



# ACST829

## Capital Budgeting and Financial Modelling

S1 External 2016

*Dept of Applied Finance and Actuarial Studies*

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#### Disclaimer

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## General Information

Unit convenor and teaching staff

Unit Convenor

Timothy Kyng

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Contact via [timothy.kyng@mq.edu.au](mailto:timothy.kyng@mq.edu.au)

Two hours per week, timing to be advised, and otherwise by mutual agreement.

Hong Xie

[hong.xie@mq.edu.au](mailto:hong.xie@mq.edu.au)

Credit points

4

Prerequisites

ACST603 or (admission to MActPrac post 2014)

Corequisites

Co-badged status

Unit description

This unit covers established methods for the valuation and appraisal of investment projects and related financial decisions. It also covers the new 'real options approach' to investment appraisal, including the application of exotic options pricing formulae to real options using Microsoft Excel to build financial models, and introducing students to Visual Basic/Excel macros for financial modelling.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

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

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

Develop an introductory understanding of the “real options approach” to investment appraisal

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

Learn how to develop user defined functions using visual basic and use them from within excel

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

## General Assessment Information

It is the responsibility of students to view their marks for each within session assessment on iLearn within 20 days of posting. If there are any discrepancies, students must contact the unit convenor immediately. Failure to do so will mean that queries received after the release of final results regarding assessment tasks (not including the final exam mark) will not be addressed.

Extensions for the assignments and the case study:

No extensions will be granted. Late tasks will be accepted up to 72 hours after the submission deadline. There will be a deduction of 10% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late (for example, 25 hours late in submission – 20% penalty). This penalty does not apply for cases in which an application for special consideration is made and approved.

## Assessment Tasks

Name	Weighting	Due
<u>Final Examination</u>	50%	Examination period
<u>Case Study</u>	10%	Week 12
<u>Assignment 1</u>	20%	Week 6
<u>Assignment 2</u>	20%	Week 10

### Final Examination

Due: **Examination period**

Weighting: **50%**

Submission

THE EXAM WILL BE CONDUCTED EITHER DURING THE NORMAL EXAMINATION PERIOD OR JUST BEFORE IT. EXTERNAL STUDENTS SHOULD CONTACT THE UNIT COORDINATOR REGARDING EXAMINATION ARRANGEMENTS

#### Extension

IF YOU DON'T COMPLY WITH THE ARRANGEMENTS MADE FOR THE THE FINAL EXAM YOU WILL FAIL THE UNIT. IF THIS IS DUE TO DISRUPTION TO STUDIES YOU CAN APPLY FOR SPECIAL CONSIDERATION, BUT YOU MUST PROVIDE SUPPORTING EVIDENCE TO EXPLAIN WHY YOU DIDN'T COMPLY WITH THE EXAMINATION ARRANGEMENTS.

#### Penalties

IF YOU DON'T ATTEND THE FINAL EXAM AND YOU ARE GRANTED SPECIAL CONSIDERATION, YOU MAY HAVE TO SIT A SUPPLEMENTARY EXAM. OTHERWISE YOU WOULD FAIL THE UNIT.

On successful completion you will be able to:

- 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
- 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
- Develop an introductory understanding of the “real options approach” to investment appraisal
- To learn to use microsoft excel to build the financial models and perform the calculations to implement these methods
- Learn how to develop user defined functions using visual basic and use them from within excel
- Learn how to properly document a financial decision making problem and its solution using spreadsheet software and communicate the results to interested stakeholders.

## Case Study

Due: **Week 12**

Weighting: **10%**

#### Submission

SUBMIT YOUR WORD AND EXCEL FILES ELECTRONICALLY (METHOD TO BE ADVISED)

On successful completion you will be able to:

- 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
- Develop an introductory understanding of the “real options approach” to investment appraisal
- To learn to use microsoft excel to build the financial models and perform the calculations to implement these methods
- Learn how to properly document a financial decision making problem and its solution using spreadsheet software and communicate the results to interested stakeholders.

## Assignment 1

Due: **Week 6**

Weighting: **20%**

Submission

SUBMIT YOUR WORD AND EXCEL FILES ELECTRONICALLY (METHOD TO BE ADVISED)

On successful completion you will be able to:

- 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
- 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
- To learn to use microsoft excel to build the financial models and perform the calculations to implement these methods

## Assignment 2

Due: **Week 10**

Weighting: **20%**

Submission

SUBMIT YOUR WORD AND EXCEL FILES ELECTRONICALLY (METHOD TO BE ADVISED)

On successful completion you will be able to:

- 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
- 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
- To learn to use microsoft excel to build the financial models and perform the calculations to implement these methods

## Delivery and Resources

### Classes

For campus students:

- A 2-hour lecture will be held each week.
- A 1-hour tutorial / computer laboratory session will be held each week.

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/>

### Required and Recommended Texts and/or Materials Prescribed

#### 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)
- Financial Modelling: by Simon Beninga (ISBN 0 262 02482 9)
- 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]

### **Teaching and Learning 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.

### **Changes since last offering**

- There have been no changes to this unit since the last offering in 2015

## Unit Schedule

Important information:

- 1) Timetable for lectures is available at: <https://timetables.mq.edu.au/2016/>
- 2) Semester dates: [http://students.mq.edu.au/student\\_admin/enrolmentguide/academicdates/](http://students.mq.edu.au/student_admin/enrolmentguide/academicdates/)
- 3) Weeks 1-6: 29th February - 8th April 2016, Weeks 7-13: 26th April - 11th June 2016, Mid Term Break 11th April - 24th April 2016
- 4) NSW public holidays: [http://www.industrialrelations.nsw.gov.au/oirwww/NSW\\_public\\_holidays/NSW\\_Public\\_Holidays.page](http://www.industrialrelations.nsw.gov.au/oirwww/NSW_public_holidays/NSW_Public_Holidays.page). Note that Friday 25th March 2016 is a public holiday: no lecture that day.
- 5) Lectures this semester are scheduled for Friday 1pm-4pm. week commencing

week commencing	week of semester	lecture	
29/2/2016	1	1	Basic Financial mathematics: Interest rates, present value, future value, annuities, perpetuities, bonds; intro to excel
7/3/2016	2	2	Introduction to capital budgeting. Further topics in financial mathematics: Present value and future value loans and leases, loan repayment schedules
14/3/2016	3	3	Project cashflows and methods for their estimation. Examples of asset expansion, retirement and replacement projects
21/3/2016	4		Friday 25 march is a public holiday: no lecture this week
28/3/2016	5	4	(i) Elementary methods of forecasting. (ii) Matrix algebra and implementation in excel
4/4/2016	6	5	(i) Analysis of leasing decisions, (ii) leveraged leases and their analysis using alternative measures of return.
11/4/2016	mid term break		
18/4/2016	mid term break		
25/4/2016	7	6	(i) Project evaluation methods: npv, irr, pp, arr. Application to asset replacement, retirement and expansion projects. (ii) Methods for choosing the discount rate for npv analysis.
2/5/2016	8	7	(i) Project evaluation methods: npv, irr, pp, arr. Application to asset replacement, retirement and expansion projects. (ii) Methods for choosing the discount rate for npv analysis.
9/5/2016	9	8	(i) Methods for estimating model parameters, (ii) Sensitivity and breakeven analysis: implementation in excel
16/5/2016	10	9	(i) Introduction to options and valuation via the black scholes model, (ii) monte carlo simulation modelling for stock prices and option valuation



23/5/2016	11	10	Binomial option pricing methods and implementation in excel
30/5/2016	12	11	The flaws in the traditional methods of investment appraisal and introduction to the real options approach to valuation of projects with flexibility
6/6/2016	13	12	More on real options analysis: parameter estimation, embedded exotic options, application of exotic option valuation theory to real options examples

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

**New Assessment Policy in effect from Session 2 2016** [http://mq.edu.au/policy/docs/assessment/policy\\_2016.html](http://mq.edu.au/policy/docs/assessment/policy_2016.html). For more information visit [http://students.mq.edu.au/events/2016/07/19/new\\_assessment\\_policy\\_in\\_place\\_from\\_session\\_2/](http://students.mq.edu.au/events/2016/07/19/new_assessment_policy_in_place_from_session_2/)

Assessment Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy prior to Session 2 2016 <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public [http://www.mq.edu.au/policy/docs/complaint\\_management/procedure.html](http://www.mq.edu.au/policy/docs/complaint_management/procedure.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](http://ask.mq.edu.au).

Supplementary Exams Policy

[http://www.businessandconomics.mq.edu.au/current\\_students/undergraduate/how\\_do\\_i/special\\_consideration](http://www.businessandconomics.mq.edu.au/current_students/undergraduate/how_do_i/special_consideration)

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### PG - Discipline Knowledge and Skills

Our postgraduates will be able to demonstrate a significantly enhanced depth and breadth of knowledge, scholarly understanding, and specific subject content knowledge in their chosen fields.

This graduate capability is supported by:

### Learning outcomes

- 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

- 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
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- Learn how to develop user defined functions using visual basic and use them from within excel
- Learn how to properly document a financial decision making problem and its solution using spreadsheet software and communicate the results to interested stakeholders.

## **Assessment tasks**

- Final Examination
- Case Study
- Assignment 1
- Assignment 2

## **PG - Critical, Analytical and Integrative Thinking**

Our postgraduates will be capable of utilising and reflecting on prior knowledge and experience, of applying higher level critical thinking skills, and of integrating and synthesising learning and knowledge from a range of sources and environments. A characteristic of this form of thinking is the generation of new, professionally oriented knowledge through personal or group-based critique of practice and theory.

This graduate capability is supported by:

## **Learning outcomes**

- 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
- 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
- Develop an introductory understanding of the “real options approach” to investment appraisal
- To learn to use microsoft excel to build the financial models and perform the calculations to implement these methods
- Learn how to develop user defined functions using visual basic and use them from within

excel

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

## **Assessment tasks**

- Final Examination
- Case Study
- Assignment 1
- Assignment 2

## **PG - Research and Problem Solving Capability**

Our postgraduates will be capable of systematic enquiry; able to use research skills to create new knowledge that can be applied to real world issues, or contribute to a field of study or practice to enhance society. They will be capable of creative questioning, problem finding and problem solving.

This graduate capability is supported by:

## **Learning outcomes**

- 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
- 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
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## **Assessment tasks**

- Final Examination
- Case Study
- Assignment 1
- Assignment 2

## Changes from Previous Offering

no changes

## 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