Bachelor of Mathematics/Bachelor of Business (Accountancy, Banking and Finance or Economics) (IF60)

Year offered: 2011
Admissions: No
CRICOS code: 027274G
Course duration (full-time): 4 Years
Domestic Fees (indicative): 2011: CSP $3,358 per semester (indicative)
Domestic Entry: February
International Entry: February and July
QTAC code: 419212
Past rank cut-off: 80
Past OP cut-off: 10
OP Guarantee: Yes
Assumed knowledge: English (4, SA) and Maths B (4, SA)
Preparatory studies: For information on acquiring assumed knowledge visit http://www.qut.edu.au/assumed-knowledge
Total credit points: 432
Standard credit points per full-time semester: 54 (Average)
Course coordinator: Prof Erhan Kozan (Science and Technology); Dr Claire Gardiner, Director of Undergraduate Studies (QUT Business School)
Discipline coordinator: Ms Sherrena Buckby (Accountancy); Dr Tommy Tang (Economics); Dr John Chen (Finance)
Campus: Gardens Point

Discontinuation
Students should note that from Semester 1, 2007 this course has been renamed and recoded to IX37 Bachelor of Business/Bachelor of Mathematics. Therefore, there will be no further intake into this course, however, students who are currently enrolled, or have already been made an offer into this current course for 2007, are able to remain enrolled in it.

For course structure information on the new course, please refer to the new course.

Professional Recognition
Graduates will be eligible for membership of the Mathematical Society of Australia, the Statistical Society of Australia and, depending on unit selection, the Australian Society of Operations Research.

The Bachelor of Business degree may, subject to choice of major, allow graduates to satisfy the academic requirements for membership as follows:
*Accountancy: CPA Australia (associate membership & enrolment in the CPA Program), Institute of Chartered Accountants in Australia (ICAA)(enrolment in the CA Program).
*Banking and Finance: Financial Services Institute of Australasia (FINSIA).
*Economics: Economic Society of Australia (Queensland Division).

Course Design
Students are required to complete 432 credit points comprised of 204 credit points from the Bachelor of Mathematics program and 228 credit points from the Bachelor of Business program.

Mathematics Scholarships
Students enrolled in this course can apply for industry sponsored scholarships. Mathematics equity scholarships are also awarded on the basis of socioeconomic disadvantage.

Course Combinations
Recommended combinations for the Business component are:
- Accountancy: Extended major in Professional Accounting
- Banking & Finance: Extended major in Banking, Financial Economics or Funds Management; or double major in Economics
- Economics: Extended major in Financial Economics or double major in Banking & Finance.

*Please note that EFB101 Data Analysis for Business which is normally undertaken in the majors of Accountancy, Banking and Finance & Economics, is not required as the content will be covered in the statistics units from the mathematics component of the program.

Students also note that enrolment in the unit EFB326 Applied Portfolio Management is restricted to students undertaking the Financial Economics specialisation (FES) and the following extended majors: Banking (BFX); Financial Economics (FEX); and Funds Management (FDX).

Limits on grades of 3
A new policy concerning grades of 3 came into effect from 1 January 2009 (QUT MOPP C/5.2). With effect from this date grades of 3 are no longer considered a conceded or low pass but are classified as a fail grade. Any grades of 3 awarded prior to 1 January 2009 retain the conceded pass status and will be counted for graduation purposes up to the maximum number of grades of 3 permitted for your course. Grades of 3 incurred in units that commence after 1 January...
2009 will not count towards your degree. Further information is available on the Student Services website.

**Important Information for Business Students**

QUT Business School rules and procedures are outlined in the QUT Business School Undergraduate Guidelines booklet. Other useful information can be found on the Student Services website.

**Further Information**

For further information about this course, please contact:

**Science and Technology Coordinator**
Phone: +61 7 3138 9353
Email: enquiry.scitech@qut.edu.au

**Business Coordinator**
Phone: +61 7 3138 2050
Email: bus@qut.edu.au

Course structure - Accountancy Major (For students with SA in Senior Maths B & C)

**Year 1, Semester 1**
- BSB110 Accounting
- BSB113 Economics
- MAB101 Statistical Data Analysis 1
- MAB111 Mathematical Sciences 1B

**Year 1, Semester 2**
- AYB121 Financial Accounting
- BSB119 Global Business
- BSB122 Quantitative Analysis and Finance
- MAB112 Mathematical Sciences 1C
- MAB210 Statistical Modelling 1

**Year 2, Semester 1**
- AYB220 Company Accounting
- BSB111 Business Law and Ethics
- MAB311 Advanced Calculus
  - Mathematics Elective (Level 2)

**Year 2, Semester 2**
- AYB221 Computerised Accounting Systems
- BSB126 Marketing
- MAB220 Computational Mathematics 1
- MAB313 Mathematics of Finance

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Business Double Major / Extended Major / Specialisation Unit

**Year 3, Semester 1**
- AYB225 Management Accounting
- BSB115 Management
- MAB312 Linear Algebra
  - Mathematics Elective (Level 2)
  - Business Double Major / Extended Major / Specialisation Unit

**Year 3, Semester 2**
- BSB114 Government, Business and Society
  - Mathematics Elective (Level 2 or 3)
  - Mathematics Elective (Level 2 or 3)
  - Business Double Major / Extended Major / Specialisation Unit

**Year 4, Semester 1**
- AYB301 Audit and Assurance
  - Mathematics Elective (Level 2 or 3)
  - Mathematics Elective (Level 2 or 3)
  - Mathematics Elective (Level 2 or 3)
  - Business Double Major / Extended Major / Specialisation Unit

**Year 4, Semester 2**
- Mathematics Elective (Level 2 or 3)
  - Mathematics Elective (Level 2 or 3)
  - Business Double Major / Extended Major / Specialisation Unit

**Business Units**

Students should refer to the BS56 Course Notes entry for information on double major/extended major/specialisation units.

Note: Please refer to "Course Updates - List of re-coded and replacement Business units" to check for course structure changes.

Course structure - Accountancy Major (For students with SA in Senior Maths B only)

**Year 1, Semester 1**
- BSB110 Accounting
- BSB113 Economics
- MAB100 Mathematical Sciences 1A
Year 1, Semester 2
AYB121 Financial Accounting
BSB122 Quantitative Analysis and Finance
MAB111 Mathematical Sciences 1B
MAB112 Mathematical Sciences 1C
MAB210 Statistical Modelling 1

Year 2, Semester 1
AYB220 Company Accounting
BSB111 Business Law and Ethics
MAB311 Advanced Calculus

Year 2, Semester 2
AYB221 Computerised Accounting Systems
BSB126 Marketing
MAB220 Computational Mathematics 1
MAB313 Mathematics of Finance

Year 3, Semester 1
AYB225 Management Accounting
BSB115 Management
MAB312 Linear Algebra

Year 3, Semester 2
BSB114 Government, Business and Society

Year 4, Semester 1
AYB301 Audit and Assurance

Year 4, Semester 2
Mathematics Elective (Level 2 or 3)
Mathematics Elective (Level 2 or 3)
Business Double Major / Extended Major / Specialisation Unit
Business Double Major / Extended Major / Specialisation Unit

NOTE: Students must select BSB119 International & Electronic Business to replace one of the Mathematics Electives.

Students should refer to the BS56 Course Notes entry for information on double major/extended major/specialisation units

NOTE: Please refer to "Course Updates - List of re-coded and replacement Business units" to check for course structure changes.

Course structure - Banking and Finance Major (for students with SA in Senior Maths B & C)
Year 3, Semester 1
BSB115  Management
EFB201  Financial Markets
MAB312  Linear Algebra
    Mathematics Elective (Level 2)
    Business Double Major/Extended Major/Specialisation

Year 3, Semester 2
EFB312  International Finance
    Mathematics Elective (Level 2 or 3)
    Business Double Major/Extended Major/Specialisation

Year 4, Semester 1
    Mathematics Elective (Level 2 or 3)
    Mathematics Elective (Level 2 or 3)
    Mathematics Elective (Level 2 or 3)
    Business Double Major/Extended Major/Specialisation

Business Units
Students should refer to the BS56 Course Notes entry for information on double major/extended major/specialisation units

Note: Please refer to "Course Updates - List of re-coded and replacement Business units" to check for course structure changes.

Course structure - Banking and Finance Major (for students with SA in Senior Maths B only)

Year 1, Semester 1
BSB110  Accounting
BSB113  Economics
MAB100  Mathematical Sciences 1A
MAB101  Statistical Data Analysis 1

Year 1, Semester 2
BSB122  Quantitative Analysis and Finance
EFB102  Economics 2
MAB111  Mathematical Sciences 1B
MAB112  Mathematical Sciences 1C
MAB210  Statistical Modelling 1

Year 2, Semester 1
BSB126  Marketing
EFB210  Finance 1
MAB311  Advanced Calculus
    Mathematics Elective (Level 2)

Year 2, Semester 2
BSB111  Business Law and Ethics
BSB114  Government, Business and Society
EFB307  Finance 2
MAB220  Computational Mathematics 1
MAB313  Mathematics of Finance

Year 3, Semester 1
BSB115  Management
EFB201  Financial Markets
MAB312  Linear Algebra
    Mathematics Elective (Level 2)
    Business Double Major/Extended Major/Specialisation

Year 3, Semester 2
EFB312  International Finance
    Mathematics Elective (Level 2 or 3)
    Mathematics Elective (Level 2 or 3)
    Business Double Major/Extended Major/Specialisation

Year 4, Semester 1
    Mathematics Elective (Level 2 or 3)
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    Business Double Major/Extended Major/Specialisation

Year 4, Semester 2
    Mathematics Elective (Level 2 or 3)
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### Business Units

- Students must select BSB119 International & Electronic Business to replace one of the Mathematics Electives
- Students should refer to the BS56 Course Notes entry for information on double major/extended major/specialisation units
- Note: Please refer to "Course Updates - List of re-coded and replacement Business units" to check for course structure changes.

#### Course structure - Economics Major (for students with SA in Senior Maths B & C)

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<tr>
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<td>MAB101</td>
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<td>MAB111</td>
<td>Mathematical Sciences 1B</td>
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<tr>
<td>BSB119</td>
<td>Global Business</td>
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<td>BSB122</td>
<td>Quantitative Analysis and Finance</td>
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<td>EFB102</td>
<td>Economics 2</td>
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<td>MAB112</td>
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<td>Business Law and Ethics</td>
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### Business Units

- Students should refer to the BS56 Course Notes entry for information on double major/extended major/specialisation units
- Note: Please refer to "Course Updates - List of re-coded and replacement Business units" to check for course structure changes.

#### Course structure - Economics Major (for students with SA in Senior Maths B only)

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Extended Major in Banking

AYB225 Management Accounting
AYB312 Financial Institutions Law
EFB310 Financial Institutions - Control
EFB311 Financial Institutions - Lending
Plus two units from the Banking Extended Major Options listed below:

EFB200 Applied Regression Analysis
EFB308 Finance 3
EFB309 Financial Derivatives
EFB318 Portfolio and Security Analysis
EFB326 Applied Portfolio Management

Note: Please refer to “Course Updates - List of re-coded and replacement Business units” to check for course structure changes.

Extended Major in Financial Economics (for Banking & Finance Major)

EFB200 Applied Regression Analysis
EFB202 Business Cycles and Economic Growth
EFB211 Firms, Markets and Resources
EFB325 Financial Microeconomics
Plus two units from the Financial Economics Extended Major Options list below

EFB308 Finance 3
EFB309    Financial Derivatives
EFB318    Portfolio and Security Analysis
EFB324    Macroeconomics and Global Financial Markets
EFB326    Applied Portfolio Management

Note: Please refer to "Course Updates - List of re-coded and replacement Business units" to check for course structure changes.

Extended Major in Financial Economics (for Economics Major)

EFB200    Applied Regression Analysis
EFB210    Finance 1
EFB324    Macroeconomics and Global Financial Markets
EFB325    Financial Microeconomics

Plus two units from the Financial Economics Extended Major Options list below:

EFB201    Financial Markets
EFB326    Applied Portfolio Management
EFB327    Econometrics of Financial Markets
EFB328    Public Economics and Finance

Note: Please refer to "Course Updates - List of re-coded and replacement Business units" to check for course structure changes.

Extended Major in Funds Management

AYB225    Management Accounting
EFB308    Finance 3
EFB309    Financial Derivatives
EFB318    Portfolio and Security Analysis

Plus two units from the Funds Management Extended Major Options list below:

AYB312    Financial Institutions Law
EFB200    Applied Regression Analysis
EFB310    Financial Institutions - Control
EFB311    Financial Institutions - Lending
EFB326    Applied Portfolio Management

Note: Please refer to "Course Updates - List of re-coded and replacement Business units" to check for course structure changes.

Extended Major in Professional Accounting

AYB223    Law of Business Associations
AYB325    Taxation Law
EFB102    Economics 2
EFB210    Finance 1
AYB311    Financial Accounting Issues
AYB321    Strategic Management Accounting

Note: Please refer to "Course Updates - List of re-coded and replacement Business units" to check for course structure changes.

Course structure - Mathematics Units

Level 2 units

MAB311    Advanced Calculus
MAB312    Linear Algebra
MAB313    Mathematics of Finance
MAB314    Statistical Modelling 2
MAB315    Operations Research 2
MAB413    Differential Equations
MAB414    Applied Statistics 2
MAB420    Computational Mathematics 2
MAB422    Mathematical Modelling
MAB461    Discrete Mathematics
MAB480    Introduction to Scientific Computation
MAB481    Visualisation and Data Analysis

Level 3 units

MAB521    Applied Mathematics 3
MAB522    Computational Mathematics 3
MAB524    Statistical Inference
MAB525    Operations Research 3A
MAB533    Statistical Techniques
MAB536    Time Series Analysis
MAB613    Partial Differential Equations
MAB623    Financial Mathematics
MAB624    Applied Statistics 3
MAB625    Operations Research 3B
MAB640    Industry Project
MAB681    Advanced Visualisation and Data Analysis
MAB672    Advanced Mathematical Modelling

NOTES: - MAB311 Advanced Calculus and MAB312
Linear Algebra are mandatory for students who commenced in 2004 onwards. They can be taken in a different semester 1 to that suggested in the programs above.

- For students commencing in 2004 onwards, the units MAB523 Introduction to Quality Management and MAB621 Discrete Mathematics do not contribute to the mandatory 48 credit points minimum from Level 3 Mathematics units. This does not apply for students who commenced prior to 2004.

- MAB681 will not be offered in 2008, but will be offered in Semester 2 2009 and every second year.

Course structure

This course has been discontinued. Currently enrolled students should check with the relevant Faculty for course progression and enrolment advice.

Course Updates - List of re-coded and replacement Business units

### Faculty Core units

- BSB114 is replaced by BSB124 Working in Business
- BSB115 is now retitled BSB115 Management
- BSB119 is now retitled BSB119 Global Business
- BSB122 is replaced by BSB123 Data Analysis

### Accountancy Core units

- AYB121 is now AYB200 Financial Accounting
- AYB220 is now AYB340 Company Accounting
- AYB301 is now retitled AYB301 Audit and Assurance

### Advertising Core units

- AMB221 is now AMB318 Advertising Copywriting
- AMB222 is now AMB319 Media Planning
- AMB321 is now AMB339 Advertising Campaigns

### Banking and Finance Core units

- EFB101 is replaced by EFB222 Quantitative Methods for Economics and Finance
- EFB102 is now retitled EFB223 Economics 2

### Economics Core units

- EFB101 is replaced by EFB222 Quantitative Methods for Economics and Finance
- EFB102 is now retitled EFB223 Economics 2
- EFB202 is replaced by EFB330 Intermediate

### Macroeconomics

- EFB211 is replaced by EFB331 Intermediate Microeconomics
- EFB314 is replaced by EFB336 International Economics
- EFB329 is now EFB338 Contemporary Application of Economic

### Electronic Business Core units

- BSB212 is replaced by AYB114 Business Technologies
- BSB213 is replaced by AYB115 Governance Issues and Fraud
- BSB314 is replaced by Forensic and Business Intelligence
- ITB233 is now INB312 Enterprise Systems Application
- ITB823 is now INB830 Web Sites for E-Commerce
- ITB239 is now INB342 Enterprise Data Mining

### Human Resource Management Core units

- MGB220 is now retitled MGB220 Business Research Methods
- MGB221 is now MGB339 Performance and Reward

### International Business Core units

- IBB202 is replaced by EFB240 Finance for International Business
- IBB208 IBB208 is no longer offered. Please contact the School of AMPR regarding a replacement unit. (Email: ampradmin@qut.edu.au)
- IBB210 is now replaced by AMB210 Importing and Exporting
- IBB213 is now AMB336 International Marketing
- IBB217 IBB217 is no longer offered. Please contact the School of AMPR regarding a replacement unit. (Email: ampradmin@qut.edu.au)
- IBB300 is now AMB369 International Business Strategy
- IBB308 is replaced by MGB340 International Business in the Asia-Pacific

### Management Core units

- MGB310 Sustainability in a Changing Environment was formerly known as MGB212 and MGB334

### Marketing Core units

- AMB241 is now AMB335 E-Marketing Strategies
- AMB341 is now AMB359 Strategic Marketing

### Public Relations Core units

- AMB260 is replaced by AMB263 Introduction to Public
Relations

AMB360 is replaced by AMB373 Corporate Communication
AMB361 is replaced by AMB379 Public Relations Campaigns

Business Law and Tax Extended Major (BLX)

AYB223 replaced by AYB230 Corporations Law
AYB325 is now AYB219 Taxation Law
AYB305 is replaced by AYB205 Law of Business Entities
AYB312 is now AYB232 Financial Institutions

Professional Accounting Extended Major (PAX)

AYB223 is replaced by AYB230 Corporations Law
AYB325 is now AYB219 Taxation Law

Advertising Extended Major (ADX)

AMB230 now retitled AMB230 Digital Promotions
AMB330 now retitled AMB330 Advertising Planning Portfolio

Banking Extended Major (BFX)

AYB312 is now AYB232 Financial Institutions Law
EFB200 is replaced by EFB333 Introductory Econometrics
EFB318 is replaced by EFB335 Investments

Financial Economics Extended Major (FEX) (for Banking & Finance Students)

EFB200 is replaced by EFB333 Introductory Econometrics
EFB202 is replaced by EFB330 Intermediate Macroeconomics
EFB211 is replaced by EFB331 Intermediate Microeconomics
EFB325 is replaced by EFB336 International Economics
EFB318 is replaced by EFB335 Investments
EFB324 is replaced by EFB337 Game Theory and Applications

Financial Economics Extended Major (FEX) (for Economics Students)

EFB200 is replaced by EFB333 Introductory Econometrics
EFB324 is replaced by EFB201 Financial Markets
EFB325 is replaced by EFB337 Game Theory and Applications

Funds Management Extended Major (FDX)

EFB318 is replaced by EFB335 Investments
AYB312 is now AYB232 Financial Institutions Law
EFB200 is replaced by EFB333 Introductory Econometrics

Human Resource Management Extended Major (HRX)

MGB315 is now MGB370 Personal and Professional Development
IBB205 is now MGB225 Intercultural Communication and Negotiation Skills
MGB310 Sustainability in a Changing Environment was formerly known as MGB212 and MGB334

International Business Extended Major (IBX)

IBB205 is now MGB225 Intercultural Communication and Negotiation Skills
IBB303 is now AMB303 International Logistics
AMB230 now retitled AMB230 Digital Promotions
IBB312 is replaced by AMB300 Independent Project 1

Management Extended Major (MXN)

IBB205 is now MGB225 Intercultural Communication and Negotiation Skills
MGB218 is now MGB324 Managing Business Growth
MGB315 is now MGB370 Personal & Professional Development
IBB210 is replaced by AMB210 Import and Exporting
IBB303 is now AMB303 International Logistics

Marketing Extended Major (MKX)

AMB251 now retitled AMB251 Innovation and Brand Management
AMB260 is replaced by AMB263 Introduction to Public Relations
AMB351 is now AMB209 Tourism Marketing
AMB352 is replaced by AMB252 Business Decision Making
AMB354 is now AMB208 Events Marketing
IBB213 is now AMB336 International Marketing
IBB303 is now AMB303 International Logistics

Public Relations Extended Major (PRX)

AMB370 is replaced by AMB374 Global Public Relations Cases
AMB371 is replaced by AMB375 Public Relations Management

Business Law and Tax Specialisation (BLS)
AYB223 is replaced by AYB230 Corporations Law
AYB325 is now AYB219 Taxation Law
AYB305 is now AYB205 Company Law & Practice
AYB312 is now AYB232 Financial Institutions Law
BSB213 is now AYB115 Governance Issues in E-Business

Electronic Business Specialisation (EUS)
BSB212 is replaced by AYB114 Business Technologies
BSB213 is replaced by AYB115 Governance Issues and Fraud
BSB314 is replaced by AYB341 Forensic and Business Intelligence
ITB233 is now INB312 Enterprise Systems Applications
ITB823 is now INB830 Web Sites for E-Commerce
ITB239 is now INB342 Enterprise Data Mining

Financial Economics Specialisation (FES)
EFB102 is replaced by EFB223 Economics 2
EFB202 is replaced by EFB330 Intermediate Macroeconomics
EFB211 is replaced by EFB331 Intermediate Microeconomics
EFB329 is now 338 Contemporary Applications of Economics
EFB314 is replaced by EB336 International Economics
EFB324 is replaced by EFB201 Financial Markets
EFB325 is replaced by EFB337 Game Theory and Applications

Integrated Marketing Communication Specialisation (IMS)
AMB260 is replaced by AMB263 Introduction to Public Relations
AMB230 now retitled AMB230 Digital Promotions
AMB354 is now AMB208 Events Marketing

International Logistics Specialisation (ILG)
IBB303 is now AMB303 International Logistics
BSB314 is replaced by AYB341 Forensic and Business Intelligence
IBB210 is replaced by AMB210 Importing and Exporting
EFB213 is replaced by AMB252 Business Decision Making (offered Sem 2); OR MGB335 Project Management (offered Sem 1 & 2)

Sales Specialisation (SALES)
AMB230 now retitled AMB230 Digital Promotions

AYB250 is replaced by MGB225 Intercultural Communication and Negotiation Skills

International Exchange Specialisation (IEX)
IBB205 is now MGB225 Intercultural Communication and Negotiation Skills

Potential Careers:
Account Executive, Accountant, Actuary, Banker, Banking and Finance Professional, Business Analyst, Certified Practicing Accountant, Computer Game Programmer, Corporate Secretary, Economist, Financial Advisor/Analyst, Financial Project Manager, Funds Manager, Government Officer, Investment Manager, Market Research Manager, Mathematician, Quantitative Analyst, Risk Manager, Statistician, Stockbroker.

UNIT SYNOPSES

AYB121 FINANCIAL ACCOUNTING
Financial Accounting examines of the accounting concepts and procedures relevant to both partnership and corporate structures within the context of the accounting profession's conceptual framework and the relevant accounting standards and Corporations Law requirements. Topics include: the formation, operation, financial reporting and disclosure for both partnerships and companies; accounting for leases; and the professional role of accountants. The emphasis is on the effect of the different forms of ownership on the financial statements.
Prerequisite(s): BSB110 or CTB110
Contact hours: 3 per week  
Campus: Gardens Point

AYB220 COMPANY ACCOUNTING
This unit includes: the preparation of consolidated financial statements; an overview of the statutory requirements that dictate the format and content of published financial reports of companies; the requirements of the Corporations Act 2001 and the major disclosure orientated accounting standards; accounting for income tax; accounting for the acquisition of assets (including entities); accounting for investments in associates; accounting for foreign currency transactions arising from international trading and financing; and the translation of the results of foreign operations.
Prerequisite(s): AYB121  
Contact hours: 3.5 per week  
Campus: Gardens Point

AYB221 COMPUTERISED ACCOUNTING SYSTEMS
This unit provides an examination of the concepts, processes and issues relevant to computerised accounting systems including: accounting information systems; internal controls; design and development of computerised accounting systems including general ledger and reporting
cycle, revenue cycle, expenditure cycle and payroll cycle; computer fraud, security and crime; accessing accounting information; and accounting in an electronic environment. Practical application of these concepts is enhanced by the use of accounting software such as MYOB, spreadsheet software such as Excel, database software such as Access, and interactive multimedia software such as Accounting Information Systems Cycles.

**Prerequisites:** BSB110 or CTB110  
**Antirequisites:** AYN443  
**Equivalents:** AYX221  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1 and 2011 SEM-2

### AYB223 LAW OF BUSINESS ASSOCIATIONS

The unit is intended to equip students with a basic understanding and knowledge relevant to the environment of legal entities, particularly corporations. It also seeks to provide students with sufficient basic understanding of the legal structure of business associations to enable them to recognise the appropriate structure for particular commercial situations.

**Prerequisite(s):** BSB111 or CTB111  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Incompatible with:** AYB205

### AYB225 MANAGEMENT ACCOUNTING

This unit introduces students to accounting systems and techniques that provide management at all levels with information for use in planning, controlling and decision making. This can be contrasted with financial accounting, which provides summary financial information principally for external users (ie shareholders, creditors, banks, etc). Emphasis is placed on developing a range of accounting systems (in particular product costing) which may be used in manufacturing firms, although the principles and concepts used to develop such systems can be adapted to service organisations.

**Prerequisites:** BSB110 or CTB111  
**Equivalents:** AYX225  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1 and 2011 SEM-2

### AYB301 AUDIT AND ASSURANCE

This unit enables students to comprehend the key concepts of auditing as a discipline, to demonstrate the relationship between auditing and the systems of accountability and to demonstrate the differences between manual and EDP audit processes. The unit builds on the knowledge of accounting and accounting standards acquired in prior units by enabling students to understand in detail the audit process (including professional auditing standards and techniques) which leads to the auditor providing an opinion on the financial reports of various types of entities. Ethics and auditor’s liability are also covered.

**Prerequisites:** (AYB221 or INB120) and (AYB340 or AYB220)  
**Equivalents:** AYX301  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1 and 2011 SEM-2

### AYB311 FINANCIAL ACCOUNTING ISSUES

This unit introduces students to the nature of accounting theory and integrates theory with practice to assist in the understanding of major Australian and International accounting issues. The following topics are addressed: positive and normative theories of accounting; the external reporting framework including international harmonisation and the conceptual framework; definition, recognition and measurement of assets, liabilities, equity, revenues and expenses; asset revaluations; intangibles; leases and employee entitlements. Accounting in specific industries such as construction, extractive industries and superannuation funds is also examined. This unit complies with the new international accounting standards. Contracting theory is used.

**Prerequisites:** AYB340 or AYB220  
**Equivalents:** AYX311  
**Credit points:** 12  
**Contact hours:** 3.5 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1 and 2011 SUM

### AYB312 FINANCIAL INSTITUTIONS LAW

This unit deals with the regulation of banks and non-bank financial institutions, the financial institutions’ scheme, the banker-customer relationship, laws relating to cheques and other negotiable instruments, negligent advice by financial institutions and other possible grounds of liability in the dealings of financial institutions with customers.

**Prerequisite(s):** BSB111 or CTB111  
**Contact hours:** 3 per week  
**Campus:** Gardens Point

### AYB321 STRATEGIC MANAGEMENT ACCOUNTING

Strategic management accounting develops a theory of organisations that provides an understanding of the information requirements of management to facilitate the strategic planning, decision-making and control necessary for the achievement of their objectives. Topics include: developing effective performance-evaluation systems and compensation plans; examining how managers can design organisations to motivate individuals to make choices that increase firm value; strategic planning and budgetary systems; pricing and product mix decisions; managing transfer-pricing disputes among divisions; developing an understanding of new management accounting practices, including activity-based costing (ABC), the balanced scorecard (BSC), and economic value added (EVA); and appreciating the research on the benefits and problems with ABC, BSC and EVA.

**Prerequisites:** AYB225  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1 and 2011 SEM-2
AYB325 TAXATION LAW
This unit introduces students to the statutory framework of the Australian taxation system. Elements in the determination of taxable income and the levy of income tax are examined including general and specific categories of assessable income and allowable deductions, capital gains tax and administration aspects of the tax system. The taxation of fringe benefits is also examined. The unit concludes with a brief overview of the taxation of partnerships, trusts and companies and the goods and services tax. Emphasis is placed on developing students' skills in problem solving through research and analysis of taxation issues.
Prerequisite(s): AYB223  Contact hours: 3 per week  Campus: Gardens Point

BSB110 ACCOUNTING
Accounting data is the basis for decision making in any organisation. Accordingly, the aim of this unit is to provide students with a basic level of knowledge of modern financial and managerial accounting theory and practice so that they can understand how accounting data is used to help make decisions in organisations. The unit covers financial procedures and reporting for business entities, analysis and interpretation of financial statements and planning, control and business decision making.
Antirequisites: BSD110, CNB293, UDB342  Equivalents: BSX110, CTB110  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point and Caboolture  Teaching period: 2011 SEM-1, 2011 SEM-2 and 2011 SUM

BSB111 BUSINESS LAW AND ETHICS
This unit integrates the concepts and principles of business law with the theories and applications of business ethics. The unit makes extensive use of cases in law and ethics to develop knowledge and skills that enable students to analyse, apply and evaluate the legal principles and ethical decision-making processes relevant to modern business practice.
Antirequisites: AYB120, LWS009, LWB145  Equivalents: BSX111, CTB111  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point and Caboolture  Teaching period: 2011 SEM-1, 2011 SEM-2 and 2011 SUM

BSB113 ECONOMICS
This unit introduces students to the key economic concepts and their practical applications. It comprises twelve topics each focusing on a current economic issue. Microeconomic topics include demand and supply, elasticity, production and cost theory and market structure. Macroeconomic topics include measuring GDP, inflation and unemployment, money and banking, and fiscal and monetary policy.

AYB223  Contact hours: 3 per week  Campus: Gardens Point

BSB114 GOVERNMENT, BUSINESS AND SOCIETY
This unit provides a basic grounding in the principles, institutions and functions of government and their interactions with business and society. Its principal focus is the structure and key features of Australia's constitutional and government framework including the judicial and administrative processes, especially as they affect business. Students develop a comparative appreciation of the principles, institutional arrangements and practices of contemporary government in a global context. This includes consideration of law-making and policy processes and the impact of the changing national and international environment.
Contact hours: 3 per week  Campus: Gardens Point and Caboolture  Incompatible with: HUB694, HUB682, SSB028, BSD114, CTB114

BSB115 MANAGEMENT
The unit provides an introduction to the theories and practice of management and organisations. Emphasis is on the conceptual and people skills that are needed in all areas of management and in all areas of organisational life. The unit acknowledges that organisations exist in an increasingly international environment where the emphasis will be on knowledge, the ability to learn, to change and to innovate. Organisations are viewed from individual, group, corporate and external environmental perspectives.
Antirequisites: BSD115  Equivalents: BSX115, CTB115  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point and Caboolture  Teaching period: 2011 SEM-1, 2011 SEM-2 and 2011 SUM-1

BSB119 GLOBAL BUSINESS
This unit examines the drivers of globalisation and the diversity of country markets at an introductory level. It develops the skills and understanding to identify and respond to the opportunities, challenges and risks of conducting business across politically, economically and culturally diverse environments. An authentic country feasibility study is undertaken to help identify where a firm can find opportunities both in terms of actual and potential markets and the location for value-adding activities. The unit aims for students to have developed a comprehension of the nature and role of globalisation and the drivers of international business, a knowledge of the competitive forces and challenges confronting all business as a consequence of globalisation processes and an awareness of the additional knowledge and skills required of management to operate business internationally across a diversity of environments.
Antirequisites: BSB116, BSB112, BSD119 
Equivalents: BSX119, CTB119 
Credit points: 12 
Contact hours: 3 per week 
Campus: Gardens Point and Caboolture 
Teaching period: 2011 SEM-1, 2011 SEM-2 and 2011 SUM

BSB122 QUANTITATIVE ANALYSIS AND FINANCE
To maintain the competitiveness of, and add value to, an organisation, today’s managers have to make critical business and financial decisions. This unit is a preliminary study of the techniques for analysing business information, and will provide students with a framework for understanding the fundamentals of business and financial decision making. Topics include the following: the basic techniques of organising and analysing data; the probability of probability distributions; understanding a firm’s investing, financing and dividend decisions; and the three main ideas underpinning financial decisions (time value of money, diversification and arbitrage).

Contact hours: 3 per week 
Campus: Gardens Point and Caboolture 
Incompatible with: BSB117, CTB122

BSB126 MARKETING
This introductory subject examines the role and importance of marketing to the contemporary organisation. Emphasis is placed on understanding the basic principles and practices of marketing such as the marketing concept, market segmentation, management information systems and consumer behaviour. The unit explores the various elements of the marketing mix, with special reference to product, price, distribution, and promotion, including advertising and public relations. By way of introduction only, key issues relating to services marketing, e-marketing and consumer marketing are also canvassed.

Antirequisites: BSB116, BSD126 
Equivalents: BSX126, CTB126 
Credit points: 12 
Contact hours: 4 per week 
Campus: Gardens Point and Caboolture 
Teaching period: 2011 SEM-1, 2011 SEM-2 and 2011 SUM

EFB102 ECONOMICS 2
Consumer behaviour, the role of the government in market intervention, allocative efficiency and market structure are some of the fundamental issues in microeconomics addressed in this unit. Business cycles and the related issue of macroeconomic stabilisation policy are analysed and explained within the Australian context. The significance of the international economy is described through a discussion of foreign exchange markets, the Australian dollar and the terms of trade.

Prerequisite(s): BSB113 or CTB113 
Contact hours: 3 per week 
Campus: Gardens Point

EFB200 APPLIED REGRESSION ANALYSIS
This unit expands on the basic multiple regression model introduced in EFB101, by examining the practical problems encountered in using the single equation econometric model. In particular, the major problems encountered using real data, such as multicollinearity, serial correlation in time series data and heteroskedasticity in the case of cross-sectional data, specification error, and alternative functional form issues will be illustrated in the context of published Australian data. The unit includes extensive use of a commonly used computer package to allow the practical application of the various techniques.

Prerequisite(s): EFB101 or MAB101 
Contact hours: 3 per week 
Campus: Gardens Point

EFB201 FINANCIAL MARKETS
This unit introduces students to the institutional structure of global financial markets, and thereby complements the understanding of theoretical finance gained in either BSB122 or EFB210. Topics covered include the functions of financial markets, the banking and payments system, financial system deregulation, non-bank financial institutions, stock exchange operations, debt markets, foreign exchange markets and markets for financial derivatives.

Prerequisite(s): BSB113 or CTB113 
Equivalents: EFX201 
Credit points: 12 
Contact hours: 3 per week 
Campus: Gardens Point 
Teaching period: 2011 SEM-1 and 2011 SEM-2

EFB202 BUSINESS CYCLES AND ECONOMIC GROWTH
This unit develops an analytical framework in order to evaluate the macroeconomic performance of the Australian economy and the policy actions taken by government. Key issues addressed include business cycle stabilisation, unemployment, inflation, economic growth, the balance of payments, the Commonwealth budget and national saving.

Prerequisite(s): EFB102 
Contact hours: 3 per week 
Campus: Gardens Point

EFB210 FINANCE 1
This unit covers the following topics: an introduction to the financial institutional framework; an introduction to debt and equity instruments; financial mathematics applied to the pricing of debt and equity securities; a firm’s investment decision including Net Present Value (NPV) and Internal Rate of Return (IRR); introduction to risk and uncertainty using the Capital Asset Pricing Model (CAPM) and Weighted Average Cost of Capital (WACC) concept and risk management.

Prerequisite(s): BSB123 or BSB122 or MAB126 or (BSB110 and BSB113) 
Equivalents: EFX210 
Credit points: 12 
Contact hours: 3 per week 
Campus: Gardens Point 
Teaching period: 2011 SEM-1, 2011 SEM-2 and 2011 SUM

EFB211 FIRMS, MARKETS AND RESOURCES
This unit is concerned with the economic analysis of the decisions and actions of consumers, firms, and governments in modern economies. It develops student understanding of that body of economics that is expressly concerned with the operations of, and inter-relationships between, the individual units of the economy. The unit is designed, not only to foster both clear thinking about the interplay between government, private firms, and consumers, but also to develop the student's ability to apply microeconomic concepts to economic problems that the student has not previously encountered.

**Prerequisite(s):** EFB102  
**Contact hours:** 3 per week  
**Campus:** Gardens Point

**EFB307 FINANCE 2**

This unit includes the following topics: the financing decision - capital structure, debt versus equity, lease versus debt, term structure versus default structure of interest rates; the dividend decision - dividends versus capital gains, franked versus unfranked income; firm valuation; free cash flow model; evaluation of takeovers; Risk and Return - diversification, the CAPM model, its practical application and its relationship to efficient market hypothesis; introduction to forwards, futures, options, warrants, convertibles and risk management using financial derivatives.

**Prerequisites:** EFB210  
**Equivalents:** EFX307  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1 and 2011 SEM-2

**EFB308 FINANCE 3**

This unit includes the following topics: a study of contemporary finance research; CAPM; beta estimation; valuation theory; market efficiency; value at risk; use of finance research tools; anomalies and extension of finance theories. Students are required to complete a research project combining theory and practice. This unit covers many topical areas in contemporary finance research. These include, but are not limited to: asset pricing; beta estimation; market efficiency; value at risk; mutual fund performance; volatility modelling; and the term structure of interest rates. Students are required to complete a research project combining theory and practice.

**Prerequisites:** EFB307  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-2

**EFB309 FINANCIAL DERIVATIVES**

This unit extends students' knowledge of financial derivatives as obtained in Finance 2. Topics include: advanced option pricing models; advanced option trading strategies; exotic options; forward and futures pricing models; hedging commodities and equities by using futures; forward rate agreement and interest rate swaps; financial risk management issues.

**Prerequisites:** EFB307  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1

**EFB310 FINANCIAL INSTITUTIONS - CONTROL**

This unit introduces students to the fundamental principles of controlling the risk profile and capital position of a deposit-taking financial institution to maintain solvency. The basic framework of the unit is based on the regulatory capital adequacy regimes, supplemented by consideration of the more sophisticated internal models of risk developed by financial institutions themselves. Relevant case studies demonstrate the imperative for, and application of, the risk management framework.

**Prerequisites:** EFB210  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-2

**EFB311 FINANCIAL INSTITUTIONS - LENDING**

This unit examines the fundamental motivations for lending by financial institutions, and the ways in which these are reflected in loan market practice. Specific topics cover the theoretical basis of lending as financial intermediation, the purpose and utilization of loans by borrowers, the major costs of lending for financial intermediaries (including a strong focus on credit costs), lenders' compensation, lending relationships, the structural features of loan agreements, loan security and enforcement, and special topics on syndicated lending and project finance.

**Prerequisites:** EFB210  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1

**EFB312 INTERNATIONAL FINANCE**

This unit examines the theory and practice of international finance, including the mechanics and uses of the spot, forward, swap, futures and options markets in foreign exchange; the relationship between domestic and international capital markets; interest rate and exchange rate determination; risk management of foreign exchange; international trade finance; evaluation of offshore investment.

**Prerequisites:** EFB210, IBB202, EFB240  
**Equivalents:** EFX312  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1 and 2011 SEM-2

**EFB314 INTERNATIONAL TRADE AND ECONOMIC COMPETITIVENESS**

The unit analyses the increasing globalisation of world trade and investment, and develops an analytical framework to assess the impact of these flows on the Australian economy, its businesses, people and policy makers. It examines the patterns of trade and capital flow.
Prerequisite(s): EFB211 & EFB202  
Contact hours: 3 per week  
Campus: Gardens Point  
Incompatible with: EFB212

**EFB318 PORTFOLIO AND SECURITY ANALYSIS**

This unit addresses the following topics: management of investment portfolios; diversification; performance management; risk management; advanced asset pricing models; equity valuation strategies and fixed interest risk analysis.

**Prerequisite(s):** EFB307  
Contact hours: 3 per week  
Campus: Gardens Point

**EFB324 MACROECONOMICS AND GLOBAL FINANCIAL MARKETS**

The unit provides an in-depth understanding of the interplay between macroeconomic policies and global financial markets. Macroeconomic frameworks adopted in this unit are practically oriented and much of the material with which they deal is drawn from relevant events of recent decades. The unit discusses various analytical tools and policy approaches to the macroeconomy as they affect both developed and developing countries. Particular emphasis is given to how a good knowledge of macroeconomics helps in understanding international financial market developments and also, to some extent, how fluctuations in such markets can have serious implications for macroeconomic conditions and economic policy.

**Prerequisite(s):** EFB202  
Contact hours: 3 per week  
Campus: Gardens Point

**EFB325 FINANCIAL MICROECONOMICS**

This unit addresses the theoretical microeconomic foundations of financial economics, focussing on how individuals and firms deal with uncertainty and situations involving strategic interactions. The theoretical concepts are illustrated with application from both the private and public sector. Contents include game theory and its economic applications, expected utility theory, risk analysis, intertemporal preferences, cost of capital, demand for capital, and asymmetric information.

**Prerequisite(s):** EFB211  
Contact hours: 3 per week  
Campus: Gardens Point

**EFB326 APPLIED PORTFOLIO MANAGEMENT**

This unit introduces the student to the treasury environment in which financial institutions operate. The key to the unit is the raising of funds and the management of interest rate risk. This unique hands-on unit allows students to develop these skills by trading in a simulated environment of international economic uncertainty. Students have trading parameters within which they should operate. Students must make decisions concerning source of funds, term and duration, interest rate re-set, and risk management with derivatives. Trading will be conducted over a simulated four quarter year.

**Prerequisite(s):** EFB210  
Credit points: 12  
Contact hours: 3 per week  
Campus: Gardens Point  
Teaching period: 2011 SEM-2

**EFB327 ECONOMETRICS OF FINANCIAL MARKETS**

The Econometrics of Financial Markets provides a comprehensive introduction to models of economic behaviour in financial markets, using the tools of discrete time-series analysis. This unit aims to give grounding in the necessary econometric methods before demonstrating how competing theoretical models may be tested. It provides illustrative empirical results from the stock, bond and foreign exchange markets.

**Prerequisite(s):** EFB200  
Contact hours: 3 per week  
Campus: Gardens Point

**EFB328 PUBLIC ECONOMICS AND FINANCE**

The major topics/areas covered in this unit include principles underlying government provision, distribution and finance as responses to market failure, externalities and government intervention in the presence of externalities and economics of pollution control. Cost-benefit analysis is the environment is also dealt with under this section. In the next section we provide an introduction to tax and then we discuss tax compliance and reform of the tax system. Under education the unit will cover the following: Market failure and government failure in education, financing of education and education outcomes, consumer choice in education and economic analysis of current directions in education reform. Under health the unit will cover topics such as demand for health, health sector targets and instruments of public policy, health care financing and outputs in Australia and problems of information in the health sector.

**Prerequisite(s):** EFB211  
Contact hours: 3 per week  
Campus: Gardens Point

**EFB329 CONTEMPORARY APPLICATIONS OF ECONOMICS THEORY**

This capstone unit reinforces and extends the economic theory introduced to students in the major, and applies it to a number of topical issues that lend themselves to critical analysis using economic principles. Both macroeconomic and microeconomic theories are used with the emphasis placed on usefulness of the theory in development of a framework which assists with decision-making and informs critiques of public policy. Some of the perspectives taken in studying these topics will include: their impacts on efficiency and on specific economic agents and institutions; the role, if any, of government in their resolution; and the economic instruments available to analysts by which to frame their detailed consideration.

**Prerequisite(s):** 192 credit points of study, including EFB202 and EFB211  
Contact hours: 3 per week
MAB100 MATHEMATICAL SCIENCES 1A
To enrol you should have (1) at least Sound Achievement in 4 semesters of Mathematics B, or (2) a grade of least 4 in MAB105, or (3) the equivalent. This unit will reinforce the notion of a function with particular emphasis on polynomial, trigonometric, exponential and logarithmic functions including arithmetic and geometric progressions and the binomial theorem. Calculus will be reviewed and expanded with an emphasis on integration and on integration techniques and applications. Vectors and matrices will be introduced with vectors interpreted geometrically and algebraically and matrices as representations of linear systems, with applications. If time permits, complex numbers will be introduced. This unit is incompatible with HA in Senior Mathematics C.

Prerequisite(s): MAB105 or SA in Senior Maths B (or equivalent) Credit points: 12 Contact hours: 4 per week Campus: Gardens Point

Teaching period: 2009 SEM-1, 2009 SEM-2 and 2009 SUM

MAB101 STATISTICAL DATA ANALYSIS 1
Experiments, observational studies, sampling, and polls; data and variables; framework for describing and manipulating probability; independence; Binomial and Normal distributions; population parameters and sample statistics; concepts of estimation and inference; standard error; confidence intervals for means and proportions; tests of hypotheses on means and proportions (one sample and two independent samples); inference using tables of counts; modelling relationships using regression analysis; model diagnosis; use of statistical software.

Assumed knowledge: Grade of at least Sound Achievement in Senior Mathematics C (or equivalent) or MAB100 is assumed knowledge. Credit points: 12 Contact hours: 4 per week Campus: Gardens Point


MAB112 MATHEMATICAL SCIENCES 1C
This unit includes the following: introduction to linear algebra including vectors, matrices and linear systems; the real and complex number systems; first and second order differential equations. Students must have completed four semesters of Senior Mathematics C with an exit level of Sound Achievement, or have passed MAB100 (or equivalent).

Corequisites: MAB111 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point

MAB210 STATISTICAL MODELLING 1
This unit is intended for all mathematics degree students, all double degree students with mathematics, secondary education students with mathematics as a teaching area, and quantitatively-oriented students in other courses, particularly in Science, Information Technology, Engineering and areas of Business. The unit will provide you with fundamental skills and operational knowledge for all further study in statistics, and highly relevant foundations for other areas of mathematics such as mathematical modelling and operations research. The unit will also help you develop fundamental problem-solving skills in statistics and mathematics.

Prerequisites: MAB121 or MAB122 Antirequisites: MAN210 Assumed knowledge: Grade of Sound Achievement in Senior Mathematics C (or equivalent) or MAB100 is assumed knowledge. Students are advised to enrol in either MAB121 or MAB122 in the same semester if not previously completed. Credit points: 12 Contact hours: 4 per week Campus: Gardens Point

Teaching period: 2011 SEM-1 and 2011 SEM-2

MAB220 COMPUTATIONAL MATHEMATICS 1
Many real world problems are not solvable analytically, meaning that it is necessary to develop computational methods that can be used to solve these problems. Additionally, to be able to apply these methods to large problems, they must be implemented as algorithms in a computer language such as MATLAB. This unit addresses both the theoretical development of computational methods and their implementation in MATLAB. The aim of this unit is to provide you with the introductory concepts, computational techniques and programming skills that will allow you to solve many real world problems. It is also designed to prepare you for study in the advanced units in computational mathematics.

Assumed knowledge: Grade of at least Sound Achievement in Senior Mathematics B (or equivalent) or MAB105 and corequisite MAB120 or MAB125
MAB311 ADVANCED CALCULUS
This unit includes the following: polar coordinates; parametric equations; conic sections; quadric surfaces; vector-valued functions; Fourier series; functions of several variables; graphs; partial derivatives; total derivatives; extrema; Lagrange multipliers; Taylor series for multivariable functions; double and triple integrals; Green's theorems; line and surface integrals; divergence theorem; Stoke's theorem; applications.
Prerequisites: (MAB111 or MAB121) and (MAB112 or MAB122) Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-1

MAB312 LINEAR ALGEBRA
This unit covers the following broad topics from linear algebra: matrix analysis; eigenvalues and eigenvectors; vector spaces; inner product spaces.
Prerequisites: (MAB111 or MAB121) and (MAB112 or MAB122) Antirequisites: MAN312 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-1

MAB313 MATHEMATICS OF FINANCE
Finance provides one of the significant areas for the application of mathematics. Understanding the fundamental principles involved will enhance your general preparation for life and provide an essential tool for those of you who intend to pursue further studies or careers in the financial area. The aim of this unit is to provide you with an introduction to the methods used in obtaining relevant solutions to financial and business problems.
Prerequisites: MAB111 or MAB121 (which can be concurrently enrolled) Antirequisites: MAN313 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-2

MAB314 STATISTICAL MODELLING 2
This unit includes: models for stochastic processes and statistical methods, which have applications in engineering, information technology, finance, and physical and life sciences. Markov chains; random walks; branching processes; queueing processes; long-term behaviour of processes; use of generating functions; bivariate and conditional distributions; transformations of random variables; beta and gamma distributions; mixture distributions; order statistics, minimum and maximum.
Prerequisites: MAB112 and MAB210 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-1

MAB315 OPERATIONS RESEARCH 2
This unit introduces the essential features of operations research methods. It develops a number of basic mathematical techniques to solve generic problems and the theoretical foundations of these techniques. Students should develop the ability to apply various operations research methods, algorithms and techniques in the solution of practical problems. Students will also look at the applications of operations research techniques to real-world problems.
Prerequisites: MAB210 and (MAB112 or MAB122) Antirequisites: MAN315 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-1

MAB413 DIFFERENTIAL EQUATIONS
Differential Equations are among the most important aspects of the theoretical developments of any branch of science. It is often the case that the formulation of mathematical models of real world problems leads to an equation in which a function and its derivatives play a major role. Such equations are examples of differential equations. This unit builds on studies of differential equations in first year and provides a framework for studying partial differential equations and other aspects of applied mathematics in later semesters.
Prerequisites: MAB311 or MAB312 Antirequisites: MAN413 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-2

MAB414 APPLIED STATISTICS 2
This unit includes: Simple linear regression (revision), multiple linear regression, making inferences from regressions, choosing a model, checking model assumptions, general linear models - analysis of covariance, ANOVA revisited, designing experiments, issues in designing experiments, analysing experimental results, further experimental designs, assumptions, and how to cope if they aren't met, simulations.
Prerequisites: MAB101 Assumed knowledge: MAB112 is recommended prior study Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-2

MAB420 COMPUTATIONAL MATHEMATICS 2
This unit provides you with the opportunity to employ a number of the skills that you have developed in the disciplines of computational mathematics and linear algebra, combining them in a coherent manner for resolving topical and relevant real world problems. You will become familiar with the methodologies for developing numerical algorithms that can be employed for either the direct solution or the iterative solution of large, sparse linear systems.
MAB422 MATHEMATICAL MODELLING
In this unit you will develop skills in the formulation and interpretation of mathematical models of ‘real-world’ problems drawn from the literature, the media and the lecturer's own research areas. You will also develop and extend your skills in the use of mathematical software to investigate solutions of some of these models. By emphasising the need to write clear mathematical arguments and to explain in logical and clear English the conclusions drawn from the mathematical models developed in the unit, you will also develop your written communication skills.

Prerequisites: MAB121 Antirequisites: MAN422
Assumed knowledge: MAB220 is recommended for prior/concurrent study for exposure to MATLAB
Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-2

MAB461 DISCRETE MATHEMATICS
Discrete mathematics is playing an ever increasingly important role in society. We live in an electronic age where information security is of paramount importance, and it is discrete mathematics in the main that provides this security. In addition, many real world systems are discrete in nature and therefore lend themselves to a discrete analysis. These methods are therefore vital to the professional mathematician and useful to those with an interest in mathematics. This second level unit will provide you with an introduction to discrete and combinatorial mathematics, and give you a mathematical perspective that is different from the traditional coverage in other mathematics units. It will also provide you with valuable methods to apply in other areas of science and computer science.

Prerequisites: MAB112 or MAB122 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-2

MAB480 INTRODUCTION TO SCIENTIFIC COMPUTATION
This unit teaches students how to implement a mathematical algorithm in a modern scientific computing environment (eg Matlab). A case-study approach is used with an emphasis on writing efficient code. Also an overview of other software packages used in mathematics will be given.

Antirequisites: ITB849 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point

MAB481 VISUALISATION AND DATA ANALYSIS
This unit covers; history and evolution of data visualisation, definition of data visualisation, impact of data visualisation; fundamentals of computer graphics and modern day visualisation environments; visualisation of 2-D and 3-D data; general visualisation techniques including filtering; colour map transformations; contouring; height fields; coloured height fields; interpolation; Delauney triangulation; iso-surfaces; volume visualisation; probing; slicing; streamlines; streaklines and texture mapping; visualisation of multi-dimensional data; other data types such as finite element, vector, molecular and scatter data. Not offered after 2009.

Prerequisite(s): MAB101, MAB111, MAB480 or ITB003 (Highly Recommended: MAB112) Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2009 SEM-1

MAB521 APPLIED MATHEMATICS 3
This unit includes: partial differential equations such as the wave, heat and Laplace equations; special functions(gamma, delta, Bessel and error functions, Legendre polynomials); vector analysis and applications (vector algebra, vector calculus, fields, grad, div, curl, line and surface integrals, divergence theorem, Stoke’s theorem, applications); functions of a complex variable (analytic functions, contour integrals, Laurent series, residues).

Prerequisites: MAB311 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-1

MAB522 COMPUTATIONAL MATHEMATICS 3
This unit includes: deriving the basic equations that describe fluid motion; the finite volume method for solving PDEs (application to the generalised diffusion equation, cell-centred and vertex-centred schemes, handling of boundary and initial conditions); solution of systems of nonlinear equations (Newton’s method, Inexact Newton methods, Globally convergent methods).

Prerequisites: MAB311 and MAB420 Antirequisites: MAN522 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-1

MAB524 STATISTICAL INFERENCE
This unit includes: maximum likelihood estimation, confidence intervals and hypothesis tests, introduction to Bayesian inference, prior and posterior distributions, Bayesian inference for binomial data, Poisson count data and normal data, simulation techniques for sampling from distributions. Use of software Matlab and R.

Prerequisites: MAB314 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-1

MAB525 OPERATIONS RESEARCH 3A
This unit develops problem-solving skills and sharpens analytical skills. This unit introduces the technical issues
involved in applying operations research principles, methods and algorithms in the solution of real-world problems.

**Prerequisites:** MAB315  
**Antirequisites:** MAN525

**MAB533 STATISTICAL TECHNIQUES**

This unit builds on your knowledge and skills of statistical techniques and aims to provide you with an understanding and a working knowledge of some more specialised statistical techniques and their applications. Topics covered include quality management concepts and tools for statistical process control, modelling and analysis of reliability (for inanimate objects) and survival (for living entities), and multivariate techniques such as principal components analysis, discriminant analysis and cluster analysis.

**Prerequisites:** MAB210 and MAB414  
**Antirequisites:** MAB523

**MAB536 TIME SERIES ANALYSIS**

Data in business, economics, engineering and the natural sciences often occur in the form of time series. Time Series Analysis provides models and methods for the analysis of such series of correlated observations. The ability to forecast optimally, to understand causal relationships between variables, and to analyse dynamic systems is of great practical importance. For example, optimal sales forecasts are needed for business planning, transfer function models are needed for improving the design and control of a process plant, and vector time series models are used to represent the relationships and interactions of macroeconomic variables in an economy. This unit is concerned with the building of time series models and the use of such models for practical applications such as optimal forecasting, simulation, causality analysis, and analysis of dynamic systems.

**Prerequisites:** MAB314 and MAB414  
**Antirequisites:** MAB536, MAB526

**MAB613 PARTIAL DIFFERENTIAL EQUATIONS**

Partial differential equations are the classical foundation of mathematical models used to unambiguously describe processes exhibiting spatial and temporal variation. There exist numerous modern important examples of such so-called continuum models and so it is essential that any practising mathematician be conversant with both the background, formulation and solution of such equations. This unit aims to develop your understanding of the construction, analysis, solution and interpretation of partial differential equation models of real-world processes.

**Prerequisites:** MAB311 and MAB413  
**Antirequisites:** MAN613

**MAB623 FINANCIAL MATHEMATICS**

This unit includes the following: quantitative techniques in business, economics and finance; theory and structure of interest rates; general accumulation and discounting functions; force of interest; discounting including Modern Portfolio theory and extension; varying interest; general annuities; varying annuities; continuous varying annuities; mathematical analysis of financial transactions in money and capital markets; life annuities and life assurances; the life table; basic life table functions; life annuities and assurances; policy values; paid up policy values; changes to policies; use of life table; superannuation.

**Prerequisites:** MAB313 and MAB311  
**Credit points:** 12

**MAB624 APPLIED STATISTICS 3**

Applied statistics provides methods for investigating relationships between variables that arise in data from a variety of areas including science, technology and commerce. The planning of the collection of the data, using ideas of experimental design, and the analysis of the resulting data, using methods based on statistical inference, are fundamental aspects of the statistical process. In addition, communication of results with clear reporting of the conclusions of the analysis is very important. These activities are an important part of decision making processes whatever the context of the application. This unit aims to build on the introductory experimental design and statistical analysis methods presented to you in Applied Statistics 2 in order to introduce modern statistical methods. Additionally, the use of statistical software to carry out analyses and the reporting of conclusions are emphasised.

**Prerequisites:** MAB414  
**Antirequisites:** MAN624

**MAB625 OPERATIONS RESEARCH 3B**

Operations research techniques are used in most industries that are concerned with the application of scientific methods in decision making, especially the allocation of resources. There is thus a need for graduate students who can make decisions on the most appropriate technology to solve a particular problem and implement it. This unit will build on the foundation of previous Operations Research units to develop knowledge and skills in using advanced techniques, tools and methods.

**Prerequisites:** MAB315  
**Equivalents:** MAN625
MAB640 INDUSTRY PROJECT
In a holistic and systematic approach to problem solving, it is important that you learn to apply analytical methods and quantitative techniques encountered in a classroom environment to real world issues in industry. The aim of this unit is to allow you to utilise your knowledge of problem solving procedures and develop your communication and interactive skills by completing a specified project in industry under controlled supervision, providing a summary of your findings in a seminar and presenting a formally written detailed report.

Other requisites: Unit coordinator approval is required to enrol
Credit points: 24
Campus: Gardens Point
Teaching period: 2011 SEM-1 and 2011 SEM-2

MAB672 ADVANCED MATHEMATICAL MODELLING
Models are developed beginning with the description of 'real world' problems. Emphasis is on the mathematical modelling and not on the development of new mathematical techniques. The unit includes: mathematical modelling; model formulation; dimensional analysis and re-scaling; curves of pursuit; bungy jumping; modelling with systems of ordinary differential equations; phase plane methods for analysing systems of ODEs; bacterial growth in a chemostat; predator-prey models with harvesting; limit cycles; oscillations and excitable media; modelling with partial differential equations; motion of a continuum; continuity; traffic flow; aggregation of slime mould amoebae; momentum; ideal gas dynamics; quasi-linear PDEs.
Prerequisites: MAB422
Antirequisites: MAN672
Assumed knowledge: MAB311. Also recommend: MAB413
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2011 SEM-1

MAB681 ADVANCED VISUALISATION AND DATA ANALYSIS
This unit includes: advanced visualisation; virtual reality and data analysis; contemporary issues in data visualisation; introduction to advanced tools; completion of a project in advanced visualisation which demonstrates analysis, background research, investigation, development of project proposal, and presentation of the project outcomes.
Prerequisite(s): MAB481 (Highly Recommended: MAB380 or MAB480)
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2007 SEM-2
Incompatible with: MAN681