



<b>Course Code:</b>	<b>2306AFE</b>
<b>Course Name:</b>	<b>Quantitative Methods for Banking, Finance &amp; Economics</b>
<b>Semester:</b>	<b>Semester 3, 2014</b>
<b>Program:</b>	Associate Degree in Commerce & Business
<b>Credit Points:</b>	10
<b>Course Coordinator:</b>	Lucille Wong
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#### Teaching Team

Your lecturer/tutor can be contacted via the email system on the portal.	
<b>Name</b>	<b>Email</b>
Lucille Wong	<a href="mailto:lucille.wong@staff.qibt.qld.edu.au">lucille.wong@staff.qibt.qld.edu.au</a>

#### Staff Consultation

Your lecturer/tutor is available each week for consultation outside of normal class times. Times that your lecturer/tutor will be available for consultation will be given in the first week of lectures. A list of times and rooms will be published on the QIBT Portal under the "myTimetable" link.

#### Prerequisites

To successfully enrol in this Course, you must provide evidence that you have completed the following Courses:

- 1303AFE - Economics for Managers

#### Brief Course Description

Quantitative Methods for Business Finance and Economics is a 10 Credit Point course within the Associate Degree in Commerce and Business. The course is situated within the second year of the program. The Associate Degree in Commerce and Business is designed to provide students with a pathway to:

• further university studies in Commerce, Business and related degrees or

• direct employment

This course is designed to provide basic quantitative skills which are useful in solving business problems and in economic analysis. These skills are essential for proceeding to further studies in the increasingly quantitatively-oriented subfields of economics, accounting, banking, or financial management and administration.

This course is required if you plan to undertake further study at the degree level with a Banking and Finance major as much of the current finance/economic thought, research and teaching is understood in mathematical terms. Therefore a certain level of skill and understanding of basic mathematical methods is required if the study of economics or finance is to be pursued beyond the descriptive level.

#### Rationale

This course is useful for students interested in applying their mathematical skills to financial and economic environments and in finding solutions to financial problems useful in decision-making.

#### Aims

This course is designed to equip students with basic mathematical skills that are useful in solving business problems and in economic analysis. These skills are essential to economics students. They are also useful to students who wish to proceed to further studies in the increasingly quantitatively oriented subfields of accounting, commerce, finance, marketing, management and administration, or who are likely to be confronted with quantitatively oriented problems in their future management or research work. Throughout the course students will learn to identify business/economic problems that require a knowledge of mathematics for rigorous understanding, and subsequently to develop a clear grasp of relevant mathematical techniques.

This is a core course for the BCom majors in Finance and Economics. Hence it is a prerequisite for many intermediate and advanced courses in finance and economics. It is important to the further study of banking, finance and economics in that much of current economic thought, research and teaching are couched in mathematical terms.

This course also provides an introductory quantitative methods course for studies in Marketing, Management, Accounting and Finance, and Information Systems and enhances the analytical skills of these students.

In the first part of the course, the aim is to review basic concepts and the techniques of algebra and to employ these to gain additional insight into familiar business and economics principles. Applications include break-even analysis, demand and supply analysis, linear algebra, linear programming, and mathematics of finance.

The second part of the course provides an introduction to differential calculus. Again, there is a heavy emphasis on business and economic applications, which include rates of growth and decline, revenue and profit maximization or cost minimisation.

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### Learning Outcomes

Upon successful completion of this course you will be able to:

1. Demonstrate knowledge, understanding and application of mathematical skills necessary for financial and economic analysis;
2. Apply the appropriate quantitative tools to analyse, evaluate and interpret data related to market events, government policies and business decision-making;
3. Solve intermediate level mathematical finance problems;
4. Critically analyse a financial situation and apply an appropriate solution;
5. Use MS Excel to solve mathematical problems.

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### Texts and Supporting Materials

#### Required

Text: abbreviated as [BRADLEY] throughout the Guide.

Bradley, T. (2013), *Essential Mathematics for Economics and Business* 4th ed., John Wiley & Sons, Qld, Australia. And associated website: [www.wiley.co.uk/bradley4ed](http://www.wiley.co.uk/bradley4ed)

[Note: The 2008 and 2009 publications of the 3rd edition are essentially the same. Older editions are OK but you will have to check for differences in my references to section/question/page/Progress Exercise numbers, and for missing parts yourself]

#### Supplementary Reading: (many are in the Griffith University library)

Shannon, J. (1995), *Mathematics for Business, Economics and Finance*, John Wiley & Sons Qld, Australia

Shannon, J. (1996), *EXCEL for Business Mathematics*, John Wiley & Sons, Qld, Australia.

Walkenbach J., (1993) *Excel for Dummies - Quick Reference* IDG Books

Arya, J. C. and R. W. Lardner (1993), *Mathematical Analysis for Business Economics, and the Life and Social Sciences*, 4th Edition, Prentice-Hall, New Jersey

Soper, J. (1999), *Mathematics for Economics and Business*, Blackwell, Cornwall, Great Britain.

Dowling, E.T. (1993), *Schaum's Outline of Theory and Problems of Mathematical Methods for Business and Economics*, McGraw-Hill, New York

Harsgbarger, R. J. and J. J. Reynolds (2000) *Mathematical Applications for the Management, Life, and Social Sciences*, 6th Edition., Houghton Mifflin.

Jacques, I., (1999), *Mathematics for Economics and Business* 3rd ed. Addison-Wesley

Timbrell, M. (1985), *Mathematics for Economists*, Basil Blackwell, Oxford.

O'Brien, D.T., D.E. Lewis and J.E. Guest (1989), *Mathematics for Business and Economics*, Harcourt Brace and Jovanovich, Sydney.

Wisniewski, M. (1996), *Introductory Mathematical Methods in Economics*, 2nd Edition, McGraw Hill.

Mzrahi, A and M Sullivan (1993), *Mathematics for Business, Life Sciences, and Social Sciences*, 5th Edition, John Wiley and Sons.

#### For very basic Mathematics/Finance coverage for the Mid Semester exam:-

Croucher, J.S. (1998+ any edition), *Mathematics and Statistics for Business - first 9 Chapters*, McGraw-Hill, Sydney, Australia

Waxman, P. (1993+any edition), *Business Mathematics and Statistics - first 12 Chapters*, Prentice Hall, Australia

Ayres, F. and P.A.Schmidt (2001), *Schaum's Easy Outlines: College Mathematics: Crash Course*, McGraw Hill, New York.

Wesner, T. and H. Nustad (1988), *Elementary Algebra*, 2nd Edition, W.C. Brown.

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### Organisation and Teaching Strategies

Each week, you are required to attend 4 hours of contact time in class consisting of lectures, tutorials and workshops. During lectures you will be presented with the theory component of the course and complete worked examples relating to the concepts covered. In the tutorial sessions, you may complete revision exercises, undertake problem-solving activities and work through their solutions in an informal small-group environment. You are expected to bring the textbook, the Course Guide and a (nonprogrammable) scientific calculator to each of your tutorial sessions throughout the semester. The workshop sessions will provide you with the opportunity to develop a range of skills that will support learning objectives and foster certain generic skills that are helpful to your professional development.

#### Class Contact Summary

##### Attendance:

You are strongly encouraged to attend all lectures, tutorial and workshop sessions. You are also reminded that your attendance in class will be marked twice during a four hour class. To receive full attendance, you must be present in the classroom on both occasions.

##### Program Progression:

You are reminded that satisfactory Program Progression requires that attendance in classes is maintained at equal to or greater than 80%, and that GPA is maintained at equal to or greater than 3.5 with passing grades achieved in more than 50% of courses in any semester [please see QIBT Policy Library - Program Progression Policy - for more information].

##### Lecture Notes & Course Materials:

You are expected to use the course materials provided on the QIBT portal and to work independently on the computing component of the course. You are also required to bring a copy of the lecture notes printed from the QIBT website to classes each week as you will complete the worked examples contained in these slides during lectures.

##### Independent Study:

You are expected to reinforce your learning gained during class time by undertaking sufficient independent study. For this 10 CP course, you will need to spend at least 10 hours per week engaged in activities that will help your learning and fulfil the course objectives. Thus, provided you have well used the 4 hours per week of formal contact, you would then complete at least 6 hours per week of independent study.

### Content Schedule

The course will emphasise both (i) the relevant mathematical topics and (ii) the extensive use of concepts and applications in commerce.

1. The role of mathematical reasoning in the business and social sciences
2. Single equation models in business: an introduction to the number system and elementary algebra.
3. Simultaneous linear equation models: demand and supply analysis, break-even analysis
4. Functions and graphs: linear and nonlinear equations
5. Mathematics of growth and finance: logarithms, exponentials and progressions
6. Linear algebra, linear programming and applications: optimisation under constraints.
7. Marginal economic and financial analysis: use of the calculus, 1st and 2nd order differentials.

### Weekly Teaching Schedule

Week	Topic	Activity	Readings
1	Introduction, Mathematical Preliminaries, Elementary Algebra	Lecture	Chapter 1
		Workshop	
2	Linear Equations: The Straight Line and Graphs; Applications of the straight line, Simultaneous equations	Lecture	Chapters 2 and 3
3	Nonlinear Functions and Graphs: Nonlinear Functions and Applications to Business	Lecture	Chapter 4
4	Nonlinear Functions (continued), Mathematics of Finance: Mathematical Progressions in Finance/Economics and Applications	Lecture	Chapters 4 and 5
5	Mathematics of Finance (continued): Simple interest, compound interest, APR, Annuities, Debt repayments, Sinking funds	Lecture	
6	Mathematics of Finance (continued): Finance applications, mortgage repayments, using Excel, Cost Benefit analysis (NPV & IRR)	Lecture	Chapter 5
7	More on Algebra and Calculus	Lecture	
8	Mid-semester Exam: 2 hours revision followed by the mid-semester exam	Examination	
9	Linear Programming Concepts: Introduction to Linear Programming Concepts.	Lecture	Chapter 9
	EXCEL lab on mortgage repayment schedule	Class	
10	Linear Programming & Differential Calculus: Applications of Linear Programming using EXCEL SOLVER & Introduction to Differential Calculus: Calculating the Derivative of a function - Basics	Lecture	Chapters 10 and 6
	EXCEL lab on linear programming	Class	
11	Differential Calculus (continued): Calculation of Higher Order Derivatives, optimization and applications	Lecture	Chapter 6
	EXCEL lab revision for the lab exam	Class	
12	Differential Calculus (continued): More on single variable function, Graphing Functions using Critical Points and more applications	Lecture	Chapter 6
	EXCEL exam	Examination	
13	Revision	Lecture	

### Assessment

This section sets out the assessment requirements for this course.

### Summary of Assessment

Item	Assessment Task	Weighting	Relevant Learning Outcomes	Due Date
1	Mid-Semester Exam	15%	1,3	8
2	EXCEL Practical Exam	15%	1,4,5	12
3	Final Exam	55%	1,2,3,4	14
4	In-Class quizzes	15%	1,2,3,4	random

### Assessment Details

**In-class quizzes 15%**

15 minute short answer questions that will be administered in various random weeks.

**Mid-Semester Exam 15%**

A 1 1/2 hour multiple choice exam covering lectures 1-6

**EXCEL Practical Exam 15%**

A 50 minute exam consisting of 2 questions requiring you to write the answers off the screen onto your Question and Answer sheet.

**Final Exam 55%**

A 3 hour exam covering the whole course consisting of problem solving questions similar to those in the tutorials.

**Submission and Return of Assessment Items**

Normally you will be able to collect your assignments in class within fourteen [14] days of the due date for submission of the assignment.

**Retention of Originals**

You must be able to produce a copy of all work submitted if so requested. Copies should be retained until after the release of final results for the course.

**Extensions**

To apply for an extension of time for an assessment item you must submit a written request to your lecturer via the Student Website at least 48 hours before the date the assessment item is due. Grounds for extensions are usually: serious illness, accident, disability, bereavement or other compassionate circumstances and must be able to be substantiated with relevant documentation [e.g. medical certificate]. Please refer to the QIBT website - Policy Library - for guidelines regarding extensions and deferred assessment.

**Penalties for late submission without an approved extension**

Penalties apply to assignments that are submitted after the due date without an approved extension. Assessment submitted after the due date will be penalised 10% of the TOTAL marks available for assessment (not the mark awarded) for each day the assessment is late. Assessment submitted more than five days late will be awarded a mark of zero (0) For example:

- > 5 minutes and <= 24 hours 10%
- > 24 hours and <= 48 hours 20%
- > 48 hours and <= 72 hours 30%
- > 72 hours and <= 96 hours 40%
- > 96 hours and <= 120 hours 50%
- > 120 hours 100%

Note:

- Two day weekends will count as one day in the calculation of a penalty for late submission.
- When a public holiday falls immediately before or after a weekend, the three days will count as one day in the calculation of a penalty for late submission.
- When two public holidays (e.g. Easter), fall immediately before or after, or one day either side of a weekend, the four days will count as two days in calculating the penalty for late submission.
- When a single public holiday falls mid-week, the day will not be counted towards the calculation of a penalty.

Please refer to the QIBT website - Policy Library > Assessment Policy for guidelines and penalties for late submission.

**Assessment Feedback**

Marks awarded for assessment items will also be available on the on-line grades system on the Student Website within fourteen [14] days of the due date.

**Generic Skills**

QIBT aims to develop graduates who have an open and critical approach to learning and a capacity for lifelong learning. Through engagement in their studies, students are provided with opportunities to begin the development of these and other generic skills.

Studies in this course will give you opportunities to begin to develop the following skills:

Generic Skills	Taught	Practised	Assessed
Written Communication	Yes	Yes	Yes
Oral Communication		Yes	
Information Literacy	Yes	Yes	Yes
Secondary Research			
Critical and Innovative Thinking	Yes	Yes	Yes
Academic Integrity		Yes	Yes
Self Directed Learning		Yes	
Team Work			
Cultural Intelligence		Yes	
English Language Proficiency		Yes	

## ***Additional Course Generic Skills***

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### **Additional Course Information**

In addition to formal contact hours, you are provided with extra support through individual consultation with teaching staff, tutorials in English language, and self-access computer laboratories.

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### **Academic Integrity**

QIBT is committed to maintaining high academic standards to protect the value of its qualifications. Academic integrity means acting with the values of honesty, trust, fairness, respect and responsibility in learning, teaching and research. It is important for students, teachers, researchers and all staff to act in an honest way, be responsible for their actions, and show fairness in every part of their work. Academic integrity is important for an individual's and the College's reputation.

All staff and students of the College are responsible for academic integrity. As a student, you are expected to conduct your studies honestly, ethically and in accordance with accepted standards of academic conduct. Any form of academic conduct that is contrary to these standards is considered a breach of academic integrity and is unacceptable.

Some students deliberately breach academic integrity standards with intent to deceive. This conscious, pre-meditated form of cheating is considered to be one of the most serious forms of fraudulent academic behaviour, for which the College has zero tolerance and for which penalties, including exclusion from the College, will be applied.

However, QIBT also recognises many students breach academic integrity standards without intent to deceive. In these cases, students may be required to undertake additional educational activities to remediate their behaviour and may also be provided appropriate advice by academic staff.

As you undertake your studies at QIBT, your lecturers, tutors and academic advisors will provide you with guidance to understand and maintain academic integrity, however, it is also your responsibility to seek out guidance if and when you are unsure about appropriate academic conduct.

Please ensure that you are familiar with the [QIBT Academic Integrity Policy](#); this policy provides an overview of some of the behaviours that are considered breaches of academic integrity, as well as the penalties and processes involved when a breach is identified.

For further information please refer to the Academic Integrity Policy on the QIBT website – Policy Library.

### ***Risk Assessment Statement***

There are no out of the ordinary risks associated with this course.

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