINAL EXAMINATION SCRIPT VIEWING**

If, at the conclusion of the unit, you have performed below expectations, and are considering lodging an appeal of grade and/or viewing your final exam script please refer to the following website which provides information about these processes and the cut off dates in the first instance. Please read the instructions provided concerning what constitutes a valid grounds for appeal before appealing your grade.

http://www.businessandeconomics.mq.edu.au/new_and_current_students/undergraduate_current_students/how_do_i/grade_appeals

**SPECIAL CONSIDERATION**

The University is committed to equity and fairness in all aspects of its learning and teaching. In stating this commitment, the University recognises that there may be circumstances where a student is prevented by unavoidable disruption from performing in accordance with their ability. A special consideration policy exists to support students who experience serious and unavoidable disruption such that they do not reach their usual demonstrated performance level. The policy is available at:  
http://www.mq.edu.au/policy/docs/special_consideration/policy.html

**STUDENT SUPPORT SERVICES**

Macquarie University provides a range of Academic Support Services. Details of these and other services for students can be accessed at http://www.student.mq.edu.au.

[Individual Unit Convenors may wish to add Unit/ Faculty specific support eg BESS, Room, PAL, E4B Consultation Room.]
Access to all student computing facilities within the Faculty of Business and Economics is restricted to authorised coursework for approved units. Student ID cards must be displayed in the locations provided at all times.

Students are expected to act responsibly when using University IT facilities. The following regulations apply to the use of computing facilities and online services:

- Accessing inappropriate web sites or downloading inappropriate material is not permitted. Material that is not related to coursework for approved units is deemed inappropriate.
- Downloading copyright material without permission from the copyright owner is illegal, and strictly prohibited. Students detected undertaking such activities will face disciplinary action, which may result in criminal proceedings.

Non-compliance with these conditions may result in disciplinary action without further notice.

Students must use their Macquarie University email addresses to communicate with staff as it is University policy that the University issued email account is used for official University communication.