



## 2012 Undergraduate & Postgraduate Program Rules

# Faculty of Engineering, Computer & Mathematical Sciences

### Contents

#### Undergraduate Program Rules

Bachelor of Computer Graphics.....	57
Bachelor of Computer Science .....	59
Honours degree of Bachelor of Computer Science .....	61
Bachelor of Computer Science (Advanced) .....	62
Bachelor of Engineering .....	65
B.E.(Architectural).....	69
B.E.(Chemical) .....	69
B.E.(Chemical – Minerals Processing).....	70
B.E.(Chemical – Sustainable Energy) .....	71
B.E.(Chemical)/B.A. ....	72
B.E.(Chemical)/B.Ec. ....	73
B.E.(Chemical)/B.Fin.....	74
B.E.(Chemical)/B.Ma.&Comp.Sc.(Computer Science focus) .....	75
B.E.(Chemical)/ B.Ma.Comp.Sc. (Mathematics focus).....	76
B.E.(Chemical)/B.Sc. ....	77
B.E.(Chemical)/B.Sc.(Biotech.) .....	78
B.E.(Civil and Environmental).....	79
B.E.(Civil and Environmental)/B.A.....	79
B.E.(Civil and Environmental)/B.Ec. ....	81
B.E.(Civil and Environmental)/B.Fin. ....	82
B.E.(Civil and Environmental)/B.Ma.& Comp.Sc. (Computer Science focus) .....	83
B.E.(Civil and Environmental)/B.Ma.&Comp.Sc. (Mathematics focus).....	84
B.E.(Civil and Environmental)/B.Sc. ....	85
B.E.(Civil and Structural).....	86
B.E.(Civil and Structural)/B.A. ....	87
B.E.(Civil and Structural)/B.Ec. ....	88
B.E.(Civil and Structural)/B.Fin. ....	89
B.E.(Civil and Structural)/B.Ma.&Comp.Sc. (Computer Science focus) .....	91
B.E.(Civil and Structural)/B.Ma.&Comp.Sc. (Mathematics focus).....	92
B.E.(Civil and Structural)/B.Sc. ....	93

B.E.(Civil and Structural)/ B.E.(Civil and Environmental)	94
B.E.(Computational)	95
B.E.(Computer Systems)	96
B.E.(Computer Systems)/B.A	97
B.E.(Computer Systems)/B.Ec. program	97
B.E.(Computer Systems)/B.Fin.	98
B.E.(Computer Systems)/LLB.	99
B.E.(Computer Systems)/B.Ma.&Comp.Sc.	100
B.E.(Electrical and Electronic)	100
B.E.(Electrical and Electronic - Avionics)	101
B.E.(Electrical and Electronic)/B.A.	102
B.E. (Electrical and Electronic)/B.Ec.	103
B.E.(Electrical and Electronic)/B.Fin	103
B.E.(Electrical and Electronic)/LLB.	104
B.E.(Electrical and Electronic)/B.Ma.&Comp.Sc.	105
B.E.(Electrical and Electronic)/B.Sc.	106
B.E. (Electrical and Sustainable Energy)	106
B.E.(Mechanical)	107
B.E.(Mechanical)/B.A.	108
B.E.(Mechanical)/B.Ec.	109
B.E.(Mechanical)/B.Fin	110
B.E.(Mechanical)/LLB.	111
B.E.(Mechanical)/B.Ma.&Comp.Sc. (Computer Science focus)	112
B.E (Mechanical)/B.Ma.&Comp.Sc. (Mathematics focus)	113
B.E.(Mechanical)/B.Sc.	114
B.E.(Mechanical and Aerospace)	115
B.E.(Mechanical and Aerospace)/B.Ma.&Comp.Sc. (Computer Science focus)	115
B.E.(Mechanical and Aerospace)/ B.Ma.Comp.Sc. (Mathematics focus)	116
B.E (Mechanical and Aerospace)/B.Sc.	117
B.E.(Mechanical and Automotive)	118
B.E.(Mechanical and Automotive)/B.Ma.&Comp.Sc. (Computer Science focus)	119
B.E.(Mechanical and Automotive)/B.Ma.&Comp.Sc. (Mathematics focus)	119
B.E.(Mechanical and Sports)	120
B.E.(Mechanical and Sustainable Energy)	121
B.E.(Mechatronic)	121
B.E.(Mechatronic)/B.A.	122
B.E.(Mechatronic)/B.Ma. & Comp. Sc. (Computer Science focus)	123
B.E (Mechatronic)/ B.Ma.& Comp.Sc. (Mathematics focus)	124
B.E.(Mining)	125
B.E.(Mining)/B.Ma.& Comp.Sc. (Mathematics focus)	125
B.E.(Mining)/B.Sc.	126
B.E.(Petroleum)	127
B.E.(Petroleum)/B.E.(Chemical)	128
B.E.(Petroleum)/B.E.(Civil and Structural)	129
B.E.(Petroleum)/B.E.(Mechanical)	130
B.E.(Petroleum)/B.E.(Mining)	131
B.E.(Petroleum)/B.Sc.(Geology & Geophysics)	132
B.E.(Pharmaceutical)	133
B.E.(Software)	134

B.E (Telecommunications)	135
B.E (Telecommunications)/B.A.	136
B.E (Telecommunications)/B.Ec.	136
B.E (Telecommunications)/B.Fin.	137
B.E (Telecommunications)/LLB.	138
B.E (Telecommunications)/B.Ma.&Comp.Sc.	139
Bachelor of Innovation and Entrepreneurship	140
Bachelor of Mathematical Sciences	141
Bachelor of Mathematical Sciences (Honours)	144
Bachelor of Mathematical Sciences (Advanced)	145
Bachelor of Mathematical and Computer Sciences	149
Bachelor of Mathematical and Computer Sciences (Honours)	153
<b>Postgraduate Program Rules</b>	
Graduate Certificate in Applied Project Management	155
Graduate Diploma in Applied Project Management	157
Master of Applied Project Management	159
Master of Applied Project Management (Project Systems)	161
Graduate Certificate in Computer Science	163
Graduate Diploma in Computer Science	164
Master of Computer Science	166
Master of Computing and Innovation	168
Graduate Diploma in Engineering	170
Master of Engineering	172
Graduate Certificate in Innovation and Entrepreneurship	178
Graduate Diploma in Innovation and Entrepreneurship	180
Master of Applied Innovation And Entrepreneurship	182
Master of Applied Innovation and Entrepreneurship (Advanced)	185
Master of Geostatistics	187
Graduate Certificate in Marine Engineering	189
Graduate Diploma in Marine Engineering	191
Master of Marine Engineering	194
Graduate Diploma in Mathematical Sciences	197
Master of Mathematical Sciences	199
Master of Petroleum Business Management	201
Master of Petroleum Engineering	203
Graduate Certificate in Petroleum Geology and Geophysics	205
Graduate Certificate in Science and Technology Commercialisation	206
Graduate Diploma in Science and Technology Commercialisation	208
Master of Science and Technology Commercialisation	210
Master of Science and Technology Commercialisation (Advanced)	212
Graduate Certificate in Sciences (Defence)	214
Graduate Diploma in Sciences (Defence)	216
Master of Sciences (Defence)	218
Graduate Certificate in Sciences (Defence Signal and Information Processing)	220
Graduate Diploma in Sciences (Defence Signal Information Processing)	222
Master of Sciences (Defence Signal Information Processing)	224
Master of Science (Petroleum Geoscience)	226
Graduate Certificate in Social Entrepreneurship and Innovation	227
Master of Software Engineering	229

Graduate Certificate in Water Resources Management.....	231
Graduate Diploma in Water Resources Management .....	233
Master of Water Resources Management .....	236
<b>Postgraduate Research Degrees</b>	
Master Degrees by Research .....	240
Master of Applied Science.....	240
Master of Engineering Science.....	242
Master of Science in Mathematical and Computer Sciences.....	246

#### Notes on Delegated Authority

1. Council has delegated the power to approve minor changes to the Academic Program Rules to the Executive Deans of Faculties.
2. Council has delegated the power to specify syllabuses to the Head of each department or centre concerned, such syllabuses to be subject to approval by the Faculty or by the Executive Dean on behalf of the Faculty.

## Undergraduate Program Rules

### Bachelor of Computer Graphics

Note: There will be no further intake into this program

These Program Rules should be read in conjunction with the University's policies (<http://www.adelaide.edu.au/policies>).

#### 1 Duration of program

The program of study for the Bachelor degree shall extend over three years of full-time study or the equivalent part-time study.

#### 2 Assessment and examinations

- 2.1 A candidate shall not be eligible to attend for examination unless the prescribed work has been completed to the satisfaction of the teaching staff concerned.
- 2.2 In determining a candidate's final result in a course (or part of a course) the examiners may take into account oral, written, practical and other work, provided that the candidate has been given adequate notice at the commencement of the teaching of the course of the way in which such work will be taken into account and of its relative importance in the final result.
- 2.3 There shall be four classifications of pass in the final assessment of any course for the Bachelor degree, as follows: Pass with High Distinction, Pass with Distinction, Pass with Credit, Pass.
- 2.4 A candidate who fails a course for the Bachelor degree and who desires to take that course again shall, unless exempted wholly or partially therefrom by the Faculty concerned, again complete the required work in that course to the satisfaction of the teaching staff concerned.
- 2.5 A candidate who has twice failed any course for the Bachelor degree may not enrol for that course again or for any other course which in the opinion of the Faculty contains a substantial amount of the same material, except by permission of the Faculty and then only under such conditions as the Faculty may prescribe.

#### 3 Qualification requirements

##### 3.1 General: Bachelor of Computer Graphics

- 3.1.1 The program of study for the degree of Bachelor of Computer Graphics shall extend over three years of full time study or equivalent.
- 3.1.2 To qualify for the Bachelor degree a candidate shall present passes in courses from 3.2 to the value of at least 72 units including:
  - a at least 24 units for Level I courses
  - b at least 18 units for Level II courses

- c at least 24 units for Level III courses
- d at least 45 units for Level II and Level III courses.

##### 3.1.3 The courses presented must include:

- a MATHS 3015 Communication Skills III .....3
- b At least one of the following:  
MATHS 1008 Mathematics for Information Technology I .....3  
MATHS 1012 Mathematics IB .....3
- c At least 9 units of Level I Computer Science courses with at least 6 units at the level of Pass or higher
- d At least 12 units of Level III Computer Science courses
- e The Computer Science courses must include:  
COMP SCI 1102 Object Oriented Programming .....3  
COMP SCI 1103 Algorithm Design & Data Structures.....3  
COMP SCI 2000 Computer Systems .....3  
COMP SCI 2005 Systems Programming in C & C++ .....3  
COMP SCI 2006 Introduction to Software Engineering .....3  
COMP SCI 2201 Algorithm and Data Structure Analysis .....3  
COMP SCI 3006 Software Engineering & Project.....3  
COMP SCI 3007 Artificial Intelligence .....3  
COMP SCI 3013 Event Driven Computing.....3  
COMP SCI 3014 Computer Graphics .....3

Note (not forming part of the Academic Program Rules)

A graduate who qualifies for the Bachelor of Computer Graphics will be considered to have qualified for a major in Computer Science.

The core course DEST 2506 Digital Media II will not be offered from 2012. In lieu of DEST 2506 Digital Media II, students may present:

- a COMP SCI 2003 Topics in Computer Graphics or
- b two additional Level II elective courses

The core course DEST 3031 Digital Media Studio will not be offered from 2011. In lieu of DEST 3031 Digital Media Studio, students may present:

- a COMP SCI 3019 Topics in Computer Graphics *or*
- b two additional Level III elective courses

3.1.4 A graduate who wishes to qualify for the degree of Bachelor of Computer Graphics and to count towards that degree courses which have already been presented for another award may do so providing such a candidate either

- a presents a range of courses which fulfils the requirements of 3.1.2 and 3.1.3 above. The courses presented must include Level II and Level III courses from 3.2 below to the value of at least 24 units, which have not been presented for any other degree. At least 18 units of the new courses must be at Level III *or*
- b presents a range of courses as determined by the Faculty in accordance with any formal articulation programs approved by the Faculty

3.1.5 No candidate will be permitted to count for the degree any course together with any other course that, in the opinion of the Faculty, contains a substantial amount of the same material; and no course may be counted twice towards the same degree. No candidate may present the same section of a course in more than one course for the degree.

3.1.6 Students who have completed at another institution part of the equivalent of the requirements for the Adelaide degree of Bachelor of Computer Graphics will be required as a minimum to complete Level III courses from 3.2 with an aggregate unit value of 24 satisfying the requirements of 3.1.3.

3.1.7 With special permission of the Faculty, a student who has completed most of the courses for the degree of Bachelor of Computer Graphics at the University of Adelaide including Level III Computer Science courses with an aggregate unit value of 12 may be permitted to complete the requirements for the degree at another institution. All applications must be made in writing to the Faculty.

### 3.2 Program of study for the degree of Bachelor of Computer Graphics

Note: Students are advised that some courses are either unrepresentable or cannot be counted with other courses towards the degree of Bachelor of Computer Graphics. Students are advised to check their chosen electives with the Faculty Program Adviser.

Notwithstanding the Academic Program Rules and syllabuses published in this volume, a number of the courses listed in the program leading to the de-

gree of Bachelor of Computer Graphics may not be offered. The availability of all courses is conditional upon the availability of staff and facilities.

#### 3.2.1 Level I

Courses offered at Level I towards a degree program at the University of Adelaide and approved by the Faculty Program Adviser.

#### 3.2.2 Level II

Courses offered at Level II towards a degree program at the University of Adelaide and approved by the Faculty Program Adviser.

#### 3.2.3 Level III

Courses offered at Level III towards a degree program at the University of Adelaide and approved by the Faculty Program Adviser.

### 3.3 Graduation

Subject to Chapter 89 of the Statutes, candidates who have satisfied the requirements for any award of the University shall be admitted to that award.

### 4 Special circumstances

When in the opinion of the relevant Faculty special circumstances exist, the Council, on the recommendation of the Faculty in each case, may vary any of the provisions of the Academic Program Rules for any particular award.

These Program Rules should be read in conjunction with the University's policies (<http://www.adelaide.edu.au/policies>).

### 1 General

There shall be a degree and an Honours degree of Bachelor of Computer Science. A candidate may obtain either degree or both.

### 2 Duration of program

The program of study for the Bachelor degree shall extend over three years of full-time study or the equivalent part-time study.

### 3 Assessment and examinations

- 3.1 A candidate shall not be eligible to attend for examination unless the prescribed work has been completed to the satisfaction of the teaching staff concerned.
- 3.2 In determining a candidate's final result in a course (or part of a course) the examiners may take into account oral, written, practical and other work, provided that the candidate has been given adequate notice at the commencement of the teaching of the course of the way in which such work will be taken into account and of its relative importance in the final result.
- 3.3 There shall be four classifications of pass in the final assessment of any course for the Bachelor degree, as follows: Pass with High Distinction, Pass with Distinction, Pass with Credit, Pass.
- 3.4 A candidate who fails a course for the Bachelor degree and who desires to take that course again shall, unless exempted wholly or partially therefrom by the Head of the School concerned, again complete the required work in that course to the satisfaction of the teaching staff concerned.
- 3.5 A candidate who has twice failed any course for the Bachelor degree may not enrol for that course again or for any other course which in the opinion of the Faculty contains a substantial amount of the same material, except by permission of the Faculty and then only under such conditions as the Faculty may prescribe.

### 4 Qualification requirements

#### 4.1 General: Bachelor of Computer Science

- 4.1.1 To qualify for the Bachelor degree a candidate shall present courses from 4.2 to the value of at least 72 units including:
  - a at least 24 units for Level I courses

- b at least 18 units for Level II courses
- c at least 24 units for Level III courses

4.1.2 The courses presented must include:

- a COMP SCI 1102 Object Oriented Programming  
COMP SCI 1103 Algorithm Design & Data Structures
- b At least one of the following:  
COMP SCI 1003 Internet Computing  
COMP SCI 1010 Puzzle Based Learning  
COMP SCI 1012 Scientific Computing
- c At least one of the following:  
MATHS 1008 Mathematics for Information Technology I  
MATHS 1012 Mathematics IB
- d At least 12 units of Level II Computer Science courses. The courses must include:  
COMP SCI 2000 Computer Systems  
COMP SCI 2201 Algorithm and Data Structure Analysis
- e MATHS 3015 Communication Skills III
- f At least 18 units of Level III Computer Science courses. The courses must include:  
COMP SCI 3006 Software Engineering & Project

Note (not forming part of the Academic Program Rules)

A graduate who qualifies for the Bachelor of Computer Science or Bachelor of Computer Science (Software Engineering) will be considered to have qualified for a major in Computer Science.

4.1.3 Students enrolled in an Engineering program offered by the Faculty may qualify for the B.Comp.Sc. by fulfilling the requirements of 4.1.5(a) of these Academic Program Rules.

Note (not forming part of the Academic Program Rules)

This clause enables Engineering students to complete the requirements of the B.Comp.Sc. degree before completing the requirements of the Bachelor of Engineering degree. Students wishing to qualify for the B.Comp.Sc. in this way must apply for admission to the B.Comp.Sc. program.

4.1.4 Except with the permission of the Faculty, a candidate may not enrol in courses to the value of more than 18 units taught by Disciplines other than

Applied Mathematics, Pure Mathematics, Statistics and Computer Science before presenting:  
COMP SCI 1103 Algorithm Design & Data Structures and either

MATHS 1008 Mathematics for Information Technology I

or

MATHS 1011 Mathematics IA with  
MATHS 1013 Mathematics IM

or

MATHS 1012 Mathematics IB with  
MATHS 1011 Mathematics IA

The courses to the value of not more than 18 units shall not include courses in which a candidate has failed or courses from which a candidate has withdrawn.

4.1.5 A graduate who wishes to qualify for the degree of Bachelor of Computer Science and to count towards that degree courses that have already been presented for another award may do so providing such a candidate:

a presents a range of courses that fulfil the requirements of 4.1.1 and 4.1.2 above, except for the requirements of 4.1.2b. The courses presented must include Level II and Level III courses from 4.2 below to the value of at least 24 units, which have not been presented for any other degree. At least 18 units of the new courses must be at Level III

or

b presents a range of courses as determined by the Faculty in accordance with any formal articulation programs approved by the Faculty. COMP SCI 2202 Foundations of Computer Science may be presented only with written permission by the Faculty.

4.1.6 No candidate will be permitted to count for the degree any course together with any other course which, in the opinion of the Faculty, contains a substantial amount of the same material; and no course may be counted twice towards the same degree. No candidate may present the same section of a course in more than one course for the degree.

4.1.7 Students who have completed at another institution part of the equivalent of the requirements for the Adelaide degree of Bachelor of Computer Science will be required as a minimum to complete Level III courses from 4.2 with an aggregate units value of 24 satisfying the requirements of 4.1.2(e) and 4.1.2 (f).

4.1.8 With special permission of the Faculty, a student who has completed most of the courses for the degree of Bachelor of Computer Science at the

University of Adelaide including Level III Computer Science courses with an aggregate units value of 12 may be permitted to complete the requirements for the degree at another institution. All applications must be made in writing to the Faculty.

#### 4.2 Program of study for the degree of Bachelor of Computer Science

Note: Students are advised that some courses cannot be presented or counted with other courses towards the degree of Bachelor of Computer Science. Students are advised to check their chosen electives with the Faculty Program Adviser.

Notwithstanding the Academic Program Rules and syllabuses published in this volume, a number of the courses listed in the program leading to the degree of B.Comp.Sc. may not be offered in every calendar year. The availability of all courses is conditional upon the availability of staff and facilities.

##### 4.2.1 Level I

Courses offered at Level I towards a degree program at the University of Adelaide and approved by the Faculty Program Adviser.

##### 4.2.2 Level II

Courses offered at Level II towards a degree program at the University of Adelaide and approved by the Faculty Program Adviser.

##### 4.2.3 Level III

Courses offered at Level III towards a degree program at the University of Adelaide and approved by the Faculty Program Adviser.

#### 4.3 The Honours degree of Bachelor of Computer Science

To be eligible to be admitted to an Honours degree program, a candidate shall complete the requirements for a Bachelor degree or equivalent to a standard that is acceptable to the Faculty for the purpose of admission to the Honours degree.

A candidate who satisfies the requirements for Honours shall be awarded the Honours degree, but the Faculty shall decide within which of the following classes and divisions the degree shall be awarded:

- 1 First Class
- 2A Second Class div A
- 2B Second Class div B
- 3 Third Class
- NAH Not awarded.

4.3.1 The Honours degree of Bachelor of Computer Science

4.3.1.1 A candidate may, subject to the approval of the Faculty, proceed to the Honours degree in one of the following courses, each with the value of 24 units:

APP MTH 4011 A/B Honours Applied Mathematics and Computer Science

COMP SCI 4999 A/B Honours Computer Science

PURE MTH 4004 A/B Honours Computer Science & Pure Mathematics

STATS 4003A/B Honours Statistics & Computer Science

4.3.1.2 The work of the Honours Program must be completed in one year of full-time study, save that the Faculty may permit a candidate to spread the work over two years, but no more, under such conditions as it may determine.

4.3.1.3 A candidate may not enrol a second time for the Honours program in Computer Science if he/she:

- a has already qualified for Honours in that program
- or
- b has presented himself/herself for examination in the Honours program in that course but has failed to obtain Honours
- or
- c has withdrawn from the program unless the Faculty under 4.3.1.4 permits re-enrolment.

4.3.1.4 If a candidate is unable to complete the program for the Honours degree within the time allowed, or if a candidate's work is unsatisfactory at any stage of the program, or if a candidate withdraws from the program, such fact shall be reported to Faculty. The Faculty may permit the candidate to re-enrol for an Honours degree under such conditions (if any) as it may determine.

#### 4.4 Graduation

Subject to Chapter 89 of the Statutes, candidates who have satisfied the requirements for any award of the University shall be admitted to that award.

#### 5 Special circumstances

When in the opinion of the relevant Faculty special circumstances exist, the Council, on the recommendation of the Faculty in each case, may vary any of the provisions of the Academic Program Rules for any particular award.

# Bachelor of Computer Science (Advanced)

These Program Rules should be read in conjunction with the University's policies (<http://www.adelaide.edu.au/policies>).

## 1 General

There shall be a degree of Bachelor of Computer Science (Advanced).

## 2 Duration of program

The program of study for the Bachelor degree shall extend over three years of full-time study or the equivalent part-time study.

## 3 Assessment and examinations

- 3.1 A candidate shall not be eligible to attend for examination unless the prescribed work has been completed to the satisfaction of the teaching staff concerned.
- 3.2 In determining a candidate's final result in a course (or part of a course) the examiners may take into account oral, written, practical and other work, provided that the candidate has been given adequate notice at the commencement of the teaching of the course of the way in which such work will be taken into account and of its relative importance in the final result.
- 3.3 There shall be four classifications of pass in the final assessment of any course for the Bachelor degree, as follows: Pass with High Distinction, Pass with Distinction, Pass with Credit, Pass.
- 3.4 A candidate who fails a course for the Bachelor degree and who desires to take that course again shall, unless exempted wholly or partially there from by the Head of the School concerned, again complete the required work in that course to the satisfaction of the teaching staff concerned.
- 3.5 A candidate who has twice failed any course for the Bachelor degree may not enrol for that course again or for any other course which in the opinion of the Faculty contains a substantial amount of the same material, except by permission of the Faculty and then only under such conditions as the Faculty may prescribe.

## 4 Qualification requirements

### 4.1 General: Bachelor of Computer Science (Advanced)

- 4.1.1 To qualify for the Bachelor degree a candidate shall present courses from 4.2 to the value of at least 72 units including:
- at least 24 units for Level I courses
  - at least 18 units for Level II courses
  - at least 24 units for Level III courses

4.1.2 The courses presented must include:

- The following core courses:  
COMP SCI 1102 Object Oriented Programming  
COMP SCI 1103 Algorithm Design & Data Structures  
COMP SCI 1104 Grand Challenges in Computer Science  
MATHS 1012 Mathematics IB  
MATHS 3015 Communication Skills
- At least 3 units of Level I Computer Science courses chosen from:  
COMP SCI 1003 Internet Computing  
COMP SCI 1010 Puzzle Based Learning  
COMP SCI 1012 Scientific Computing
- At least 12 units of Level II Computer Science courses including the following core courses:  
COMP SCI 2000 Computer Systems  
COMP SCI 2201 Algorithm and Data Structure Analysis  
COMP SCI 2008 Topics in Computer Science
- At least 18 units of Level III Computer Science courses including the following core courses:  
COMP SCI 3006 Software Engineering & Project  
COMP SCI 3020 Advanced Topics in Computer Science

Note (not forming part of the Academic Program Rules)

A graduate who qualifies for the Bachelor of Computer Science (Advanced) will be considered to have qualified for a major in Computer Science.

4.1.3 Students enrolled in an Engineering program offered by the Faculty may qualify for the B.Comp.Sc.(Adv) by fulfilling the requirements of 4.1.4(a) of these Academic Program Rules.

Note (not forming part of the Academic Program Rules)

This clause enables Engineering students to complete the requirements of the B.Comp.Sc.(Adv) degree before completing the requirements of the Bachelor of Engineering degree. Students wishing to qualify for the B.Comp.Sc.(Adv) in this way must apply for admission to the B.Comp.Sc.(Adv) program. Engineering students are likely to require more than one additional year of full-time study to complete both the Engineering and B.Comp.Sc.(Adv) programs.

4.1.4 A graduate who wishes to qualify for the degree of Bachelor of Computer Science (Advanced) and to count towards that degree courses that have already been presented for another award may do so providing such a candidate:

- presents a range of courses that fulfil the requirements of 4.1.1 and 4.1.2 above, except for the requirements of 4.1.2b, may present COMP SCI 1202 in lieu of COMP SCI 1102, and may present COMP SCI 1203 in lieu of COMP SCI 1103. The courses presented must include Level II and Level III courses from 4.2 below to the value of at least 24 units, which have not been presented for any other degree. At least 18 units of those courses must be at Level III  
*or*
- presents a range of courses as determined by the Faculty in accordance with any formal articulation programs approved by the Faculty.

4.1.5 No candidate will be permitted to count for the degree any course together with any other course which, in the opinion of the Faculty, contains a substantial amount of the same material; and no course may be counted twice towards the same degree. No candidate may present the same section of a course in more than one course for the degree.

4.1.6 Students who have completed at another institution part of the equivalent of the requirements for the Adelaide degree of Bachelor of Computer Science (Advanced) will be required as a minimum to complete courses from 4.1.2 with an aggregate value of 24 units. At least 12 units of these must be courses satisfying 4.1.2d.

4.1.7 With special permission of the Faculty, a student who has completed most of the courses for the degree of Bachelor of Computer Science (Advanced) at the University of Adelaide including Level III Computer Science courses with an aggregate value of 12 units may be permitted to complete the requirements for the degree at another institution. All applications must be made in writing to the Faculty.

### 4.2 Recommended program of study for the degree of Bachelor of Computer Science (Advanced)

Note: Students are advised to check their chosen electives with the Faculty Program Adviser.

Notwithstanding the Academic Program Rules, a number of the elective courses listed in the program leading to the degree of B.Comp.Sc.(Adv) may not be offered in every calendar year. The availability of all courses is conditional upon the availability of staff and facilities. Core courses will be offered every year.

### 4.2.1 Level I

#### Semester 1

COMP SCI 1101 Introduction to Programming+	3
MATHS 1011 Mathematics IA**	3
Level I elective courses*	6

#### Semester 2

COMP SCI 1102 Object Oriented Programming	3
MATHS 1008 Mathematics for Information Technology I <sup>^</sup>	3
MATHS 1012 Mathematics IB** <sup>^</sup>	3
COMP SCI 1104 Grand Challenges in Computer Science	3

\* Students who do not have prior programming experience or who are not confident in their programming ability should complete COMP SCI 1101 Introduction to Programming prior to undertaking COMP SCI 1102 Object Oriented Programming followed by COMP SCI 1103 Algorithm Design & Data Structures in the following year. COMP SCI 1101 Introduction to Programming may be replaced by a Level I elective if not required.

<sup>^</sup> Students are encouraged to complete MATHS 1008 Mathematics for Information Technology I. MATHS 1008 Mathematics for Information Technology I may be replaced by a Level I elective if not required.

\* Level I electives can be chosen from courses offered towards any degree program at the university with the exception of courses listed in 4.2.4, provided that the student is eligible to do that course e.g. has satisfied the prerequisite/s. As required by 4.1.2b the Level I electives must include at least 3 units selected from COMP SCI 1003 Internet Computing, COMP SCI 1010 Puzzle Based Learning and COMP SCI 1012 Scientific Computing.

\*\* Students intending to complete MATHS 1012 Mathematics IB who have undertaken SACE Stage 2 Specialist Maths must enrol in MATHS 1011 Mathematics IA followed by Mathematics IB. Students who have not taken SACE Stage 2 Specialist Maths will be required to enrol in MATHS 1013 Mathematics IM then MATHS 1011 Mathematics IA in the following semester, and then MATHS 1012 Mathematics IB in the Summer Semester or following year. Students who are required to undertake MATHS 1013 Mathematics IM will present it in lieu of an elective.

### 4.2.2 Level II

#### Semester 1

COMP SCI 2006 Introduction to Software Engineering#	3
COMP SCI 1103 Algorithm Design & Data Structures+ ...	3
Level II Computer Science course	3
Level II elective course*	3

These Program Rules should be read in conjunction with the University's policies (<http://www.adelaide.edu.au/policies>).

## 1 General

The degree of Bachelor of Engineering may be awarded in the Pass or Honours grade. The award of the Honours grade shall be made for meritorious performance in the program with greatest weight given to performance in the later years.

The Honours grade may be awarded in one of the following classifications: First Class, Second Class Division A, Second Class Division B.

## 2 Duration of program

The program shall extend over four years of full-time study. Details of these programs are set out in 6.5.1-6.5.19 below.

## 3 Admission

### 3.1 Transfers between programs

The Faculty of Engineering, Computer and Mathematical Sciences may permit a student to transfer with credit from one Engineering program to another. A student may also be permitted to transfer from other programs (offered by the University or another institution) to an Engineering program. Prospective transfer students should first consult the Faculty.

The Faculty has developed a transfer credit scheme between certain Technical and Further Education (TAFE) programs and the Bachelor of Engineering program. Applications for credit transfer from TAFE programs can be made to the Faculty upon admission.

## 4 Enrolment

### 4.1 Approval of program of study

During the enrolment period before the beginning of each academic year, students who are so directed must obtain the approval of the Dean or nominee of the Faculty of Engineering, Computer and Mathematical Sciences to enrol for the courses they wish to study. The Dean or nominee, in exceptional circumstances, may approve minor variations to the course completion requirements of individual students.

4.2 Unless exempted, all international students are required to undertake a specialist course ENG 3003 Engineering Communication EAL. The course provides language development in English as a

second language for the purposes of oral and written communication in the context of the study of Engineering. Students normally undertake this course in their first semester of study. This course is substituted in lieu of another course in the program and students must seek advice from the Faculty on this substitution.

4.3 Except with the permission of the Faculty, students who have either completed or partially completed a Bachelor of Engineering from the University—or from another institution that is accepted by the Faculty as equivalent—will be required to complete courses from section 6 of these Academic Program Rules with a minimum aggregate units value of 36, including Level III courses with an aggregate units value of at least 6, and Level IV courses with an aggregate units value of at least 18.

## 5 Assessment and examinations

- i A student shall not be eligible to attend for examination unless the prescribed work has been completed to the satisfaction of the teaching staff concerned. A student who is not eligible to attend for examination shall be deemed to have failed the examination.
- ii In determining a student's final result in a course (or part of a course) the examiners may take into account oral, written, practical and examination work, provided that the student has been given adequate notice of the way in which work will be taken into account and of its relative importance in the final result.
- iii There shall be four classifications of pass at an annual examination in any course for the degree, as follows: Pass with High Distinction, Pass with Distinction, Pass with Credit, Pass.
- iv A student who fails to pass in any course shall again complete the required work in that course to the satisfaction of the teaching staff concerned, unless exempted by the Faculty.
- v A student who has twice failed to pass the examination in any course or division of a course may not present again for instruction or examination therein unless the student's plan of study is approved by the Dean or nominee. For the purpose of this Rule a student who is refused permission to sit for examination in any course

## Semester 2

COMP SCI 2000 Computer Systems .....	3
COMP SCI 2201 Algorithm and Data Structure Analysis .....	3
COMP SCI 2008 Topics in Computer Science ^ .....	6

# Students are encouraged to undertake COMP SCI 2006 Introduction to Software Engineering. Although this course is not specifically required under the academic program rules of the degree it is Assumed Knowledge for COMP SCI 3006 Software Engineering & Project. COMP SCI 2006 Introduction to Software Engineering may be replaced by a Level II Computer Science elective if not required.

^ COMP SCI 2008 Topics in Computer Science can be taken in semester 1 if the student prefers, in which case the electives listed in semester 1 would be taken in semester 2.

\* Level II electives can be chosen from courses offered towards any degree program at the university with the exception of courses listed in 4.2.4, provided that the student is eligible to do that course e.g. has satisfied the prerequisite/s.

## 4.2.3 Level III

### Semester 1

COMP SCI 3002 Programming Techniques# .....	3
Level III Computer Science course.....	3
Level III Computer Science course.....	3
Level III elective course* .....	3

### Semester 2

COMP SCI 3006 Software Engineering & Project .....	3
MATHS 3015 Communication Skills III.....	3
COMP SCI 3020 Advanced Topics in Computer Science ^ .....	6

# Students are encouraged to undertake COMP SCI 3002 Programming Techniques. Although this course is not specifically required under the academic program rules of the degree it is Assumed Knowledge for COMP SCI 3006 Software Engineering & Project. COMP SCI 3002 Programming Techniques may be replaced by a Level III Computer Science elective if not required.

^ COMP SCI 3020 Advanced Topics in Computer Science can be taken in semester 1 if the student prefers, in which case the electives listed in semester 1 would be taken in semester 2.

\* Level III electives can be chosen from courses offered towards any degree program at the university with the exception of courses listed in 4.2.4, provided that the student is eligible to do that course e.g. has satisfied the prerequisite/s.

## 4.2.4 Courses not permitted

C&ENVENG 1012 Engineering Modelling and Analysis IA
ECOMMRCE 1000 Information Systems I
ECON 1005 Mathematics for Economists I
ECON 1008 Business & Economics Statistics I
MATHS 1009 Introduction to Financial Mathematics I
MATHS 1010 Applications of Quantitative Methods in Finance I
MECH ENG 1100 Introduction to Mechanical Engineering
MECH ENG 1101 Introduction to Automotive Engineering
MECH ENG 1102 Introduction to Aerospace Engineering
MECH ENG 1103 Introduction to Mechatronic Engineering
MECH ENG 1104 Introduction to Sports Engineering
MECH ENG 1105 Introduction to Sustainable Energy Engineering
STATS 1004 Statistical Practice I (Life Sciences)
COMP SCI 2202 Foundations of Computer Science
ECON 2503 Mathematical Economics II
ECON 2504 Intermediate Econometrics II
ENG 2001 Communication and Study Skills
ENG 2002 Financial Computing II
MATHS 2201 Engineering Mathematics I
MATHS 2202 Engineering Mathematics II
COMP SCI 3017 Software Engineering Group Project I – Part A
COMP SCI 3018 Software Engineering Group Project I – Part B

## 4.3

Students enrolled in this program must maintain a GPA of 5.0 or will be required to transfer to the Bachelor of Computer Science.

4.4 Candidates who satisfy the requirements of the Bachelor of Computer Science (Advanced) degree or equivalent may be admitted to the Honours degree.

4.5 Graduation

Subject to Chapter 89 of the Statutes, candidates who have satisfied the requirements for any award of the University shall be admitted to that award.

5 Special Circumstances

When in the opinion of the relevant Faculty special circumstances exist, the Council, on the recommendation of the faculty in each case, may vary any of the provisions of the Academic Program Rules for any particular award.

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or division of a course shall be deemed to have failed to pass the examination.

## 6 Qualification requirements

### 6.1 General

- i A student shall regularly attend lectures and do written, laboratory, and other practical work (where such is required), and pass examinations in the courses prescribed for one of the following Engineering programs:
  - a (Architectural)
  - b (Chemical - with the option of specialising in Minerals Processing or Sustainable Energy)
  - c (Civil and Environmental)
  - d (Civil and Structural)
  - e (Computational)
  - f (Computer Systems)
  - g (Electrical and Electronic – with the option of specialising in Avionics)
  - h (Electrical and Sustainable Energy)
  - i (Mechanical)
  - j (Mechanical and Aerospace)
  - k (Mechanical and Automotive)
  - l (Mechanical and Sports)
  - m (Mechanical and Sustainable Energy)
  - n (Mechatronic)
  - o (Mining)
  - p (Petroleum)
  - q (Pharmaceutical)
  - r (Software)
  - s (Telecommunications)
- ii Before being admitted to the degree a student shall also submit satisfactory evidence of completion of a period of practical experience in work approved by the Faculty as appropriate to the program that the student has followed.

### 6.2 Level I Mathematics requirements

Students who have undertaken SACE Stage 2 Specialist Mathematics (or equivalent) will be required to enrol in Mathematics IA followed by Mathematics IB. Students who have not undertaken SACE Stage 2 Specialist Mathematics will be required to enrol in Mathematics IM, followed by Mathematics IA with Mathematics IB taken in Summer Semester to complete the Mathematics requirements at Level I. The satisfactory completion of Mathematics IM is in addition to the normal requirements of the Bachelor of Engineering.

## 6.3 Practical experience

### i General

For all engineering programs, a total of twelve weeks' practical experience (of which a minimum 6 weeks should be under the supervision of a professional engineer) is required and this should be undertaken during the University vacations and normally completed before beginning the work of Level IV of the program.

The Faculty may grant either partial or total exemption from these requirements to a student who produces satisfactory evidence of practical experience obtained before their first enrolment in the Faculty; and in special cases, the Faculty may grant dispensation from the requirements.

Credit will not normally be given for periods of less than three consecutive weeks.

A student should seek a variety of practical experience appropriate to the student's academic level.

Before beginning a period of practical experience, a student may ensure that it will be satisfactory to the Faculty by consulting the Head of the School or nominee, concerned.

Upon completion of each period of practical experience, a student is required to submit a prescribed practical experience form to the Faculty for approval. This submission must include a statement of practical experience gained and must be certified by the employer.

### ii Mechanical, Mechanical and Aerospace, Mechanical and Automotive, Mechanical and Sports, Mechatronic

Students must complete Workshop Practice, which will normally occupy a one-week period during a semester break. On satisfactory completion of this component of Mechatronics IM or Sports Engineering I, students will be automatically credited with one-week engineering experience towards the 12-week work experience requirement.

## 6.4 Combined programs and double degree programs

Students may enhance their engineering qualification by combining studies in Engineering with studies in other Schools or Faculties. The current options are:

### 6.4.1 Bachelor of Engineering and Bachelor of Laws - B.E./LL.B

Students in Computer Systems, Electrical and Electronic, Mechanical, and Telecommunications

Engineering programs may elect to complete both the Bachelor of Engineering and Bachelor of Laws degrees, provided they are accepted into the LL.B program. Students wishing to pursue this program of study may apply for admission through the South Australian Tertiary Admissions Centre.

For further details, see the relevant Law studies within the B.E. program under Sections 6.5 of these Academic Program Rules.

### 6.4.2 Bachelor of Engineering and Bachelor of Science - B.E./B.Sc.

#### 6.4.2.1 Direct Entry

- i Students may enrol directly in a program of study leading, after five years of full-time study (or six years in the case of BE(Mechanical and Aerospace)/BSc) (or the part time equivalent thereof), to the award of both the degree of Bachelor of Engineering and the degree of Bachelor of Science in the Faculty of Sciences. The following options are available:
  - B.E. (Chemical)/B.Sc.
  - B.E. (Civil and Environmental)/B.Sc.
  - B.E. (Civil and Structural)/B.Sc.
  - B.E. (Mechanical)/B.Sc.
  - B.E. (Mechanical and Aerospace)/B.Sc.
  - B.E. (Mining)/B.Sc.
- ii Students enrolled in one of these programs are required to complete satisfactorily the Engineering and Science components described within the relevant sections of these Rules.

#### 6.4.2.2 Direct Entry B.E.(Elec.)/B.Sc.(Physics)

Students may enrol directly in a program of study leading, after five years of full-time study (or the part-time equivalent) to the combined award of Bachelor of Engineering (Electrical and Electronic) and Bachelor of Science.

To qualify for the combined award, students are required to complete satisfactorily the Engineering and Science components described within the relevant section of these Rules.

#### 6.4.2.3 Direct Entry B.E.(Chem)/B.Sc.(Biotech)

Students may enrol directly in a program of study leading, after five years of full-time study (or the part-time equivalent) to the award of both the degrees of Bachelor of Engineering (Chemical) and Bachelor of Science (Biotechnology).

To qualify for the double awards, students are required to complete satisfactorily the Engineering and Science components described within the relevant section of these Rules.

### 6.4.2.4 Direct Entry B.E.(Petroleum)/B.Sc (Geology and Geophysics)

Students may enrol directly in a program of study leading, after five years of full-time study (or the part-time equivalent) to the combined award of Bachelor of Engineering (Petroleum) and Bachelor of Science.

To qualify for the combined award, students are required to complete satisfactorily the Engineering and Science components described within the relevant section of these Rules.

### 6.4.3 Bachelor of Engineering and Bachelor of Mathematical and Computer Sciences - B.E./B.Ma.& Comp.Sc.

6.4.3.1 Students may enrol directly in a program of study leading, after five years of full-time study (or the part time equivalent thereof), to the award of both the degree of Bachelor of Engineering and the degree of Bachelor of Mathematical and Computer Sciences. The following options are available:

- B.E.(Chemical)/B.Ma. & Comp.Sc.
- B.E.(Civil and Environmental)/B.Ma. & Comp.Sc.
- B.E.(Civil and Structural)/B.Ma. & Comp.Sc.
- B.E.(Computer Systems)/B.Ma. & Comp.Sc.
- B.E.(Electrical and Electronic)/B.Ma. & Comp.Sc.
- B.E.(Mechanical)/B.Ma. & Comp.Sc.
- B.E.(Mechanical and Aerospace)/B.Ma. & Comp.Sc.
- B.E.(Mechanical and Automotive)/B.Ma. & Comp.Sc.
- B.E.(Mechatronic)/B.Ma. & Comp.Sc.
- B.E.(Mining)/B.Ma. & Comp.Sc.
- B.E.(Telecommunications)/B.Ma. & Comp.Sc.

To qualify for these awards, students are required to complete satisfactorily the Engineering, and Mathematical and Computer Sciences components described within the relevant section of these Rules.

Students who commence this program, but who subsequently decide that they do not wish to proceed in both areas of study, may transfer their enrolment to the single B.E. or B.Ma. & Comp.Sc. program with appropriate credit for courses completed.

#### 6.4.3.2 Later Year Entry

Engineering students may intermit their Engineering studies for a year to undertake additional studies in Mathematical and Computer Sciences in order to qualify for the degree of B.Ma.&Comp.Sc.

### 6.4.4 Bachelor of Engineering and Bachelor of Arts - B.E./B.A.

- i The combined award is available in Chemical, Civil and Environmental, Civil and Structural,

Computer Systems, Electrical and Electronic, Mechanical, Mechatronic and Telecommunications Engineering. Students may qualify for the combined award after five years of full-time study in which the requirements of the degrees of B.E. and B.A. have been merged. In some cases, students may need to take an overload to complete the program in five years.

- ii Students who commence this program but who subsequently decide that they do not wish to proceed in both areas of study may transfer their enrolment to the single B.E. or the B.A. program, with appropriate credit for courses completed.
- iii Students may transfer into the combined program after partially completing the requirements of either the B.E. or the B.A. program. This may, however, affect the total time taken to complete the combined program. Students should consult the Faculty to discuss their proposed program of studies.

#### iv Status

On application to the Faculty, students may be granted transfer credit for studies completed at the University or another approved institution. In the case of studies completed at another approved institution, credit transfer in Humanities and Social Sciences courses will normally only be granted in respect of studies valued at a maximum of 6 units, and normally not including studies towards the major.

#### v Program of Studies

The details of a student's program will depend upon the Engineering elective and the Humanities and Social Sciences courses chosen. The order in which courses are taken will need to take into consideration any prerequisite requirements and students will need to discuss their program of studies with the relevant Faculty.

To qualify for the combined award, students are required to complete satisfactorily the Engineering and Arts components described within the relevant section of these Rules.

#### vi Honours

In the Engineering component, Honours are awarded for meritorious performance in the program (taken over the Engineering courses only). In the Arts component, the award of Honours requires one further year of study devoted exclusively to the Honours program.

### 6.4.5 Bachelor of Engineering and Bachelor of Economics - B.E./B.Ec.

- i Students may enrol directly in a program of study leading, after five years of full-time study (or the part-time equivalent), to the award of both the degree of Bachelor of Engineering and the degree of Bachelor of Economics. The following options are available:

B.E.(Chemical)/B.Ec.  
 B.E.(Civil and Environmental)/B.Ec.  
 B.E.(Civil and Structural)/B.Ec.  
 B.E.(Computer Systems)/B.Ec.  
 B.E.(Electrical and Electronic)/B.Ec.  
 B.E.(Mechanical)/B.Ec.  
 B.E.(Telecommunications)/B.Ec.

- ii To qualify for the double award, students are required to complete satisfactorily the Engineering and Economics components described within the relevant section of these Rules.

### 6.4.6 Bachelor of Engineering and Bachelor of Finance - B.E./B.Fin.

- i Students may enrol directly in a program of study leading, after five years of full-time study (or the part-time equivalent), to the award of both the degree of Bachelor of Engineering and the degree of Bachelor of Finance. The following options are available:

B.E.(Chemical)/B.Fin.  
 B.E.(Civil and Environmental)/B.Fin.  
 B.E.(Civil and Structural)/B.Fin.  
 B.E.(Computer Systems)/B.Fin.  
 B.E.(Electrical and Electronic)/B.Fin.  
 B.E.(Mechanical)/B.Fin.  
 B.E.(Telecommunications)/B.Fin.

- ii To qualify for the double awards, students are required to complete satisfactorily the Engineering and Finance components described within the relevant section of these Rules.

### 6.4.7 Combined Engineering Degrees

The following options are available:

B.E.(Civil and Structural)/B.E.(Civil and Environmental)  
 B.E.(Petroleum)/B.E.(Chemical)  
 B.E.(Petroleum)/B.E.(Civil and Structural)  
 B.E.(Petroleum)/B.E.(Mechanical)  
 B.E.(Petroleum)/B.E.(Mining)

Students may enrol directly in a program of study leading, after five years of full-time study (or the part-time equivalent) to the combined award of the degrees. To qualify for the combined award,

students are required to complete satisfactorily the Engineering components described within the relevant section of these Rules.

## 6.5 Academic programs

### 6.5.1 Architectural Engineering

#### 6.5.1.1 B.E.(Architectural)

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

#### Level I

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA.....	3
C&ENVENG 1013 Introduction to Architectural Engineering.....	3
DESST 1504 Representation 1.....	3
DESST 1506 Design Studio 2.....	6
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM*.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

C&ENVENG 2025 Strength of Materials IIA.....	3
C&ENVENG 2069 Geotechnical Engineering IIA.....	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA.....	3
C&ENVENG 2072 Structural Engineering Design.....	3
DESST 1508 Environment 1.....	3
DESST 2518 Construction 2.....	3
MATHS 2201 Engineering Mathematics I.....	3
MECH ENG 2021 Thermo-Fluids I.....	3

#### Level III

C&ENVENG 3001 Structural Mechanics IIIA.....	3
C&ENVENG 3005 Structural Design III (Concrete).....	3
C&ENVENG 3007 Structural Design III (Steel).....	3
C&ENVENG 3012 Geotechnical Engineering Design III.....	3
C&ENVENG 3078 Engineering Management & Planning IIIA.....	3
MECH ENG 3102 Heat Transfer & Thermodynamics.....	3
DEST 2517 Environment 2.....	3
DEST 3511 Sustainable Commercial Building Design.....	3

#### Level IV

C&ENVENG 4003A/B Civil & Structural Research Project Part 1 & 2.....	6
C&ENVENG 4034 Engineering Management IV.....	3
MECH ENG 4107 Air-Conditioning.....	3
C&ENVENG 4068 Computer Methods of Structural Analysis & Design.....	3
Elective courses ^.....	9

^ Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Architectural Engineering Research Project.

#### Electives

Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

#### Structural Engineering

C&ENVENG 4069 Advanced Reinforced Concrete.....	3
C&ENVENG 4070 Seismic Design of Masonry Buildings.....	3
C&ENVENG 4107 Prestressed Concrete Structures.....	3
C&ENVENG 4111 Structural Dynamics and Applications.....	3
C&ENVENG 4099 Structural Response to Blast Loading.....	3
Geotechnical/Mining Engineering	
C&ENVENG 4106 Introduction to Geostatistics.....	3

Alternatively, students may substitute up to 3 units of Level II or III courses offered by the School of Mathematics.

### 6.5.2 Chemical Engineering

#### 6.5.2.1 B.E.(Chemical)

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV.

#### Level I

CHEM ENG 1007 Process Engineering I.....	3
CHEM ENG 1011 Introduction to Process Modelling.....	3
CHEM ENG 1010 Professional Practice I.....	3
CHEM 1100 Chemistry IA+.....	3
and	
CHEM 1200 Chemistry IB+.....	3

<i>or</i>	
CHEM 1101 Foundations of Chemistry IA+ .....	3
<i>and</i>	
CHEM 1201 Foundations of Chemistry IB+ .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
BIOLOGY 1101 Biology 1: Molecules, Genes and Cells .....	3
<i>or</i>	
GEOLOGY 1103 Earth Systems 1 .....	3
<i>or</i>	
GEOLOGY 1104 Geology for Engineers 1 .....	3
<b>+Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry or equivalent must enrol in CHEM 1100/1200. All other students must enrol in CHEM 1101/1201.</b>	
<b>Level II</b>	
CHEM 2530 Environmental & Analytical Chemistry II.....	3
<i>or</i>	
CHEM 2510 Chemistry IIA++ .....	3
CHEM ENG 2010 Introduction to Process Simulation.....	3
CHEM ENG 2011 Chemical Engineering Thermodynamics .....	3
CHEM ENG 2013 Advanced Process Modelling.....	3
CHEM ENG 2014 Process Heat Transfer .....	3
CHEM ENG 2016 Professional Practice II .....	3
CHEM ENG 2018 Process Fluid Mechanics .....	3
MATHS 2201 Engineering Mathematics I.....	3
<b>++CHEM 2510 Chemistry IIA requires either passes in both CHEM 1100 &amp; CHEM 1200 or credits in both CHEM 1101 &amp; CHEM 1201 as prerequisites.</b>	
<b>Level III</b>	
CHEM ENG 3036 Unit Operations Laboratory .....	3
CHEM ENG 3024 Professional Practice III .....	3
CHEM ENG 3029 Materials III .....	3
CHEM ENG 3030 Simulation & Concept Design.....	3
CHEM ENG 3031 Process Control & Utilities.....	3
CHEM ENG 3033 Chemical Engineering Applications C.....	3
CHEM ENG 3034 Chemical Engineering Applications B .....	3
CHEM ENG 3035 Chemical Engineering Applications A .....	3
<b>Level IV</b>	
CHEM ENG 4014 Plant Design Project.....	6

CHEM ENG 4034 Professional Practice IV .....	3
CHEM ENG 4050 Chemical Engineering Applications D.....	3
CHEM ENG 4056 Research Practice.....	3
CHEM ENG 4055 Advanced Unit Operations Laboratory .....	3
<i>or</i>	
CHEM ENG 4054 Research Project (H)#.....	3
Electives .....	6
<b>#Students accepted into the Honours Stream will take Research Project(H) and other students will take Advanced Unit Operations Laboratory</b>	
<b>Electives</b>	
CHEM ENG 4043 Special Studies in Chemical Engineering.....	3
CHEM ENG 4040 Chemical Engineering Research Elective .....	3
CHEM ENG 4044 Minerals Processing .....	3
CHEM ENG 4046 Combustion Processes.....	3
CHEM ENG 4032 Composite & Multiphase Polymers.....	3
CHEM ENG 4039 Environmental Engineering.....	3
CHEM ENG 4045 Introduction to Nanotechnology.....	3
CHEM ENG 4048 Bio-Fuels, Biomass & Wastes ....	3
CHEM ENG 4049 Biomolecular Engineering .....	3
CHEM ENG 4051 Water & Wastewater Engineering .....	3
CHEM ENG 4052 Food Process Engineering.....	3
CHEM ENG 4053 Pinch Analysis & Process Synthesis.....	3
<b>6.5.2.2 B.E.(Chemical – Minerals Processing)</b>	
<b>Level I</b>	
CHEM 1100 Chemistry IA+ .....	3
<i>and</i>	
CHEM 1200 Chemistry IB+ .....	3
<i>or</i>	
CHEM 1101 Foundations of Chemistry IA+.....	3
<i>and</i>	
CHEM 1201 Foundations of Chemistry IB+ .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
GEOLOGY 1000 Geology for Engineers.....	3
CHEM ENG 1007 Process Engineering I.....	3
CHEM ENG 1010 Professional Practice 1.....	3
CHEM ENG 1011 Introduction to Process Modelling.....	3
MATHS 1011 Mathematics IA.....	3

MATHS 1012 Mathematics IB.....	3
<b>+Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry or equivalent must enrol in CHEM 1100/1200. All other students must enrol in CHEM 1101/1201.</b>	
<b>Level II</b>	
CHEM 2530 Environmental & Analytical Chemistry II.....	3
<i>or</i>	
CHEM 2510 Chemistry IIA++ .....	3
CHEM ENG 2019 Introduction to Minerals Processing .....	3
CHEM ENG 2010 Introduction to Process Simulation.....	3
CHEM ENG 2014 Process Heat Transfer .....	3
CHEM ENG 2018 Process Fluid Mechanics .....	3
CHEM ENG 2016 Professional Practice II .....	3
CHEM ENG 2011 Chemical Engineering Thermodynamics .....	3
MATHS 2201 Engineering Mathematics I.....	3
<b>++CHEM 2510 Chemistry IIA requires either passes in both CHEM 1100 &amp; CHEM 1200 or credits in both CHEM 1101 &amp; CHEM 1201 as prerequisites.</b>	
<b>Level III</b>	
CHEM ENG3036 Unit Operations Laboratory .....	3
CHEM ENG 3024 Professional Practice III .....	3
CHEM ENG 3029 Materials III .....	3
CHEM ENG 3030 Simulation & Concept Design ....	3
CHEM ENG 3031 Process Control & Utilities.....	3
CHEM ENG 3033 Chemical Engineering Applications C.....	3
CHEM ENG 3034 Chemical Engineering Applications B .....	3
CHEM ENG 3035 Chemical Engineering Applications A .....	3
<b>Level IV (indicative only)</b>	
CHEM ENG 4034 Professional Practice IV .....	3
Pyrometallurgy.....	3
CHEM ENG 4056 Research Practice.....	3
Hydro & Electro Metallurgy .....	3
CHEM ENG 4054 Research Project H#.....	3
<i>or</i>	
CHEM ENG 4055 Advanced Unit Operations Laboratory .....	3
Minerals Processing Design Project .....	6
Electives .....	3
<b>#Students accepted into the Honours Stream will take Research Project(H) and other students will take Advanced Unit Operations Laboratory</b>	

<b>Electives</b>	
CHEM ENG 4048 Bio-Fuels, Biomass & Wastes ....	3
CHEM ENG 4040 Chemical Engineering Research Elective.....	3
CHEM ENG 4046 Combustion Processes.....	3
CHEM ENG 4039 Environmental Engineering.....	3
CHEM ENG 4043 Special Studies in Chemical Engineering .....	3
CHEM ENG 4032 Composite & Multiphase Polymers.....	3
CHEM ENG 4045 Introduction to Nanotechnology.....	3
CHEM ENG 4049 Biomolecular Engineering .....	3
CHEM ENG 4051 Water and Wastewater Engineering .....	3
CHEM ENG 4052 Food Process Engineering .....	3
CHEM ENG 4053 Pinch Analysis & Process Synthesis .....	3
<b>6.5.2.3 B.E.(Chemical – Sustainable Energy)</b>	
<b>Level I</b>	
CHEM ENG 1007 Process Engineering I.....	3
CHEM ENG1011 Introduction to Process Modelling.....	3
CHEM ENG 1010 Professional Practice I.....	3
CHEM 1100 Chemistry IA+ .....	3
<i>and</i>	
CHEM 1200 Chemistry IB+ .....	3
<i>or</i>	
CHEM 1101 Foundations of Chemistry IA+.....	3
<i>and</i>	
CHEM 1201 Foundations of Chemistry IB+ .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
GEOLOGY 1103 Earth Systems .....	3
<i>or</i>	
GEOLOGY 1104 Geology for Engineers.....	3
<b>+Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry or equivalent must enrol in CHEM 1100/1200. All other students must enrol in CHEM 1101/1201.</b>	
<b>Level II</b>	
CHEM ENG 2010 Introduction to Process Simulation.....	3
CHEM ENG 2011 Chemical Engineering Thermodynamics .....	3
CHEM ENG 2013 Advanced Process Modelling.....	3
CHEM ENG 2014 Process Heat Transfer .....	3
CHEM ENG 2016 Professional Practice II.....	3

CHEM ENG 2018 Process Fluid Mechanics	3
MATHS 2201 Engineering Mathematics I	3
MECH ENG 3105 Sustainability & the Environment	3
<b>Level III</b>	
CHEM ENG3036 Unit Operations Laboratory	3
CHEM ENG 3024 Professional Practice III	3
CHEM ENG 3029 Materials III	3
CHEM ENG 3030 Simulation & Concept Design	3
CHEM ENG 3031 Process Control & Utilities	3
CHEM ENG 3033 Chemical Engineering Applications C	3
CHEM ENG 3034 Chemical Engineering Applications B	3
CHEM ENG 3035 Chemical Engineering Applications A	3
<b>Level IV</b>	
CHEM ENG 4034 Professional Practice IV	3
CHEM ENG 4048 Bio-Fuels, Biomass & Wastes	3
CHEM ENG 4014 Plant Design Project	6
CHEM ENG 4055 Advanced Unit Operations Laboratory	3
<i>or</i>	
CHEM ENG 4054 Research Project H#	3
CHEM ENG 4053 Pinch Analysis & Process Synthesis	3
CHEM ENG 4056 Research Practice	3
TECHCOMM 3006 Energy Management, Economics & Policy	3
<b>#Students accepted into the Honours Stream will take Research Project (H) and other students will take Advanced Unit Operations Laboratory</b>	

#### 6.5.2.4 B.E.(Chemical)/B.A.

To satisfy the Arts component of this program, students must undertake 30 units of Arts courses, which includes an approved major sequence (24 units). The remaining 6 units can be undertaken at any level. Students should consult the Bachelor of Arts academic program rules for the list of approved major sequences and the specific requirements of each.

To satisfy the BE (Chemical) component of this program students are required to satisfactorily complete the courses listed below:

<b>Level I</b>	
CHEM 1100 Chemistry IA+	3
<i>and</i>	
CHEM 1200 Chemistry IB+	3
<i>or</i>	

CHEM 1101 Foundations of Chemistry IA+	3
<i>and</i>	
CHEM 1201 Foundations of Chemistry IB+	3
CHEM ENG 1007 Process Engineering I	3
CHEM ENG 1011 Introduction to Process Modelling	3
CHEM ENG 1010 Professional Practice I	3
MATHS 1011 Mathematics IA*	3
MATHS 1012 Mathematics IB*	3
MATHS 1013 Mathematics IM*	3
BIOLOGY 1101 Biology 1: Molecules, Genes and Cells	3
<i>or</i>	
GEOLOGY 1103 Earth Systems	3
<i>or</i>	
GEOLOGY 1104 Geology for Engineers	3
<b>+Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry or equivalent must enrol in CHEM 1100 /1200. All other students must enrol in CHEM 1101/1201.</b>	
<b>*See Clause 6.2 regarding Level I Mathematics requirements.</b>	
<b>Level II</b>	
CHEM ENG 2010 Introduction to Process Simulation	3
CHEM ENG 2011 Chemical Engineering Thermodynamics	3
CHEM ENG 2013 Advanced Process Modelling	3
CHEM ENG 2014 Process Heat Transfer	3
CHEM ENG 2016 Professional Practice II	3
CHEM ENG 2018 Process Fluid Mechanics	3
MATHS 2201 Engineering Mathematics I	3
Arts Course	3
<b>Level III</b>	
CHEM ENG 3036 Unit Operations Laboratory	3
CHEM ENG 3024 Professional Practice III	3
CHEM ENG 3029 Materials III	3
CHEM ENG 3030 Simulation & Concept Design	3
CHEM ENG 3031 Process Control & Utilities	3
CHEM ENG 3033 Chemical Engineering Applications C	3
CHEM ENG 3034 Chemical Engineering Applications B	3
CHEM ENG 3035 Chemical Engineering Applications A	3

<b>Level IV</b>	
CHEM ENG 4056 Research Practice	6
CHEM ENG 4034 Professional Practice IV	3
CHEM ENG 4055 Advanced Unit Operations Laboratory	3
<i>or</i>	
CHEM ENG 4054 Research Project (H)#	3
CHEM ENG 4050 Chemical Engineering Applications D	3
Arts course	3
Chemical Engineering Elective course	3
<b>#Students accepted into the Honours Stream will take Research Project (H) and other students will take Advanced Unit Operations laboratory</b>	
<b>Electives</b>	
CHEM ENG 4043 Special Studies in Chemical Engineering	3
CHEM ENG 4040 Chemical Engineering Research Elective	3
CHEM ENG 4044 Minerals Processing	3
CHEM ENG 4046 Combustion Processes	3
CHEM ENG 4032 Composite & Multiphase Polymers	3
CHEM ENG 4039 Environmental Engineering	3
CHEM ENG 4045 Introduction to Nanotechnology	3
CHEM ENG 4048 Bio-Fuels, Biomass & Wastes	3
CHEM ENG 4049 Biomolecular Engineering	3
CHEM ENG 4053 Pinch Analysis & Process Synthesis	3
CHEM ENG 4052 Food Process Engineering	3
CHEM ENG 4051 Water & Wastewater Engineering	3
<b>Level V</b>	
Advanced Level Arts courses	24

#### 6.5.2.5 B.E.(Chemical)/B.Ec.

To qualify for both the award of the degree of B.E.(Chemical) and the degree of B.Ec., students are required to complete satisfactorily courses as indicated below:

<b>Level I</b>	
CHEM 1100 Chemistry IA+	3
<i>and</i>	
CHEM 1200 Chemistry IB+	3
<i>or</i>	
CHEM 1101 Foundations of Chemistry IA+	3
<i>and</i>	

CHEM 1201 Foundations of Chemistry IB+	3
CHEM ENG 1007 Process Engineering I	3
CHEM ENG 1011 Introduction to Process Modelling	3
CHEM ENG 1010 Professional Practice I	3
ECON 1004 Principles of Microeconomics 1	3
MATHS 1011 Mathematics IA *	3
MATHS 1012 Mathematics IB*	3
MATHS 1013 Mathematics IM*	3
<b>+Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry or equivalent must enrol in CHEM 1100 /1200. All other students must enrol in CHEM 1101/1201.</b>	
<b>*See Clause 6.2 regarding Level I Mathematics requirements</b>	
<b>Level II</b>	
CHEM ENG 2010 Introduction to Process Simulation	3
CHEM ENG 2011 Chemical Engineering Thermodynamics	3
CHEM ENG 2014 Process Heat Transfer	3
CHEM ENG 2016 Professional Practice II	3
CHEM ENG 2018 Process Fluid Mechanics	3
ECON 1000 Principles of Macroeconomics I	3
ECON 2507 Intermediate Macroeconomics II	3
MATHS 2201 Engineering Mathematics I	3
<b>Level III</b>	
CHEM ENG3036 Unit Operations laboratory	3
CHEM ENG 3024 Professional Practice III	3
CHEM ENG 3029 Materials III	3
CHEM ENG 3030 Simulation & Concept Design	3
CHEM ENG 3031 Process Control & Utilities	3
CHEM ENG 3033 Chemical Engineering Applications C	3
CHEM ENG 3034 Chemical Engineering Applications B	3
CHEM ENG 3035 Chemical Engineering Applications A	3
<b>Level IV</b>	
COMMGMT 2500 Organisational Behaviour II	3
ECON 2504 Intermediate Econometrics II	3
<i>or</i>	
ECON 2503 Intermediate Mathematical Economics II	3
ECON 2506 Intermediate Microeconomics A II	3
CHEM ENG 4034 Professional Practice IV	3
CHEM ENG 4056 Research Practice	3
CHEM ENG 4055 Advanced Unit Operations	

Laboratory .....	3
<i>or</i>	
CHEM ENG 4054 Research Project (H)# .....	3
CHEM ENG 4050 Chemical Engineering Applications D .....	3
Chemical Engineering Elective .....	3
<b>#Students accepted into the Honours Stream will take Research Project(H) and other students will take Advanced Unit Operations Laboratory</b>	
<b>Level V</b>	
CHEM ENG 4014 Plant Design Project .....	6
Level III Economics courses .....	18
<b>Electives</b>	
CHEM ENG 4043 Special Studies in Chemical Engineering .....	3
CHEM ENG 4040 Chemical Engineering Research Elective .....	3
CHEM ENG 4044 Minerals Processing .....	3
CHEM ENG 4046 Combustion Processes .....	3
CHEM ENG 4032 Composite & Multiphase Polymers .....	3
CHEM ENG 4039 Environmental Engineering .....	3
CHEM ENG 4045 Introduction to Nanotechnology .....	3
CHEM ENG 4048 Bio-Fuels, Biomass & Wastes ....	3
CHEM ENG 4049 Biomolecular Engineering .....	3
CHEM ENG 4054 Pinch Analysis & Process Synthesis .....	3
CHEM ENG 4052 Food Process Engineering .....	3
CHEM ENG 4051 Water and Wastewater Engineering .....	3

#### 6.5.2.6 B.E.(Chemical)/B.Fin.

To qualify for both the award of the degree of B.E.(Chemical) and the degree of B.Fin, students are required to complete satisfactorily courses as indicated below:

<b>Level I</b>	
CHEM 1100 Chemistry IA+ .....	3
<i>and</i>	
CHEM 1200 Chemistry IB+ .....	3
<i>or</i>	
CHEM 1101 Foundations of Chemistry IA+ .....	3
<i>and</i>	
CHEM 1201 Foundations of Chemistry IB+ .....	3
CHEM ENG 1007 Process Engineering I .....	3
CHEM ENG1011 Introduction to Process Modelling .....	3

CHEM ENG 1010 Professional Practice I .....	3
ACCTING 1002 Accounting for Decision Makers ....	3
MATHS 1011 Mathematics IA* .....	3
MATHS 1012 Mathematics IB* .....	3
MATHS 1013 Mathematics IM* .....	3
<b>+Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry or equivalent must enrol in CHEM 1100 /1200. All other students must enrol in CHEM 1101/1201.</b>	

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

CHEM ENG 2010 Introduction to Process Simulation .....	3
CHEM ENG 2011 Chemical Engineering Thermodynamics .....	3
CHEM ENG 2014 Process Heat Transfer .....	3
CHEM ENG 2016 Professional Practice II .....	3
CHEM ENG 2018 Process Fluid Mechanics .....	3
ECON 1000 Principles of Macroeconomics I .....	3
ECON 1004 Principles of Microeconomics I .....	3
MATHS 2201 Engineering Mathematics I .....	3

#### Level III

ECON 1009 International Financial Institutions & Markets I .....	3
CHEM ENG 3036 Unit Operations Laboratory .....	3
CHEM ENG 3024 Professional Practice III .....	3
CHEM ENG 3030 Simulation & Concept Design ....	3
CHEM ENG 3031 Process Control & Utilities .....	3
CHEM ENG 3029 Materials III .....	3
CHEM ENG 3034 Chemical Engineering Applications B .....	3
CHEM ENG 3035 Chemical Engineering Applications A .....	3

#### Level IV

CORPFIN 2500 Business Finance II .....	3
CORPFIN 2501 Financial Institutions Management II .....	3
ECON 2504 Intermediate Econometrics II .....	3
ECON 2508 Financial Economics II .....	3
CHEM ENG 4034 Professional Practice IV .....	3
CHEM ENG4056 Research Practice .....	3
CHEM ENG 4055 Advanced Unit Operations Laboratory .....	3
<i>or</i>	
CHEM ENG 4054 Research Project (H)# .....	3
CHEM ENG 4050 Chemical Engineering Applications D .....	3

**#Students accepted into the Honours Stream will take Research Project (H) and other students will take Advanced Unit Operations Laboratory.**

#### Level V

CHEM ENG 3033 Chemical Engineering Applications C .....	3
CHEM ENG 4014 Plant Design Project .....	6
CORPFIN 3501 Portfolio Theory & Management III .....	3
<i>and either</i>	
APP MTH 3012 Financial Modelling: Tools & Techniques .....	3
<i>or</i>	
CORPFIN 3502 Options, Futures & Risk Management III .....	3
Level III Finance courses .....	6
Chemical Engineering Elective .....	3

#### Electives

CHEM ENG 4032 Composite & Multiphase Polymers .....	3
CHEM ENG 4039 Environmental Engineering .....	3
CHEM ENG 4040 Chemical Engineering Research Elective .....	3
CHEM ENG 4043 Special Studies in Chemical Engineering .....	3
CHEM ENG 4044 Minerals Processing .....	3
CHEM ENG 4045 Introduction to Nanotechnology .....	3
CHEM ENG 4046 Combustion Processes .....	3
CHEM ENG 4048 Bio-Fuels, Biomass & Wastes ....	3
CHEM ENG 4049 Bio-molecular Engineering .....	3
CHEM ENG 4053 Pinch Analysis & Process Synthesis .....	3
CHEM ENG 4052 Food Process Engineering .....	3
CHEM ENG 4051 Water & Wastewater Engineering .....	3

#### 6.5.2.7 B.E.(Chemical)/B.Ma.&Comp.Sc.(Computer Science focus)

To qualify for both the award of the degree of B.E.(Chemical) and the degree of B.Ma.Comp.Sc. with a Computer Science Major, students are required to complete satisfactorily:

<b>Level I</b>	
CHEM 1100 Chemistry IA+ .....	3
<i>and</i>	
CHEM 1200 Chemistry IB+ .....	3
<i>or</i>	

CHEM 1101 Foundations of Chemistry IA+ .....	3
<i>and</i>	
CHEM 1201 Foundations of Chemistry IB+ .....	3
CHEM ENG 1007 Process Engineering I .....	3
CHEM ENG 1010 Professional Practice I .....	3
COMP SCI 1201 Introduction to Programming for Engineers .....	3
COMP SCI 1202 Object Oriented Programming E .....	3
MATHS 1011 Mathematics IA* .....	3
MATHS 1012 Mathematics IB* .....	3
MATHS 1013 Mathematics IM* .....	3
<b>+Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry or equivalent must enrol in CHEM 1100 /1200. All other students must enrol in CHEM 1101/1201.</b>	

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

CHEM ENG 2010 Introduction to Process Simulation .....	3
CHEM ENG 2011 Chemical Engineering Thermodynamics .....	3
CHEM ENG 2014 Process Heat Transfer .....	3
CHEM ENG 2016 Professional Practice II .....	3
CHEM ENG 2018 Process Fluid Mechanics .....	3
COMP SCI 2000 Computer Systems .....	3
COMP SCI 1203 Algorithm Design and Data Structures for Engineers .....	3
MATHS 2201 Engineering Mathematics I .....	3

#### Level III

CHEM ENG 2013 Advanced Process Modelling .....	3
CHEM 2530 Environmental & Analytical Chemistry II .....	3
<i>or</i>	
CHEM 2510 Chemistry IIA++ .....	3
CHEM ENG3036 Unit Operations Laboratory .....	3
CHEM ENG 3024 Professional Practice III .....	3
CHEM ENG 3030 Simulation & Concept Design ....	3
CHEM ENG 3031 Process Control & Utilities .....	3
CHEM ENG 3034 Chemical Engineering Applications B .....	3
CHEM ENG 3035 Chemical Engineering Applications A .....	3
<b>+ +CHEM 2510 Chemistry IIA requires either passes in both CHEM 1100 and CHEM 1200 or credits in both CHEM 1101 and CHEM 1201 as prerequisites.</b>	

<b>Level IV</b>	
Level III Computer Science courses.....	18
CHEM ENG 3029 Materials III .....	3
CHEM ENG 3033 Chemical Engineering Applications C.....	3
<b>Level V</b>	
CHEM ENG 4014 Plant Design Project.....	6
CHEM ENG 4034 Professional Practice IV .....	3
CHEM ENG 4055 Advanced Unit Operations Laboratory	
<i>or</i>	
CHEM ENG 4054 Research Project (H)#.....	3
CHEM ENG 4050 Chemical Engineering applications D .....	3
Electives .....	6

**6.5.2.8 B.E (Chemical)/ B.Ma.Comp.Sc. (Mathematics focus)**

To qualify for both the award of the degree of B.E.(Chemical) and the degree of B.MaComp.Sc. with a Mathematics focus, students are required to complete satisfactorily:

<b>Level I</b>	
CHEM 1100 Chemistry IA+ .....	3
<i>and</i>	
CHEM 1200 Chemistry IB+ .....	3
<i>or</i>	

CHEM 1101 Foundations of Chemistry IA+ .....	3
<i>and</i>	
CHEM 1201 Foundations of Chemistry IB+ .....	3
CHEM ENG 1007 Process Engineering I.....	3
CHEM ENG1011 Introduction to Process Modelling.....	3
CHEM ENG 1010 Professional Practice I .....	3
MATHS 1011 Mathematics IA* .....	3
MATHS 1012 Mathematics IB*.....	3
MATHS 1013 Mathematics IM* .....	3
BIOLOGY 1101 Biology I: Molecules, Genes and Cells.....	3
<i>Or</i>	
GEOLOGY 1103 Earth Systems .....	3
<i>Or</i>	
GEOLOGY 1104 Geology for Engineers 1 .....	3

**+Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry or equivalent must enrol in CHEM 1100 /1200. All other students must enrol in CHEM 1101/1201.**

**\*See Clause 6.2 regarding Level I Mathematics requirements.**

<b>Level II</b>	
CHEM ENG 2010 Introduction to Process Simulation.....	3
CHEM ENG 2011 Chemical Engineering Thermodynamics .....	3
CHEM ENG 2014 Process Heat Transfer.....	3
CHEM ENG 2016 Professional Practice II .....	3
CHEM ENG 2018 Process Fluid Mechanics .....	3
CHEM 2510 Chemistry IIA++ .....	3
<i>or</i>	
CHEM ENG 2530 Environmental & Analytical Chemistry II.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II .....	3

**++CHEM 2100 Chemistry IIA requires either passes in both CHEM 1100 & CHEM 1200 or credits in both CHEM 1101 & CHEM 1201 as prerequisites**

<b>Level III</b>	
CHEM ENG3036 Unit Operations Laboratory .....	3
CHEM ENG 3024 Professional Practice III .....	3
CHEM ENG 3029 Materials III .....	3
CHEM ENG 3030 Simulation & Concept Design ....	3
CHEM ENG 3031 Process Control & Utilities.....	3
CHEM ENG 3033 Chemical Engineering Applications C.....	3

CHEM ENG 3034 Chemical Engineering Applications B .....	3
CHEM ENG 3035 Chemical Engineering Applications A .....	3
<b>Level IV</b>	
Mathematics courses* .....	24
<b>*24 units of additional Mathematics courses of which 18 units must be at Level III</b>	
<b>Level V</b>	
CHEM ENG 4014 Plant Design Project.....	6
CHEM ENG 4034 Professional Practice IV .....	3
CHEM ENG 4056 Research Practice.....	3
CHEM ENG 4055 Advanced Unit Operations Laboratory .....	3
<i>or</i>	
CHEM ENG 4054 Research Project (H)#.....	3
CHEM ENG 4050 Chemical Engineering Applications D.....	3
Chemical Engineering Electives .....	6
<b>#Students accepted into the Honours Stream will take Research Project (H) and other students will take Advanced Unit Operations Laboratory</b>	
<b>Chemical Engineering Electives</b>	
CHEM ENG 4043 Special Studies in Chemical Engineering .....	3
CHEM ENG 4040 Chemical Engineering Research Elective.....	3
CHEM ENG 4044 Minerals Processing .....	3
CHEM ENG 4046 Combustion Processes.....	3
CHEM ENG 4032 Composite & Multiphase Polymers.....	3
CHEM ENG 4039 Environmental Engineering.....	3
CHEM ENG 4045 Introduction to Nanotechnology.....	3
CHEM ENG 4048 Bio-Fuels, Biomass & Wastes ....	3
CHEM ENG 4049 Biomolecular Engineering .....	3
CHEM ENG 4053 Pinch Analysis & Process Synthesis.....	3
CHEM ENG 4052 Food Process Engineering.....	3
CHEM ENG 4051 Water and Wastewater Engineering .....	3

**6.5.2.9 B.E.(Chemical)/B.Sc.**

To qualify for a Bachelor of Science award, students must complete a major pursuant to Bachelor of Science Program Rules 5.4.

To qualify for both the award of the degree of B.E.(Chemical) and the award of the degree of B.Sc., students are required to complete satisfactorily the courses listed below:

<b>Level I</b>	
CHEM 1100 Chemistry 1A.....	3
CHEM 1200 Chemistry 1B+ .....	3
CHEM ENG 1007 Process Engineering I.....	3
CHEM ENG1011 Introduction to Process Modelling.....	3
CHEM ENG 2016 Professional Practice II .....	3
MATHS 1011 Mathematics IA* .....	3
MATHS 1012 Mathematics IB*.....	3
MATHS 1013 Mathematics IM* .....	3
Level I Science Course .....	3
<b>+If students wish to undertake another Level I Science course option (timetabling permitting) they should discuss this with School Course Advisers</b>	
<b>*See Clause 6.2 regarding Level I Mathematics requirements.</b>	
<b>Level II</b>	
CHEM ENG 2010 Introduction to Process Simulation.....	3
CHEM ENG 2011 Chemical Engineering Thermodynamics .....	3
CHEM ENG 2014 Process Heat Transfer .....	3
CHEM ENG 2018 Process Fluid Mechanics .....	3
MATHS 2201 Engineering Mathematics I.....	3
Level II Science Courses.....	9
<b>Level III</b>	
CHEM ENG 3036 Unit Operations Laboratory .....	3
CHEM ENG 3024 Professional Practice III .....	3
CHEM ENG 3029 Materials III .....	3
CHEM ENG 3030 Simulation & Concept Design ....	3
CHEM ENG 3031 Process Control & Utilities.....	3
CHEM ENG 3033 Chemical Engineering Applications C.....	3
CHEM ENG 3034 Chemical Engineering Applications B .....	3
CHEM ENG 3035 Chemical Engineering Applications A .....	3
<b>Level IV</b>	
Level III Science Courses.....	24
<b>Level V</b>	
CHEM ENG 4014 Plant Design Project.....	6
CHEM ENG 4034 Professional Practice IV .....	3
CHEM ENG 4055 Advanced Unit Operations Laboratory .....	3
<i>or</i>	
CHEM ENG 4054 Research Project (H)#.....	3
CHEM ENG 4050 Chemical Engineering Applications D.....	3

Chemical Engineering Electives .....	6
<b>#Students accepted into the Honours Stream will take Research Project (H) and other students will take Advanced Unit Operations Laboratory.</b>	
<b>Chemical Engineering Electives</b>	
CHEM ENG 4032 Composite & Multiphase Polymers.....	3
CHEM ENG 4039 Environmental Engineering.....	3
CHEM ENG 4040 Chemical Engineering Research Elective.....	3
CHEM ENG 4043 Special Studies in Chemical Engineering.....	3
CHEM ENG 4044 Minerals Processing .....	3
CHEM ENG 4045 Introduction to Nanotechnology.....	3
CHEM ENG 4046 Combustion Processes.....	3
CHEM ENG 4048 Bio-Fuels, Biomass & Wastes ...	3
CHEM ENG 4049 Bio-Molecular Engineering.....	3
CHEM ENG 4053 Pinch Analysis & Process Synthesis .....	3
CHEM ENG 4052 Food Process Engineering.....	3
CHEM ENG 4051 Water & Wastewater Engineering .....	3

### 6.5.2.10 B.E.(Chemical)/B.Sc.(Biotech.)

To qualify for a Bachelor of Science award, students must complete a major pursuant to Bachelor of Science Program Rules.

To qualify for both the award of the degree of B.E.(Chemical) and the degree of B.Sc(Biotech.):

#### Level I

BIOLOGY 1101 Biology I: Molecules, Genes & Cells.....	3
BIOLOGY 1201 Biology I: Human Perspectives.....	3
CHEM ENG1011 Introduction to Process Modelling.....	3
CHEM 1100 Chemistry IA+ .....	3
<i>and</i>	
CHEM 1200 Chemistry IB+ .....	3
<i>or</i>	
CHEM 1101 Foundations of Chemistry IA+ .....	3
<i>and</i>	
CHEM 1201 Foundations of Chemistry IB+ .....	3
CHEM ENG 1007 Process Engineering I.....	3
MATHS 1011 Mathematics IA* .....	3
MATHS 1012 Mathematics IB* .....	3
MATHS 1013 Mathematics IM* .....	3

+Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry or equivalent must enrol in CHEM 1100 /1200. All other students must enrol in CHEM 1101/1201.

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

BIOCHEM 2502 Biochemistry II (Biotech) Molecular & Cell Biology .....	3
CHEM ENG 2010 Introduction to Process Simulation.....	3
CHEM ENG 2011 Chemical Engineering Thermodynamics .....	3
CHEM ENG 2014 Process Heat Transfer.....	3
CHEM ENG 2015 Principles of Biotechnology II.....	3
CHEM ENG 2016 Professional Practice II .....	3
CHEM ENG 2018 Process Fluid Mechanics .....	3
MATHS 2201 Engineering Mathematics I.....	3

#### Level III

BIOCHEM 2503 Biochemistry II (Biotechnology): Metabolism.....	3
MICRO 2504 Microbiology II (Biotechnology) .....	3
CHEM ENG 3024 Professional Practice III .....	3
CHEM ENG 3030 Simulation & Concept Design .....	3
CHEM ENG 3031 Process Control & Utilities.....	3
CHEM ENG 3034 Chemical Engineering Applications B .....	3
CHEM ENG 3035 Chemical Engineering Applications A .....	3
CHEM ENG 3036 Unit Operations Laboratory .....	3

#### Level IV

BIOCHEM 3000 Molecular & Structural Biology III .....	6
BIOCHEM 3001 Cell & Development Biology III .....	6
<i>or</i>	
PHARM 3011 Pharmacology B III.....	6
BIOTECH 3000 Biotechnology Practice III.....	6
PHARM 3010 Pharmacology A III.....	6

#### Level V

CHEM ENG 3033 Chemical Engineering Applications C .....	3
CHEM ENG 3029 Materials III .....	3
CHEM ENG 4014 Plant Design Project.....	6
CHEM ENG 4034 Professional Practice IV .....	3
CHEM ENG 4055 Advanced Unit Operations Laboratory, or	
CHEM ENG 4054 Research Project (H)#.....	3
CHEM ENG 4050 Chemical Engineering Applications D.....	3

CHEM ENG 4056 Research Practice.....	3
<b>#Students accepted into the Honours Stream will take Research Project (H) and other students will take Advanced Unit Operations Laboratory.</b>	

### 6.5.3 Civil and Environmental Engineering

#### 6.5.3.1 B.E.(Civil and Environmental)

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV.

#### Level I

C&ENVENG 1008 Engineering Planning & Design IA .....	3
C&ENVENG 1009 Civil & Environmental Engineering IA.....	3
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA .....	3
ENV BIOL 1002 Ecological Issues.....	3
GEOLOGY 1104 Geology for Engineers.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3

#### Level II

CHEM ENG 2017 Transport Processes in the Environment.....	3
C&ENVENG 2067 Construction Management & Surveying.....	3
C&ENVENG 2068 Environmental Engineering & Sustainability II.....	3
C&ENVENG 2069 Geotechnical Engineering IIA .....	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA .....	3
C&ENVENG 2071 Water Engineering IIA .....	3
ENV BIOL 2005 Ecology for Engineers II.....	3
MATHS 2201 Engineering Mathematics I.....	3

#### Level III

ENV BIOL 3012WT Integrated Catchment Management III or	
C&ENVENG 3012 Geotechnical Engineering Design III.....	3
CHEM ENG 4051 Water & Wastewater Treatment.....	3
ECON 3500 Resource & Environmental Economics III.....	3
C&ENVENG 3077 Engineering Hydrology .....	3
C&ENVENG 3078 Engineering Management & Planning IIIA .....	3
C&ENVENG 3079 Water Engineering & Design III (S2).....	3

C&ENVENG 4037 Introduction to Environmental Law .....	3
C&ENVENG 4087 Environmental Modelling & Management.....	3

#### Level IV

C&ENVENG 4005A/B Civil & Environmental Research Project Part 1 & 2^.....	6
C&ENVENG 4108 Environmental Engineering Design IVA .....	3
C&ENVENG 4109 Environmental Engineering Design IVB.....	3
C&ENVENG 4110 Environmental Engineering Design IVC.....	3
C&ENVENG 4034 Engineering Management IV .....	3
Electives .....	6

^ Students who are not selected for Honours will be required to complete 2 additional final year elective courses instead of the Civil & Environmental Research Project.

#### Electives

Students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Environmental Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

#### Geotechnical/Mining Engineering

C&ENVENG 3012 Geotechnical Engineering Design III.....	3
C&ENVENG 4106 Introduction to Geostatistics.....	3

#### Water Engineering

C&ENVENG 4073 Water Distribution Systems & Design .....	3
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#### Management Engineering

MINING 4110 Mine Asset Management & Services.....	3
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#### Environmental Engineering

SOIL&WAT 3007WT GIS for Environmental Management.....	3
ENV BIOL 3012WT Integrated Catchment Management.....	3
MINING 4104 Socio-Environmental Aspects of Mining.....	3

### 6.5.3.2 B.E.(Civil and Environmental)/B.A.

To satisfy the Arts component of this program,

students must undertake 30 units of Arts courses, which includes an approved major sequence (24 units). The remaining 6 units can be undertaken at any level. Students should consult the Bachelor of Arts academic program rules for the list of approved major sequences and the specific requirements of each.

To satisfy the BE (Civil and Environmental) component of this program students are required to satisfactorily complete the courses listed below:

**Level I**

C&ENVENG 1008 Engineering Planning & Design IA .....3  
 C&ENVENG 1009 Civil & Environmental Engineering IA .....3  
 C&ENVENG 1010 Engineering Mechanics - Statics .....3  
 C&ENVENG 1012 Engineering Modelling & Analysis IA .....3  
 ENV BIOL 1002 Ecological Issues I .....3  
 MATHS 1011 Mathematics IA\* .....3  
 MATHS 1012 Mathematics IB \* .....3  
 MATHS 1013 Mathematics IM\* .....3  
 Arts Course .....3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

C&ENVENG 2067 Construction Management & Surveying .....3  
 C&ENVENG 2068 Environmental Engineering & Sustainability II .....3  
 C&ENVENG 2069 Geotechnical Engineering IIA .....3  
 C&ENVENG 2070 Engineering Modelling & Analysis IIA .....3  
 C&ENVENG 2071 Water Engineering IIA .....3  
 CHEM ENG 2017 Transport Processes in the Environment .....3  
 MATHS 2201 Engineering Mathematics I .....3  
 Arts course .....3

**Level III**

ENV BIOL 3012WT Integrated Catchment Management III .....3  
 or  
 C&ENVENG 3012 Geotechnical Engineering Design III .....3  
 CHEM ENG 4051 Water & Wastewater Treatment .....3  
 ECON 3500 Resource & Environmental Economics III .....3

C&ENVENG 3077 Engineering Hydrology .....3  
 C&ENVENG 3078 Engineering Management & Planning IIIA .....3  
 C&ENVENG 3079 Water Engineering & Design III (S2) .....3  
 C&ENVENG 4037 Introduction to Environmental Law .....3  
 C&ENVENG 4087 Environmental Modelling & Management .....3

**Level IV**

C&ENVENG 4005A/B Civil & Environmental Research Project Part 1 & 2^ .....6  
 C&ENVENG 4034 Engineering Management IV .....3  
 C&ENVENG 4108 Environmental Engineering Design IVA .....3  
 C&ENVENG 4109 Environmental Engineering Design IVB .....3  
 C&ENVENG 4110 Environmental Engineering Design IVC .....3  
 Electives .....6

^Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Environmental Research Project

**Electives**

Students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences.

Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Environmental Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

**Geotechnical/Mining Engineering**

C&ENVENG 3012 Geotechnical Engineering Design III .....3  
 C&ENVENG 4106 Introduction to Geostatistics .....3

**Water Engineering**

C&ENVENG 4073 Water Distribution Systems & Design .....3

**Management Engineering**

MINING 4110 Mine Asset Management & Services .....3

**Environmental Engineering**

SOIL&WAT 3007WT GIS for Environmental Management .....3

ENV BIOL 3012WT Integrated Catchment Management .....3  
 C&ENVENG 4087 Environmental Modelling & Management .....3  
 MINING 4104 Socio-Environmental Aspects of Mining .....3

**Level V**

Arts courses .....24

**6.5.3.3 B.E.(Civil and Environmental)/B.Ec.**

To qualify for both the award of the degree of B.E.(Civil and Environmental) and the degree of B.Ec, students are required to complete satisfactorily courses listed below:

**Level I**

C&ENVENG 1008 Engineering Planning & Design IA .....3  
 C&ENVENG 1009 Civil & Environmental Engineering I .....3  
 C&ENVENG 1010 Engineering Mechanics - Statics .....3  
 C&ENVENG 1012 Engineering Modelling & Analysis IA .....3  
 ECON 1004 Principles of Microeconomics I .....3  
 ENV BIOL 1002 Ecological Issues .....3  
 MATHS 1011 Mathematics IA\* .....3  
 MATHS 1012 Mathematics IB \* .....3  
 MATHS 1013 Mathematics IM\* .....3

\*See Clause 6.2 regarding Level I Mathematics requirements

**Level II**

C&ENVENG 2067 Construction Management & Surveying .....3  
 C&ENVENG 2068 Environmental Engineering & Sustainability II .....3  
 C&ENVENG 2069 Geotechnical Engineering IIA .....3  
 C&ENVENG 2070 Engineering Modelling & Analysis IIA .....3  
 C&ENVENG 2071 Water Engineering IIA .....3  
 CHEM ENG 2017 Transport Processes in the Environment .....3  
 ECON 1000 Principles of Macroeconomics I .....3  
 MATHS 2201 Engineering Mathematics I .....3

**Level III**

ENV BIOL 2005 Ecology for Engineers II .....3  
 ECON 2506 Intermediate Microeconomics All .....3  
 ECON 2507 Intermediate Macroeconomics II .....3  
 C&ENVENG 3077 Engineering Hydrology .....3

C&ENVENG 3078 Engineering Management & Planning IIIA .....3  
 C&ENVENG 3079 Water Engineering & Design III (S2) .....3  
 C&ENVENG 4037 Introduction to Environmental Law .....3  
 C&ENVENG 4087 Environmental Modelling & Management .....3

**Level IV**

ECON 2504 Intermediate Econometrics .....3  
 or  
 ECON 2503 Intermediate Mathematical Economics II .....3  
 COMMGMT 2500 Organisational Behaviour II .....3  
 Level III Economics courses\* .....18

\*Level III Economics courses chosen from those listed in the specific Academic Program Rules for the Bachelor of Economics.

**Level V**

C&ENVENG 4005A/B Civil & Environmental Research Project Part 1 & 2^ .....6  
 C&ENVENG 4108 Environmental Engineering Design IVA .....3  
 C&ENVENG 4109 Environmental Engineering Design IVB .....3  
 C&ENVENG 4100 Environmental Engineering Design IVC .....3  
 C&ENVENG 4034 Engineering Management IV .....3  
 Electives .....6

^Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Environmental Research Project

**Electives**

Students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Environmental Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

**Geotechnical/Mining Engineering**

C&ENVENG 3012 Geotechnical Engineering Design III .....3  
 C&ENVENG 4106 Introduction to Geostatistics .....3

### Water Engineering

C&ENVENG 4073 Water Distribution Systems & Design .....3

### Management Engineering

MINING 4110 Mine Asset Management & Services.....3

### Environmental Engineering

SOIL&WAT 3007WT GIS for Environmental Management.....3

ENV BIOL 3012WT Integrated Catchment Management.....3

MINING 4104 Socio-Environmental Aspects of Mining.....3

#### 6.5.3.4 B.E.(Civil and Environmental)/B.Fin.

To qualify for both the award of the degree of B.E.(Civil and Environmental) and the degree of B.Fin, students are required to complete satisfactorily courses listed below:

##### Level I

C&ENVENG 1008 Engineering Planning & Design IA.....3

C&ENVENG 1009 Civil & Environmental Engineering I.....3

C&ENVENG 1010 Engineering Mechanics - Statics.....3

C&ENVENG 1012 Engineering Modelling Analysis IA.....3

ECON 1004 Principles of Microeconomics I.....3

ENV BIOL 1002 Ecological Issues.....3

MATHS 1011 Mathematics IA\* .....3

MATHS 1012 Mathematics IB\* .....3

MATHS 1013 Mathematics IM\* .....3

\*See Clause 6.2 regarding Level I Mathematics requirements.

##### Level II

ACCTING 1002 Accounting for Decision Makers I.....3

C&ENVENG 2068 Environmental Engineering & Sustainability II.....3

C&ENVENG 2069 Geotechnical Engineering IIA.....3

C&ENVENG 2070 Engineering Modelling & Analysis IIA.....3

C&ENVENG 2071 Water Engineering IIA.....3

ECON 1000 Principles of Macroeconomics I.....3

ECON 1009 International Finance Institutions & Markets I.....3

MATHS 2201 Engineering Mathematics I.....3

##### Level III

CORPFIN 2500 Business Finance II.....3

ECON 2504 Intermediate Econometrics II.....3

ECON 2508 Financial Economics II.....3

C&ENVENG 2067 Construction Management & Surveying .....3

C&ENVENG 3077 Engineering Hydrology .....3

C&ENVENG 3079 Water Engineering & Design III (S2).....3

C&ENVENG 4037 Introduction to Environmental Law .....3

C&ENVENG 4087 Environmental Modelling & Management.....3

##### Level IV

CORPFIN 2501 Financial Institutions Management II.....3

CHEM ENG 4051 Water & Wastewater Treatment ...3

C&ENVENG 3078 Engineering Management & Planning IIIA.....3

ENV BIOL 3012WT Integrated Catchment Management III.....3

or

C&ENVENG 3012 Geotechnical Engineering Design III.....3

CORPFIN 3501 Portfolio Theory & Management III.....3

and either

APP MTH 3012 Financial Modelling: Tools & Techniques.....3

or

CORPFIN 3502 Options, Futures & Risk Management III.....3

Level III Finance course .....6

##### Level V

C&ENVENG 4005A/B Civil & Environmental Research Project Part 1 & 2^.....6

C&ENVENG 4108 Environmental Engineering Design IVA.....3

C&ENVENG 4109 Environmental Engineering Design IVB.....3

C&ENVENG 4100 Environmental Engineering Design IVC.....3

C&ENVENG 4034 Engineering Management IV.....3

Electives .....6

^Students who are not selected for Honours will be required to complete 2 additional final year elective courses instead of the Civil & Environmental Research Project.

##### Electives

Students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Environmental Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

##### Geotechnical/Mining Engineering

C&ENVENG 3012 Geotechnical Engineering Design III.....3

C&ENVENG 4106 Introduction to Geostatistics.....3

##### Water Engineering

C&ENVENG 4073 Water Distribution Systems & Design.....3

##### Management Engineering

MINING 4110 Mine Asset Management & Services.....3

##### Environmental Engineering

SOIL&WAT 3007WT GIS for Environmental Management .....3

ENV BIOL 3012WT Integrated Catchment Management.....3

C&ENVENG 4087 Environmental Modelling & Management .....3

MINING 4104 Socio-Environmental Aspects of Mining.....3

#### 6.5.3.5 B.E.(Civil and Environmental)/B.Ma. & Comp.Sc. (Computer Science focus)

To qualify for both the award of the degree of B.E.(Civil and Environmental) and the degree of B.Ma.Comp.Sc. with a Computer Science Major, students are required to complete satisfactorily:

##### Level I

C&ENVENG 1008 Engineering Planning & Design IA.....3

C&ENVENG 1009 Civil & Environmental Engineering IA.....3

C&ENVENG 1010 Engineering Mechanics - Statics.....3

COMP SCI 1201 Introduction to Programming for Engineers .....3

COMP SCI 1202 Object Oriented Programming E.UG.....3

ENV BIOL 1002 Ecological Issues.....3

MATHS 1011 Mathematics IA\* .....3

MATHS 1012 Mathematics IB\* .....3

MATHS 1013 Mathematics IM\* .....3

\*See Clause 6.2 regarding Level I Mathematics requirements

##### Level II

C&ENVENG 2067 Construction Management & Surveying .....3

C&ENVENG 2068 Environmental Engineering & Sustainability II.....3

C&ENVENG 2069 Geotechnical Engineering IIA.....3

C&ENVENG 2071 Water Engineering IIA.....3

CHEM ENG 2017 Transport Process in the Environment.....3

ENV BIOL 2005 Ecology for Engineers II.....3

MATHS 2201 Engineering Mathematics I.....3

Level II Computer Science course.....3

##### Level III

CHEM ENG 4051 Water & Wastewater Treatment.....3

ECON 3500 Resource & Environmental Economics III.....3

C&ENVENG 3077 Engineering Hydrology .....3

C&ENVENG 3078 Engineering Management & Planning IIIA.....3

C&ENVENG 3079 Water Engineering & Design III (S2).....3

C&ENVENG 4037 Introduction to Environmental Law .....3

C&ENVENG 4087 Environmental Modelling & Management.....3

Level II Computer Science course.....3

##### Level IV

Level III Computer Science Courses .....18

ENV BIOL 3012WT Integrated Catchment Management.....3

C&ENVENG 3012 Geotechnical Engineering Design III.....3

##### Level V

C&ENVENG 4005A/B Civil & Environmental Research Project ^ .....6

C&ENVENG 4034 Engineering Management IV.....3

C&ENVENG 4108 Environmental Engineering Design IVA.....3

C&ENVENG 4109 Environmental Engineering Design IVB.....3

C&ENVENG 4110 Environmental Engineering Design IVC.....	3
C&ENVENG 4037 Introduction to Environmental Law .....	3
Electives .....	12
^Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Environmental Research Project.	
<b>Electives</b>	
Students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences.	
Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.	
Students should undertake at least two electives from the Environmental Engineering group, and may only undertake one 'Mining' elective in any one year.	
The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:	
<b>Geotechnical/Mining Engineering</b>	
C&ENVENG 3012 Geotechnical Engineering Design III.....	3
C&ENVENG 4106 Introduction to Geostatistics.....	3
<b>Water Engineering</b>	
C&ENVENG 4073 Water Distribution Systems & Design.....	3
<b>Management Engineering</b>	
MINING 4110 Mine Asset Management & Services.....	3
<b>Environmental Engineering</b>	
SOIL&WAT 3007WT GIS for Environmental Management .....	3
ENV BIOL 3012WT Integrated Catchment Management .....	3
C&ENVENG 4087 Environmental Modelling & Management .....	3
MINING 4104 Socio-Environmental Aspects of Mining.....	3

**6.5.3.6 B.E (Civil and Environmental)/B. Ma.&Comp.Sc. (Mathematics focus)**

To qualify for both the award of the degree of B.E.(Civil and Environmental) and the degree of B.Ma.Comp.Sc. with a Mathematics Major, students are required to complete satisfactorily:

**Level I**

C&ENVENG 1008 Engineering Planning & Design IA.....	3
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C&ENVENG 1009 Civil & Environmental Engineering I .....	3
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA.....	3
ENV BIOL 1002 Ecological Issues.....	3
GEOLOGY 1104 Geology for Engineers .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
*See Clause 6.2 regarding Level I Mathematics requirements	
<b>Level II</b>	
C&ENVENG 2067 Construction Management & Surveying .....	3
C&ENVENG 2068 Environmental Engineering & Sustainability II.....	3
C&ENVENG 2069 Geotechnical Engineering IIA.....	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA .....	3
C&ENVENG 2071 Water Engineering IIA .....	3
CHEM ENG 2017 Transport Processes in the Environment.....	3
ENV BIOL 2005 Ecology for Engineers II.....	3
MATHS 2201 Engineering Mathematics I.....	3

**Level III**

ENV BIOL 3012WT Integrated Catchment Management III or	
C&ENVENG 3012 Geotechnical Engineering Design III.....	3
CHEM ENG 4051 Water & Wastewater Treatment ...	3
ECON 3500 Resource & Environmental Economics III.....	3
C&ENVENG 3077 Engineering Hydrology .....	3
C&ENVENG 3078 Engineering Management & Planning IIIA.....	3
C&ENVENG 3079 Water Engineering & Design III (S2) .....	3
C&ENVENG 4037 Introduction to Environmental Law .....	3
C&ENVENG 4087 Environmental Modelling & Management .....	3

**Level IV**

Mathematics courses* .....	24
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\*24 units of additional Mathematics courses of which 18 units must be at Level III

**Level V**

C&ENVENG 4005A/B Civil & Environmental Research Project ^ .....	6
C&ENVENG 4108 Environmental Engineering Design IVA.....	3
C&ENVENG 4109 Environmental Engineering Design IVB.....	3
C&ENVENG 4100 Environmental Engineering Design IVC.....	3
C&ENVENG 4034 Engineering Management IV.....	3
Electives .....	6

^Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Environmental Research Project.

**Electives**

Students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Environmental Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

<b>Geotechnical/Mining Engineering</b>	
C&ENVENG 3012 Geotechnical Engineering Design III.....	3
C&ENVENG 4106 Introduction to Geostatistics.....	3

**Water Engineering**

C&ENVENG 4073 Water Distribution Systems & Design.....	3
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**Management Engineering**

MINING 4110 Mine Asset Management & Services.....	3
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**Environmental Engineering**

SOIL&WAT 3007WT GIS for Environmental Management .....	3
ENV BIOL 3012WT Integrated Catchment Management .....	3
MINING 4104 Socio-Environmental Aspects of Mining.....	3

**6.5.3.7 B.E.(Civil and Environmental)/B.Sc.**

To qualify for a Bachelor of Science award, students must complete a major pursuant to Bachelor of Science Program Rules.

To qualify for the award of the degree of B.E.(Civil

and Environmental) and the degree of B.Sc., students are required to complete satisfactorily:

**Level I**

C&ENVENG 1008 Engineering Planning & Design IA.....	3
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
C&ENVENG 1009 Civil & Environmental Engineering I .....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
Level I Science Courses .....	6

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

MATHS 2201 Engineering Mathematics I.....	3
C&ENVENG 2068 Environmental Engineering & Sustainability II.....	3
C&ENVENG 2069 Geotechnical Engineering IIA.....	3
C&ENVENG 2067 Construction Management & Surveying .....	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA.....	3
C&ENVENG 2071 Water Engineering IIA .....	3
MATHS 2202 Engineering Mathematics II.....	3

or

Level II Science course .....	3
Level II Science course .....	3

**Level III**

ECON 3500 Resource & Environmental Economics III.....	3
C&ENVENG 3077 Engineering Hydrology .....	3
C&ENVENG 3078 Engineering Management & Planning IIIA .....	3
C&ENVENG 3079 Water Engineering & Design III (S2) .....	3
C&ENVENG 4037 Introduction to Environmental Law .....	3
C&ENVENG 4087 Environmental Modelling & Management.....	3
Level II Science courses .....	6

**Level IV**

Level III Science Courses.....	24
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## Level V

C&ENVENG 4005A/B Civil & Environmental Research Project ^ .....	6
C&ENVENG 4108 Environmental Engineering Design IVA .....	3
C&ENVENG 4109 Environmental Engineering Design IVB .....	3
C&ENVENG 4100 Environmental Engineering Design IVC .....	3
C&ENVENG 4034 Engineering Management IV .....	3
Electives .....	6

^ Students who are not selected for Honours will be required to complete 2 additional final year elective courses instead of the Civil & Environmental Research Project.

### Electives

Students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Environmental Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

### Geotechnical/Mining Engineering

C&ENVENG 3012 Geotechnical Engineering Design III .....	3
C&ENVENG 4106 Introduction to Geostatistics .....	3

### Water Engineering

C&ENVENG 4073 Water Distribution Systems & Design .....	3
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### Management Engineering

MINING 4110 Mine Asset Management & Services .....	3
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### Environmental Engineering

SOIL&WAT 3007WT GIS for Environmental Management .....	3
ENV BIOL 3012WT Integrated Catchment Management .....	3
C&ENVENG 4087 Environmental Modelling & Management .....	3
MINING 4104 Socio-Environmental Aspects of Mining .....	3
CHEM ENG 4051 Water & Wastewater Treatment ...	3

## 6.5.4 Civil and Structural Engineering

### 6.5.4.1 B.E.(Civil and Structural)

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

#### Level I

C&ENVENG 1008 Engineering Planning & Design IA .....	3
C&ENVENG 1009 Civil & Environmental Engineering IA .....	3
C&ENVENG 1010 Engineering Mechanics - Statics .....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA .....	3
GEOLOGY 1104 Geology for Engineers .....	3
MATHS 1011 Mathematics IA .....	3
MATHS 1012 Mathematics IB .....	3
MECH ENG 1007 Engineering Mechanics - Dynamics .....	3

#### Level II

C&ENVENG 2025 Strength of Materials IIA .....	3
C&ENVENG 2067 Construction Management & Surveying .....	3
C&ENVENG 2068 Environmental Engineering & Sustainability II .....	3
C&ENVENG 2069 Geotechnical Engineering IIA ...	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA .....	3
C&ENVENG 2071 Water Engineering IIA .....	3
C&ENVENG 2072 Structural Engineering Design ...	3
MATHS 2201 Engineering Mathematics I .....	3

#### Level III

C&ENVENG 3001 Structural Mechanics IIIA .....	3
C&ENVENG 3005 Structural Design III (Concrete) ..	3
C&ENVENG 3007 Structural Design III (Steel) .....	3
C&ENVENG 3012 Geotechnical Engineering Design III .....	3
C&ENVENG 3077 Engineering Hydrology .....	3
C&ENVENG 3078 Engineering Management & Planning IIIA .....	3
C&ENVENG 3079 Water Engineering & Design II (S2) .....	3
CHEM ENG 4051 Water & Wastewater Treatment or C&ENVENG 4087 Environmental Modelling & Management .....	3

#### Level IV

C&ENVENG 4003A/B Civil & Structural Engineering Research Project ^ .....	6
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C&ENVENG 4034 Engineering Management IV .....	3
C&ENVENG 4068 Computer Methods of Structural Analysis & Design .....	3
Elective courses to the value of at least 12 units ...	12

^ Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Structural Research Project.

### Electives

Students should take at least two courses from the one group. The remaining may be chosen from any group. Alternatively, students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences.

In special circumstances other combinations of elective courses may be acceptable but must be approved by the Head of School. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Structural Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

### Structural Engineering

C&ENVENG 4069 Advanced Reinforced Concrete .....	3
C&ENVENG 4070 Seismic Design of Masonry Buildings .....	3
C&ENVENG 4099 Structural Response to Blast Loading .....	3
C&ENVENG 4107 Prestressed Concrete Structures .....	3
C&ENVENG 4111 Structural Dynamics and Applications .....	3

### Geotechnical/Mining Engineering

MINING 3072 Mining Geomechanics .....	3
MINING 4102 Mine Geotechnical Engineering .....	3
C&ENVENG 4106 Introduction to Geostatistics .....	3

### Water Engineering

C&ENVENG 4073 Water Distribution Systems & Design .....	3
C&ENVENG 4087 Environmental Modelling, Management & Design .....	3
C&ENVENG 4108 Environmental Engineering Design IVA .....	3
C&ENVENG 4109 Environmental Engineering Design IVB .....	3
CHEM ENG 4051 Water & Wastewater Treatment ...	3

## Management Engineering

MINING 4110 Mine Asset Management & Services	3
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### 6.5.4.2 B.E.(Civil and Structural)/B.A.

To satisfy the Arts component of this program, students must undertake 30 units of Arts courses, which includes an approved major sequence (24 units). The remaining 6 units can be undertaken at any level. Students should consult the Bachelor of Arts academic program rules for the list of approved major sequences and the specific requirements of each.

To satisfy the BE (Civil and Structural) component of this program students are required to satisfactorily complete the courses listed below:

#### Level I

C&ENVENG 1008 Engineering Planning & Design IA .....	3
C&ENVENG 1009 Civil & Environmental Engineering I .....	3
C&ENVENG 1010 Engineering Mechanics - Statics .....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA .....	3
MATHS 1011 Mathematics IA .....	3
MATHS 1012 Mathematics IB .....	3
MATHS 1013 Mathematics IM* .....	3
Arts course .....	3
MECH ENG 1007 Engineering Mechanics - Dynamics .....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

C&ENVENG 2025 Strength of Materials IIA .....	3
C&ENVENG 2067 Construction Management & Surveying .....	3
C&ENVENG 2068 Environmental Engineering & Sustainability II .....	3
C&ENVENG 2069 Geotechnical Engineering IIA .....	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA .....	3
C&ENVENG 2071 Water Engineering IIA .....	3
C&ENVENG 2072 Structural Engineering Design ...	3
MATHS 2201 Engineering Mathematics I .....	3

#### Level III

Arts course .....	3
C&ENVENG 3001 Structural Mechanics IIIA .....	3
C&ENVENG 3005 Structural Design III (Concrete) ..	3
C&ENVENG 3007 Structural Design III (Steel) .....	3

C&ENVENG 3012 Geotechnical Engineering Design III.....	3
C&ENVENG 3077 Engineering Hydrology .....	3
C&ENVENG 3078 Engineering Management & Planning IIIA.....	3
C&ENVENG 3079 Water Engineering & Design III (S2) .....	3
<b>Level IV</b>	
C&ENVENG 4003A/B Civil & Structural Engineering Research Project ^ .....	6
C&ENVENG 4034 Engineering Management IV .....	3
C&ENVENG 4068 Computer Methods of Structural Analysis & Design .....	3
Electives .....	12
^ Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Structural Research Project.	
<b>Level V</b>	
Arts courses .....	24
Electives	
Students should take at least two courses from the one group. The remaining may be chosen from any group. Alternatively, students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. In special circumstances other combinations of elective courses may be acceptable but must be approved by the Head of School.	
Students may also, with approval of Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.	
Students should undertake at least two electives from the Structural Engineering group, and may only undertake one 'Mining' elective in any one year.	
The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:	
<b>Structural Engineering</b>	
C&ENVENG 4069 Advanced Reinforced Concrete .....	3
C&ENVENG 4070 Seismic Design of Masonry Buildings.....	3
C&ENVENG 4099 Structural Response to Blast Loading .....	3
C&ENVENG 4107 Prestressed Concrete Structures .....	3
C&ENVENG 4111 Structural Dynamics and Applications.....	3
<b>Geotechnical/Mining Engineering</b>	
MINING 3072 Mining Geomechanics.....	3

MINING 4102 Mine Geotechnical Engineering.....	3
C&ENVENG 4106 Introduction to Geostatistics.....	3
<b>Water Engineering</b>	
C&ENVENG 4073 Water Distribution Systems & Design.....	3
C&ENVENG 4087 Environmental Modelling, Management & Design .....	3
C&ENVENG 4108 Environmental Engineering Design IVA .....	3
C&ENVENG 4109 Environmental Engineering Design IVB.....	3
CHEM ENG 4051 Water & Wastewater Treatment ...	3
<b>Management Engineering</b>	
MINING 4110 Mine Asset Management & Services .....	3

#### 6.5.4.3 B.E.(Civil and Structural)/B.Ec.

To qualify for both the award of the degree of B.E.(Civil and Structural) and the degree of B.Ec., students are required to complete satisfactorily courses listed below:

##### Level I

C&ENVENG 1008 Engineering Planning & Design IA.....	3
C&ENVENG 1009 Civil & Environmental Engineering I .....	3
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA.....	3
ECON 1004 Principles of Microeconomics I .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
ECON 1000 Principles of Macroeconomics.....	3

\* See Clause 6.2 regarding Level I Mathematics requirements.

##### Level II

C&ENVENG 2025 Strength of Materials IIA.....	3
C&ENVENG 2067 Construction Management & Surveying.....	3
C&ENVENG 2068 Environmental Engineering & Sustainability II.....	3
C&ENVENG 2069 Geotechnical Engineering IIA ...	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA .....	3
C&ENVENG 2071 Water Engineering IIA.....	3
C&ENVENG 2072 Structural Engineering Design ...	3
MATHS 2201 Engineering Mathematics I.....	3

##### Level III

ECON 2506 Intermediate Microeconomics A II.....	3
ECON 2507 Intermediate Macroeconomics II.....	3
C&ENVENG 3001 Structural Mechanics IIIA.....	3
C&ENVENG 3005 Structural Design III (Concrete) ..	3
C&ENVENG 3007 Structural Design III (Steel).....	3
C&ENVENG 3012 Geotechnical Engineering Design III.....	3
C&ENVENG 3077 Engineering Hydrology .....	3
C&ENVENG 3079 Water Engineering & Design III (S2) .....	3

##### Level IV

ECON 2504 Intermediate Econometrics .....	3
<i>or</i>	
ECON 2503 Intermediate Mathematical Economics II.....	3
COMMGMT 2500 Organisational Behaviour II .....	3
Level III Economics courses* .....	18

\*Level III Economics courses chosen from those listed in the specific Academic Program Rules of the degree of Bachelor of Economics.

##### Level V

Civil & Structural Engineering courses:	
C&ENVENG 4003A/B Civil & Structural Engineering Research Project ^ .....	6
C&ENVENG 4034 Engineering Management IV .....	3
C&ENVENG 4068 Computer Methods of Structural Analysis & Design .....	3
Electives .....	12

^ Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Structural Research Project.

##### Electives

Students should take at least two courses from the one group. The remaining may be chosen from any group. Alternatively, students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. In special circumstances other combinations of elective courses may be acceptable but must be approved by the Head of School. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Structural Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

##### Structural Engineering

C&ENVENG 4069 Advanced Reinforced Concrete .....	3
C&ENVENG 4070 Seismic Design of Masonry Buildings.....	3
C&ENVENG 4099 Structural Response to Blast Loading .....	3
C&ENVENG 4107 Prestressed Concrete Structures .....	3
C&ENVENG 4111 Structural Dynamics and Applications.....	3

##### Geotechnical/Mining Engineering

MINING 3069 Rock Breakage .....	3
MINING 3072 Mining Geomechanics.....	3
MINING 4102 Mine Geotechnical Engineering.....	3
C&ENVENG 4106 Introduction to Geostatistics.....	3

##### Water Engineering

C&ENVENG 4073 Water Distribution Systems & Design.....	3
C&ENVENG 4087 Environmental Modelling, Management & Design.....	3
C&ENVENG 4108 Environmental Engineering Design IVA.....	3
C&ENVENG 4109 Environmental Engineering Design IVB.....	3
CHEM ENG 4051 Water & Wastewater Treatment.....	3

##### Management Engineering

MINING 4110 Mine Asset Management & Services.....	3
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#### 6.5.4.4 B.E.(Civil and Structural)/B.Fin.

To qualify for both the award of the degree of B.E.(Civil and Structural) and the degree of B.Fin., students are required to complete satisfactorily courses listed below:

##### Level I

C&ENVENG 1008 Engineering Planning & Design IA.....	3
C&ENVENG 1009 Civil & Environmental Engineering IA.....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA .....	3
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
ECON 1004 Principles of Microeconomics I .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
ECON 1000 Principles of Macroeconomics I.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

ACCTING 1002 Accounting for Decision Makers I .....3  
 C&ENVENG 2025 Strength of Materials IIA .....3  
 C&ENVENG 2069 Geotechnical Engineering IIA ....3  
 C&ENVENG 2070 Engineering Modelling & Analysis II .....3  
 C&ENVENG 2071 Water Engineering IIA .....3  
 C&ENVENG 2072 Structural Engineering Design ...3  
 ECON 1009 International Finance Institutions & Markets I .....3  
 MATHS 2201 Engineering Mathematics 1 .....3

**Level III**

CORPFIN 2500 Business Finance II .....3  
 ECON 2504 Intermediate Econometrics II .....3  
 ECON 2508 Financial Economics II .....3  
 C&ENVENG 3001 Structural Mechanics IIIA .....3  
 C&ENVENG 3005 Structural Design III (Concrete) .....3  
 C&ENVENG 3007 Structural Design III (Steel) .....3  
 C&ENVENG 3012 Geotechnical Engineering Design III .....3  
 C&ENVENG 3077 Engineering Hydrology .....3

**Level IV**

CORPFIN 2501 Financial Institutions Management II .....3  
 C&ENVENG 3078 Engineering Management & Planning IIIA .....3  
 C&ENVENG 3079 Water Engineering & Design III (S2) .....3  
 CHEM ENG 4051 Water & Wastewater Treatment or C&ENVENG 4087 Environmental Modelling & Management .....3  
 CORPFIN 3501 Portfolio Theory & Management III .....3  
 and either  
 APP MTH 3012 Financial Modelling: Tools & Techniques .....3  
 or  
 CORPFIN 3502 Options, Futures & Risk Management III .....3  
 Level III Finance courses .....6  
**Level V**  
 C&ENVENG 4003A/B Civil & Structural Engineering Research Project ^ .....6  
 C&ENVENG 4034 Engineering Management IV .....3

C&ENVENG 4068 Computer Methods of Structural Analysis & Design .....3  
 Electives chosen from electives below ..... 12

^ Students who are not selected for Honours will be required to complete 2 additional final year elective courses instead of the Civil & Structural Research Project.

**Electives**

Students should take at least two courses from the one group. The remaining may be chosen from any group. Alternatively, students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. In special circumstances other combinations of elective courses may be acceptable but must be approved by the Head of School. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Structural Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

**Structural Engineering**

C&ENVENG 4069 Advanced Reinforced Concrete .....3  
 C&ENVENG 4070 Seismic Design of Masonry Buildings .....3  
 C&ENVENG 4099 Structural Response to Blast Loading .....3  
 C&ENVENG 4107 Prestressed Concrete Structures .....3  
 C&ENVENG 4111 Structural Dynamics and Applications .....3

**Geotechnical/Mining Engineering**

MINING 3072 Mining Geomechanics .....3  
 MINING 4102 Mine Geotechnical Engineering .....3  
 C&ENVENG 4106 Introduction to Geostatistics .....3

**Water Engineering**

C&ENVENG 4073 Water Distribution Systems & Design .....3  
 C&ENVENG 4087 Environmental Modelling, Management & Design .....3  
 C&ENVENG 4108 Environmental Engineering Design IVA .....3  
 C&ENVENG 4109 Environmental Engineering Design IVB .....3  
 CHEM ENG 4051 Water & Wastewater Treatment .....3

**Management Engineering**

MINING 4110 Mine Asset Management & Services .....3

**6.5.4.5 B.E.(Civil and Structural)/B.Ma.&Comp.Sc. (Computer Science focus)**

To qualify for both the award of the degree of B.E.(Civil and Structural) and the degree of B.Ma. Comp.Sc. with a Computer Science Major, students are required to complete satisfactorily:

**Level I**

C&ENVENG 1008 Engineering Planning & Design IA .....3  
 C&ENVENG 1009 Civil & Environmental Engineering IA .....3  
 C&ENVENG 1010 Engineering Mechanics - Statics .....3  
 COMP SCI 1201 Introduction to Programming for Engineers .....3  
 COMP SCI 1202 Object Oriented Programming E UG .....3  
 MATHS 1011 Mathematics IA .....3  
 MATHS 1012 Mathematics IB .....3  
 MATHS 1013 Mathematics IM\* .....3  
 MECH ENG 1007 Engineering Mechanics - Dynamics .....3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

MATHS 2201 Engineering Mathematics I .....3  
 MATHS 2202 Engineering Mathematics II .....3  
 C&ENVENG 2068 Environmental Engineering & Sustainability II .....3  
 C&ENVENG 2025 Strength of Materials IIA .....3  
 C&ENVENG 2067 Construction Management & Surveying .....3  
 C&ENVENG 2069 Geotechnical Engineering IIA ....3  
 C&ENVENG 2071 Water Engineering IIA .....3  
 C&ENVENG 2072 Structural Engineering Design .....3

**Level III**

C&ENVENG 3001 Structural Mechanics IIIA .....3  
 C&ENVENG 3005 Structural Design III (Concrete) ..3  
 C&ENVENG 3007 Structural Design III (Steel) .....3  
 C&ENVENG 3012 Geotechnical Engineering Design III .....3  
 C&ENVENG 3077 Engineering Hydrology .....3  
 C&ENVENG 3078 Engineering Management & Planning IIIA .....3

Level II Computer Science Course .....6

**Level IV**

Level III Computer Science courses\* ..... 18  
 C&ENVENG 3079 Water Engineering & Design III (S2) .....3  
 CHEM ENG 4051 Water & Wastewater Treatment .....3  
 or  
 C&ENVENG 4087 Environmental Modelling & Management .....3

**Level V**

C&ENVENG 4003A/B Civil & Structural Engineering Research Project ^ .....6  
 C&ENVENG 4034 Engineering Management IV .....3  
 C&ENVENG 4068 Computer Methods of Structural Analysis & Design .....3  
 Elective courses to the value of at least 12 units ...12

\*Level III Computer Science courses chosen from those listed in the specific Academic Program Rules of the degree of Bachelor of Computer Science.

^ Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Structural Research Project.

**Electives**

Students should take at least two courses from the one group. The remaining may be chosen from any group. Alternatively, students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. In special circumstances other combinations of elective courses may be acceptable but must be approved by the Head of School. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Structural Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

**Structural Engineering**

C&ENVENG 4069 Advanced Reinforced Concrete .....3  
 C&ENVENG 4070 Seismic Design of Masonry Buildings .....3  
 C&ENVENG 4099 Structural Response to Blast Loading .....3  
 C&ENVENG 4107 Prestressed Concrete Structures .....3

C&ENVENG 4111 Structural Dynamics and Applications.....	3
<b>Geotechnical/Mining Engineering</b>	
MINING 3072 Mining Geomechanics.....	3
MINING 4102 Mine Geotechnical Engineering.....	3
C&ENVENG 4106 Introduction to Geostatistics.....	3
<b>Water Engineering</b>	
C&ENVENG 4073 Water Distribution Systems & Design.....	3
C&ENVENG 4087 Environmental Modelling, Management & Design.....	3
C&ENVENG 4108 Environmental Engineering Design IVA.....	3
C&ENVENG 4109 Environmental Engineering Design IVB.....	3
CHEM ENG 4051 Water & Wastewater Treatment.....	3
<b>Management Engineering</b>	
MINING 4110 Mine Asset Management & Services.....	3

**6.5.4.6 B.E (Civil and Structural)/B.Ma.&Comp.Sc. (Mathematics focus)**

To qualify for both the award of the degree of B.E.(Civil and Structural) and the degree of B.Ma. Comp.Sc. with a Mathematics focus, students are required to complete satisfactorily:

**Level I**

C&ENVENG 1008 Engineering Planning & Design IA.....	3
C&ENVENG 1009 Civil & Environmental Engineering IA.....	3
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA.....	3
GEOLOGY 1104 Geology for Engineers.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM*.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

C&ENVENG 2025 Strength of Materials IIA.....	3
C&ENVENG 2068 Environmental Engineering & Sustainability II.....	3
C&ENVENG 2069 Geotechnical Engineering IIA.....	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA.....	3

C&ENVENG 2071 Water Engineering IIA.....	3
C&ENVENG 2072 Structural Engineering Design.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Maths II.....	3
<b>Level III</b>	
C&ENVENG 3001 Structural Mechanics IIIA.....	3
C&ENVENG 3005 Structural Design III (Concrete).....	3
C&ENVENG 3007 Structural Design III (Steel).....	3
C&ENVENG 3012 Geotechnical Engineering Design III.....	3
C&ENVENG 3077 Engineering Hydrology.....	3
C&ENVENG 3078 Engineering Management & Planning IIIA.....	3
C&ENVENG 3079 Water Engineering & Design II (S2).....	3
CHEM ENG 4051 Water & Wastewater Treatment.....	3
or	
C&ENVENG 4087 Environmental Modelling & Management.....	3

**Level IV**

Mathematics courses*.....	24
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\*24 units of additional Mathematics courses of which 18 units must be at Level III.

**Level V**

C&ENVENG 4003A/B Civil & Structural Engineering Research Project ^.....	6
C&ENVENG 4034 Engineering Management IV.....	3
C&ENVENG 4068 Computer Methods of Structural Analysis & Design.....	3
Elective courses to the value of at least 12 units.....	12

^ Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Structural Research Project.

**Electives**

Students should take at least two courses from the one group. The remaining may be chosen from any group. Alternatively, students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. In special circumstances other combinations of elective courses may be acceptable but must be approved by the Head of School. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Structural Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

**Structural Engineering**

C&ENVENG 4069 Advanced Reinforced Concrete.....	3
C&ENVENG 4070 Seismic Design of Masonry Buildings.....	3
C&ENVENG 4099 Structural Response to Blast Loading.....	3
C&ENVENG 4107 Prestressed Concrete Structures.....	3
C&ENVENG 4111 Structural Dynamics and Applications.....	3

**Geotechnical/Mining Engineering**

MINING 3072 Mining Geomechanics.....	3
MINING 4102 Mine Geotechnical Engineering.....	3
C&ENVENG 4106 Introduction to Geostatistics.....	3

**Water Engineering**

C&ENVENG 4073 Water Distribution Systems & Design.....	3
C&ENVENG 4087 Environmental Modelling, Management & Design.....	3
C&ENVENG 4108 Environmental Engineering Design IVA.....	3
C&ENVENG 4109 Environmental Engineering Design IVB.....	3
CHEM ENG 4051 Water & Wastewater Treatment.....	3

**Management Engineering**

MINING 4110 Mine Asset Management & Services.....	3
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**6.5.4.7 B.E.(Civil and Structural)/B.Sc.**

To qualify for a Bachelor of Science award, students must complete a major pursuant to Bachelor of Science Program Rules.

To qualify for both the award of the degree of B.E.(Civil and Structural) and the degree of B.Sc., students are required to complete satisfactorily courses as indicated below:

**Level I**

C&ENVENG 1008 Engineering Planning & Design IA.....	3
C&ENVENG 1009 Civil & Environmental Engineering I.....	3
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA.....	3

MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM*.....	3
Level I Science courses.....	6

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

C&ENVENG 2025 Strength of Materials IIA.....	3
C&ENVENG 2069 Geotechnical Engineering IIA.....	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA.....	3
C&ENVENG 2071 Water Engineering IIA.....	3
C&ENVENG 2072 Structural Engineering Design IIA.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II.....	3

or

Level II Science course.....	3
Level II Science course.....	3

**Level III**

C&ENVENG 3001 Structural Mechanics IIIA.....	3
C&ENVENG 3005 Structural Design III (Concrete).....	3
C&ENVENG 3007 Structural Design III (Steel).....	3
C&ENVENG 3012 Geotechnical Engineering Design III.....	3
C&ENVENG 3077 Engineering Hydrology.....	3
C&ENVENG 3079 Water Engineering & Design III (S2).....	3
Level II Science courses.....	6

**Level IV**

Level III Science courses.....	24
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**Level V**

C&ENVENG 4003A/B Civil & Structural Engineering Research Project ^.....	6
C&ENVENG 4034 Engineering Management IV.....	3
C&ENVENG 4068 Computer Methods of Structural Analysis & Design.....	3
Electives.....	12

^ Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Structural Research Project.

**Electives**

Students should take at least two courses from the one group. The remaining may be chosen from any group. Alternatively, students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. In special circumstances other combinations of elective courses may be

acceptable but must be approved by the Head of School. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Structural Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

#### Structural Engineering

C&ENVENG 4069 Advanced Reinforced Concrete .....	3
C&ENVENG 4070 Seismic Design of Masonry Buildings.....	3
C&ENVENG 4099 Structural Response to Blast Loading .....	3
C&ENVENG 4107 Prestressed Concrete Structures .....	3
C&ENVENG 4111 Structural Dynamics and Applications.....	3

#### Geotechnical/Mining Engineering

MINING 3072 Mining Geomechanics.....	3
MINING 4102 Mine Geotechnical Engineering.....	3
C&ENVENG 4106 Introduction to Geostatistics.....	3

#### Water Engineering

C&ENVENG 4073 Water Distribution Systems & Design .....	3
C&ENVENG 4087 Environmental Modelling, Management & Design .....	3
C&ENVENG 4108 Environmental Engineering Design IVA.....	3
C&ENVENG 4109 Environmental Engineering Design IVB.....	3
CHEM ENG 4051 Water & Wastewater Treatment ...	3

#### Management Engineering

MINING 4110 Mine Asset Management & Services.....	3
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#### 6.5.4.8 B.E.(Civil and Structural)/ B.E.(Civil and Environmental)

To qualify for the combined award of B.E.(Civil and Structural) and B.E.(Civil and Environmental), students are required to complete satisfactorily courses listed below:

##### Level I

C&ENVENG 1008 Engineering Planning and Design IA.....	3
C&ENVENG 1009 Civil and Environmental Engineering IA.....	3

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA.....	3
GEOLOGY 1104 Geology for Engineers I.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM*	
ENV BIOL 1002 Ecological Issues I.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

##### Level II

C&ENVENG 2025 Strength of Materials IIA.....	3
C&ENVENG 2067 Construction Management & Surveying .....	3
C&ENVENG 2068 Environmental Engineering & Sustainability II.....	3
C&ENVENG 2069 Geotechnical Engineering IIA.....	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA.....	3
C&ENVENG 2071 Water Engineering IIA.....	3
C&ENVENG 2072 Structural Engineering Design .....	3
MATHS 2201 Engineering Mathematics I.....	3

##### Level III

CHEM ENG 2071 Transport Processes in the Environment.....	3
C&ENVENG 3001 Structural Mechanics IIIA.....	3
C&ENVENG 3005 Structural Design III (Concrete) ..	3
C&ENVENG 3007 Structural Design III (Steel).....	3
C&ENVENG 3012 Geotechnical Engineering Design III.....	3
C&ENVENG 3077 Engineering Hydrology .....	3
C&ENVENG 3078 Engineering Management & Planning IIA.....	3
C&ENVENG 3079 Water Engineering & Design III (S2) .....	3

##### Level IV

CHEM ENG 4051 Water & Wastewater Treatment.....	3
ENV BIOL 2005 Ecology for Engineers II.....	3
ENV BIOL 3012WT Integrated Catchment Management III.....	3
ECON 3500 Resource & Environmental Economics III.....	3
C&ENVENG 4037 Introduction to Environmental Law .....	3
C&ENVENG 4087 Environmental Modelling & Management.....	3

C&ENVENG 4108 Environmental Engineering Design IVA.....	3
C&ENVENG 4109 Environmental Engineering Design IVB.....	3

##### Level V

C&ENVENG 4003A Civil & Structural Engineering Research Project ^ .....	6
or	
C&ENVENG 4005A Civil & Environmental Research Project ^ .....	6
C&ENVENG 4034 Engineering Management IV.....	3
C&ENVENG 4068 Computer Methods of Structural Analysis & Design .....	3
C&ENVENG 4110 Environmental Engineering Design IVC.....	3
Electives .....	9

^The Civil Engineering Research Project must be in the area of Structural or Geotechnical Engineering while the Environmental Engineering Research Project must be in the area of Water or Environmental Engineering. Students not selected for Honours Civil Engineering Research Project or the Honours Environmental Engineering Research Project will be required to complete two additional final year elective courses instead of the Research Project.

##### Electives

Students should take at least two courses from the one group. The remaining may be chosen from any group. Alternatively, students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. In special circumstances other combinations of elective courses may be acceptable but must be approved by the Head of School. At least 2 of the elective courses must be in the areas of Structural and/or Geotechnical Engineering and at least 2 must be in the areas of Water and/or Environmental Engineering.

Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

Students should undertake at least two electives from the Structural Engineering group, and may only undertake one 'Mining' elective in any one year.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

##### Structural Engineering

C&ENVENG 4069 Advanced Reinforced Concrete .....	3
C&ENVENG 4070 Seismic Design of Masonry Buildings.....	3

C&ENVENG 4099 Structural Response to Blast Loading .....	3
C&ENVENG 4107 Prestressed Concrete Structures .....	3
C&ENVENG 4111 Structural Dynamics and Applications.....	3

##### Environmental Engineering

MINING 4104 Socio-Environmental Aspects of Mining.....	3
SOIL&WAT 3007WT GIS for Environmental Management.....	3
Geotechnical/Mining Engineering	
MINING 3072 Mining Geomechanics.....	3
MINING 4102 Mine Geotechnical Engineering.....	3
C&ENVENG 4106 Introduction to Geostatistics.....	3

##### Water Engineering

C&ENVENG 4073 Water Distribution Systems & Design.....	3
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##### Management Engineering

MINING 4110 Mine Asset Management & Services .....	3
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#### 6.5.5 Computational Engineering

##### 6.5.5.1 B.E.(Computational)

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

##### Level I

COMP SCI 1012 Scientific Computing.....	3
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1009 Materials I .....	3
ELEC ENG 1008 Electrical & Electronic Engineering IA.....	3
MATHS 1011 Mathematics IA .....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
MECH ENG 1006 Design Graphics & Communication M.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics .....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

##### Level II

C&ENVENG 2025 Strength of Materials IIA.....	3
MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2019 Dynamics & Control I .....	3
MECH ENG 2020 Materials & Manufacturing.....	3

MECH ENG 2021 Thermo Fluids I.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II.....	3
MATHS 2104 Numerical Methods.....	3
<b>Level III</b>	
APP MTH 3002 Fluid Mechanics III.....	3
APP MTH 3010 Variational Methods & Optimal Control .....	3
APP MTH 3013 Differential Equations III .....	3
APP MTH 3014 Optimisation III .....	3
MECH ENG 3102 Heat Transfer & Thermodynamics .....	3
MECH ENG 3027 Engineering Systems Design & Communication.....	3
MECH ENG 3030 Structural Design & Solid Mechanics.....	3
MECH ENG 3101 Applied Aerodynamics.....	3
<b>Level IV</b>	
APP MTH 3000 Computational Mathematics III .....	3
APP MTH 4053 Computational Project Part 1 & 2^ .....	6
C&ENVENG 4034 Engineering Management IV .....	3
Elective courses to the value of 12 units.....	12

^ Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Computational Engineering Honours Project, in consultation with the Head of Mathematical Sciences.

**Electives**

Applied Mathematics course:	
APP MTH 3017 Waves.....	3
Computer Science course:	
COMP SCI 4045 Distributed High Performance Computing .....	3
Mechanical Engineering course:	
MECH ENG 4111 CFD for Engineering Applications.....	3
MECH ENG 4118 Finite Element Analysis of Structures .....	3
MECH ENG 3028 Dynamics and Control II .....	3
Physics course:	
PHYSICS 3534 Computational Physics III .....	3

**6.5.6 Computer Systems Engineering**

**6.5.6.1 B.E.(Computer Systems)**

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

**Level I**

COMP SCI 1201 Introduction to Programming for Engineers .....	3
COMP SCI 1202 Object-Oriented Programming E .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
ELEC ENG 1010 Electrical & Electronic Engineering IB.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
PHYSICS 1100 Physics IA.....	3
PHYSICS 1200 Physics IB.....	3

**Level II**

COMP SCI 2000 Computer Systems .....	3
COMP SCI 1203 Algorithm Design and Data Structures.....	3
ELEC ENG 2007 Signals & Systems .....	3
ELEC ENG 2008 Electronics .....	3
ELEC ENG 2009 Engineering Electromagnetics.....	3
ELEC ENG 2011 Circuit Analysis.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II .....	3

**Level III**

COMP SCI 3001 Computer Networks & Applications.....	3
COMP SCI 3006 Software Engineering & Project ...	3
ELEC ENG 3026 Engineering Systems: Avionics...3	
ELEC ENG 3027 Control.....	3
ELEC ENG 3018 RF Engineering.....	3
ELEC ENG 3024 Project Management for Electrical Engineering .....	3
ELEC ENG 3028 Digital Systems.....	3
ELEC ENG 3033 Signal Processing .....	3

**Level IV**

C&ENVENG 4034 Engineering Management IV .....	3
ELEC ENG 4055 Systems Engineering .....	3
ELEC ENG 4056 Real Time Systems.....	3
ELEC ENG 4064 Business Management Systems .....	3
ELEC ENG 4036A/B Design Project* .....	6
or	
ELEC ENG 4039A/B Honours Project* .....	6
Electives .....	6

\*Students accepted into the Honours Stream will take Honours Project and other students will take Design Project

**Electives**

COMP SCI 3004 Operating Systems.....	3
COMP SCI 3005 Computer Architecture .....	3
ELEC ENG 3034 Telecommunications Principles...3	
ELEC ENG 4053 Digital Microelectronics.....	3
ELEC ENG 4057 RF Systems .....	3
ELEC ENG 4058 Power Quality & Condition Monitoring .....	3
ELEC ENG 4059 Power Electronics & Drive Systems.....	3
ELEC ENG 4061 Image Processing .....	3
ELEC ENG 4063 Communications.....	3
PURE MTH 3018 Coding & Cryptology III.....	3

**6.5.6.2 B.E.(Computer Systems)/B.A**

To satisfy the Arts component of this program, students must undertake 30 units of Arts courses, which includes an approved major sequence (24 units). The remaining 6 units can be undertaken at any level. Students should consult the Bachelor of Arts academic program rules for the list of approved major sequences and the specific requirements of each.

To satisfy the BE (Computer Systems) component of this program students are required to satisfactorily complete the courses listed below:

**Level I**

COMP SCI 1201 Introduction to Programming for Engineers .....	3
COMP SCI 1202 Object-Oriented Programming E UG.....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
PHYSICS 1100 Physics IA .....	3
PHYSICS 1200 Physics IB.....	3
Level I Arts course.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

ELEC ENG 1010 Electrical & Electronic Engineering IB.....	3
ELEC ENG 2007 Signals & Systems.....	3
ELEC ENG 2011 Circuit Analysis.....	3
ELEC ENG 2009 Engineering Electromagnetics.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II .....	3

Level I Arts course.....	6
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**Level III**

COMP SCI 2000 Computer Systems .....	3
COMP SCI 1203 Algorithm Design and Data Structures.....	3
ELEC ENG 2008 Electronics II .....	3
ELEC ENG 3028 Digital Systems.....	3
ELEC ENG 3026 Engineering Systems: Avionics...3	
ELEC ENG 3033 Signal Processing .....	3
Advanced Level Arts courses .....	6

**Level IV**

COMP SCI 3001 Computer Networks & Applications.....	3
COMP SCI 3006 Software Engineering & Project ...3	
ELEC ENG 3018 RF Engineering.....	3
ELEC ENG 3024 Project Management for Electrical Engineering .....	3
ELEC ENG 3027 Control .....	3
Advanced Level Arts courses .....	9

**Level V**

ELEC ENG 4055 Systems Engineering.....	3
ELEC ENG 4056 Real Time Systems.....	3
ELEC ENG 4036A/B Design Project Part I*.....	3
or	
ELEC ENG 4039A/B Honours Project* .....	6
ELEC ENG 4056 Real Time Systems.....	3
Elective .....	3
Advanced Level Arts courses .....	6

\*Students accepted into the Honours Stream will take Honours Project and other students will take Design Project Electives

COMP SCI 3004 Operating Systems.....	3
COMP SCI 3005 Computer Architecture .....	3
ELEC ENG 3034 Telecommunications Principles...3	
ELEC ENG 4053 Digital Microelectronics.....	3
ELEC ENG 4057 RF Systems .....	3
ELEC ENG 4058 Power Quality & Condition Monitoring .....	3
ELEC ENG 4059 Power Electronics & Drive Systems.....	3
ELEC ENG 4061 Image Processing .....	3
ELEC ENG 4063 Communications.....	3
PURE MTH 3018 Coding & Cryptology III.....	3

**6.5.6.3 B.E.(Computer Systems)/B.Ec. program**

To qualify for both the award of the degree of

B.E.(Computer Systems) and the degree of B.Ec., students are required to complete satisfactorily courses listed below:

**Level I**

COMP SCI 1201 Introduction to Programming for Engineers .....3  
 COMP SCI 1202 Object-Oriented Programming.....3  
 ECON 1004 Principles of Microeconomics I .....3  
 ELEC ENG 1009 Electrical & Electronic Engineering IA .....3  
 MATHS 1011 Mathematics IA .....3  
 MATHS 1012 Mathematics IB .....3  
 MATHS 1013 Mathematics IM\* .....3  
 PHYSICS 1100 Physics IA .....3  
 PHYSICS 1200 Physics IB .....3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

ECON 1000 Principles of Macroeconomics I .....3  
 ECON 2504 Intermediate Econometrics .....3  
 or  
 ECON 2503 Mathematical Economics II .....3  
 ELEC ENG 1010 Electrical & Electronic Engineering IB .....3  
 ELEC ENG 2007 Signals & Systems .....3  
 ELEC ENG 2009 Engineering Electromagnetics.....3  
 ELEC ENG 2011 Circuit Analysis.....3  
 MATHS 2201 Engineering Mathematics I .....3  
 MATHS 2202 Engineering Mathematics II .....3

**Level III**

COMP SCI 2000 Computer Systems UG .....3  
 COMP SCI 1203 Algorithm Design & Data Structures .....3  
 ELEC ENG 3026 Engineering Systems: Avionics...3  
 ELEC ENG 2008 Electronics .....3  
 ECON 2506 Intermediate Microeconomics A II .....3  
 ECON 2507 Intermediate Macroeconomics .....3  
 ELEC ENG 3028 Digital Systems.....3  
 ELEC ENG 3033 Signal Processing .....3

**Level IV**

COMMGMT 2500 Organisational Behaviour II .....3  
 COMP SCI 3006 Software Engineering & Project ...3  
 ELEC ENG 3018 RF Engineering .....3  
 ELEC ENG 3024 Project Management for Electrical Engineers.....3  
 ELEC ENG 3027 Control .....3

COMPSCI 3001 Computer Networks & Applications.....3  
 Level III Economics Courses\* .....6

\*Level III Economics courses chosen from those listed in the specific Academic Program Rules for the degree of Bachelor of Economics.

**Level V**

ELEC ENG 4056 Real Time Systems .....3  
 ELEC ENG 4036A/B Design Project# .....6  
 or  
 ELEC ENG 4039A/B Honours Project# .....6  
 ELEC ENG 4055 Systems Engineering .....3  
 Level III Economics Courses\* .....12  
 #Students accepted into the Honours Stream will take Honours Project and other students will take Design Project

**6.5.6.4 B.E.(Computer Systems)/B.Fin.**

To qualify for both the award of the degree of B.E.(Computer Systems) and the degree of B.Fin., students are required to complete satisfactorily courses listed below:

**Level I**

COMP SCI 1201 Introduction to Programming for Engineers .....3  
 COMP SCI 1202 Object-Oriented Programming E UG .....3  
 ECON 1004 Principles of Microeconomics .....3  
 ELEC ENG 1009 Electrical & Electronic Engineering IA .....3  
 MATHS 1011 Mathematics IA .....3  
 MATHS 1012 Mathematics IB .....3  
 MATHS 1013 Mathematics IM\* .....3  
 PHYSICS 1100 Physics IA .....3  
 PHYSICS 1200 Physics IB .....3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

ECON 1000 Principles of Macroeconomics I .....3  
 ECON 1009 International Financial Institutions & Markets I .....3  
 ELEC ENG 1010 Electrical & Electronic IB .....3  
 ELEC ENG 2007 Signals & Systems.....3  
 ELEC ENG 2009 Engineering Electromagnetics.....3  
 ELEC ENG 2011 Circuit Analysis.....3  
 MATHS 2201 Engineering Mathematics I .....3  
 MATHS 2202 Engineering Mathematics II .....3

**Level III**

ACCTING 1002 Accounting for Decision Makers I .....3  
 COMP SCI 2000 Computer Systems .....3  
 COMP SCI 1203 Algorithm Design & Data Structures .....3  
 CORPFIN 2500 Business Finance II .....3  
 ECON 2504 Intermediate Econometrics II .....3  
 ELEC ENG 2008 Electronics .....3  
 ELEC ENG 3028 Digital Systems .....3  
 ELEC ENG 3033 Signal Processing .....3

**Level IV**

APP MTH 3012 Financial Modelling: Tools & Techniques .....3  
 or  
 CORPFIN 35022 Options, Futures & Risk Management III .....3  
 COMP SCI Computer Networks & Applications .....3  
 CORPFIN 2501 Financial Institutions Management II .....3  
 ECON 2508 Financial Economics II .....3  
 ELEC ENG 3018 RF Engineering .....3  
 ELEC ENG 3024 Project Management for Electrical Engineers .....3  
 ELEC ENG 3026 Engineering Systems: Avionics...3  
 ELEC ENG 3027 Control .....3

**Level V**

COMP SCI 3006 Software Engineering & Project .....3  
 CORPFIN 3501 Portfolio Theory & Management III .....3  
 ELEC ENG 4055 Systems Engineering .....3  
 ELEC ENG 4056 Real Time Systems .....3  
 ELEC ENG 4036A/B Design Project# .....6  
 or  
 ELEC ENG 4039A/B Honours Project# .....6  
 Level III Finance Courses+ .....6

#Students accepted into the Honours Stream will take Honours Project and other students will take Design Project +Level III Finance courses chosen from those listed in the specific Academic Program Rules for the degree of Bachelor of Finance.

**6.5.6.5 B.E.(Computer Systems)/LLB.**

To qualify for the award of the degree of BE (Computer Systems ) and the degree of LLB, students are required to complete satisfactorily courses below:

**Level I**

ELEC ENG 1009 Electrical & Electronic Engineering IA .....3

ELEC ENG 1010 Electrical & Electronic Engineering 1B .....3  
 LAW 1501 Foundations of Law .....3  
 LAW 1502 Law of Torts 1 .....3  
 LAW 1504 Principles of Public Law.....3  
 LAW 1505 Law of Torts 2 .....3  
 MATHS 1011 Mathematics IA .....3  
 MATHS 1012 Mathematics IB .....3  
 MATHS 1013 Mathematics IM\* .....3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

COMP SCI 1201 Introduction to Programming for Engineers .....3  
 COMP SCI 1202 Object-Oriented Programming.....3  
 PHYSICS 1100 Physics 1A .....3  
 PHYSICS 1200 Physics 1B .....3  
 Law courses to be advised by the Law School..... 12

**Level III**

ELEC ENG 2007 Signals & Systems.....3  
 ELEC ENG 2008 Electronics .....3  
 ELEC ENG 2009 Engineering Electromagnetics.....3  
 ELEC ENG 2011 Circuit Analysis.....3  
 MATHS 2201 Engineering Mathematics 1 .....3  
 MATHS 2202 Engineering Mathematics II .....3  
 Law courses to be advised by Law School.....6

**Level IV**

COMP SCI 1203 Algorithm Design and Data Structures for Engineers .....3  
 COMP SCI 2000 Computer Systems .....3  
 ELEC ENG 3027 Control .....3  
 ELEC ENG 3028 Digital Systems.....3  
 Law courses to be advised by Law School..... 12

**Level V**

COMP SCI 3001 Computer Networks & Applications.....3  
 COMP SCI 3006 Software Engineering & Project ...3  
 ELEC ENG 3018 RF Engineering .....3  
 ELEC ENG 3024 Project Management for Electrical Engineers.....3  
 ELEC ENG 3026 Engineering Systems: Avionics .....3  
 ELEC ENG 3033 Signal Processing .....3  
 Law courses to be advised by Law School.....6

**Level VI**

ELEC ENG 4036A/B Design Project\* .....6  
 or

ELEC ENG 4039A/B Honours Project*	6
ELEC ENG 4055 Systems Engineering	3
ELEC ENG Real Time Systems IV	3
Law courses to be advised by Law School	12
plus	
12 additional Units as required by Law School	
*Students accepted into the Honours Stream will take the Honours Project and other students will take the Design Project	

#### 6.5.6.6 B.E.(Computer Systems)/B.Ma.&Comp.Sc.

To qualify for both the award of the degree of B.E.(Computer Systems) and the degree of B.Ma.&Comp.Sc., students are required to complete satisfactorily:

Level I	
COMP SCI 1201 Introduction to Programming for Engineers	3
COMP SCI 1202 Object-Oriented Programming E	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3
ELEC ENG 1010 Electrical & Electronic Engineering IB	3
MATHS 1011 Mathematics IA	3
MATHS 1012 Mathematics IB	3
MATHS 1013 Mathematics IM*	3
PHYSICS 1100 Physics IA	3
PHYSICS 1200 Physics IB	3
*See Clause 6.2 regarding Level I Mathematics requirements.	
Level II	
COMP SCI 2000 Computer Systems	3
COMP SCI 1203 Algorithm Design and Data Structures	3
ELEC ENG 2007 Signals & Systems	3
ELEC ENG 2008 Electronics	3
ELEC ENG 2009 Engineering Electromagnetics	3
ELEC ENG 2011 Circuit Analysis	3
MATHS 2201 Engineering Mathematics I	3
MATHS 2202 Engineering Mathematics II	3
Level III	
COMP SCI 3001 Computer Networks & Applications	3
ELEC ENG 3026 Engineering Systems: Avionics	3
ELEC ENG 3018 RF Engineering	3
ELEC ENG 3024 Project Management for Electrical Engineering	3

ELEC ENG 3028 Digital Systems	3
ELEC ENG 3033 Signal Processing	3
Level II or III Maths or Computer Science courses	6

#### Level IV

ELEC ENG 3027 Control	3
COMP SCI 3006 Software Engineering & Project	3
Level III Mathematics or Computer Science courses	18

#### Level V

C&ENVENG 4034 Engineering Management IV	3
ELEC ENG 4055 Systems Engineering	3
ELEC ENG 4056 Real Time Systems	3
ELEC ENG 4064 Business Management Systems	3
ELEC ENG 4036A/B Design Project*	6
or	
ELEC ENG 4039A/B Honours Project*	6
Engineering electives	6

\*Students accepted into the Honours Stream will take Honours Project and other students will take Design Project Electives

COMP SCI 3004 Operating Systems	3
COMP SCI 3005 Computer Architecture	3
ELEC ENG 3034 Telecommunications Principles	3
ELEC ENG 4053 Digital Microelectronics	3
ELEC ENG 4057 RF Systems	3
ELEC ENG 4058 Power Quality & Condition Monitoring	3
ELEC ENG 4059 Power Electronics & Drive Systems	3
ELEC ENG 4061 Image Processing	3
ELEC ENG 4063 Communications	3
PURE MTH 3018 Coding & Cryptology III	3

### 6.5.7 Electrical and Electronic Engineering

#### 6.5.7.1 B.E.(Electrical and Electronic)

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

#### Level I

COMP SCI 1201 Introduction to Programming for Engineers	3
COMP SCI 1202 Object-Oriented Programming E	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3

ELEC ENG 1010 Electrical & Electronic Engineering IB	3
MATHS 1011 Mathematics IA	3
MATHS 1012 Mathematics IB	3
PHYSICS 1100 Physics IA	3
PHYSICS 1200 Physics IB	3

#### Level II

COMP SCI 2000 Computer Systems	3
COMP SCI 1203 Algorithm Design & Data Structures	3
ELEC ENG 2007 Signals and Systems	3
ELEC ENG 2008 Electronics	3
ELEC ENG 2009 Engineering Electromagnetics	3
ELEC ENG 2011 Circuit Analysis	3
MATHS 2201 Engineering Mathematics I	3
MATHS 2202 Engineering Mathematics II	3

#### Level III

ELEC ENG 3027 Control	3
ELEC ENG 3018 RF Engineering	3
ELEC ENG 3021 Electric Energy Systems	3
ELEC ENG 3024 Project Management for Electrical Engineering	3
ELEC ENG 3028 Digital Systems	3
ELEC ENG 3031 Power Systems	3
ELEC ENG 3033 Signal Processing	3
ELEC ENG 3034 Telecommunications Principles	3

#### Level IV

C&ENVENG 4034 Engineering Management IV	3
ELEC ENG 4064 Business Management Systems	3
ELEC ENG 4036A/B Design Project*	6
or	
ELEC ENG 4039A/B Honours Project*	6
Electives	12

\*Students accepted into the Honours Stream will take Honours Project and other students will take Design Project Electives

COMP SCI 3001 Computer Networks & Applications	3
COMP SCI 3004 Operating Systems	3
COMP SCI 3005 Computer Architecture	3
ELEC ENG 4053 Digital Microelectronics	3
ELEC ENG 4054 Telecommunications Systems	3
ELEC ENG 4055 Systems Engineering	3
ELEC ENG 4056 Real Time Systems	3

ELEC ENG 4057 RF Systems	3
ELEC ENG 4058 Power Quality & Condition Monitoring	3
ELEC ENG 4059 Power Electronics & Drive Systems	3
ELEC ENG 4061 Image Processing	3
ELEC ENG 4062 Distributed Generation Technologies	3
ELEC ENG 4063 Communications	3
PURE MTH 3018 Coding & Cryptology III	3

#### 6.5.7.2 B.E.(Electrical and Electronic - Avionics)

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

#### Level I

COMP SCI 1201 Introduction to Programming for Engineers	3
COMP SCI 1202 Object-Oriented Programming E	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3
ELEC ENG 1010 Electrical & Electronic Engineering IB	3
MATHS 1011 Mathematics IA	3
MATHS 1012 Mathematics IB	3
MATHS 1013 Mathematics IM *	3
MECH ENG 1007 Engineering Mechanics - Dynamics	3
PHYSICS 1100 Physics IA	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

COMP SCI 2000 Computer Systems	3
COMP SCI 1203 Algorithm Design and Data Structures	3
ELEC ENG 2007 Signals & Systems	3
ELEC ENG 2008 Electronics	3
ELEC ENG 2009 Engineering Electromagnetics	3
ELEC ENG 2011 Circuit Analysis	3
MATHS 2201 Engineering Mathematics I	3
MATHS 2202 Engineering Mathematics II	3

#### Level III

ELEC ENG 4056 Real Time Systems	3
ELEC ENG 3018 RF Engineering	3
ELEC ENG 3027 Control	3
ELEC ENG 3024 Project Management for Electrical Engineering	3

ELEC ENG 3026 Engineering Systems: Avionics	3
ELEC ENG 3028 Digital Systems	3
ELEC ENG 3033 Signal Processing	3
MECH ENG 3100 Aeronautical Engineering	3
<b>Level IV</b>	
C&ENVENG 4034 Engineering Management IV	3
ELEC ENG 4055 System Engineering	3
ELEC ENG 4064 Business Management Systems	3
ELEC ENG 4065 Avionic Sensors & Systems	3
ELEC ENG 4036A/B Design Project#	6
or	
ELEC ENG 4039A/B Honours Project #	6
Electives	6
<b>#Students accepted into the Honours stream will take Honours Project and other students will take Design Project Electives</b>	
COMP SCI 3001 Computer Networks & Applications	3
ELEC ENG 3034 Telecommunications Principles	3
ELEC ENG 4054 Telecommunications Systems	3
ELEC ENG 4057 RF Systems	3
COMP SCI 3006 Software Engineering & Project	3
ELEC ENG 4063 Communications	3

### 6.5.7.3 B.E.(Electrical and Electronic)/B.A.

To satisfy the Arts component of this program, students must undertake 30 units of Arts courses, which includes an approved major sequence (24 units). The remaining 6 units can be undertaken at any level. Students should consult the Bachelor of Arts academic program rules for the list of approved major sequences and the specific requirements of each.

To satisfy the BE (Electrical and Electronic) component of this program students are required to satisfactorily complete the courses listed below:

#### Level I

COMP SCI 1201 Introduction to Programming for Engineers	3
COMP SCI 1202 Object-Oriented Programming E	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3
MATHS 1011 Mathematics IA	3
MATHS 1012 Mathematics IB	3
MATHS 1013 Mathematics IM*	3

PHYSICS 1100 Physics IA	3
PHYSICS 1200 Physics IB	3
Level I Arts course	3

**\*See Clause 6.2 regarding Level I Mathematics requirements.**

#### Level II

ELEC ENG 1010 Electrical & Electronic Engineering IB	3
ELEC ENG 2007 Signals & Systems	3
ELEC ENG 2009 Engineering Electromagnetics	3
ELEC ENG 2011 Circuit Analysis	3
MATHS 2201 Engineering Mathematics I	3
MATHS 2202 Engineering Mathematics II	3
Level I Arts courses	6

#### Level III

COMP SCI 2000 Computer Systems	3
COMP SCI 1203 Algorithm Design & Data Structures	3
ELEC ENG 2008 Electronics	3
ELEC ENG 3028 Digital Systems	3
ELEC ENG 3033 Signal Processing	3
ELEC ENG 3034 Telecommunications Principles	3
Advanced Level Arts courses	6

#### Level IV

ELEC ENG 3018 RF Engineering	3
ELEC ENG 3021 Electric Energy Systems	3
ELEC ENG 3024 Project Management for Electrical Engineers	3
ELEC ENG 3027 Control	3
ELEC ENG 3031 Power Systems	3
Advanced Level Arts courses	9

#### Level V

ELEC ENG 4036A/B Design Project*	6
or	
ELEC ENG 4039A/B Honours Project*	6
Electives	6
Advanced Level Arts Courses	6
ELEC ENG 4064 Business Management Systems	3
ELEC ENG 4034 Engineering Management IV	3
<b>*Students accepted into the Honours Stream will take Honours Project and other students will take Design Project Electives</b>	
COMP SCI 3001 Computer Networks & Applications	3
COMP SCI 3004 Operating Systems	3

COMP SCI 3005 Computer Architecture	3
ELEC ENG 4053 Digital Microelectronics	3
ELEC ENG 4054 Telecommunications Systems	3
ELEC ENG 4055 Systems Engineering	3
ELEC ENG 4056 Real Time Systems	3
ELEC ENG 4057 RF Systems	3
ELEC ENG 4058 Power Quality & Condition Monitoring	3
ELEC ENG 4059 Power Electronics & Drive Systems	3
ELEC ENG 4061 Image Processing	3
ELEC ENG 4062 Distributed Generation Technologies	3
ELEC ENG 4063 Communications	3
PURE MTH 3018 Coding & Cryptology III	3

### 6.5.7.4 B.E. (Electrical and Electronic)/B.Ec.

To qualify for both the award of the degree of B.E.(Electrical and Electronic) and the degree of B.Ec. students are required to complete satisfactorily courses listed below:

#### Level I

COMP SCI 1201 Introduction to Programming for Engineers	3
COMP SCI 1202 Object-Oriented Programming E	3
ECON 1004 Principles of Microeconomics I	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3
MATHS 1011 Mathematics IA	3
MATHS 1012 Mathematics IB	3
MATHS 1013 Mathematics IM*	3
PHYSICS 1100 Physics IA	3
PHYSICS 1200 Physics IB	3

**\*See Clause 6.2 regarding Level I Mathematics requirements.**

#### Level II

ECON 1000 Principles of Macroeconomics I	3
ECON 2504 Intermediate Econometrics II	3
or	
ECON 2503 Intermediate Mathematical Economics II	3
ELEC ENG 1010 Electrical & Electronic Engineering IB	3
ELEC ENG 2007 Signals & Systems	3
ELEC ENG 2009 Engineering Electromagnetics	3
ELEC ENG 2011 Circuit Analysis	3
MATHS 2201 Engineering Mathematics I	3

MATHS 2202 Engineering Mathematics II	3
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#### Level III

COMP SCI 2000 Computer Systems	3
COMP SCI 1203 Algorithm Design & Data Structures	3
ELEC ENG 2008 Electronics II	3
ECON 2507 Intermediate Macroeconomics II	3
ECON 2506 Intermediate Microeconomics A II	3
ELEC ENG 3028 Digital Systems	3
ELEC ENG 3033 Signal Processing III	3
ELEC ENG 3034 Telecommunications Principles	3

#### Level IV

COMMGMGT 2500 Organisational Behaviour II	3
ELEC ENG 3018 RF Engineering	3
ELEC ENG 3021 Electric Energy Systems	3
ELEC ENG 3024 Project Management for Electrical Engineers	3
ELEC ENG 3027 Control	3
ELEC ENG 3031 Power Systems	3
Level III Economics courses*	6

**\*Level III Economics courses chosen from those listed in the specific Academic Program Rules of the degree of Bachelor of Economics.**

#### Level V

ELEC ENG 4036A/B Design Project#	6
or	
ELEC ENG 4039A/B Honours Project#	6
ELEC ENG 4064 Business Management Systems	3
ELEC ENG 4034 Engineering Management IV	3
Level III Economics courses	12

**#Students accepted into the Honours Stream will take Honours Project and other students will take Design Project**

### 6.5.7.5 B.E.(Electrical and Electronic)/B.Fin

To qualify for both the award of the degree of B.E.(Electrical and Electronic) and the degree of B.Fin., students are required to complete satisfactorily courses listed below:

#### Level I

COMP SCI 1201 Introduction to Programming for Engineers	3
COMP SCI 1202 Object-Oriented Programming E	3
ECON 1004 Principles of Microeconomics I	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3

MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
PHYSICS 1100 Physics IA .....	3
PHYSICS 1200 Physics IB.....	3
<b>*See Clause 6.2 regarding Level I Mathematics requirements.</b>	
<b>Level II</b>	
ECON 1009 International Finance Institutions & Markets I.....	3
ELEC ENG 1010 Electrical & Electronic Engineering IB.....	3
ELEC ENG 2007 Signals & Systems.....	3
ELEC ENG 2009 Engineering Electromagnetics.....	3
ELEC ENG 2011 Circuit Analysis.....	3
ECON 1000 Principles of Macroeconomics I.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II.....	3
<b>Level III</b>	
ACCTING 1002 Accounting for Decision Makers I.....	3
COMP SCI 2000 Computer Systems .....	3
COMP SCI 1203 Algorithm Design & Data Structures.....	3
ELEC ENG 2008 Electronics .....	3
CORPFIN 2500 Business Finance II.....	3
ECON 2504 Intermediate Econometrics II.....	3
ELEC ENG 3028 Digital Systems.....	3
ELEC ENG 3033 Signal Processing .....	3
<b>Level IV</b>	
APP MTH 3012 Financial Modelling: Tools & Techniques or	
CORPFIN 3502 Options, Futures & Risk Management III.....	3
CORPFIN 2501 Financial Institutions Management II .....	3
ECON 2508 Financial Economics II.....	3
ELEC ENG 3027 Control .....	3
ELEC ENG 3018 RF Engineering .....	3
ELEC ENG 3021 Electric Energy Systems.....	3
ELEC ENG 3024 Project Management for Electrical Engineering .....	3
ELEC ENG 3034 Telecommunications Principles.....	3
<b>Level V</b>	
CORPFIN 3501 Portfolio Theory & Management III.....	3

ELEC ENG 3031 Power Systems.....	3
ELEC ENG 4036A/B Design Project#.....	6
<i>or</i>	
ELEC ENG 4039A/B Honours Project# .....	6
ELEC ENG 4064 Business Management Systems.....	3
ELEC ENG 4034 Engineering Management IV .....	3
Level III Finance courses.....	6
<b>#Students accepted into the Honours Stream will take Honours Project and other students will take Design Project.</b>	

#### 6.5.7.6 B.E.(Electrical and Electronic)/LLB.

To qualify for the award of the degree of BE ( Electrical and Electronic) and the degree of LLB, students are required to complete satisfactorily courses below:

##### Level I

ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
ELEC ENG 1010 Electrical & Electronic Engineering IB.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
LAW 1501 Foundations of Law .....	3
LAW 1502 Law of Torts I.....	3
LAW 1504 Principles of Public Law.....	3
LAW 1505 Law of Torts 2.....	3

**\*See Clause 6.2 regarding Level I Mathematics requirements.**

##### Level II

COMP SCI 1201 Introduction to Programming for Engineers.....	3
COMP SCI 1202 Object-Oriented Programming E .....	3
PHYSICS 1100 Physics IA .....	3
PHYSICS 1200 Physics IB.....	3
Law courses to be advised by Law School.....	12

##### Level III

ELEC ENG 2007 Signals & Systems.....	3
ELEC ENG 2008 Electronics .....	3
ELEC ENG 2009 Engineering Electromagnetics.....	3
ELEC ENG 2011 Circuit Analysis.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II .....	3
Law courses to be advised by Law School.....	6

##### Level IV

COMP SCI 1203 Algorithm Design and Data Structures for Engineers.....	3
--	---

COMP SCI 2000 Computer Systems .....	3
ELEC ENG 3028 Digital Systems.....	3
ELEC ENG 3027 Control .....	3
Law courses to be advised by Law School.....	12

##### Level V

Electrical & Electronic Engineering courses:	
ELEC ENG 3018 RF Engineering .....	3
ELEC ENG 3024 Project Management for Electrical Engineering .....	3
ELEC ENG 3031 Power Systems.....	3
ELEC ENG 3033 Signal Processing .....	3
ELEC ENG 3034 Telecommunications Principles .....	3
ELEC ENG 3021 Electric Energy Systems.....	3
Law courses to be advised by Law School.....	6

##### Level VI

Electrical & Electronic Engineering courses:	
ELEC ENG 4036A/B Design Project ^ .....	6
<i>or</i>	
ELEC ENG 4039A Honours Project ^ .....	6
ELEC ENG 4064 Business Management Systems .....	3
ELEC ENG 4034 Engineering Management IV .....	3
Law courses to be advised by Law School.....	12
<i>plus</i>	
12 additional units of Law courses to be specified by the Law School	

**^ Students accepted into the Honours Stream will take the Honours Project and other students will take the Design Project.**

#### 6.5.7.7 B.E.(Electrical and Electronic)/ B.Ma.&Comp.Sc.

To qualify for both the award of the degree of B.E.(Electrical and Electronic) and the degree of B.Ma.Comp.Sc., students are required to complete satisfactorily:

##### Level I

COMP SCI 1201 Introduction to Programming for Engineers .....	3
COMP SCI 1202 Object-Oriented Programming E .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
ELEC ENG 1010 Electrical & Electronic Engineering IB.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3

PHYSICS 1100 Physics IA.....	3
PHYSICS 1200 Physics IB.....	3

**\*See Clause 6.2 regarding Level I Mathematics requirements.**

##### Level II

COMP SCI 2000 Computer Systems .....	3
COMP SCI 1203 Algorithm Design & Data Structures.....	3
ELEC ENG 2011 Circuit Analysis.....	3
ELEC ENG 2007 Signals & Systems.....	3
ELEC ENG 2008 Electronics.....	3
ELEC ENG 2009 Engineering Electromagnetics.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II .....	3

##### Level III

ELEC ENG 3018 RF Engineering .....	3
ELEC ENG 3021 Electric Energy Systems.....	3
ELEC ENG 3024 Project Management for Electrical Engineering .....	3
ELEC ENG 3028 Digital Systems.....	3
ELEC ENG 3033 Signal Processing .....	3
ELEC ENG 3034 Telecommunications Principles.....	3
Level II or III Mathematics or Computer Science courses .....	6

##### Level IV

ELEC ENG 3027 Control .....	3
ELEC ENG 3031 Power Systems.....	3
Level III Mathematics or Computer Science courses .....	18

##### Level V

C&ENVENG 4034 Engineering Management IV.....	3
ELEC ENG 4064 Business Management Systems.....	3
ELEC ENG 4036A/B Design Project#.....	6
<i>or</i>	
ELEC ENG 4039A/B Honours Project# .....	6
Electives .....	12
<b>#Students accepted into the Honours Stream will take Honours Project and other students will take Design Project.</b>	
<b>Electives</b>	
COMP SCI 3001 Computer Networks & Applications.....	3
COMP SCI 3004 Operating Systems.....	3
COMP SCI 3005 Computer Architecture .....	3
ELEC ENG 4053 Digital Microelectronics.....	3
ELEC ENG 4054 Telecommunications Systems.....	3

ELEC ENG 4055 Systems Engineering .....	3
ELEC ENG 4056 Real Time Systems .....	3
ELEC ENG 4057 RF Systems .....	3
ELEC ENG 4058 Power Quality & Condition Monitoring.....	3
ELEC ENG 4059 Power Electronics & Drive Systems.....	3
ELEC ENG 4061 Image Processing.....	3
ELEC ENG 4062 Distributed Generation Technologies.....	3
ELEC ENG 4063 Communications .....	3
PURE MTH 3018 Coding & Cryptology III.....	3

### 6.5.7.8 B.E.(Electrical and Electronic)/B.Sc.

To qualify for the combined award of B.E.(Electrical and Electronic) and B.Sc. students are required to complete satisfactorily courses as indicated below.

#### Level I

COMP SCI 1201 Introduction to Programming for Engineers .....	3
COMP SCI 1202 Object-Oriented Programming E .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
ELEC ENG 1010 Electrical & Electronic Engineering IB.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
PHYSICS 1100 Physics IA.....	3
PHYSICS 1200 Physics IB.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

COMP SCI 2000 Computer Systems .....	3
COMP SCI 1203 Algorithm Design & Data Structures.....	3
ELEC ENG 2007 Signals and Systems3 .....	3
ELEC ENG 2008 Electronics .....	3
ELEC ENG 2009 Engineering Electromagnetics.....	3
ELEC ENG 2011 Circuit Analysis.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II.....	3

#### Level III

PHYSICS 2510 Physics IIA .....	3
PHYSICS 2520 Physics IIB.....	3
PHYSICS 2532 Classical Physics II.....	3
PHYSICS 2534 Electromagnetism II.....	3
ELEC ENG 3018 RF Engineering .....	3

ELEC ENG 3024 Project Management for Electrical Engineers.....	3
ELEC ENG 3027 Control .....	3
ELEC ENG 3033 Signal Processing .....	3
<b>Level IV</b>	
ELEC ENG 3021 Electrical Energy Systems.....	3
ELEC ENG 3028 Digital Systems.....	3
ELEC ENG 3031 Power Systems.....	3
ELEC ENG 3034 Telecommunications Principles.....	3
PHYSICS 3542 Physics III .....	6
PHYSICS 3002 Experimental Physics III.....	3
Level III Physics Elective.....	3

#### Level V

C&ENVENG Engineering Management IV.....	3
ELEC ENG 4064 Business Management Systems .....	3
ELEC ENG 4036A/B Design Project#.....	6

or

ELEC ENG 4039A Honours Project# .....	6
Electives .....	9
Level III Physics Elective.....	3

#Students accepted into the Honours Stream will take Honours Project and other students will take Design Project.

#### Electives

COMP SCI 3001 Computer Networks &Applications.....	3
COMP SCI 3004 Operating Systems.....	3
COMP SCI 3005 Computer Architecture .....	3
ELEC ENG 4053 Digital Microelectronics.....	3
ELEC ENG 4054 Telecommunications Systems.....	3
ELEC ENG 4055 Systems Engineering .....	3
ELEC ENG 4056 Real Time Systems .....	3
ELEC ENG 4057 RF Systems .....	3
ELEC ENG 4058 Power Quality & Condition Monitoring.....	3
ELEC ENG 4059 Power Electronics & Drive Systems.....	3
ELEC ENG 4061 Image Processing.....	3
ELEC ENG 4062 Distributed Generation Technologies.....	3
ELEC ENG 4063 Communications .....	3
PURE MTH 3018 Coding & Cryptology III.....	3

### 6.5.8 Electrical and Sustainable Energy Engineering

#### 6.5.8.1 B.E. (Electrical and Sustainable Energy)

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

#### Level I

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1009 Materials I .....	3
COMP SCI 1201 Introduction to Programming for Engineers .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
ELEC ENG 1010 Electrical & Electronic Engineering IB.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
MECH ENG 1009 Engineering Mechanics - Dynamics .....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

ELEC ENG 2007 Signals & Systems .....	3
ELEC ENG 2008 Electronics .....	3
ELEC ENG 2009 Engineering Electromagnetics.....	3
ELEC ENG 2011 Circuit Analysis .....	3
ELEC ENG 3028 Digital Systems.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II.....	3
MECH ENG 2021 Thermo-Fluids.....	3

#### Level III

ELEC ENG 3021 Electric Energy Systems.....	3
ELEC ENG 3027 Control .....	3
ELEC ENG 3029 Project Management for Sustainable Energy .....	3
ELEC ENG 3031 Power Systems.....	3
ELEC ENG 3033 Signal Processing .....	3
ELEC ENG 4059 Power Electronics & Drive Systems.....	3
MECH ENG 3101 Applied Aerodynamics.....	3
MECH ENG 3105 Sustainability & the Environment.....	3

#### Level IV

C&ENVENG 4034 Engineering Management IV.....	3
MECH ENG 4144 Renewable Fluid Power Technologies.....	3
ELEC ENG 4062 Distributed Generation Technologies.....	3
ELEC ENG 4064 Business Management Systems.....	3

ELEC ENG 4036A/B Design Project# .....	6
or	

ELEC ENG 4039A Honours Project# .....	6
TECHCOMM 3006 Energy Management, Economics & Policy .....	3
Elective .....	3

#Students accepted into the Honours Stream will take Honours Project and other students will take Design Project.

#### Electives

ELEC ENG 3034 Telecommunication Principles.....	3
ELEC ENG 4055 Systems Engineering .....	3
ELEC ENG 4056 Real Time Systems.....	3
ELEC ENG 4058 Power Quality & Condition Monitoring.....	3
MECH ENG 4145 Sustainable Thermal Technologies.....	3

### 6.5.9 Mechanical Engineering

#### 6.5.9.1 B.E.(Mechanical)

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

#### Level I

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1009 Materials I .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MECH ENG 1006 Design Graphics & Communication.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics.....	3
MECH ENG 1100 Introduction to Mechanical Engineering .....	3

#### Level II

MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2019 Dynamics & Control I .....	3
MECH ENG 2020 Materials & Manufacturing.....	3
MECH ENG 2021 Thermo-Fluids I.....	3
MECH ENG 2100 Design Practice.....	3
MECH ENG 2101 Mechatronics IM+ .....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II.....	3
+includes workshop practical	

#### Level III

MATHS 2104 Numerical Methods.....	3
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MECH ENG 3027 Engineering Systems Design & Communication.....	3
MECH ENG 3028 Dynamics & Control II.....	3
MECH ENG 3030 Structural Design & Solid Mechanics.....	3
MECH ENG 3101 Applied Aerodynamics.....	3
MECH ENG 3102 Heat Transfer & Thermodynamics.....	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems.....	3
MECH ENG 3105 Sustainability & the Environment.....	3
<b>Level IV</b>	
MECH ENG 4142A/B Design Project Level IV^.....	9
<i>or</i>	
MECH ENG 4143A/B Honours Project Level IV^.....	9
Elective courses to the value of at least 15 units ...	15
<b>^ Students accepted into the Honours Stream will take Honours Project and other students will take Design Project Electives</b>	
MECH ENG 4102 Advanced PID Control.....	3
MECH ENG 4103 Advanced Computer Aided Engineering.....	3
MECH ENG 4104 Advanced Topics in Fluid Mechanics.....	3
MECH ENG 4105 Advanced Vibrations.....	3
MECH ENG 4107 Airconditioning.....	3
MECH ENG 4109 Automotive Combustion, Power Train & NVH.....	3
MECH ENG 4110 Automotive Vehicle Dynamics & Safety.....	3
MECH ENG 4111 CFD for Engineering Applications.....	3
MECH ENG 4112 Combustion Technology & Emission Control.....	3
MECH ENG 4113 Computational Acoustics.....	3
MECH ENG 4114 Corrosion: Principles & Prevention.....	3
MECH ENG 4115 Engineering Acoustics.....	3
MECH ENG 4117 Finance for Engineers.....	3
MECH ENG 4118 Finite Element Analysis of Structures.....	3
MECH ENG 4120 Fracture Mechanics.....	3
MECH ENG 4121 Materials Selection & Failure Analysis.....	3
MECH ENG 4124 Robotics M.....	3
MECH ENG 4125 Stresses in Plates & Shells.....	3

MECH ENG 4127 Wind Engineering.....	3
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### 6.5.9.2 B.E.(Mechanical)/B.A.

To satisfy the Arts component of this program, students must undertake 30 units of Arts courses, which includes an approved major sequence (24 units). The remaining 6 units can be undertaken at any level. Students should consult the Bachelor of Arts academic program rules for the list of approved major sequences and the specific requirements of each.

To satisfy the BE (Mechanical) component of this program students are required to satisfactorily complete the courses listed below:

#### Level I

Arts course.....	6
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
MATHS 1013 Mathematics IM*.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MECH ENG 1006 Design Graphics & Communication M.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics.....	3
MECH ENG 1100 Introduction to Mechanical Engineering.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

CHEM ENG 1009 Materials I.....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II.....	3
MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2100 Design Practice.....	3
Arts course.....	6

#### Level III

Arts courses.....	12
MECH ENG 2019 Dynamics & Control I.....	3
MECH ENG 2020 Materials & Manufacturing.....	3
MECH ENG 2021 Thermo-Fluids I.....	3
MECH ENG 2101 Mechatronics IM+.....	3

+includes workshop practical

#### Level IV

MATHS 2104 Numerical Methods.....	3
ELEC ENG 3027 Engineering Systems Design & Communication.....	3

MECH ENG 3028 Dynamics & Control II.....	3
MECH ENG 3030 Structural Design & Solid Mechanics.....	3
MECH ENG 3101 Applied Aerodynamics.....	3
MECH ENG 3102 Heat Transfer & Thermodynamics.....	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems.....	3
MECH ENG 3105 Sustainability & the Environment.....	3
<b>Level V</b>	
Arts courses.....	9
MECH ENG 4142A/B Design Project Level IV^.....	9
<i>or</i>	
MECH ENG 4143A/B Honours Project Level IV^.....	9
Mechanical Engineering Electives.....	6
<b>^ Students accepted into the Honours Stream will take Honours Project and other students will take Design Project Electives</b>	
MECH ENG 4102 Advanced PID Control.....	3
MECH ENG 4103 Advanced Computer Aided Engineering.....	3
MECH ENG 4104 Advanced Topics in Fluid Mechanics.....	3
MECH ENG 4105 Advanced Vibrations.....	3
MECH ENG 4107 Airconditioning.....	3
MECH ENG 4109 Automotive Combustion, Power Train & NVH.....	3
MECH ENG 4110 Automotive Vehicle Dynamics & Safety.....	3
MECH ENG 4111 CFD for Engineering Applications.....	3
MECH ENG 4112 Combustion Technology & Emission Control.....	3
MECH ENG 4113 Computational Acoustics.....	3
MECH ENG 4114 Corrosion: Principles & Prevention.....	3
MECH ENG 4115 Engineering Acoustics.....	3
MECH ENG 4117 Finance for Engineers.....	3
MECH ENG 4118 Finite Element Analysis of Structures.....	3
MECH ENG 4120 Fracture Mechanics.....	3
MECH ENG 4121 Materials Selection & Failure Analysis.....	3
MECH ENG 4124 Robotics M.....	3
MECH ENG 4125 Stresses in Plates & Shells.....	3
MECH ENG 4127 Wind Engineering.....	3

### 6.5.9.3 B.E.(Mechanical)/B.Ec.

To qualify for both the award of the degree of B.E.(Mechanical) and the degree of B.Ec., students are required to complete satisfactorily courses as indicated below:

#### Level I

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1009 Materials I.....	3
ECON 1004 Principles of Microeconomics I.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM*.....	3
MECH ENG 1006 Design Graphics & Communication.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics.....	3
MECH ENG 1100 Introduction to Mechanical Engineering.....	3

\* See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

ECON 1000 Principles of Macroeconomics I.....	3
ELEC ENG 1009 Electrical & Electronic Engineering 1A.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II.....	3
MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2019 Dynamics & Control I.....	3
MECH ENG 2100 Design Practice.....	3
MECH ENG 2101 Mechatronics IM+.....	3

+includes workshop practical

#### Level III

ECON 2507 Intermediate Macroeconomics II.....	3
ECON 2506 Intermediate Microeconomics A II.....	3
MECH ENG 2020 Materials & Manufacturing.....	3
MECH ENG 2021 Thermo-Fluids I.....	3

MECH ENG 3027 Engineering Systems Design & Communication.....	3
MECH ENG 3030 Structural Design & Solid Mechanics.....	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems.....	3
MATHS 2104 Numerical Methods.....	3

#### Level IV

COMMMGT 2500 Organisational Behaviour II.....	3
ECON 2504 Intermediate Econometrics II.....	3

or

ECON 2503 Intermediate Mathematical Economics .....	3
Level III Economics courses* .....	18

**\*Level III Economics courses chosen from those listed in the Specific Academic Program Rules of the Degree of Bachelor of Economics.**

**Level V**

MECH ENG 3102 Heat Transfer & Thermodynamics .....	3
MECH ENG 3105 Sustainability & the Environment .....	3
MECH ENG 3028 Dynamics & Control II .....	3
MECH ENG 3101 Applied Aerodynamics.....	3
MECH ENG 4142A/B Design Project Level IV^ .....	9

or

MECH ENG 4143A/B Honours Project Level IV^ .....	9
Mechanical Level IV Elective from below .....	3

^ **Students accepted into the Honours Stream will take Honours Project and other students will take Design Project**

**Level IV Electives**

MECH ENG 4102 Advanced PID Control .....	3
MECH ENG 4103 Advanced Computer Aided Engineering.....	3
MECH ENG 4104 Advanced Topics in Fluid Mechanics .....	3
MECH ENG 4105 Advanced Vibrations .....	3
MECH ENG 4107 Airconditioning.....	3
MECH ENG 4109 Automotive Combustion, Power Train & NVH.....	3
MECH ENG 4110 Automotive Vehicle Dynamics & Safety.....	3
MECH ENG 4111 CFD for Engineering Applications.....	3
MECH ENG 4112 Combustion Technology & Emission Control .....	3
MECH ENG 4113 Computational Acoustics.....	3
MECH ENG 4114 Corrosion: Principles & Prevention.....	3
MECH ENG 4115 Engineering Acoustics .....	3
MECH ENG 4117 Finance for Engineers.....	3
MECH ENG 4118 Finite Element Analysis of Structures .....	3
MECH ENG 4120 Fracture Mechanics.....	3
MECH ENG 4121 Materials Selection & Failure Analysis .....	3
MECH ENG 4124 Robotics M .....	3

MECH ENG 4125 Stresses in Plates & Shells .....	3
MECH ENG 4127 Wind Engineering .....	3

**6.5.9.4 B.E.(Mechanical)/B.Fin**

To qualify for both the award of the degree of B.E.(Mechanical) and the degree of B.Fin., students are required to complete satisfactorily courses listed below:

**Level I**

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1009 Materials I .....	3
ECON 1004 Principles of Microeconomics I .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM * .....	3
MECH ENG 1006 Design Graphics & Communication M.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics .....	3
MECH ENG 1100 Introduction to Mechanical Engineering .....	3

**\*See Clause 6.2 regarding Level I Mathematics requirements.**

**Level II**

ECON 1000 Principles of Macroeconomics I.....	3
ECON 1009 International Financial Institutions & Markets I .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II .....	3
MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2100 Design Practice.....	3
MECH ENG 2101 Mechatronics IM+ .....	3

**+includes workshop practical**

**Level III**

ACCTING 1002 Accounting for Decision Makers I.....	3
CORPFIN 2500 Business Finance II.....	3
ECON 2504 Intermediate Econometrics II.....	3
ECON 2508 Financial Economics II.....	3
MECH ENG 2020 Materials & Manufacturing .....	3
MECH ENG 2021 Thermo-Fluids I.....	3
MECH ENG 3027 Engineering Systems Design & Communication.....	3
MECH ENG 3030 Structural Design & Solid Mechanics.....	3

**Level IV**

CORPFIN 2501 Financial Institutions Management II .....	3
MECH ENG 2019 Dynamics & Control I .....	3
MECH ENG 3101 Applied Aerodynamics.....	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems.....	3
MECH ENG 3105 Sustainability & the Environment .....	3
CORPFIN 3501 Portfolio Theory & Management III.....	3
and either	
APP MATH 3012 Financial Modelling III: Tools & Techniques.....	3

or

CORPFIN 3502 Options, Futures & Risk Management III .....	3
Level III Finance course .....	3

**Level V**

MATHS 2104 Numerical Methods.....	3
MECH ENG 3028 Dynamics & Control II .....	3
MECH ENG 3102 Heat Transfer & Thermodynamics.....	3
MECH ENG 4142A/B Design Project Level IV^ .....	9

or

MECH ENG 4143A/B Honours Project Level IV^ .....	9
Level III Finance Course.....	3
Elective course .....	3

^ **Students accepted into the Honours Stream will take Honours Project and other students will take Design Project**

**Level IV Electives**

MECH ENG 4102 Advanced PID Control .....	3
MECH ENG 4103 Advanced Computer Aided Engineering.....	3
MECH ENG 4104 Advanced Topics in Fluid Mechanics .....	3
MECH ENG 4105 Advanced Vibrations .....	3
MECH ENG 4107 Airconditioning.....	3
MECH ENG 4109 Automotive Combustion, Power Train & NVH.....	3
MECH ENG 4110 Automotive Vehicle Dynamics & Safety.....	3
MECH ENG 4111 CFD for Engineering Applications.....	3
MECH ENG 4112 Combustion Technology & Emission Control .....	3
MECH ENG 4113 Computational Acoustics .....	3

MECH ENG 4114 Corrosion: Principles & Prevention.....	3
MECH ENG 4115 Engineering Acoustics .....	3
MECH ENG 4117 Finance for Engineers.....	3
MECH ENG 4118 Finite Element Analysis of Structures .....	3
MECH ENG 4120 Fracture Mechanics.....	3
MECH ENG 4121 Materials Selection & Failure Analysis.....	3
MECH ENG 4124 Robotics M .....	3
MECH ENG 4125 Stresses in Plates & Shells .....	3
MECH ENG 4127 Wind Engineering .....	3

**6.5.9.5 B.E.(Mechanical)/LLB.**

To qualify for the award of the degree of B.E.(Mech.) and the degree of LL.B., students are required to complete satisfactorily courses below:

**Level I**

LAW 1501 Foundation of Law .....	3
LAW 1502 Law of Torts 1.....	3
LAW 1504 Principles of Public Law.....	3
LAW 1505 Law of Torts 2.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
MECH ENG 1006 Design Graphics & Communication .....	3
MECH ENG 1100 Introduction to Mechanical Engineering .....	3

**\*See Clause 6.2 regarding Level I Mathematics requirements.**

**Level II**

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1009 Materials I .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics .....	3
Law courses to be advised by Law School.....	12

**Level III**

MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II .....	3
MECH ENG 2018 Design Practice.....	3
MECH ENG 2101 Mechatronics IM+ .....	3
MECH ENG 2002 Stress Analysis & Design.....	3
Law courses to be advised by Law School.....	9

**+includes workshop practical**

<b>Level IV</b>	
MECH ENG 2019 Dynamics & Control I	3
MECH ENG 2020 Materials & Manufacturing	3
MECH ENG 2021 Thermo-Fluids I	3
MECH ENG 3027 Engineering Systems Design & Communication	3
MECH ENG 3030 Structural Design & Solid Mechanics	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems	3
Law courses to be advised by Law School	6

<b>Level V</b>	
APP MTH 2104 Numerical Methods (replaces APP MTH 3017 Waves II)	3
MECH ENG 3028 Dynamics & Control II	3
MECH ENG 3101 Applied Aerodynamics	3
MECH ENG 3102 Heat Transfer & Thermodynamics	3
MECH ENG 3105 Sustainability & the Environment	3
Mechanical Engineering elective	3
Law courses	6

<b>Level VI</b>	
MECH ENG 4142A/B Design Project Level IV ^	9
or	
MECH ENG 4143A/B Honours Project Level IV ^	9
Law courses	15
plus	
another 12 units of Law courses to be specified by Law School.	
^ Students accepted into the Honours Stream will take Honours Project and other students will take Design Project	

**6.5.9.6 B.E.(Mechanical)/B.Ma.&Comp.Sc. (Computer Science focus)**

To qualify for both the award of the degree of B.E.(Mechanical) and the degree of B.Ma.Comp.Sc. with a Computer Science Focus, students are required to complete satisfactorily:

<b>Level I</b>	
C&ENVENG 1010 Engineering Mechanics - Statics	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3
COMP SCI 1202 Object Oriented Programming E UG	3
MATHS 1011 Mathematics IA	3
MATHS 1012 Mathematics IB	3

MATHS 1013 Mathematics IM*	3
MECH ENG 1006 Design Graphics & Communication M	3
MECH ENG 1007 Engineering Mechanics - Dynamics	3
MECH ENG 1100 Introduction to Mechanical Engineering	3
*See Clause 6.2 regarding Level I Mathematics requirements.	

<b>Level II</b>	
CHEM ENG 1009 Materials I	3
MATHS 2201 Engineering Mathematics I	3
MATHS 2202 Engineering Mathematics II	3
MECH ENG 2002 Stress Analysis and Design	3
MECH ENG 2021 Thermo-Fluids I	3
MECH ENG 2019 Dynamics & Control I	3
MECH ENG 2020 Materials & Manufacturing	3
MECH ENG 2100 Design Practice	3

<b>Level III</b>	
MATHS 2104 Numerical Methods	3
COMP SCI 2000 Computer Systems	3
COMP SCI 1203 Algorithm and Data Structure Design	3
MECH ENG 2101 Mechatronics IM (includes Workshop Practice)	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems	3
MECH ENG 3027 Engineering Systems Design & Communication	3
MECH ENG 3028 Dynamics & Control II	3
MECH ENG 3030 Structural Design & Solid Mechanics	3

<b>Level IV</b>	
Level III Computer Science courses*	18
MECH ENG 3101 Applied Aerodynamics	3
MECH ENG 3102 Heat Transfer & Thermodynamics	3

\*This is a focus on Computer Science only - a major in Computer Science requires in addition, the presentation of 3 units at Level II, and 12 units of the 18 units at Level III should be Computer Science courses of which one must be Software Engineering & Project. For further advice contact a Faculty Program Adviser.

<b>Level V</b>	
MECH ENG 3105 Sustainability & the Environment	3
MECH ENG 4142A/B Design Project Level IV ^	9
or	

MECH ENG 4143A/B Honours Project Level IV ^	9
Mechanical Engineering Electives	12
^ Students accepted into the Honours Stream will take Honours Project and other students will take Design Project Electives	
MECH ENG 4102 Advanced PID Control	3
MECH ENG 4103 Advanced Computer Aided Engineering	3
MECH ENG 4104 Advanced Topics in Fluid Mechanics	3
MECH ENG 4105 Advanced Vibrations	3
MECH ENG 4107 Airconditioning	3
MECH ENG 4109 Automotive Combustion, Power Train & NVH	3
MECH ENG 4110 Automotive Vehicle Dynamics & Safety	3
MECH ENG 4111 CFD for Engineering Applications	3
MECH ENG 4112 Combustion Technology & Emission Control	3
MECH ENG 4113 Computational Acoustics	3
MECH ENG 4114 Corrosion: Principles & Prevention	3
MECH ENG 4115 Engineering Acoustics	3
MECH ENG 4117 Finance for Engineers	3
MECH ENG 4118 Finite Element Analysis of Structures	3
MECH ENG 4120 Fracture Mechanics	3
MECH ENG 4121 Materials Selection & Failure Analysis	3
MECH ENG 4124 Robotics M	3
MECH ENG 4125 Stresses in Plates & Shells	3
MECH ENG 4127 Wind Engineering	3

**6.5.9.7 B.E (Mechanical)/B.Ma.&Comp.Sc. (Mathematics focus)**

To qualify for both the award of the degree of B.E.(Mechanical) and the degree of B.Ma.Comp.Sc. with a Mathematics focus, students are required to complete satisfactorily:

<b>Level I</b>	
C&ENVENG 1010 Engineering Mechanics - Statics	3
CHEM ENG 1009 Materials I	3
MATHS 1011 Mathematics IA	3
MATHS 1012 Mathematics IB	3
MATHS 1013 Mathematics IM*	3

MECH ENG 1006 Design Graphics & Communication	3
MECH ENG 1007 Engineering Mechanics - Dynamics	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3
MECH ENG 1100 Introduction to Mechanical Engineering	3
*See Clause 6.2 regarding Level I Mathematics requirements.	

<b>Level II</b>	
MATHS 2201 Engineering Mathematics I	3
MATHS 2202 Engineering Mathematics II	3
MECH ENG 2002 Stress Analysis & Design	3
MECH ENG 2101 Mechatronics IM*	3
MECH ENG 2019 Dynamics & Control I	3
MECH ENG 2020 Materials & Manufacturing	3
MECH ENG 2021 Thermo-Fluids I	3
MECH ENG 2100 Design Practice	3

*Includes Workshop Practical	
<b>Level III</b>	
MATHS 2104 Numerical Methods	3
MECH ENG 3102 Heat Transfer & Thermodynamics	3
MECH ENG 3027 Engineering Systems Design & Communication	3
MECH ENG 3028 Dynamics & Control II	3
MECH ENG 3030 Structural Design & Solid Mechanics	3
MECH ENG 3101 Applied Aerodynamics	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems	3
MECH ENG 3105 Sustainability & the Environment	3

<b>Level IV</b>	
Mathematics courses*	24
*24 units of additional Mathematics courses of which 18 units must be at Level III	

<b>Level V</b>	
MECH ENG 4142A/B Design Project Level IV ^	9
or	
MECH ENG 4143A/B Honours Project Level IV ^	9
Elective courses to the value of at least 15 units	15
^ Students accepted into the Honours Stream will take Honours Project and other students will take Design Project Electives	
MECH ENG 4102 Advanced PID Control	3

MECH ENG 4103 Advanced Computer Aided Engineering.....	3
MECH ENG 4104 Advanced Topics in Fluid Mechanics.....	3
MECH ENG 4105 Advanced Vibrations.....	3
MECH ENG 4107 Airconditioning.....	3
MECH ENG 4109 Automotive Combustion, Power Train & NVH.....	3
MECH ENG 4110 Automotive Vehicle Dynamics & Safety.....	3
MECH ENG 4111 CFD for Engineering Applications.....	3
MECH ENG 4112 Combustion Technology & Emission Control.....	3
MECH ENG 4113 Computational Acoustics.....	3
MECH ENG 4114 Corrosion: Principles & Prevention.....	3
MECH ENG 4115 Engineering Acoustics.....	3
MECH ENG 4117 Finance for Engineers.....	3
MECH ENG 4118 Finite Element Analysis of Structures.....	3
MECH ENG 4120 Fracture Mechanics.....	3
MECH ENG 4121 Materials Selection & Failure Analysis.....	3
MECH ENG 4124 Robotics M.....	3
MECH ENG 4125 Stresses in Plates & Shells.....	3
MECH ENG 4127 Wind Engineering.....	3

### 6.5.9.8 B.E.(Mechanical)/B.Sc.

To qualify for a Bachelor of Science award, students must complete a major pursuant to Bachelor of Science Program Rules.

To qualify for the award of the degrees of B.E.(Mechanical) and B.Sc. students are required to complete satisfactorily courses as indicated below:

#### Level I

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1009 Materials I.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM*.....	3
MECH ENG 1006 Design Graphics & Communication.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics.....	3
MECH ENG 1100 Introduction to Mechanical Engineering.....	3
Level I Science course.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II.....	3
MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2020 Materials & Manufacturing.....	3
MECH ENG 2021 Thermo-Fluids I.....	3
MECH ENG 2100 Design Practice.....	3
MECH ENG 2101 Mechatronics IM+.....	3
Level I Science course.....	3

+ includes workshop practical

#### Level III

MECH ENG 2019 Dynamics & Control I.....	3
MECH ENG 3027 Engineering Systems Design & Communication.....	3
MECH ENG 3030 Structural Design & Solid Mechanics.....	3
MECH ENG 3102 Heat Transfer & Thermodynamics.....	3
Level II Science courses*.....	12

\*Check with the Faculty of Science on requirements for majors

#### Level IV

Level III Science courses.....	24
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#### Level V

MECH ENG 3101 Applied Aerodynamics.....	3
MECH ENG 3028 Dynamics & Control II.....	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems.....	3
MECH 3105 Sustainability & the Environment.....	3
MECH ENG 4142A/B Mechanical Design Project Level IV^.....	9
or	
MECH ENG 4143A/B Mechanical Honours Project Level IV^.....	9
Elective course.....	3

^ Students accepted into the Honours Stream will take Honours Project and other students will take Design Project

#### Level IV Electives

MECH ENG 4102 Advanced PID Control.....	3
MECH ENG 4103 Advanced Computer Aided Engineering.....	3
MECH ENG 4104 Advanced Topics in Fluid Mechanics.....	3
MECH ENG 4105 Advanced Vibrations.....	3
MECH ENG 4107 Airconditioning.....	3
MECH ENG 4109 Automotive Combustion, Power Train & NVH.....	3

MECH ENG 4110 Automotive Vehicle Dynamics & Safety.....	3
MECH ENG 4111 CFD for Engineering Applications.....	3
MECH ENG 4112 Combustion Technology & Emission Control.....	3
MECH ENG 4113 Computational Acoustics.....	3
MECH ENG 4114 Corrosion: Principles & Prevention.....	3
MECH ENG 4115 Engineering Acoustics.....	3
MECH ENG 4117 Finance for Engineers.....	3
MECH ENG 4118 Finite Element Analysis of Structures.....	3
MECH ENG 4120 Fracture Mechanics.....	3
MECH ENG 4121 Materials Selection & Failure Analysis.....	3
MECH ENG 4124 Robotics M.....	3
MECH ENG 4125 Stresses in Plates & Shells.....	3
MECH ENG 4127 Wind Engineering.....	3

### 6.5.10 Mechanical and Aerospace Engineering

#### 6.5.10.1 B.E.(Mechanical and Aerospace)

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

#### Level I

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1009 Materials I.....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MECH ENG 1006 Design Graphics & Communication.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics.....	3
MECH ENG 1102 Introduction to Aerospace Engineering.....	3

#### Level II

MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II.....	3
MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2019 Dynamics & Control I.....	3
MECH ENG 2020 Materials & Manufacturing.....	3
MECH ENG 2021 Thermo-Fluids I.....	3
MECH ENG 2100 Design Practice.....	3

MECH ENG 2101 Mechatronics IM+.....	3
+ includes Workshop Practical	

#### Level III

MECH ENG 3026 Aerospace Materials & Structures.....	3
MECH ENG 3027 Engineering Systems Design & Communication.....	3
MECH ENG 3028 Dynamics & Control II.....	3
MECH ENG 3100 Aeronautical Engineering I.....	3
MECH ENG 3101 Applied Aerodynamics.....	3
MECH ENG 3102 Heat Transfer & Thermodynamics.....	3
MECH ENG 3104 Space Vehicle Design.....	3
MECH ENG 3105 Sustainability & the Environment.....	3

#### Level IV

MECH ENG 4100 Advanced Topics in Aerospace Engineering.....	3
MECH ENG 4106 Aerospace Propulsion.....	3
MECH ENG 4108 Aircraft Design.....	3
MECH ENG 4111 CFD for Engineering Applications.....	3

or

MECH ENG 4118 Finite Element Analysis of Structures.....	3
MECH ENG 4142A/B Design Project Level IV Part 1 & 2+.....	9

or

MECH ENG 4143A/B Honours Project Level IV Part 1 & 2+.....	9
One elective to be chosen from the following:	

MECH ENG 4104 Advanced Topics in Fluid Mechanics.....	3
MECH ENG 4107 Airconditioning.....	3
MECH ENG 4114 Corrosion: Principles & Prevention.....	3
MECH ENG 4120 Fracture Mechanics.....	3
MECH ENG 4121 Materials Selection & Failure Analysis.....	3

+ Students accepted into the Honours stream will take Honours Project and other students will take Design Project.

#### 6.5.10.2 B.E.(Mechanical and Aerospace)/B.Ma.&Comp.Sc. (Computer Science focus)

To qualify for both the award of the degree of B.E.(Mechanical and Aerospace) and the degree of B.Ma.&Comp.Sc. with a Computer Science focus, students are required to complete satisfactorily:

<b>Level I</b>	
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
MECH ENG 1102 Introduction to Aerospace Engineering .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
COMP SCI 1202 Object Oriented Programming E .....	3
MATHS 1011 Mathematics IA* .....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
MECH ENG 1006 Design Graphics & Communication.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics .....	3
<b>*See Clause 6.2 regarding Level I Mathematics requirements.</b>	
<b>Level II</b>	
CHEM ENG 1009 Materials I .....	3
MATHS 2201 Engineering Mathematics I .....	3
MATHS 2202 Engineering Mathematics II .....	3
MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2019 Dynamics & Control I .....	3
MECH ENG 2021 Thermo-Fluids I.....	3
MECH ENG 2100 Design Practice.....	3
MECH ENG 2020 Materials & Manufacturing .....	3
<b>Level III</b>	
COMP SCI 2000 Computer Systems .....	3
COMP SCI 1203 Algorithm and Data Structure Design.....	3
MECH ENG 3100 Aeronautical Engineering.....	3
MECH ENG 3026 Aerospace Materials & Structures .....	3
MECH ENG 3027 Engineering Systems Design & Communication.....	3
MECH ENG 2101 Mechatronics IM+ .....	3
MECH ENG 3104 Space Vehicle Design.....	3
MECH ENG 3028 Dynamics & Control II.....	3
<b>+includes Workshop Practical</b>	
<b>Level IV</b>	
Level III Computer Science Courses .....	18
MECH ENG 3101 Applied Aerodynamics.....	3
MECH ENG 3102 Heat Transfer & Thermodynamics .....	3
<b>Level V</b>	
MECH ENG 3105 Sustainability & the Environment .....	3

MECH ENG 4100 Advanced Topics in Aerospace Engineering .....	3
MECH ENG 4106 Aerospace Propulsion.....	3
MECH ENG 4108 Aircraft Design.....	3
MECH ENG 4142A/B Design Project Part A & B# .....	9
<i>or</i>	
MECH ENG 4143A/B Honours Project Part A & B# .....	9
MECH ENG 4111 CFD for Engineering Applications.....	3
<i>or</i>	
MECH ENG 4118 Finite Element Analysis of Structures.....	3
<b>#Students accepted into the Honours stream will take Honours Project and other students will take Design Project.</b>	

**6.5.10.3 B.E.(Mechanical and Aerospace)/ B.Ma.Comp.Sc. (Mathematics focus)**

To qualify for both the award of the degree of B.E.(Mechanical and Aerospace) and the degree of B.Ma.Comp.Sc. with a Mathematics focus, students are required to complete satisfactorily:

<b>Level I</b>	
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1009 Materials I .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
MECH ENG 1006 Design Graphics & Communication .....	3
MECH ENG 1007 Engineering Mechanics - Dynamics .....	3
MECH ENG 1102 Introduction to Aerospace Engineering .....	3

**\*See Clause 6.2 regarding Level I Mathematics requirements.**

<b>Level II</b>	
MATHS 2202 Engineering Mathematics II .....	3
MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2019 Dynamics & Control I .....	3
MECH ENG 2020 Materials & Manufacturing .....	3
MECH ENG 2021 Thermo-Fluids I.....	3
MECH ENG 2100 Design Practice.....	3
MECH ENG 2101 Mechatronics IM+ .....	3
MECH ENG 2201 Engineering Mathematics I.....	3
<b>+includes Workshop Practical</b>	

<b>Level III</b>	
MECH ENG 3026 Aerospace Materials & Structures.....	3
MECH ENG 3027 Engineering Systems Design & Communication.....	3
MECH ENG 3028 Dynamics & Control II.....	3
MECH ENG 3100 Aeronautical Engineering.....	3
MECH ENG 3101 Applied Aerodynamics.....	3
MECH ENG 3102 Heat Transfer & Thermodynamics .....	3
MECH ENG 3104 Space Vehicle Design.....	3
MECH ENG 3105 Sustainability & the Environment.....	3

<b>Level IV</b>	
Mathematics courses.....	24
24 units of additional Mathematics courses of which 18 units must be at Level III	

<b>Level V</b>	
MECH ENG 4100 Advanced Topics in Aerospace Engineering .....	3
MECH ENG 4106 Aerospace Propulsion.....	3
MECH ENG 4108 Aircraft Design.....	3
MECH ENG 4111 CFD for Engineering Applications.....	3
<i>or</i>	
MECH ENG 4118 Finite Element Analysis of Structures.....	3
MECH ENG 4142A/B Design Project Level IV Part 1 & 2+ .....	9
<i>or</i>	
MECH ENG 4143A/B Honours Project Level IV Part 1 & 2+ .....	9

One elective to be chosen from the following:	
MECH ENG 4104 Advanced Topics in Fluid Mechanics.....	3
MECH ENG 4107 Airconditioning.....	3
MECH ENG 4114 Corrosion: Principles & Prevention.....	3
MECH ENG 4115 Engineering Acoustics .....	3
MECH ENG 4120 Fracture Mechanics.....	3
MECH ENG 4121 Materials Selection & Failure Analysis.....	3

**# Students accepted into the Honours stream will take Honours Project and other students will take Design Project.**

**6.5.10.4 B.E (Mechanical and Aerospace)/B.Sc.**

To qualify for a Bachelor of Science award, students must complete a major pursuant to Bachelor of Science Program Rules.

To qualify for both the award of the degree of B.E.(Mechanical and Aerospace) and the degree of B.Sc, students are required to complete satisfactorily:

<b>Level I</b>	
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1009 Materials I .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
MECH ENG 1006 Design Graphics & Communication.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics.....	3
MECH ENG 1102 Introduction to Aerospace Engineering .....	3
Level I Science Course .....	3
<b>*See Clause 6.2 regarding Level I Mathematics requirements.</b>	

<b>Level II</b>	
MATHS 2201 Engineering Mathematics I .....	3
MATHS 2202 Engineering Mathematics II .....	3
MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2020 Materials & Manufacturing .....	3
MECH ENG 2021 Thermo-Fluids I.....	3
MECH ENG 2100 Design Practice.....	3
MECH ENG 2101 Mechatronics IM+ .....	3
Level I Science course.....	3

**+includes Workshop Practical**

<b>Level III</b>	
MATHS 2104 Numerical Methods.....	3
MECH ENG 2019 Dynamics & Control I .....	3
MECH ENG 3026 Aerospace Materials and Structures.....	3
MECH ENG 3027 Engineering Systems Design & Communication.....	3
MECH ENG 3100 Aeronautical Engineering.....	3
MECH ENG 3102 Heat Transfer & Thermodynamics .....	3
MECH ENG 3104 Space Vehicle Design.....	3
MECH ENG 3105 Sustainability & the Environment .....	3

<b>Level IV</b>	
MECH ENG 3028 Dynamics & Control II .....	3
MECH ENG 3101 Applied Aerodynamics.....	3
MECH ENG 4106 Aerospace Propulsion.....	3
MECH ENG 4108 Aircraft Design.....	3
Level II Science courses* .....	12

\*Check with the Faculty of Sciences on requirements for majors.

**Level V**

Level III Science courses .....24

**Level VI**

MECH ENG 4100 Advanced Topics in Aerospace Engineering .....3

MECH ENG 4111 CFD for Engineering Applications .....3

MECH ENG 4118 Finite Element Analysis of Structures .....3

MECH ENG 4142A/B Design Project Part A & B# .....9

or

MECH ENG 4143A/B Honours Project Part A & B# .....9

Electives from list following .....6

**#Students accepted into the Honours stream will take Honours Project and other students will take Design Project.**

Electives from the following if available:

MECH ENG 4102 Advanced PID Control .....3

MECH ENG 4107 Airconditioning .....3

MECH ENG 4115 Engineering Acoustics .....3

MECH ENG 4120 Fracture Mechanics .....3

MECH ENG 4104 Advanced Topics in Fluid Mechanics .....3

MECH ENG 4105 Advanced Vibrations .....3

MECH ENG 4114 Corrosion: Principles & Prevention .....3

MECH ENG 4121 Materials Selection & Failure Analysis .....3

**6.5.11 Mechanical and Automotive Engineering**

**6.5.11.1 B.E.(Mechanical and Automotive)**

**NOTE: There will be no intake in 2012**

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV.

**Level I**

C&ENVENG 1010 Engineering Mechanics - Statics .....3

CHEM ENG 1009 Materials I .....3

ELEC ENG 1009 Electrical & Electronic Engineering IA .....3

MATHS 1011 Mathematics IA .....3

MATHS 1012 Mathematics IB .....3

MECH ENG 1006 Design Graphics & Communication .....3

MECH ENG 1007 Engineering Mechanics - Dynamics .....3

MECH ENG 1101 Introduction to Automotive Engineering .....3

**Level II**

MATHS 2202 Engineering Mathematics II .....3

MATHS 2201 Engineering Mathematics I .....3

MECH ENG 2002 Stress Analysis & Design .....3

MECH ENG 2019 Dynamics & Control I .....3

MECH ENG 2020 Materials & Manufacturing .....3

MECH ENG 2021 Thermo-Fluids I .....3

MECH ENG 2100 Design Practice .....3

MECH ENG 2101 Mechatronics IM+ .....3

**+ includes Workshop Practical**

**Level III**

MECH ENG 3027 Engineering Systems Design & Communication .....3

MECH ENG 3032 Microcontroller Programming .....3

MECH ENG 3033 Automotive Materials & Structures .....3

MECH ENG 3101 Applied Aerodynamics .....3

MECH ENG 3102 Heat Transfer & Thermodynamics .....3

MECH ENG 3103 Manufacturing Engineering & Quality Systems .....3

MECH ENG 3105 Sustainability & the Environment .....3

MECH ENG 3028 Dynamics & Control II .....3

**Level IV**

MECH ENG 4103 Advanced Computer Aided Engineering .....3

MECH ENG 4110 Automotive Vehicle Dynamics & Safety .....3

MECH ENG 4111 CFD for Engineering Applications .....3

MECH ENG 4118 Finite Element Analysis of Structures .....3

MECH ENG 4109 Automotive Combustion, Power Train & NVH .....3

MECH ENG 4142A/B Design Project Level IV Part 1 & 2# .....9

or

MECH ENG 4143A/B Honours Project Level IV Part 1 & 2# .....9

**#Students accepted into the Honours Stream will take Honours Project and other students will take Design Project**

**6.5.11.2 B.E.(Mechanical and Automotive)/ B.Ma.&Comp.Sc. (Computer Science focus)**

**NOTE: There will be no new intake in 2012**

To qualify for both the award of the degree of B.E.(Mechanical and Automotive) and the degree of B.Ma.Comp.Sc. with a Computer Science Focus, students are required to complete satisfactorily:

**Level I**

C&ENVENG 1010 Engineering Mechanics - Statics .....3

ELEC ENG 1009 Electrical & Electronic Engineering IA .....3

COMP SCI 1202 Object Oriented Programming E UG .....3

MATHS 1011 Mathematics IA .....3

MATHS 1012 Mathematics IB .....3

MATHS 1013 Mathematics IM\* .....3

MECH ENG 1006 Design Graphics & Communication .....3

MECH ENG 1007 Engineering Mechanics - Dynamics .....3

MECH ENG 1101 Introduction to Automotive Engineering .....3

**\*See Clause 6.2 regarding Level I Mathematics requirements.**

**Level II**

CHEM ENG 1009 Materials I .....3

MATHS 2201 Engineering Mathematics I .....3

MATHS 2202 Engineering Mathematics II .....3

MECH ENG 2002 Stress Analysis & Design .....3

MECH ENG 2019 Dynamics & Control I .....3

MECH ENG 2020 Materials & Manufacturing .....3

MECH ENG 2021 Thermo-Fluids I .....3

MECH ENG 2100 Design Practice .....3

**Level III**

COMP SCI 2000 Computer Systems .....3

COMP SCI 203 Algorithm and Data Structure Design .....3

MECH ENG 2101 Mechatronics IM (includes Workshop Practical) .....3

MECH ENG 3027 Engineering Systems Design & Communication .....3

MECH ENG 3028 Dynamics & Control II .....3

MECH ENG 3032 Microcontroller Programming .....3

MECH ENG 3033 Automotive Materials & Structures .....3

MECH ENG 3103 Manufacturing Engineering & Quality Systems .....3

**Level IV**

Level III Computer Science courses .....18

MECH ENG 3101 Applied Aerodynamics .....3

MECH ENG 3102 Heat Transfer & Thermodynamics .....3

**Level V**

MECH ENG 3105 Sustainability & the Environment .....3

MECH ENG 4103 Advanced Computer Aided Engineering .....3

MECH ENG 4110 Automotive Vehicle Dynamics & Safety .....3

MECH ENG 4109 Automotive Combustion, Power Train & NVH .....3

MECH ENG 4118 Finite Element Analysis of Structures .....3

or

MECH ENG 4111 CFD for Engineering Applications .....3

MECH ENG 4142A/B Design Project Level IV Part A & B# .....9

or

MECH ENG 4143A/B Honours Project Part 1 & 2# .....9

**#Students accepted into the Honours Stream will take Honours Project and other students will take Design Project**

**6.5.11.3 B.E.(Mechanical and Automotive)/ B.Ma.&Comp.Sc. (Mathematics focus)**

**NOTE: There will be no new intake in 2012**

To qualify for both the award of the degree of B.E.(Mechanical and Automotive) and the degree of B.Ma.Comp.Sc. with a Mathematics Focus, students are required to complete satisfactorily:

**Level I**

C&ENVENG 1010 Engineering Mechanics - Statics .....3

CHEM ENG 1009 Materials I .....3

ELEC ENG 1009 Electrical & Electronic Engineering IA .....3

MATHS 1011 Mathematics IA .....3

MATHS 1012 Mathematics IB .....3

MATHS 1013 Mathematics IM\* .....3

MECH ENG 1006 Design Graphics & Communication .....3

MECH ENG 1007 Engineering Mechanics - Dynamics .....3

MECH ENG 1101 Introduction to Automotive Engineering .....3

\*See Clause 6.2 regarding Level I Mathematics requirements

**Level II**

MATHS 2201 Engineering Mathematics I .....3  
MATHS 2202 Engineering Mathematics II .....3  
MECH ENG 2002 Stress Analysis & Design.....3  
MECH ENG 2019 Dynamics & Control I .....3  
MECH ENG 2020 Materials & Manufacturing .....3  
MECH ENG 2021 Thermo-Fluids I.....3  
MECH ENG 2100 Design Practice.....3  
MECH ENG 2101 Mechatronics IM+ .....3

+ includes Workshop Practical

**Level III**

MECH ENG 3027 Engineering Systems Design & Communication.....3  
MECH ENG 3028 Dynamics & Control II .....3  
MECH ENG 3032 Microcontroller Programming .....3  
MECH ENG 3033 Automotive Materials & Structures .....3  
MECH ENG 3101 Applied Aerodynamics.....3  
MECH ENG 3102 Heat Transfer & Thermodynamics .....3  
MECH ENG 3103 Manufacturing Engineering & Quality Systems.....3  
MECH ENG 3105 Sustainability & the Environment.....3

**Level IV**

Mathematics Courses\* .....24

\*24 units of additional Mathematics courses of which 18 units must be at Level III

**Level V**

MECH ENG 4103 Advanced Computer Aided Engineering.....3  
MECH ENG 4142A/B Design Project Level IV Part 1 & 2# .....9  
or  
MECH ENG 4143A/B Honours Project Level IV Part 1 & 2# .....9  
MECH ENG 4110 Automotive Vehicle Dynamics & Safety.....3  
MECH ENG 4111 CFD for Engineering Applications.....3  
MECH ENG 4118 Finite Element Analysis of Structures .....3  
MECH ENG 4109 Automotive Combustion, Power Train & NVH .....3

# Students accepted into the Honours Stream will take Honours Project and other students will take Design Project

**6.5.12 Mechanical and Sports Engineering**

**6.5.12.1 B.E.(Mechanical and Sports)**

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

**Level I**

C&ENVENG 1010 Engineering Mechanics - Statics.....3  
CHEM ENG 1009 Materials I .....3  
ELEC ENG 1009 Electrical & Electronic Engineering IA .....3  
MATHS 1011 Mathematics IA .....3  
MATHS 1012 Mathematics IB.....3  
MATHS 1013 Mathematics IM\* .....3  
MECH ENG 1006 Design Graphics & Communication.....3  
MECH ENG 1007 Engineering Mechanics - Dynamics .....3  
MECH ENG 1104 Introduction to Sports Engineering .....3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

MECH ENG 2002 Stress Analysis & Design.....3  
MECH ENG 2019 Dynamics & Control I .....3  
MECH ENG 2021 Thermo-Fluids I.....3  
MECH ENG 2100 Design Practice.....3  
MECH ENG 2102 Sports Engineering I\* .....3  
MATHS 2201 Engineering Mathematics I .....3  
MATHS 2202 Engineering Maths II .....3  
ANAT SC 2200 Functional Human Anatomy II .....3

\*includes Workshop Practice

**Level III**

MECH ENG 3027 Engineering Systems Design & Communication.....3  
MECH ENG 3028 Dynamics & Control II .....3  
MECH ENG 3101 Applied Aerodynamics.....3  
MECH ENG 3103 Manufacturing Engineering & Quality Systems.....3  
MECH ENG 3105 Sustainability & the Environment .....3  
MECH ENG 3107 Sports Engineering II.....3  
MECH ENG 3108 Sports Materials .....3  
PHYSIOL 2511 Human Physiology .....3

**Level IV**

MECH ENG 4142A/B Design Project Level IV^ .....9

or

MECH ENG 4143A/B Honours Project Level IV^ .....9  
ANATSC 2200 Functional Human Anatomy II.....3  
MECH ENG 4103 Advanced Computer Aided Engineering.....3  
MECH ENG 4111 CFD for Engineering Applications .....3  
MECH ENG 4118 Finite Element Analysis of Structures .....3  
MECH ENG 4140 Sports Engineering III .....3

^Students accepted into the Honours Stream will take Honours Project and other students will take Design Project

**6.5.13 Mechanical and Sustainable Energy Engineering**

**6.5.13.1 B.E.(Mechanical and Sustainable Energy)**

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

**Level I**

C&ENVENG 1010 Engineering Mechanics - Statics.....3  
CHEM ENG 1009 Materials I .....3  
ELEC ENG 1009 Electrical & Electronic Engineering IA .....3  
MATHS 1011 Mathematics IA .....3  
MATHS 1012 Mathematics IB.....3  
MECH ENG 1006 Design Graphics & Communication .....3  
MECH ENG 1007 Engineering Mechanics - Dynamics .....3  
MECH ENG 1105 Introduction to Sustainable Energy Engineering.....3

**Level II**

MATHS 2201 Engineering Mathematics I .....3  
MATHS 2202 Engineering Mathematics II .....3  
MECH ENG 2002 Stress Analysis & Design.....3  
ELEC ENG 2013 Electric Energy Systems E.....3  
MECH ENG 2019 Dynamics & Control I .....3  
MECH ENG 2021 Thermo-Fluids I.....3  
MECH ENG 2100 Design Practice.....3  
MECH ENG 2101 Mechatronics IM+ .....3

+includes workshop practical

**Level III**

MECH ENG 3027 Engineering Systems Design & Communication.....3  
MECH ENG 3028 Dynamics & Control II .....3  
MECH ENG 3032 Microcontroller Programming .....3

MECH ENG 3102 Heat Transfer & Thermodynamics .....3  
MECH ENG 3101 Applied Aerodynamics.....3  
MECH ENG 3105 Sustainability & the Environment .....3  
TECHCOMM 3006 Energy Management, Economics & Policy .....3  
CHEM ENG 4048 Biofuels, Biomass & Wastes.....3

**Level IV**

MECH ENG 4142A/B Design Project Level IV^ .....9  
or  
MECH ENG 4143A/B Honours Project^ .....9  
DESST 3511 Sustainable Commercial Building Design.....3  
MECH ENG 4112 Combustion Technology & Emission Control.....3  
MECH ENG 4144 Renewable Fluid Power Technologies.....3  
MECH ENG 4145 Sustainable Thermal Technologies.....3  
Elective course .....3

**Electives**

MECH ENG 4104 Advanced Topics in Fluid Mechanics .....3  
MECH ENG 4105 Advanced Vibrations .....3  
MECH ENG 4107 Airconditioning.....3  
MECH ENG 4111 CFD for Engineering Applications.....3  
MECH ENG 4113 Computational Acoustics .....3  
MECH ENG 4114 Corrosion: Principles and Prevention.....3  
MECH ENG 4115 Engineering Acoustics .....3  
MECH ENG 4118 Finite Element Analysis of Structures .....3  
MECH ENG 4120 Fracture Mechanics.....3  
MECH ENG 4121 Materials Selection and Failure Analysis.....3  
MECH ENG 4127 Wind Engineering .....3

^ Students accepted into the Honours Stream will take Honours Project and other students will take Design Project

**6.5.14 Mechatronic Engineering**

**6.5.14.1 B.E.(Mechatronic)**

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

**Level I**

C&ENVENG 1010 Engineering Mechanics – Statics .....3

CHEM ENG 1009 Materials I	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3
MATHS 1011 Mathematics IA	3
MATHS 1012 Mathematics IB	3
MECH ENG 1006 Design Graphics & Communication	3
MECH ENG 1007 Engineering Mechanics – Dynamics	3
MECH ENG 1103 Introduction to Mechatronic Engineering	3
<b>Level II</b>	
MATHS 2201 Engineering Mathematics I	3
MATHS 2202 Engineering Mathematics II	3
MECH ENG 2002 Stress Analysis & Design	3
MECH ENG 2015 Electronics IIM	3
MECH ENG 2019 Dynamics & Control I	3
MECH ENG 2021 Thermo-Fluids I	3
MECH ENG 2100 Design Practice	3
MECH ENG 2101 Mechatronics IM+	3
<b>+includes workshop practical</b>	
<b>Level III</b>	
ELEC ENG 3025 Power Electronics & Drive Systems M	3
MECH ENG 3027 Engineering Systems Design & Communication	3
MECH ENG 3028 Dynamics & Control II	3
MECH ENG 3032 Microcontroller Programming	3
MECH ENG 3102 Heat Transfer & Thermodynamics	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems	3
MECH ENG 3105 Sustainability & the Environment	3
MECH ENG 3106 Mechatronics II	3
<b>Level IV</b>	
MECH ENG 4102 Advanced PID Control	3
MECH ENG 4123 Advanced Digital Control	3
MECH ENG 4124 Robotics M	3
MECH ENG 4142A/B Design Project Level IV <sup>^</sup>	9
<i>or</i>	
MECH ENG 4143A/B Honours Project <sup>^</sup>	9
Elective courses	6
<sup>^</sup> Students accepted into the Honours Stream will take Honours Project and other students will take Design Project	

### Electives

MECH ENG 4101 Biomechanical Engineering	3
MECH ENG 4105 Advanced Vibrations	3
MECH ENG 4110 Automotive Vehicle Dynamics & Safety	3
MECH ENG 4111 CFD for Engineering Applications	3
MECH ENG 4113 Computational Acoustics	3
MECH ENG 4114 Corrosion: Principles & Prevention	3
MECH ENG 4115 Engineering Acoustics	3
MECH ENG 4117 Finance for Engineers	3
MECH ENG 4118 Finite Element Analysis of Structures	3
MECH ENG 4121 Materials Selection & Failure Analysis	3

### 6.5.14.2 B.E.(Mechatronic)/B.A.

To satisfy the Arts component of this program, students must undertake 30 units of Arts courses, which includes an approved major sequence (24 units). The remaining 6 units can be undertaken at any level. Students should consult the Bachelor of Arts academic program rules for the list of approved major sequences and the specific requirements of each.

To satisfy the BE (Mechatronic) component of this program students are required to satisfactorily complete the courses listed below:

#### Level I

C&ENVENG 1010 Engineering Mechanics - Statics	3
MATHS 1011 Mathematics IA	3
MATHS 1012 Mathematics IB	3
MATHS 1013 Mathematics IM*	3
MECH ENG 1006 Design Graphics & Communication	3
MECH ENG 1007 Engineering Mechanics - Dynamics	3
MECH ENG 1103 Introduction to Mechatronic Engineering	3
Level I Arts courses	6

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

Arts courses	6
CHEM ENG 1009 Materials I	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3
MATHS 2201 Engineering Mathematics I	3
MATHS 2202 Engineering Mathematics II	3

MECH ENG 2002 Stress Analysis & Design	3
MECH ENG 2100 Design Practice	3
<b>Level III</b>	
Arts courses	12
MECH ENG 2101 Mechatronics IM*	3
MECH ENG 2015 Electronics IIM	3
MECH ENG 2019 Dynamics & Control I	3
MECH ENG 2021 Thermo-Fluids I	3

\*includes workshop practical

#### Level IV

ELEC ENG 4059 power Electronics and Drive Systems	
MECH ENG 3027 Engineering Systems Design & Communication	3
MECH ENG 3028 Dynamics & Control II	3
MECH ENG 3032 Micro-Controller Programming	3
MECH ENG 3102 Heat Transfer & Thermodynamics	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems	3
MECH ENG 3105 Sustainability & the Environment	3
MECH ENG 3106 Mechatronics II	3

#### Level V

Arts courses	6
MECH ENG 4102 Advanced PID Control	3
MECH ENG 4123 Advanced Digital Control	3
MECH ENG 4124 Robotics M	3
MECH ENG 4142A/B Design Project Level IV <sup>^</sup>	9

*or*

MECH ENG 4143A/B Honours Project <sup>^</sup>	9
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<sup>^</sup> Students accepted into the Honours Stream will take Honours Project and other students will take Design Project

### 6.5.14.3 B.E.(Mechatronic)/B.Ma. & Comp. Sc. (Computer Science focus)

To qualify for both the award of the degree of B.E.(Mechatronic) and the degree of B.Ma.Comp. Sc. with a Computer Science Focus, students are required to complete satisfactorily:

#### Level I

C&ENVENG 1010 Engineering Mechanics - Statics	3
ELEC ENG 1009 Electrical & Electronic Engineering IA	3
COMP SCI 1202 Object Oriented Programming E	3
MATHS 1011 Mathematics IA	3

MATHS 1012 Mathematics IB	3
MATHS 1013 Mathematics IM*	3
MECH ENG 1006 Design Graphics & Communication	3
MECH ENG 1007 Engineering Mechanics - Dynamics	3
MECH ENG 1103 Introduction to Mechatronic Engineering	3
<b>*See Clause 6.2 regarding Level I Mathematics requirements.</b>	

#### Level II

CHEM ENG 1009 Materials I	3
MECH ENG 2015 Electronics IIM	3
MATHS 2201 Engineering Mathematics I	3
MATHS 2202 Engineering Mathematics II	3
MECH ENG 2002 Stress Analysis & Design	3
MECH ENG 2019 Dynamics & Control I	3
MECH ENG 2021 Thermo-Fluids I	3
MECH ENG 2100 Design Practice	3

#### Level III

COMP SCI 2000 Computer Systems	3
COMP SCI 1203 Algorithm and Data Structure Design	3
ELEC ENG 3025 Power Electronics & Drive Systems M	3
MECH ENG 2101 Mechatronics IM*	3
MECH ENG 3027 Engineering Systems Design & Communication	3
MECH ENG 3032 Micro-Controller Programming	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems	3
MECH ENG 3106 Mechatronics II	3

\*includes workshop practical

#### Level IV

Level III Computer Science courses*	18
MECH ENG 3102 Heat Transfer & Thermodynamics	3
MECH ENG 3028 Dynamics & Control II	3

#### Level V

MECH ENG 4102 Advanced PID Control	3
MECH ENG 4123 Advanced Digital Control	3
MECH ENG 4124 Robotics M	3
MECH ENG 4142A Design Project Level IV <sup>^</sup>	9
<i>or</i>	
MECH ENG 4143A/B Honours Project <sup>^</sup>	9
MECH ENG 3015 Sustainability & the Environment	3

Elective (chosen from list) .....	3
<b>^ Students accepted into the Honours Stream will take Honours Project and other students will take Design Project Electives</b>	
MECH ENG 4101 Biomechanical Engineering .....	3
MECH ENG 4105 Advanced Vibrations .....	3
MECH ENG 4110 Automotive Vehicle Dynamics & Safety .....	3
MECH ENG 4111 CFD for Engineering Applications .....	3
MECH ENG 4113 Computational Acoustics .....	3
MECH ENG 4114 Corrosion: Principles & Prevention .....	3
MECH ENG 4115 Engineering Acoustics .....	3
MECH ENG 4117 Finance for Engineers .....	3
MECH ENG 4118 Finite Element Analysis of Structures .....	3
MECH ENG 4121 Materials Selection & Failure Analysis .....	3
MECH ENG 4119 Fire Engineering .....	3
MECH ENG 4126 Topics in Welded Structures .....	3

**6.5.14.4 B.E (Mechatronic)/ B.Ma.& Comp. Sc. (Mathematics focus)**

To qualify for both the award of the degree of B.E.(Mechatronic) and the degree of B.Ma.&Comp. Sc. with a Mathematics Focus, students are required to complete satisfactorily:

**Level I**

C&ENVENG 1010 Engineering Mechanics - Statics .....	3
CHEM ENG 1009 Materials I .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA .....	3
MATHS 1011 Mathematics IA .....	3
MATHS 1012 Mathematics IB .....	3
MATHS 1013 Mathematics IM* .....	3
MECH ENG 1006 Design Graphics & Communication .....	3
MECH ENG 1007 Engineering Mechanics - Dynamics .....	3
MECH ENG 1103 Introduction to Mechatronic Engineering .....	3

**\*See Clause 6.2 regarding Level I Mathematics requirements**

**Level II**

MATHS 2201 Engineering Mathematics I .....	3
MATHS 2202 Engineering Mathematics II .....	3
MECH ENG 2002 Stress Analysis & Design .....	3

MECH ENG 2015 Electronics IIM .....	3
MECH ENG 2021 Thermo-Fluids I .....	3
MECH ENG 2100 Design Practice .....	3
MECH ENG 2101 Mechatronics IM* .....	3
MECH ENG 2019 Dynamics & Control I .....	3

**\*includes workshop practical**

**Level III**

ELEC ENG 3025 Power Electronics & Drive Systems .....	3
MECH ENG 3027 Engineering Systems Design & Communication .....	3
MECH ENG 3028 Dynamics & Control II .....	3
MECH ENG 3032 Micro-Controller Programming .....	3
MECH ENG 3102 Heat Transfer & Thermodynamics .....	3
MECH ENG 3105 Sustainability & the Environment .....	3
MECH ENG 3106 Mechatronics II .....	3
MECH ENG 3103 Manufacturing Engineering & Quality Systems .....	3

**Level IV**

Mathematics courses* .....	24
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**\*24 units of additional Mathematics courses of which 18 units must be at Level III**

**Level V**

MECH ENG 4102 Advanced PID Control .....	3
MECH ENG 4123 Advanced Digital Control .....	3
MECH ENG 4124 Robotics M .....	3
MECH ENG 4142A Design Project Level IV ^ .....	9

or

MECH ENG 4143A/B Honours Project ^ .....	9
Electives (chosen from list) .....	6

**^ Students accepted into the Honours Stream will take Honours Project and other students will take Design Project**

**Electives**

MECH ENG 4101 Biomechanical Engineering .....	3
MECH ENG 4105 Advanced Vibrations .....	3
MECH ENG 4110 Automotive Vehicle Dynamics & Safety .....	3
MECH ENG 4111 CFD for Engineering Applications .....	3
MECH ENG 4113 Computational Acoustics .....	3
MECH ENG 4114 Corrosion: Principles & Prevention .....	3
MECH ENG 4115 Engineering Acoustics .....	3
MECH ENG 4117 Finance for Engineers .....	3

MECH ENG 4118 Finite Element Analysis of Structures .....	3
MECH ENG 4121 Materials Selection & Failure Analysis .....	3
MECH ENG 4119 Fire Engineering .....	3
MECH ENG 4126 Topics in Welded Structures .....	3

**6.5.15 Mining Engineering**

**6.5.15.1 B.E.(Mining)**

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

**Level I**

C&ENVENG 1008 Engineering Planning & Design IA .....	3
C&ENVENG 1010 Engineering Mechanics - Statics .....	3
MINING 1011 Introduction to Mining Engineering IA .....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA .....	3
GEOLOGY 1104 Geology for Engineers .....	3
MATHS 1011 Mathematics IA .....	3
MATHS 1012 Mathematics IB .....	3
MECHENG 1007 Engineering Mechanics- Dynamics .....	3

**Level II**

MECH ENG 2021 Thermo-Fluids I .....	3
CHEM ENG 2019 Introduction to Minerals Processing .....	3
C&ENVENG 2025 Strength of Materials IIA .....	3
C&ENVENG 2068 Environmental Engineering & Sustainability II .....	3
C&ENVENG 2069 Geotechnical Engineering IIA .....	3
C&ENVENG 2070 Engineering Modelling & Analysis IIA .....	3
GEOLOGY 2504 Economic & Mine Geology II .....	3
MATHS 2201 Engineering Mathematics I .....	3

**Level III**

MINING 3068 Mine Ventilation .....	3
MINING 3069 Rock Breakage .....	3
MINING 3070 Resource Estimation .....	3
MINING 3071 Mining Systems .....	3
MINING 3072 Mining Geomechanics .....	3
MINING 3073 Mine Planning .....	3
MINING 4104 Socio-Environmental Aspects of Mining .....	3

MINING 4107 Surface Mining Systems .....	3
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**Level IV**

MINING 4101 Mine Management .....	3
MINING 4102 Mine Geotechnical Engineering .....	3
MINING 4106 Hard Rock Mine Design & Feasibility .....	3
MINING 4100A/B Mining Research Project* .....	6
MINING 4111 Coal Mine Design & Feasibility .....	3
Electives .....	6

**\*Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Mining Research Project**

**Electives**

C&ENVENG 4106 Introduction to Geostatistics .....	3
MINING 4108 Underground Mining Systems .....	3
MINING 4109 Mining in a Global Environment .....	3
MINING 4110 Mine Asset Management & Services .....	3
MINING 4112 Advanced Mine Geotechnical Engineering .....	3
MINING 4114 Simulation & Animation for Mining Engineering .....	3

**6.5.15.2 B.E.(Mining)/B.Ma.& Comp.Sc. (Mathematics focus)**

To qualify for both the award of the degree of B.E.(Mining) and the degree of B.Ma.&Comp.Sc. with a Mathematics focus, students are required to complete satisfactorily:

**Level I**

C&ENVENG 1008 Engineering Planning & Design IA .....	3
C&ENVENG 1010 Engineering Mechanics - Statics .....	3
MINING 1011 Introduction to Mining Engineering IA .....	3
C&ENVENG 1012 Engineering Modelling & Analysis IA .....	3
GEOLOGY 1104 Geology for Engineers .....	3
MATHS 1011 Mathematics IA .....	3
MATHS 1012 Mathematics IB .....	3
MATHS 1013 Mathematics IM* .....	3
MECHENG 1007 Engineering Mechanics - Dynamics .....	3

**\*See Clause 6.2 regarding Level I Mathematics requirements**

**Level II**

MECH ENG 2021 Thermo-Fluids I .....	3
CHEM ENG 2019 Introduction to	

Minerals Processing Engineering .....	3
C&ENVENG 2025 Strength of Materials IIA.....	3
C&ENVENG 2068 Environmental Engineering & Sustainability II.....	3
C&ENVENG 2069 Geotechnical Engineering IIA.....	3
MATHS 2201 Engineering Maths I.....	3
MATHS 2202 Engineering Maths II.....	3
GEOLOGY 2504 Economic & Mine Geology .....	3

**Level III**

MINING 3068 Mine Ventilation .....	3
MINING 3069 Rock Breakage .....	3
MINING 3070 Resource Estimation .....	3
MINING 3071 Mining Systems .....	3
MINING 3072 Mining Geomechanics.....	3
MINING 3073 Mine Planning.....	3
MINING 4104 Socio-Environmental Aspects of Mining.....	3
MINING 4107 Surface Mining Systems.....	3

**Level IV**

Mathematics courses*.....	24
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**\*24 units of additional Mathematics courses of which 18 units must be at Level III**

**Level V**

MINING 4101 Mine Management.....	3
MINING 4102 Mine Geotechnical Engineering.....	3
MINING 4106 Hard Rock Mine Design & Feasibility.....	3
MINING 4100A/B Mining Research Project* .....	6
MINING 4111 Coal Mine Design & Feasibility .....	3
Electives .....	6

**\*Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Mining Research Project**

**Electives**

C&ENVENG 4106 Introduction to Geostatistics.....	3
MINING 4108 Underground Mining Systems .....	3
MINING 4109 Mining in a Global Environment.....	3
MINING 4110 Mine Asset Management & Services.....	3
MINING 4112 Advanced Mine Geotechnical Engineering .....	3
MINING 4113 Advanced Mine Ventilation .....	3
MINING 4114 Simulation & Animation for Mining Engineering.....	3

**6.5.15.3 B.E.(Mining)/B.Sc.**

To qualify for a Bachelor of Science award, students must complete a major pursuant to Bachelor of Science Program Rules.

To qualify for the award of the degrees of B.E.(Mining) and B.Sc. students are required to complete satisfactorily courses as indicated:

**Level I**

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
MINING 1011 Introduction to Mining Engineering IA.....	3
GEOLOGY 1100 Earth's Interior I.....	3
GEOLOGY 1103 Earth Systems .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
PHYSICS 1100 Physics IA.....	3
PHYSICS 1200 Physics IB.....	3

**\*See Clause 6.2 regarding Level I Mathematics requirements.**

**Level II**

MECH ENG 2021 Thermo-Fluids I.....	3
CHEM ENG 2019 Introduction to Minerals Processing.....	3
C&ENVENG 2025 Strength of Materials IIA.....	3
C&ENVENG 2069 Geotechnical Engineering IIA.....	3
GEOLOGY 2500 Sedimentary Geology II.....	3
GEOLOGY 2503 Landscape Processes & Environments II .....	3
GEOLOGY 2504 Economic & Mine Geology .....	3
MATHS 2201 Engineering Mathematics I.....	3

**Level III**

MINING 3068 Mine Ventilation .....	3
MINING 3069 Rock Breakage .....	3
MINING 3070 Resource Estimation .....	3
MINING 3071 Mining Systems .....	3
MINING 3072 Mining Geomechanics.....	3
MINING 3073 Mine Planning.....	3
GEOLOGY 2501 Structural Geology II.....	3
GEOLOGY 2502 Igneous & Metamorphic Geology II.....	3

**Level IV**

GEOLOGY 3008 Geophysics III.....	3
GEOLOGY 3010 Remote Sensing .....	3
GEOLOGY 3013 Tectonics III .....	3
GEOLOGY 3016 Igneous & Metamorphic Geology III.....	3

GEOLOGY 3019 Field Geoscience Program III.....	3
GEOLOGY 3500 Exploration Methods III.....	3
GEOLOGY 3502 Mineral and Energy Resources.....	3
GEOLOGY 3504 Basins, Sediments and Regolith .....	3

**Level V**

MINING 4101 Mine Management.....	3
MINING 4102 Mine Geotechnical Engineering.....	3
MINING 4106 Hard Rock Mine Design & Feasibility.....	3
MINING 4100A/B Mining Research Project* .....	6
MINING 4111 Coal Mine Design & Feasibility .....	3
Electives .....	6

**\*Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Mining Research Project**

**Electives**

C&ENVENG 4106 Introduction to Geostatistics.....	3
MINING 4104 Socio-Environmental Aspects of Mining.....	3
MINING 4107 Surface Mining Systems .....	3
MINING 4108 Underground Mining Systems .....	3
MINING 4109 Mining in a Global Environment.....	3
MINING 4110 Mine Asset Management & Services .....	3
MINING 4112 Advanced Mine Geotechnical Engineering .....	3
MINING 4114 Simulation & Animation for Mining Engineering.....	3

**6.5.16 Petroleum Engineering**

**6.5.16.1 B.E.(Petroleum)**

Students are required to complete satisfactorily courses to the value of at least 24 units at each of Levels I, II, III and IV:

**Level I**

COMP SCI 1201 Introduction to Programming for Engineers .....	3
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
PETROENG 1005 Introduction to Petroleum Geosciences & the Oil Industry.....	3
PETROENG 1006 Introduction to Petroleum Engineering.....	3

PHYSICS 1100 Physics IA.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics.....	3

**\*See Clause 6.2 regarding Level I Mathematics requirements**

**Level II**

CHEM ENG 1007 Process Engineering 1.....	3
MATHS 2104 Numerical Methods.....	3
MATHS 2201 Engineering Mathematics I.....	3
MECH ENG 2021 Thermo-fluids I* .....	3
PETROENG 2001 Reservoir Thermodynamics & Fluid Properties .....	3
PETROENG 2005 Sedimentology & Stratigraphy .....	3
PETROENG 2009 Formation Evaluation, Petrophysics & Rock Properties.....	3
PETROENG 2010 Drilling Engineering.....	3

**\*International students are required to present ENG 3003 Engineering Communication EAL in lieu of C&ENVENG 1010 Engineering Mechanics - Statics**

**Level III**

PETROENG 3001 Reservoir Simulation.....	3
PETROENG 3005 Reservoir Characterisation & Modelling.....	3
PETROENG 3007 Well Testing & Pressure Transient Analysis.....	3
PETROENG 3019 Structural Geology & Seismic Methods .....	3
PETROENG 3020 Production Engineering.....	3
PETROENG 3023 Well Completion & Simulation.....	3
PETROENG 3025 Reservoir Engineering.....	3
PETROENG 3026 Formation Damage & Productivity Enhancement.....	3

**Level IV**

PETROENG 4037 Unconventional Resources and Recovery .....	3
PETROENG 4004A/B Petroleum Engineering Honours Project ^ .....	6
or	
PETROENG 4020A/B Petroleum Engineering Design Project ^ .....	6
PETROENG 4022 Integrated Field Development Planning & Economics Project.....	3
PETROENG 4027 Decision-Making & Risk Analysis.....	3
PETROENG 4033 Integrated Reservoir & Project Management.....	3
PETROENG 4034 Petroleum Business & Project Economics .....	3

PETROENG 4035 Reservoirs, Resources & Reserves .....3

^Students accepted into the Honours stream will take PETROENG 4004A/B Petroleum Engineering Honours Project and other students will take PETROENG 4020A/B Petroleum Engineering Design Project

### 6.5.16.2 B.E.(Petroleum)/B.E.(Chemical)

To qualify for the combined award of B.E.(Petroleum) and B.E.(Chemical), students are required to complete satisfactorily the courses as indicated below:

#### Level I

CHEM 1101 Foundations of Chemistry IA+ .....3  
and

CHEM 1201 Foundations of Chemistry IB+ .....3  
or

CHEM 1100 Chemistry IA+ .....3  
and

CHEM 1200 Chemistry IB+ .....3

MATHS 1011 Mathematics IA.....3

MATHS 1012 Mathematics IB.....3

MATHS 1013 Mathematics IM\* .....3

PETROENG 1005 Introduction to Petroleum Geosciences & the Oil Industry.....3

PETROENG 1006 Introduction to Petroleum Engineering.....3

CHEM ENG 1007 Process Engineering I.....3

COMP SCI 1201 Programming for Engineers.....3

+Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry (or equiv) must enrol in CHEM 1100/ CHEM 1200. All other students must enrol in CHEM 110 /CHEM 1201

\*See Clause 6.2 regarding Level I Mathematics requirements

#### Level II

CHEM ENG 2010 Introduction to Process Simulation.....3

CHEM ENG 2014 Process Heat Transfer.....3

CHEM ENG 2018 Process Fluid Mechanics .....3

MATHS 2201 Engineering Mathematics I.....3

PETROENG 2010 Drilling Engineering.....3

MATHS 2104 Numerical Methods.....3

CHEM ENG 2011 Chemical Engineering Thermodynamics .....3

PETROENG 2009 Formation Evaluation, Petrophysics & Rock Properties .....3

#### Level III

CHEM ENG 3020 Production Engineering.....3

CHEM ENG 3030 Simulation & Concept Design.....3

CHEM ENG 3031 Process Control & Utilities.....3

CHEM ENG 3034 Chemical Engineering Applications B.....3

CHEM ENG 3035 Chemical Engineering Applications A.....3

PETROENG 3001 Reservoir Simulation.....3

PETROENG 3005 Reservoir Characterisation & Modelling .....3

PETROENG 3025 Reservoir Engineering.....3

#### Level IV

CHEM ENG 3036 Unit Operations Lab .....3

CHEM ENG 4050 Chemical Engineering Applications D .....3

CHEM ENG 4056 Research Practice.....3

CHEM ENG 3033 Chemical Engineering Applications C .....3

CHEM ENG 4014 Plant Design Project.....6

CHEM ENG 4034 Professional Practice IV .....3

Chemical Engineering or Petroleum Engineering elective.....3

#### Level V

PETROENG 4037 Unconventional Resources and Recovery .....3

PETROENG 4004A/B Petroleum Engineering Honours Project^ .....6

or

PETROENG 4020A/B Petroleum Engineering Design Project ^ .....6

PETROENG 4022 Integrated Field Development Planning & Economics Project.....3

PETROENG 4027 Decision-Making & Risk Analysis.....3

PETROENG 4034 Petroleum Business & Project Economics .....3

Petroleum Engineering Electives .....6

^Students accepted into the Honours stream will take PETROENG 4004A/B Petroleum Engineering Honours Project and other students will take PETROENG 4020A/B Petroleum Engineering Design Project

#### Petroleum Engineering Electives

PETROENG 3019 Structural Geology & Seismic Methods .....3

PETROENG 3020 Production Engineering.....3

PETROENG 3023 Well Completion & Simulation ....3

PETROENG 3026 Formation Damage and Productivity Enhancement .....3

PETROENG 4033 Integrated Reservoir & Project Management.....3

PETROENG 4035 Reservoirs, Resources & Reserves .....3

#### Chemical Engineering Electives

CHEM ENG 4052 Food Process Engineering.....3

CHEM ENG 4053 Pinch Analysis and Process Synthesis.....3

CHEM ENG 4032 Composite and Multiphase Polymers.....3

### 6.5.16.3 B.E.(Petroleum)/B.E.(Civil and Structural)

To qualify for the combined award of B.E.(Petroleum) and B.E.(Civil & Structural), students are required to complete satisfactorily the courses as indicated below:

#### Level I

C&ENVENG 1008 Engineering Planning & Design IA .....3

C&ENVENG 1009 Civil & Environmental Engineering IA.....3

C&ENVENG 1010 Engineering Mechanics - Statics.....3

COMP SCI 1201 Introduction to Programming for Engineers .....3

MATHS 1011 Mathematics IA.....3

MATHS 1012 Mathematics IB.....3

MATHS 1013 Mathematics IM\* .....3

PETROENG 1005 Introduction to Petroleum Geosciences & the Oil Industry.....3

PETROENG 1006 Introduction to Petroleum Engineering.....3

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

C&ENVENG 2025 Strength of Materials IIA.....3

C&ENVENG 2069 Geotechnical Engineering IIA ....3

C&ENVENG 2071 Water Engineering IIA .....3

C&ENVENG 2072 Structural Engineering Design ...3

MATHS 2201 Engineering Mathematics I.....3

PETROENG 2005 Sedimentology & Stratigraphy .....3

PETROENG 2009 Formation Evaluation, Petrophysics & Rock Properties .....3

PETROENG 2010 Drilling Engineering.....3

#### Level III

C&ENVENG 3001 Structural Mechanics IIIA.....3

C&ENVENG 3005 Structural Design III (Concrete).....3

C&ENVENG 3007 Structural Design III (Steel).....3

C&ENVENG 3012 Geotechnical Engineering Design III .....3

PETROENG 3019 Structural Geology & Seismic Methods .....3

PETROENG 3020 Production Engineering.....3

PETROENG 3025 Reservoir Engineering.....3

PETROENG 3026 Formation Damage & Productivity Enhancement .....3

#### Level IV

C&ENVENG 4003A/BV Civil & Structural Engineering Research Project Part 1^ .....6

C&ENVENG 4034 Civil Engineering Management IV .....3

C&ENVENG 3077 Engineering Hydrology .....3

C&ENVENG 3079 Water Engineering & Design III (S2) .....3

MATHS 2104 Numerical Methods.....3

Electives .....6

^Students who are not selected for Honours will be required to complete two additional final year elective courses instead of the Civil & Structural Research Project.

#### Electives

Alternatively, students may take up to 3 units of Level II or III courses offered by the School of Mathematical Sciences. In special circumstances other combinations of elective courses may be acceptable but must be approved by the Head of School. Students may also, with the approval of the Head of School, replace one or more elective courses with appropriate courses offered by other schools in the University.

The elective courses offered by the School in any one year will depend on staff availability, and will be chosen from the following:

C&ENVENG 4069 Advanced Reinforced Concrete .....3

C&ENVENG 4070 Structural Design of Masonry Buildings.....3

C&ENVENG 4073 Water Distribution Systems & Design.....3

C&ENVENG 4075 Water Resources Optimisations and Modelling.....3

C&ENVENG 4077 Coastal Engineering & Design .....3

C&ENVENG 4079 Deep Foundation Engineering and Design .....3

C&ENVENG 4085 Traffic Engineering & Design ....3

C&ENVENG 4087 Environmental Modelling & Management.....3

C&ENVENG 4091 Waste Management Analysis & Design .....	3
C&ENVENG 4092 Wastewater Engineering & Design .....	3
C&ENVENG 4096 FRP Retrofitting of Concrete Structures .....	3
C&ENVENG 4097 Analysis of Rivers & Sediment Transport .....	3
C&ENVENG 4099 Structural Response to Blast Loading .....	3
C&ENVENG 4106 Introduction to Geostatistics.....	3
C&ENVENG 4107 Prestressed Concrete Structures .....	3

**Level V**

PETROENG 4004A/B Petroleum Engineering Honours Project ^ .....	6
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or

PETROENG 4020A/B Petroleum Engineering Design Project ^ .....	6
PETROENG 4022 Integrated Field Development & Economics Project.....	3
PETROENG 4027 Decision-Making & Risk Analysis.....	3
PETROENG 4034 Petroleum Business & Project Economics .....	3
PETROENG 4035 Reservoirs, Resources & Reserves .....	3
Petroleum Engineering Electives .....	6

^ Students accepted into the Honours stream will take PETROENG 4004A/B Petroleum Engineering Honours Project and other students will take PETROENG 4020A/B Petroleum Engineering Design Project

**Petroleum Engineering Electives**

PETROENG 3001 Reservoir Simulation.....	3
PETROENG 3005 Reservoir Characterisation & Modelling .....	3
PETROENG 3007 Well Testing & Pressure Transient Analysis.....	3
PETROENG 3023 Well Completion & Simulation....	3
PETROENG 4037 Unconventional Resources and Recovery .....	3
PETROENG 4033 Integrated Reservoir & Project Management .....	3

**6.5.16.4 B.E.(Petroleum)/B.E.(Mechanical)**

To qualify for the combined award of B.E.(Petroleum) and B.E.(Mechanical), students are required to complete satisfactorily the courses as indicated below:

**Level I**

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
MECH ENG 1006 Design Graphics & Communication.....	3
MECH ENG 1007 Engineering Mechanics - Dynamics.....	3
PETROENG 1005 Introduction to Petroleum Geosciences & the Oil Industry.....	3
PETROENG 1006 Introduction to Petroleum Engineering.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

CHEM ENG 1009 Materials I .....	3
MATHS 2201 Engineering Mathematics I.....	3
MECH ENG 2002 Stress Analysis & Design.....	3
MECH ENG 2021 Thermo-Fluids I.....	3
MECH ENG 2100 Design Practice.....	3
PETROENG 2005 Sedimentology & Stratigraphy ...	3
PETROENG 2009 Formation Evaluation, Petrophysics & Rock Properties .....	3
PETROENG 2010 Drilling Engineering.....	3

**Level III**

MECH ENG 2019 Dynamics & Control I .....	3
MECH ENG 2020 Materials & Manufacturing .....	3
MECH ENG 3027 Engineering Systems Design & Communication.....	3
MECH ENG 3030 Structural Design & Solid Mechanics.....	3
MECH ENG 3102 Heat Transfer & Thermodynamics .....	3
PETROENG 3023 Well Completion & Stimulation...3	
PETROENG 3025 Reservoir Engineering.....	3
PETROENG 3026 Formation Damage & Productivity Enhancement.....	3

**Level IV**

MECH ENG 4132A/B Mechanical Design Project Level IV ^ .....	6
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or

MECH ENG 4133A/B Mechanical Honours Project Level IV ^ .....	6
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MECH ENG 3105 Sustainability & the Environment.....	3
MECH ENG 3028 Dynamics & Control II.....	3
MATHS 2104 Numerical Methods .....	3
Mechanical Engineering Electives.....	9
^ Students accepted into the Honours stream will take MECH ENG 4133A Mechanical Honours Project and other students will take MECH ENG 4132A/B Mechanical Design Project.	

**Mechanical Engineering Electives**

MECH ENG 4102 Advanced PID Control .....	3
MECH ENG 4103 Advanced Computer Aided Design.....	3
MECH ENG 4104 Advanced Topics in Fluid Mechanics.....	3
MECH ENG 4105 Advanced Vibrations .....	3
MECH ENG 4107 Airconditioning.....	3
MECH ENG 4109 Automotive Combustion, Powertrain and NVH.....	3
MECH ENG 4110 Automotive Vehicle Dynamics & Safety .....	3
MECH ENG 4111 CFD for Engineering Applications.....	3
MECH ENG 4112 Combustion Technology & Emission Control.....	3
MECH ENG 4113 Computational Acoustics .....	3
MECH ENG 4114 Corrosion: Principles and Prevention.....	3
MECH ENG 4115 Engineering Acoustics .....	3
MECH ENG 4117 Finance for Engineers.....	3
MECH ENG 4118 Finite Element Analysis of Structures.....	3
MECH ENG 4120 Fracture Mechanics.....	3
MECH ENG 4121 Materials Selection & Failure Analysis.....	3
MECH ENG 4124 Robotics M .....	3
MECH ENG 4125 Stresses in Plates & Shells .....	3
MECH ENG 4127 Wind Engineering.....	3

**Level V**

PETROENG 3020 Production Engineering.....	3
PETROENG 4004A/B Petroleum Engineering Honours Project ^ .....	6

or

PETROENG 4020A/B Petroleum Engineering Design Project ^ .....	6
PETROENG 4022 Integrated Field Development & Economics Project.....	3
PETROENG 4027 Decision-Making & Risk Analysis.....	3

PETROENG 4034 Petroleum Business & Project Economics.....	3
Petroleum Engineering Electives .....	6

^ Students accepted into the Honours stream will take PETROENG 4004A/B Petroleum Engineering Honours Project and other students will take PETROENG 4020A/B Petroleum Engineering Design Project

**Petroleum Engineering Electives**

PETROENG 3001 Reservoir Simulation.....	3
PETROENG 3005 Reservoir Characterisation & Modelling.....	3
PETROENG 3007 Well Testing & Pressure Transient Analysis.....	3
PETROENG 3019 Structural Geology & Seismic Methods .....	3
PETROENG 4037 Unconventional Resources and Recovery .....	3
PETROENG 4033 Integrated Reservoir & Project Management .....	3
PETROENG 4035 Reservoirs, Resources & Reserves .....	3

**6.5.16.5 B.E.(Petroleum)/B.E.(Mining)**

To qualify for the combined award of B.E.(Petroleum) and B.E.(Mining), students are required to complete satisfactorily the courses as indicated below:

**Level I**

CHEM ENG 1007 Process Engineering I.....	3
COMP SCI 1201 Introduction to Programming for Engineers .....	3
C&ENVENG 1010 Engineering Mechanics - Statics.....	3
MINING 1011 Introduction to Mining Engineering IA .....	3
MATHS 1011 Mathematics IA* .....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3

PETROENG 1005 Introduction to Petroleum Geosciences & the Oil Industry.....	3
PETROENG 1006 Introduction to Petroleum Engineering.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

C&ENVENG 2025 Strength of Materials IIA.....	3
C&ENVENG 2069 Geotechnical Engineering IIA....	3
C&ENVENG 2071 Water Engineering IIA .....	3
GEOLOGY 2504 Economic & Mine Geology II.....	3
MATHS 2104 Numerical Methods.....	3

MATHS 2201 Engineering Mathematics I.....	3	PETROENG 4034 Petroleum Business & Project Economics.....	3
PETROENG 2009 Formation Evaluation, Petrophysics & Rock Properties .....	3	PETROENG 4035 Reservoir, Resources & Reserves .....	3
PETROENG 2010 Drilling Engineering.....	3	<b>Mining Electives</b>	
<b>Level III</b>		MINING 4104 Socio-Environmental Aspects of Mining.....	3
MINING 3068 Mine Ventilation .....	3	MINING 4107 Surface Mining Systems.....	3
MINING 3069 Rock Breakage .....	3	MINING 4108 Underground Mining Systems .....	3
MINING 3070 Resource Estimation .....	3	MINING 4109 Mining in a Global Environment.....	3
MINING 3071 Mining Systems .....	3	MINING 4110 Mine Asset Management & Services .....	3
MINING 3072 Mining Geomechanics.....	3	MINING 4112 Advanced Mine Geotechnical Engineering .....	3
MINING 3073 Mine Planning.....	3	MINING 4113 Advanced Mine Ventilation (3 units).....	3
MINING 4101 Mine Management.....	3	MINING 4114 Simulation & Animation for Mining Engineers.....	3
MINING 4102 Mine Geotechnical Engineering.....	3		
<b>Level IV</b>			
MINING 4106 Hard Rock Mine Design & Feasibility.....	6		
PETROENG 3001 Reservoir Simulation.....	3		
PETROENG 3005 Reservoir Characterisation & Modelling.....	3		
PETROENG 3007 Well Testing & Pressure Transient Analysis.....	3		
PETROENG 3019 Structural Geology & Seismic Methods .....	3		
PETROENG 3020 Production Engineering.....	3		
PETROENG 3025 Reservoir Engineering .....	3		
PETROENG 4111 Coal Mine Design & Feasibility.....	3		
<b>Level V</b>			
PETROENG 4037 Unconventional Resources and Recovery .....	3		
PETROENG 4004A/B Petroleum Engineering Honours Project.....	6		
<i>or</i>			
PETROENG 4020A/B Petroleum Engineering Design Project .....	6		
<i>or</i>			
MINING 4100A/B Mining Research Project Part 1&2.....	6		
<i>or</i>			
Mining Electives.....	6		
PETROENG 4022 Integrated Field Development & Economics Project.....	3		
PETROENG 4027 Decision-Making & Risk Analysis.....	3		
PETROENG 4033 Integrated Reservoir & Project Management.....	3		

**6.5.16.6 B.E.(Petroleum)/B.Sc.(Geology & Geophysics)**

To qualify for the combined award of B.E.(Petroleum) and B.Sc.(Geology & Geophysics), candidates are required to complete satisfactorily the courses as indicated below:

**Level I**

GEOLOGY 1100 Earth's Interior I .....	3
GEOLOGY 1103 Earth Systems .....	3
MATHS 1011 Mathematics IA* .....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
PETROENG 1005 Introduction to Petroleum Geosciences & the Oil Industry .....	3
PETROENG 1006 Introduction to Petroleum Engineering.....	3
PHYSICS 1100 Physics IA .....	3
COMP SCI 1201 Introduction to Programming for Engineers.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

C&ENVENG 1010 Engineering Mechanics - Statics.....	3
CHEM ENG 1007 Process Engineering.....	3
PETROENG 2001 Reservoir Thermodynamics & Fluid Properties .....	3
PETROENG 2005 Sedimentology & Stratigraphy .....	3
PETROENG 2009 Formation Evaluation, Petrophysics & Rock Properties .....	3
PETROENG 2010 Drilling Engineering.....	3

MATHS 2201 Engineering Maths I.....	3
MATHS 2202 Engineering Maths II .....	3
<b>Level III</b>	
GEOLOGY 2501 Structural Geology II .....	3
GEOLOGY 2502 Igneous & Metamorphic Geology II .....	3
GEOLOGY 2503 Landscape Processes & Environments II .....	3
PETROENG 3005 Reservoir Characterisation & Modelling .....	3
PETROENG 3019 Structural Geology & Seismic Methods .....	3
PETROENG 3020 Production Engineering.....	3
PETROENG 3025 Reservoir Engineering.....	3
PETROENG 3026 Formation Damage & Productivity Enhancement .....	3
<b>Level IV</b>	
GEOLOGY 3008 Geophysics III.....	3
SOIL & WAT 3010 Remote Sensing III.....	3
GEOLOGY 3013 Tectonics III .....	3
GEOLOGY 3016 Igneous & Metamorphic Geology III.....	3
GEOLOGY 3019 Field Geoscience Program III .....	3
GEOLOGY 3500 Exploration Methods III.....	3
GEOLOGY 3502 Mineral & Energy Resources III.....	3
GEOLOGY 3504 Basins, Sediments and Regolith III.....	3
<b>Level V</b>	
PETROENG 4004A/B Petroleum Engineering Honours Project ^ .....	6
<i>or</i>	
PETROENG 4020A/B Petroleum Engineering Design Project ^ .....	6
PETROENG 4022 Integrated Field Development & Economics Project.....	3
PETROENG 4027 Decision-Making & Risk Analysis .....	3
PETROENG 4034 Petroleum Business & Project Economics.....	3
PETROENG 4035 Reservoirs, Resources & Reserves .....	3
Petroleum Engineering Electives .....	6
<b>^ Students accepted into the Honours stream will take PETROENG 4004A/B Petroleum Engineering Honours Project and other students will take PETROENG 4020A/B Petroleum Engineering Design Project</b>	
<b>Petroleum Engineering Electives</b>	
PETROENG 3001 Reservoir Simulation.....	3

PETROENG 3007 Well Testing & Pressure Transient Analysis.....	3
PETROENG 3023 Well Completion & Simulation.....	3
PETROENG 4037 Unconventional Resources and Recovery .....	3
PETROENG 4033 Integrated Reservoir & Project Management .....	3

**6.5.17 Pharmaceutical Engineering**

**6.5.17.1 B.E.(Pharmaceutical)**

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

**Level I**

BIOLOGY 1101 Biology I: Molecules, Genes & Cells.....	3
BIOLOGY 1201 Biology I: Human Perspectives.....	3
CHEM 1101 Foundations of Chemistry IA+ .....	3
<i>and</i>	
CHEM 1201 Foundations of Chemistry IB+ .....	3
<i>or</i>	
CHEM 1100 Chemistry IA+ .....	3
<i>and</i>	
CHEM 1200 Chemistry IB+ .....	3
CHEM ENG 1007 Process Engineering I.....	3
CHEM ENG 1010 Professional Practice 1 .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3

**+ Students with a Subject Achievement score of at least 13 in SACE Stage 2 Chemistry or equivalent must enrol in CHEM 1100/CHEM 1200. All other students must enrol in CHEM 1101/CHEM 1201**

\*See Clause 6.2 regarding Level I Mathematics requirements.

**Level II**

CHEM 2510 Chemistry IIA+ .....	3
CHEM 2540 Medicinal & Biological Chemistry II.....	3
CHEM ENG 2010 Introduction to Process Simulation.....	3
CHEM ENG 2011 Chemical Engineering Thermodynamics .....	3
CHEM ENG 2012 Principles of Pharmaceutical Engineering.....	3
CHEM ENG 2014 Process Heat Transfer .....	3
BIOCHEM 2501 Biochemistry II: Metabolism.....	3
CHEM ENG 2018 Process Fluid Mechanics .....	3

+CHEM 2510 requires either passes in both CHEM 1100 & CHEM 1200 or credits in both CHEM 1101 & CHEM 1201

**Level III**

CHEM 3214 Medicinal & Biological Chemistry III .....3  
 CHEM ENG 3025 Pharmaceutical Plant Design & Process Engineering .....3  
 CHEM ENG 3021 Advanced Pharmaceutical Unit Operations .....3  
 CHEM ENG 3024 Professional Practice III .....3  
 CHEM ENG 3027 Pharmaceutical Engineering Applications B.....3  
 CHEM ENG3022 Pharmaceutical Engineering Applications A.....3  
 CHEM ENG 3036 Unit Operations Laboratory .....3  
 PHARM 2100 Drugs, Chemicals & Health .....3

**Level IV**

CHEM ENG 3031 Process Control & Utilities.....3  
 CHEM ENG 4054 Research Project (H)^ .....3  
 or  
 CHEM ENG 4055 Advanced Unit Operations Laboratory .....3  
 CHEM ENG 4034 Professional Practice IV .....3  
 CHEM ENG 4035 Pharmaceutical Plant Design Project.....6  
 CHEM ENG 4036 Pharmaceutical Manufacturing & Packaging Systems.....3  
 CHEM ENG 4038 Particulate Processes & Colloid Science.....3  
 PHARM 4200 Drugs, Discovery & Development.....3  
 ^ Students accepted into the Honours stream will take Research Project H and other students will take Advanced Unit Operations Laboratory

**6.5.18 Software Engineering**

**6.5.18.1 B.E.(Software)**

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

**Level I**

COMP SCI 1003 Internet Computing.....3  
 COMP SCI 1102 Object Oriented Programming+ .....3  
 COMP SCI 1103 Algorithm Design & Data Structures.....3  
 ELEC ENG 1009 Electrical & Electronic Engineering IA.....3  
 ELEC ENG 1010 Electrical & Electronic Engineering IB.....3  
 MATHS 1011 Mathematics IA.....3

MATHS 1012 Mathematics IB.....3  
 MATHS 1013 Mathematics IM\* .....3  
 STATS 1000 Statistical Practice I .....3

\*See Clause 6.2 regarding Level I Mathematics requirements.

+ Students who do not have prior programming experience or who are not confident in their programming ability should complete COMP SCI 1101 Introduction to Programming prior to undertaking COMP SCI 1102 Object Oriented Programming followed by COMP SCI 1103 Algorithm Design and Data Structures and COMP SCI 2201 Algorithm and Data Structure Analysis in the following year. Students who take COMP SCI 1101 Introduction to Programming will present it in lieu of a level II elective.

**Level II**

COMP SCI 2000 Computer Systems .....3  
 COMP SCI 2002 Database & Information Systems.....3  
 COMP SCI 2201 Algorithm & Data Structure Analysis.....3  
 COMP SCI 2005 Systems Programming in C & C++ .....3  
 COMP SCI 2006 Introduction to Software Engineering.....3  
 Level II Electives\* .....9

**Level III**

COMP SCI 3001 Computer Networks & Applications.....3  
 COMP SCI 3002 Programming Techniques.....3  
 COMP SCI 3004 Operating Systems.....3  
 COMP SCI 3005 Computer Architecture .....3  
 COMP SCI 3013 Event Driven Computing.....3  
 COMP SCI 3017 Software Engineering Group Project I A .....3  
 COMP SCI 3018 Software Engineering Group Project I B .....3  
 Level III Elective\* .....3

**Level IV**

COMP SCI 4003A/B Software Engineering Group Project II .....6  
 or  
 COMP SCI 4011A/B Software Engineering Honours Project^ .....6  
 COMP SCI 4023 Software Process Improvement.....3  
 COMP SCI 4054 High Integrity Software Engineering.....3  
 ELEC ENG 4064 Business Management Systems .....3

C&ENVENG 4034 Engineering Management IV .....3  
 Level IV Electives .....6

\*Electives to be chosen from courses in Computer Science, Mathematics and Electrical & Electronic Engineering.

^ Students accepted into the Honours stream will take COMP SCI 4011A/B Software Engineering Honours Project and other students will take Software Engineering Group Project

**Level IV Electives**

(Other electives may be acceptable but require the approval of the Faculty.)  
 COMP SCI 3007 Artificial Intelligence .....3  
 COMP SCI 3009 Advanced Programming Paradigms .....3  
 COMP SCI 3012 Distributed Systems UG .....3  
 COMP SCI 3014 Computer Graphics .....3  
 COMP SCI 4000 Software Architectures .....3  
 COMP SCI 4005 Adaptive Business Intelligence.....3  
 COMP SCI 4009 Modern Heuristic Methods .....3  
 COMP SCI 4022 Computer Vision.....3  
 COMP SCI 4041 Language Translators.....3  
 COMP SCI 4044 Computer Systems Security .....3  
 COMP SCI 4045 Distributed High Performance Computing .....3  
 COMP SCI 4077 Systems Modelling & Simulation.....3  
 COMP SCI 4091 Commercialising IT Research .....3  
 COMP SCI 4092 Mobile & Wireless Networks.....3  
 COMP SCI 4094 Distributed Databases & Data Mining.....3  
 COMP SCI 4095 Evolutionary Computation.....3  
 ELEC ENG 4056 Real Time Systems .....3  
 PURE MTH 3018 Coding & Cryptology III.....3

**6.5.19 Telecommunications Engineering**

**6.5.19.1 B.E.(Telecommunications)**

Students are required to complete satisfactorily courses to the value of 24 units at each of Levels I, II, III and IV:

**Level I**

COMP SCI 1201 Introduction to Programming for Engineers .....3  
 COMP SCI 1202 Object-Oriented Programming E .....3  
 ELEC ENG 1009 Electrical & Electronic Engineering IA.....3  
 ELEC ENG 1010 Electrical & Electronic Engineering IB.....3

MATHS 1011 Mathematics IA.....3  
 MATHS 1012 Mathematics IB.....3  
 PHYSICS 1100 Physics IA .....3  
 PHYSICS 1200 Physics IB.....3

**Level II**

COMP SCI 2000 Computer Systems UG .....3  
 COMP SCI 1203 Algorithm Design & Data Structures.....3  
 ELEC ENG 2007 Signals & Systems.....3  
 ELEC ENG 2008 Electronics .....3  
 ELEC ENG 2009 Engineering Electromagnetics.....3  
 ELEC ENG 2011 Circuit Analysis.....3  
 MATHS 2201 Engineering Mathematics I.....3  
 MATHS 2202 Engineering Mathematics II .....3

**Level III**

COMP SCI 3001 Computer Networks & Applications .....3  
 APP MTH 3016 Random Processes III .....3  
 ELEC ENG 3018 RF Engineering .....3  
 ELEC ENG 3024 Project Management for Electrical Engineering .....3  
 ELEC ENG 3027 Control .....3  
 ELEC ENG 3028 Digital Systems.....3  
 ELEC ENG 3033 Signal Processing .....3  
 ELEC ENG 3034 Telecommunications Principles .....3

**Level IV**

C&ENVENG 4034 Engineering Management IV .....3  
 ELEC ENG 4036A/B Design Project# .....6  
 or  
 ELEC ENG 4039A/B Honours Project# .....6  
 ELEC ENG 4054 Telecommunications Systems.....3  
 ELEC ENG 4063 Communications .....3  
 ELEC ENG 4064 Business Management Systems .....3  
 Elective .....3

#Students accepted into the Honours stream will take Honours Project and other students will take Design Project Electives

COMP SCI 3004 Operating Systems.....3  
 COMP SCI 3005 Computer Architecture .....3  
 COMP SCI 3006 Software Engineering & Project .....3  
 ELEC ENG 4056 Real Time Systems .....3  
 ELEC ENG 4057 RF Systems .....3  
 ELEC ENG 4055 Systems Engineering .....3  
 ELEC ENG 4061 Image Processing .....3

PURE MTH 3018 Coding & Cryptology III.....3

### 6.5.19.2 B.E.(Telecommunications)/B.A.

To satisfy the Arts component of this program, students must undertake 30 units of Arts courses, which includes an approved major sequence (24 units). The remaining 6 units can be undertaken at any level. Students should consult the B.A. academic program rules for the list of approved major sequences and specific requirements of each.

To satisfy the BE (Telecommunications) component of this program students are required to satisfactorily complete the courses listed below:

#### Level I

COMP SCI 1201 Introduction to Programming for Engineers .....3  
 COMP SCI 1202 Object-Oriented Programming E .....3  
 ELEC ENG 1009 Electrical & Electronic Engineering IA .....3  
 MATHS 1011 Mathematics IA.....3  
 MATHS 1012 Mathematics IB.....3  
 MATHS 1013 Mathematics IM\* .....3  
 PHYSICS 1100 Physics IA .....3  
 PHYSICS 1200 Physics IB.....3  
 Level I Arts Course .....3

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

ELEC ENG 2007 Signals & Systems .....3  
 ELEC ENG 2009 Engineering Electromagnetics.....3  
 ELECENG 2011 Circuit Analysis.....3  
 ELEC ENG 1010 Electrical & Electronic Engineering IB.....3  
 MATHS 2201 Engineering Mathematics I .....3  
 MATHS 2202 Engineering Mathematics II .....3  
 Level I Arts courses .....6

#### Level III

COMP SCI 2000 Computer Systems .....3  
 COMP SCI 1203 Algorithm Design & Data Structures.....3  
 ELEC ENG 2008 Electronics II .....3  
 ELEC ENG 3028 Digital Systems.....3  
 ELEC ENG 3033 Signal Processing III.....3  
 ELEC ENG 3034 Telecommunications Principles .....3  
 Advanced Level Arts courses .....6

#### Level IV

APP MTH 3016 Random Processes III .....3

COMP SCI 3001 Computer Networks & Applications.....3  
 ELEC ENG 3018 RF Engineering .....3  
 ELEC ENG 3024 Project Management for Electrical Engineering .....3  
 ELEC ENG 3027 Control .....3  
 Advanced Level Arts courses .....9

#### Level V

ELEC ENG 4036A/B Design Project# .....6  
*or*  
 ELEC ENG 4039A/B Honours Project# .....6  
 ELEC ENG 4035 Communications .....3  
 ELEC ENG 4054 Telecommunications Systems.....3  
 Elective .....6  
 Advanced Level Arts courses .....6

#Students accepted into the Honours stream will take Honours Project and other students will take Design Project Part.

#### Electives

COMP SCI 3004 Operating Systems.....3  
 COMP SCI 3005 Computer Architecture .....3  
 COMP SCI 3006 Software Engineering & Project ...3  
 ELEC ENG 4056 Real Time Systems .....3  
 ELEC ENG 4057 RF Systems .....3  
 ELEC ENG 4055 Systems Engineering .....3  
 ELEC ENG 4061 Image Processing .....3  
 PURE MTH 3018 Coding & Cryptology III.....3

### 6.5.19.3 B.E.(Telecommunications)/B.Ec.

To qualify for the combined award of B.E.(Telecommunications) and B.Ec., students are required to complete satisfactorily courses listed below:

#### Level I

COMP SCI 1201 Introduction to Programming for Engineers .....3  
 COMP SCI 1202 Object-Oriented Programming E .....3  
 ECON 1004 Principles of Microeconomics I .....3  
 ELEC ENG 1009 Electrical & Electronic Engineering IA.....3  
 MATHS 1011 Mathematics IA.....3  
 MATHS 1012 Mathematics IB.....3  
 MATHS 1013 Mathematics IM\* .....3  
 PHYSICS 1100 Physics IA .....3  
 PHYSICS 1200 Physics IB.....3

\* See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

ECON 1000 Principles of Macroeconomics I.....3  
 ECON 2503 Intermediate Mathematical Economics II.....3  
*or*  
 ECON 2504 Intermediate Econometrics II.....3  
 ELEC ENG 1010 Electrical & Electronic Engineering IB.....3  
 ELEC ENG 2007 Signals & Systems.....3  
 ELEC ENG 2009 Engineering Electromagnetics.....3  
 ELEC ENG 2011 Circuit Analysis.....3  
 MATHS 2201 Engineering Mathematics I .....3  
 MATHS 2202 Engineering Mathematics II .....3

#### Level III

COMP SCI 2000 Computer Systems .....3  
 COMP SCI 1203 Algorithm Design & Data Structures.....3  
 ELEC ENG 2008 Electronics .....3  
 ECON 2506 Intermediate Microeconomics II.....3  
 ECON 2507 Intermediate Macroeconomics II.....3  
 ELEC ENG 3028 Digital Systems.....3  
 ELEC ENG 3033 Signal Processing .....3  
 ELEC ENG 3034 Telecommunications Principles...3

#### Level IV

APP MTH Random Processes III .....3  
 COMP SCI 3001 Computer Networks & Applications.....3  
 COMMGMT 2500 Organisational Behaviour II .....3  
 ELEC ENG 3018 RF Engineering .....3  
 ELEC ENG 3024 Project Management for Electrical Engineering .....3  
 Level III Economics courses\* .....6

\*Level III Economics courses chosen from those listed in the Specific Academic Program Rules of the Degree of Bachelor of Economics.

#### Level V

ELEC ENG 4036A/B Design Project# .....6  
*or*  
 ELEC ENG 4039A/B Honours Project# .....6  
 ELEC ENG 4035 Communications .....3  
 ELEC ENG 4054 Telecommunications Systems.....3  
 Engineering Elective.....3  
 Level III Economics courses .....9

#Students accepted into the Honours stream will take Honours Project and other students will take Design Project

#### Engineering Electives

ELEC ENG 4056 Real Time Systems.....3  
 ELEC ENG 4061 Image Processing .....3

### 6.5.19.4 B.E.(Telecommunications)/B.Fin.

To qualify for the combined award of B.E.(Telecommunications) and B.Fin., students are required to complete satisfactorily courses listed below:

#### Level I

COMP SCI 1201 Introduction to Programming for Engineers .....3  
 COMP SCI 1202 Object-Oriented Programming E .....3  
 ECON 1004 Principles of Microeconomics I .....3  
 ELEC ENG 1009 Electrical & Electronic Engineering IA.....3  
 MATHS 1011 Mathematics IA.....3  
 MATHS 1012 Mathematics IB.....3  
 MATHS 1013 Mathematics IM\* .....3  
 PHYSICS 1100 Physics IA .....3  
 PHYSICS 1200 Physics IB.....3

\* See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

ECON 1000 Principles of Macroeconomics I.....3  
 ECON 1009 International Finance Institutions & Markets I.....3  
 ELEC ENG 1010 Electrical & Electronic IB.....3  
 ELEC ENG 2007 Signals & Systems.....3  
 ELEC ENG 2009 Engineering Electromagnetics.....3  
 ELEC ENG 2011 Circuit Analysis.....3  
 MATHS 2201 Engineering Mathematics I .....3  
 MATHS 2202 Engineering Mathematics II .....3

#### Level III

ACCTING 1002 Accounting for Decision Makers I.....3  
 COMP SCI 2000 Computer Systems .....3  
 COMP SCI 1203 Algorithm Design & Data Structures .....3  
 CORPFIN 2500 Business Finance II.....3  
 ECON 2504 Intermediate Econometrics II.....3  
 ELEC ENG 2008 Electronics .....3  
 ELEC ENG 3028 Digital Systems.....3  
 ELEC ENG 3033 Signal Processing .....3

#### Level IV

CORPFIN 2501 Financial Institutions Management II .....3

ECON 2508 Financial Economics II.....	3
COMP SCI 3001 Computer Networks & Applications.....	3
ELEC ENG 3018 RF Engineering .....	3
ELEC ENG 3024 Project Management for Electrical Engineering .....	3
ELEC ENG 3034 Telecommunications Principles...3	
APP MTH 3012 Financial Modelling: Tools & Techniques.....	3
<i>or</i>	
CORPFIN 3502 Options, Futures & Risk Management III.....	3
Level III Finance course .....	3
<b>Level V</b>	
ELEC ENG 4054 Telecommunications Systems....3	
ELEC ENG 4063 Communications .....	3
ELEC ENG 4036A/B Design Project# .....	6
<i>or</i>	
ELEC ENG 4039A/B Honours Project# .....	6
APP MTH 3016 Random Processes III .....	3
CORPFIN 3501 Portfolio Theory and Management III.....	3
Engineering Elective.....	3
Level III Finance courses.....	3
<b>#Students accepted into the Honours stream will take Honours Project and other students will take Design Project Engineering Electives:</b>	
ELEC ENG 4056 Real Time Systems.....	3
ELEC ENG 4061 Image Processing .....	3

### 6.5.19.5 B.E.(Telecommunications)/LLB.

To qualify for the combined award of B.E.(Telecommunications) and LL.B, students are required to complete satisfactorily courses below:

#### Level I

ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
ELEC ENG 1010 Electrical & Electronic Engineering IB .....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
LAW 1501 Foundations of Law .....	3
LAW 1502 Law of Torts I.....	3
LAW 1504 Principles of Public Law or equivalent...3	
LAW 1505 Law of Torts II.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements

#### Level II

COMP SCI 1201 Introduction to Programming for Engineers .....	3
COMP SCI 1202 Object-Oriented Programming E .....	3
PHYSICS 1100 Physics IA.....	3
PHYSICS 1200 Physics IB.....	3
Law courses to be advised by Law School.....	12

#### Level III

ELEC ENG 2011 Circuit Analysis.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II .....	3
ELEC ENG 2007 Signals & Systems.....	3
ELEC ENG 2009 Engineering Electromagnetics....3	
ELEC ENG 2008 Electronics .....	3
Law courses to be advised by Law School.....	6

#### Level IV

COMP SCI 1203 Algorithm Design & Data Structures for Engineers .....	3
COMP SCI 2000 Computer Systems .....	3
ELEC ENG 3027 Control .....	3
ELEC ENG 3028 Digital Systems.....	3
Law courses to be advised by Law School.....	12

#### Level V

Note: Level V is indicative only—for enrolment information continuing students should visit [www.ecms.adelaide.edu.au/enrol/guides](http://www.ecms.adelaide.edu.au/enrol/guides)

Electrical & Electronic Engineering courses:

APP MTH 3016 Random Processes III .....	3
COMP SCI 3001 Computer Networks & Applications.....	3
ELEC ENG 3018 RF Engineering .....	3
ELEC ENG 3024 Project Management for Electrical Engineers.....	3
ELEC ENG 3033 Signal Processing III.....	3
ELEC ENG 3034 Telecommunications Principles...3	
Law courses to be advised by Law School.....	6

#### Level VI

ELEC ENG 4036A/B Design Project^ .....	6
<i>or</i>	
ELEC ENG 4039A/B Honours Project^ .....	6
ELEC ENG 4054 Telecommunications Systems....3	
ELEC ENG 4063 Communications .....	3
Law courses to be advised by Law School.....	12

*plus*

12 additional units of Law courses to be specified by the Law School.

^ Students accepted into the Honours stream will take Honours Project and other students will take Design Project

### 6.5.19.6 B.E.(Telecommunications)/B.Ma.&Comp.Sc.

To qualify for both the award of the degree of B.E.(Telecommunications) and the degree of B.Ma.&Comp.Sc. with a Mathematics Major, students are required to complete satisfactorily:

#### Level I

COMP SCI 1201 Introduction to Programming for Engineers .....	3
COMP SCI 1202 Object-Oriented Programming E .....	3
ELEC ENG 1009 Electrical & Electronic Engineering IA.....	3
ELEC ENG 1010 Electrical & Electronic Engineering IB.....	3
MATHS 1011 Mathematics IA.....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM* .....	3
PHYSICS 1100 Physics IA.....	3
PHYSICS 1200 Physics IB.....	3

\*See Clause 6.2 regarding Level I Mathematics requirements.

#### Level II

COMP SCI 2000 Computer Systems .....	3
COMP SCI 1203 Algorithm Design & Data Structures.....	3
MATHS 2201 Engineering Mathematics I.....	3
MATHS 2202 Engineering Mathematics II .....	3
ELEC ENG 2007 Signals & Systems II.....	3
ELEC ENG 2008 Electronics II.....	3
ELEC ENG 2009 Engineering Electromagnetics....3	
ELEC ENG 2011 Circuit Analysis.....	3

#### Level III

COMP SCI 3001 Computer Networks & Applications.....	3
ELEC ENG 3018 RF Engineering .....	3
ELEC ENG 3024 Project Management for Electrical Engineering .....	3
ELEC ENG 3028 Digital Systems.....	3
ELEC ENG 3033 Signal Processing .....	3
ELEC ENG 3034 Telecommunications Principles .....	3
Level II or III Mathematics or Computer Science courses .....	6

#### Level IV

APP MTH 3016 Random Processes III .....	3
ELEC ENG 3027 Control .....	3
Level III Maths or Computer Science courses.....	18

#### Level V

C&ENVENG 4034 Engineering Management IV .....	3
ELEC ENG 4035 Communications .....	3
ELEC ENG 4054 Telecommunications Systems....3	
ELEC ENG 4064 Business Management Systems.3	
ELEC ENG 4036A/B Design Project# .....	6

*or*

ELEC ENG 4039A/B Honours Project# .....	6
Electives .....	6

**#Students accepted into the Honours stream will take Honours Project and other students will take Design Project Electives**

COMP SCI 3004 Operating Systems.....	3
COMP SCI 3005 Computer Architecture .....	3
COMP SCI 3006 Software Engineering & Project ...3	
ELEC ENG 4056 Real Time Systems .....	3
ELEC ENG 4057 RF Systems .....	3
ELEC ENG 4055 Systems Engineering .....	3
ELEC ENG 4061 Image Processing .....	3
PURE MTH 3018 Coding & Cryptology III.....	3

### 6.6 Unacceptable combinations of courses

No student will be permitted to count towards an award any course, together with any other course, which, in the opinion of the Faculty concerned, contains a substantial amount of the same material; and no course or portion of a course may be counted twice towards an award.

### 6.7 Graduation

Subject to Chapter 89 of the Statutes, candidates who have satisfied the requirements for any award of the University shall be admitted to that award.

## 7 Special circumstances

When in the opinion of the relevant Faculty special circumstances exist, the Council, on the recommendation of the Faculty in each case, may vary any of the provisions of the Academic Program Rules for any particular award.

These Program Rules should be read in conjunction with the University's policies (<http://www.adelaide.edu.au/policies>).

## 1 Duration of program

Except with the permission of the Faculty, the Bachelor of Innovation and Entrepreneurship shall be completed in a minimum of 1.5 years or part-time equivalent.

## 2 Admission

2.1 A candidate for admission to the program of study for the Bachelor of Innovation and Entrepreneurship shall have successfully completed a minimum of 36 units or equivalent, of an undergraduate degree (of which no more than 24 units shall be at Level I), or have qualified for an approved Australian Qualifications Framework (AQF) Advanced Diploma, or a Diploma from a Singapore Polytechnic, or a degree or diploma accepted by the Faculty as equivalent.

## 2.2 Status, exemption and credit transfer

Specified credit may be available on a case-by-case basis.

## 3 Assessment and examinations

- i A student shall not be eligible to attend for examination unless the prescribed work has been completed to the satisfaction of the teaching staff concerned. A student who is not eligible to attend for examination shall be deemed to have failed the examination.
- ii In determining a student's final result in a course (or part of a course) the examiners may take into account oral, written, practical, and examination work, provided that the student has been given adequate notice of the way in which work will be taken into account and of its relative importance in the final result.
- iii There shall be four classifications of pass at an annual examination in any course for the degree as follows: Pass with High Distinction, Pass with Distinction, Pass with Credit, Pass.
- iv A student who fails to pass in any course shall again complete the required work in that course to the satisfaction of the teaching staff concerned unless exempted by the Faculty.
- v A student who has twice failed to pass the examination in any course or division of a course may not present again for instruction or examination therein unless the student's plan of study is approved by the Dean or nominee. For the purpose of this Rule, a student who is refused

permission to sit for examination in any course or division of a course shall be deemed to have failed to pass the examination.

## 4 Qualification requirements

4.1 To qualify for the Bachelor of Innovation and Entrepreneurship, a candidate shall satisfactorily complete courses to the value of 36 units comprising (or such other courses as specified from time to time by the Faculty):

TECHCOMM 2001 Foundations of Entrepreneurship*	3
TECHCOMM 2005 Entrepreneurial Strategy & Resourcing	3
TECHCOMM 3000 Innovation & Creativity	3
TECHCOMM 2006 Opportunity Assessment	3
TECHCOMM 3001 New Venture Planning	3
TECHCOMM 3003 Ethics & Cultural Aspects of Entrepreneurship	3
TECHCOMM 3002 Applied Entrepreneurship	3
TECHCOMM 3005 Technology Commercialisation	3
TECHCOMM 3004A & B Extended Project#	12

\*All students must complete this course in the first term of study.

#All students must have completed 24 units of coursework in this program before completing this course.

## 4.2 Unacceptable combination of courses

No student will be permitted to count toward an award any course, together with any other course which, in the opinion of the Faculty concerned, contains a substantial amount of the same material; and no course or portion of a course may be counted twice toward an award.

## 4.3 Graduation

Subject to Chapter 89 of the Statutes, candidates who have satisfied the requirements for any award of the University shall be admitted to that award.

## 5 Special circumstances

When in the opinion of the relevant Faculty special circumstances exist, the Council, on the recommendation of the Faculty in each case, may vary any of the provisions of the Academic Program Rules for any particular award.

These Program Rules should be read in conjunction with the University's policies (<http://www.adelaide.edu.au/policies>).

## 1 General

There shall be a degree of Bachelor of Mathematical Sciences and an Honours degree of Bachelor of Mathematical Sciences. A candidate may obtain either degree or both.

## 2 Duration of program

The program of study for the Bachelor degree shall extend over three years of full-time study or the equivalent part-time study.

## 3 Assessment and examinations

- 3.1 A candidate shall not be eligible to attend for examination unless the prescribed work has been completed to the satisfaction of the teaching staff concerned.
  - 3.2 In determining a candidate's final result in a course (or part of a course) the examiners may take into account oral, written, practical and other work, provided that the candidate has been given adequate notice at the commencement of the teaching of the course of the way in which such work will be taken into account and of its relative importance in the final result.
  - 3.3 There shall be four classifications of pass in the final assessment of any course for the Bachelor degree, as follows: Pass with High Distinction, Pass with Distinction, Pass with Credit, Pass.
  - 3.4 A candidate who fails a course for the Bachelor degree and who desires to take that course again shall, unless exempted wholly or partially therefrom by the Head of the School concerned, again complete the required work in that course to the satisfaction of the teaching staff concerned.
  - 3.5 A candidate who has twice failed any course for the Bachelor degree may not enrol for that course again or for any other course which in the opinion of the Faculty contains a substantial amount of the same material, except by permission of the Faculty and then only under such conditions as the Faculty may prescribe.
- ## 4 Qualification requirements
- ### 4.1 General: Bachelor of Mathematical Sciences
- 4.1.1 To qualify for the Bachelor degree a candidate shall, subject to the conditions and modifications specified under 3.3 above, pass courses from 4.2 below to the value of at least 72 units which satisfy the following requirements:

- a A candidate shall pass Level I courses to the value of at least 18 units including:
    - COMP SCI 1012 Scientific Computing .....3
    - MATHS 1008 Mathematics for Information Technology I .....3
    - MATHS 1011 Mathematics IA .....3
    - MATHS 1012 Mathematics IB .....3
    - STATS 1005 Statistical Analysis & Modelling I .....3

Courses in addition to the above shall be chosen from 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.1.5 below.
  - b A candidate shall pass Level II courses to the value of at least 21 units including:
    - MATHS 2100 Real Analysis .....3
    - MATHS 2101 Multivariable & Complex Calculus .....3
    - MATHS 2102 Differential Equations .....3
    - MATHS 2103 Probability and Statistics .....3

Courses in addition to the above shall be chosen from 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.4, 4.2.2.5 below.
  - c A candidate shall pass Level III courses to the value of at least 24 units including:
    - i at least 18 units of study chosen from Applied Mathematics, and/or Pure Mathematics, and/or Statistics .....18
    - ii MATHS 3015 Communication Skills III....3

Courses in addition to the above shall be chosen from 4.2.3.1, 4.2.3.3, 4.2.3.4, 4.2.3.5, 4.2.3.6 below.
- 4.1.2 A graduate who wishes to qualify for the degree of Bachelor of Mathematical Sciences and to count towards that degree courses which have already been presented for another degree may do so providing such a candidate presents a range of courses which fulfils the requirements of 4.1.1 above, and includes courses to the value of at least 24 units from 4.2.2.1, 4.2.3.1 and 4.2.3.2 below that have not been presented for any other degree. At least 21 of these 24 units must be at Level III.
- 4.1.3 No candidate will be permitted to count for the degree any course together with any other course which, in the opinion of the Faculty, contains a substantial amount of the same material; and no

course may be counted twice towards the degree. No candidate may present the same section of a course in more than one course for the degree.

4.1.4 Except with permission of the Faculty, students who have completed at another institution part of the equivalent of the requirements for the Adelaide degree of Bachelor of Mathematical Sciences will be required to complete courses from 4.2.3, to the value of at least 24 units including at least 18 units from 4.2.3.1.

4.1.5 With permission of the Faculty a student who has completed most of the courses for the degree of Bachelor of Mathematical Sciences at the University of Adelaide including courses from 4.2.3.1 to the value of at least 9 units may be permitted to complete the requirements for the degree at another institution. All applications must be made in writing to the Faculty.

4.1.6 To complete a major in a Mathematical Sciences Discipline, a candidate shall successfully complete:

#### Applied Mathematics

Level III courses offered in Applied Mathematics to the value of at least 12 units.

#### Mathematical Sciences

Candidates who do not otherwise qualify for a major in Applied Mathematics, Pure Mathematics or Statistics and who have successfully completed at least 12 units of Level III courses offered across those Disciplines will qualify for the award of a major in Mathematical Sciences.

#### Pure Mathematics

Level III courses offered in Pure Mathematics to the value of at least 12 units.

#### Statistics

Level III courses in Statistics to the value of at least 12 units, including STATS 3001 Statistical Modelling III, and STATS 3006 Mathematical Statistics III, and at least 6 units chosen from:

APP MTH 3001 Applied Probability III\*

APP MTH 3016 Random Processes III\*

APP MTH 3030 Stochastic Decision Theory III\*

STATS 3003 Sampling Theory and Practice III

STATS 3005 Time Series III

STATS 3008 Biostatistics III

\* These courses may be presented towards a major in Statistics or a major in Applied Mathematics but not both.

4.1.7 To complete a double major in Mathematical Sciences Disciplines, a candidate shall successfully complete:

#### Applied Mathematics and Pure Mathematics

Level III courses offered in Applied Mathematics to the

value of at least 12 units and Level III courses offered in Pure Mathematics to the value of at least 9 units.

#### Applied Mathematics and Statistics

Level III courses offered in Applied Mathematics to the value of at least 12 units and Level III courses offered in Statistics to the value of at least 9 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III.

#### Pure Mathematics and Applied Mathematics

Level III courses offered in Pure Mathematics to the value of at least 12 units and Level III courses offered in Applied Mathematics to the value of at least 9 units.

#### Pure Mathematics and Statistics

Level III courses offered in Pure Mathematics to the value of at least 12 units and Level III courses offered in Statistics to the value of at least 9 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III.

#### Statistics and Applied Mathematics

Level III courses offered in Statistics to the value of at least 12 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III, and Level III courses offered in Applied Mathematics to the value of at least 9 units.

#### Statistics and Pure Mathematics

Level III courses offered in Statistics to the value of at least 12 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III, and Level III courses offered in Pure Mathematics to the value of at least 9 units.

### 4.2 Program of study for the degree of Bachelor of Mathematical Sciences

Notwithstanding the Academic Program Rules published in this volume, a number of the courses listed in the program leading to the degree of Bachelor of Mathematical Sciences may not be offered within a given calendar year.

#### 4.2.1 Level I courses

##### 4.2.1.1 Mathematical Sciences courses

MATHS 1008 Mathematics for Information Technology I .....3

MATHS 1011 Mathematics IA .....3

MATHS 1012 Mathematics IB .....3

STATS 1005 Statistical Analysis and Modelling I.....3

##### 4.2.1.2 Computer Science courses

COMP SCI 1012 Scientific Computing .....3

COMP SCI 1003 Internet Computing .....3

COMP SCI 1101 Introduction to Programming .....3

COMP SCI 1102 Object Oriented Programming .....3

COMP SCI 1103 Algorithm Design & Data Structures.....3

#### 4.2.1.3 Humanities and Social Sciences courses

Level I courses listed for the degree of B.A. and approved by the Faculty Program Adviser.

#### 4.2.1.4 Economics and Commerce courses

Courses listed for the degree of B.Ec. and approved by the Faculty Program Adviser.

#### 4.2.1.5 Science courses

Level I Science courses listed for the degree of B.Sc. in the Faculty of Sciences.

### 4.2.2 Level II courses

#### 4.2.2.1 Mathematical Sciences courses

##### Applied Mathematics

APP MTH 2105 Optimisation and Operations Research .....3

MATHS 2104 Numerical Methods .....3

##### Core Mathematics

MATHS 2100 Real Analysis .....3

MATHS 2101 Multivariable & Complex Calculus .....3

MATHS 2102 Differential Equations .....3

MATHS 2103 Probability and Statistics .....3

##### Pure Mathematics

PURE MTH 2106 Algebra .....3

##### Statistics

STATS 2107 Statistical Modelling & Inference .....3

#### 4.2.2.2 Computer Science

COMP SCI 2000 Computer Systems .....3

COMP SCI 2002 Database & Information Systems.....3

COMP SCI 2005 Systems Programming C and C++ .....3

COMP SCI 2006 Introduction to Software Engineering .....3

COMP SCI 2201 Algorithm & Data Structure Analysis.....3

#### 4.2.2.3 Humanities and Social Sciences courses

Advanced level courses or Level II language courses listed for the degree of B.A. and approved by the Faculty Program Adviser.

#### 4.2.2.4 Economics and Commerce courses

Level II courses listed for the degree of B.Ec. and approved by the Faculty Program Adviser.

#### 4.2.2.5 Science courses

Level II Science courses listed for the degree of

B.Sc. in the Faculty of Sciences

### 4.2.3 Level III courses

#### 4.2.3.1 Mathematical Sciences courses

##### Applied Mathematics

APP MTH 3000 Computational Mathematics III .....3

APP MTH 3001 Applied Probability III .....3

APP MTH 3002 Fluid Mechanics III.....3

APP MTH 3004 Mathematical Biology III .....3

APP MTH 3010 Variational Methods & Optimal Control III.....3

APP MTH 3012 Financial Modelling: Tools & Techniques III .....3

APP MTH 3013 Differential Equations III .....3

APP MTH 3014 Optimisation III .....3

APP MTH 3016 Random Processes III .....3

APP MTH 3017 Waves III .....3

APP MTH 3019 Mathematical Modelling in Nanotechnology III .....3

APP MTH 3020 Stochastic Decision Theory III .....3

##### Pure Mathematics

PURE MTH 3002 Topology and Analysis III.....3

PURE MTH 3003 Number Theory III .....3

PURE MTH 3007 Groups and Rings III .....3

PURE MTH 3009 Integration and Analysis III..... 3

PURE MTH 3012 Fields and Geometry III.....3

PURE MTH 3018 Coding and Cryptology III.....3

PURE MTH 3019 Complex Analysis III.....3

PURE MTH 3020 Methods of Modern Mathematics III.....3

PURE MTH 3021 Logic and Computability .....3

PURE MTH 3022 Geometry of Surfaces III .....3

PURE MTH 3023 Fields and Modules III.....3

PURE MTH 3024 Finite Geometry III .....3

##### Statistics

STATS 3001 Statistical Modelling III .....3

STATS 3003 Sampling Theory and Practice III .....3

STATS 3005 Time Series III.....3

STATS 3006 Mathematical Statistics III .....3

STATS 3008 Biostatistics III .....3

#### 4.2.3.2 Miscellaneous (non Maths & Comp Sc courses)

MATHS 3015 Communication Skills III .....3

These Program Rules should be read in conjunction with the University's policies (<http://www.adelaide.edu.au/policies>).

## 4.2.3.3 Computer Science

COMP SCI 3001 Computer Networks & Applications .....	3
COMP SCI 3002 Programming Techniques.....	3
COMP SCI 3004 Operating Systems.....	3
COMP SCI 3005 Computer Architecture .....	3
COMP SCI 3006 Software Engineering & Project ...	3
COMP SCI 3007 Artificial Intelligence.....	3
COMP SCI 3009 Advanced Programming Paradigms .....	3
COMP SCI 3012 Distributed Systems.....	3
COMP SCI 3013 Event Driven Computing.....	3
COMP SCI 3014 Computer Graphics.....	3

## 4.2.3.4 Humanities and Social Sciences courses

Advanced Level or Level III Language courses listed for the degree of B.A. and approved by the Faculty Program Adviser.

## 4.2.3.5 Economics and Commerce courses

Level III courses listed for the degree of B.Ec. and approved by the Faculty Program Adviser.

## 4.2.3.6 Science courses

Level III Science courses listed for the degree of B.Sc. in the Faculty of Sciences.

## 4.3 The Honours degree of Bachelor of Mathematical Sciences

To be eligible to be admitted to an Honours degree program, a candidate shall complete the requirements for a Bachelor degree or equivalent to a standard that is acceptable to the Faculty for the purpose of admission to the Honours degree. A candidate who satisfies the requirements for Honours shall be awarded the Honours degree, but the Faculty shall decide within which of the following classes and divisions the degree shall be awarded:

- 1 First Class
- 2A Second Class div A
- 2B Second Class div B
- 3 Third Class
- NAH Not awarded.

### 4.3.1 The Honours degree of Bachelor of Mathematical Sciences

4.3.1.1 A candidate may, subject to the approval of the Head of the School of Mathematical Sciences, proceed to the Honours degree in one of the following courses, each with the value of 24 units:

APP MTH 4015A/B Honours Applied Mathematics
APP MTH 4017A/B Honours Applied Mathematics and Statistics
MATHS 4000A/B Honours Mathematical Sciences
PURE MTH 4001A/B Honours Pure Mathematics and Statistics
PURE MTH 4002A/B Honours Mathematical Physics and Pure Mathematics
PURE MTH 4003A/B Honours Pure and Applied Mathematics
PURE MTH 4005A/B Honours Pure Mathematics
STATS 4000A/B Honours Statistics

- 4.3.1.2 A candidate may, subject to the approval of the Faculty in each case, enrol in an Honours course taught in a school in another faculty. Such candidates must consult the Head of the School concerned and apply in writing to the Faculty for admission to the Honours program.
- 4.3.1.3 The Honours program is ordinarily to be completed in one year of full-time study. In exceptional circumstances, the Faculty may permit a candidate to spread the work over two years on the recommendation of the Head of School.
- 4.3.1.4 A candidate may not enrol a second time for the Honours program in the same course if he/she:
- a has already qualified for Honours in that course,
  - or
  - b has presented himself/herself for examination in that course but has failed to obtain Honours,
  - or
  - c has withdrawn from the program unless the Faculty under 4.3.1.5 permits re-enrolment.
- 4.3.1.5 The Faculty may permit a candidate, who has previously withdrawn from an Honours program to re-enrol under such conditions (if any) as it may determine.

## 4.4 Graduation

Subject to Chapter 89 of the Statutes, candidates who have satisfied the requirements for any award of the University shall be admitted to that award.

## 5 Special circumstances

When in the opinion of the relevant Faculty special circumstances exist, the Council, on the recommendation of the Faculty in each case, may vary any of the provisions of the Academic Program Rules for any particular award.

## 1 General

There shall be a degree of Bachelor of Mathematical Sciences (Advanced) and an Honours degree of Bachelor of Mathematical Sciences. A candidate may obtain either degree or both.

## 2 Duration of program

The program of study for the Bachelor degree shall extend over three years of full-time study or the equivalent part-time study.

## 3 Assessment and examinations

- 3.1 A candidate shall not be eligible to attend for examination unless the prescribed work has been completed to the satisfaction of the teaching staff concerned.
- 3.2 In determining a candidate's final result in a course (or part of a course) the examiners may take into account oral, written, practical and other work, provided that the candidate has been given adequate notice at the commencement of the teaching of the course of the way in which such work will be taken into account and of its relative importance in the final result.
- 3.3 There shall be four classifications of pass in the final assessment of any course for the Bachelor degree, as follows: Pass with High Distinction, Pass with Distinction, Pass with Credit, Pass.
- 3.4 A candidate who fails a course for the Bachelor degree and who desires to take that course again shall, unless exempted wholly or partially there from by the Head of the School concerned, again complete the required work in that course to the satisfaction of the teaching staff concerned.
- 3.5 A candidate who has twice failed any course for the Bachelor degree may not enrol for that course again or for any other course which in the opinion of the Faculty contains a substantial amount of the same material, except by permission of the Faculty and then only under such conditions as the Faculty may prescribe.

## 4 Qualification requirements

### 4.1 General: Bachelor of Mathematical Sciences (Advanced)

4.1.1 To qualify for the Bachelor degree a candidate shall, subject to the conditions and modifications specified under 3.3 above, pass courses from 4.2 below

to the value of at least 72 units which satisfy the following requirements:

- a A candidate shall pass Level I courses to the value of at least 18 units including:
  - COMP SCI 1012 Scientific Computing .....3
  - MATHS 1008 Mathematics for Information Technology I .....3
  - MATHS 1011 Mathematics IA .....3
  - MATHS 1012 Mathematics IB .....3
  - STATS 1005 Statistical Analysis & Modelling I .....3
- b A candidate shall pass Level II courses to the value of at least 21 units including:
  - MATHS 2100 Real Analysis .....3
  - MATHS 2101 Multivariable & Complex Calculus .....3
  - MATHS 2102 Differential Equations .....3
  - MATHS 2103 Probability and Statistics .....3
  - MATHS 2xxx Advanced Mathematical Perspectives II .....3
- c A candidate shall pass Level III courses to the value of at least 24 units including:
  - i at least 15 units of study chosen from Applied Mathematics, and/or Pure Mathematics, and/or Statistics.....18
  - ii MATHS 3105 Communication Skills III ...3
  - MATHS 3xxx Advanced Mathematical Perspectives III.....3

Courses in addition to the above shall be chosen from 4.2.3.1, 4.2.3.3, 4.2.3.4, 4.2.3.5, 4.2.3.6 below. Candidates shall also complete courses for at least one of the majors in defined in 4.1.7.

4.1.2 A candidate for the Bachelor of Mathematical Sciences (Advanced) must maintain a GPA of at least 5.0. A candidate that fails to achieve this standard will be required to transfer to the Bachelor of Mathematical Sciences

4.1.3 A graduate who wishes to qualify for the degree of Bachelor of Mathematical Sciences (Advanced) and to count towards that degree courses which have already been presented for another degree may do so providing such a candidate presents a range of courses which fulfils the requirements of 4.1.1 above, and includes courses to the value of at least 24 units from 4.2.2.1, 4.2.3.1 and 4.2.3.2 below that have not been presented for any other degree. At least 21 of these 24 units must be at Level III.

4.1.4 No candidate will be permitted to count for the degree any course together with any other course which, in the opinion of the Faculty, contains a substantial amount of the same material; and no course may be counted twice towards the degree. No candidate may present the same section of a course in more than one course for the degree.

4.1.5 Except with permission of the Faculty, students who have completed at another institution part of the equivalent of the requirements for the Adelaide degree of Bachelor of Mathematical Sciences (Advanced) will be required to complete courses from 4.2.3, to the value of at least 24 units including at least 18 units from 4.2.3.1.

4.1.6 With permission of the Faculty a student who has completed most of the courses for the degree of Bachelor of Mathematical Sciences (Advanced) at the University of Adelaide including courses from 4.2.3.1 to the value of at least 9 units may be permitted to complete the requirements for the degree at another institution. All applications must be made in writing to the Faculty.

4.1.7 To complete a major in a Mathematical Sciences Discipline, a candidate shall successfully complete:

#### Applied Mathematics

Level III courses offered in Applied Mathematics to the value of at least 12 units.

#### Mathematical Sciences

Candidates who do not otherwise qualify for a major in Applied Mathematics, Pure Mathematics or Statistics and who have successfully completed at least 12 units of Level III courses offered across those Disciplines will qualify for the award of a major in Mathematical Sciences.

#### Pure Mathematics

Level III courses offered in Pure Mathematics to the value of at least 12 units.

#### Statistics

Level III courses in Statistics to the value of at least 12 units, including STATS 3001 Statistical Modelling III, and STATS 3006 Mathematical Statistics III, and at least 6 units chosen from:

APP MTH 3001 Applied Probability III\*

APP MTH 3016 Random Processes III\*

APP MTH 3030 Stochastic Decision Theory III\*

STATS 3003 Sampling Theory and Practice III

STATS 3005 Time Series III

STATS 3008 Biostatistics III

\* These courses may be presented towards a major in Statistics or a major in Applied Mathematics but not both.

4.1.8 To complete a double major in Mathematical Sciences Disciplines, a candidate shall successfully complete:

#### Applied Mathematics and Pure Mathematics

Level III courses offered in Applied Mathematics to the value of at least 12 units and Level III courses offered in Pure Mathematics to the value of at least 9 units.

#### Applied Mathematics and Statistics

Level III courses offered in Applied Mathematics to the value of at least 12 units and Level III courses offered in Statistics to the value of at least 9 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III.

#### Pure Mathematics and Applied Mathematics

Level III courses offered in Pure Mathematics to the value of at least 12 units and Level III courses offered in Applied Mathematics to the value of at least 9 units.

#### Pure Mathematics and Statistics

Level III courses offered in Pure Mathematics to the value of at least 12 units and Level III courses offered in Statistics to the value of at least 9 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III.

#### Statistics and Applied Mathematics

Level III courses offered in Statistics to the value of at least 12 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III, and Level III courses offered in Applied Mathematics to the value of at least 9 units.

#### Statistics and Pure Mathematics

Level III courses offered in Statistics to the value of at least 12 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III, and Level III courses offered in Pure Mathematics to the value of at least 9 units.

## 4.2 Program of study for the degree of Bachelor of Mathematical Sciences (Advanced)

Notwithstanding the Academic Program Rules published in this volume, a number of the courses listed in the program leading to the degree of Bachelor of Mathematical Sciences (Advanced) may not be offered within a given calendar year.

## 4.2.1 Level I courses

### 4.2.1.1 Mathematical Sciences courses

MATHS 1008 Mathematics for Information Technology I .....3

MATHS 1011 Mathematics IA .....3

MATHS 1012 Mathematics IB .....3

STATS 1005 Statistical Analysis and Modelling I.....3

### 4.2.1.2 Computer Science courses

COMP SCI 1012 Scientific Computing .....3

COMP SCI 1003 Internet Computing .....3

COMP SCI 1101 Introduction to Programming .....3

COMP SCI 1102 Object Oriented Programming .....3

COMP SCI 1103 Algorithm Design & Data Structures.....3

### 4.2.1.3 Humanities and Social Sciences courses

Level I courses listed for the degree of B.A. and approved by the Faculty Program Adviser.

### 4.2.1.4 Economics and Commerce courses

Courses listed for the degree of B.Ec. and approved by the Faculty Program Adviser.

### 4.2.1.5 Science courses

Level I Science courses listed for the degree of B.Sc. in the Faculty of Sciences.

## 4.2.2 Level II courses

### 4.2.2.1 Mathematical Sciences courses

#### Applied Mathematics

APP MTH 2105 Optimisation and Operations Research .....3

MATHS 2104 Numerical Methods .....3

#### Core Mathematics

MATHS 2100 Real Analysis .....3

MATHS 2101 Multivariable & Complex Calculus .....3

MATHS 2102 Differential Equations .....3

MATHS 2103 Probability and Statistics .....3

MATHS 2xxx Advanced Mathematical Perspectives II .....3

#### Pure Mathematics

PURE MTH 2106 Algebra .....3

#### Statistics

STATS 2107 Statistical Modelling & Inference .....3

### 4.2.2.2 Computer Science

COMP SCI 2000 Computer Systems .....3

COMP SCI 2002 Database & Information Systems.....3

COMP SCI 2005 Systems Programming C and C++ .....3

COMP SCI 2006 Introduction to Software Engineering .....3

COMP SCI 2201 Algorithms & Data Structure Analysis.....3

### 4.2.2.3 Humanities and Social Sciences courses

Advanced level courses or Level II language courses listed for the degree of B.A. and approved by the Faculty Program Adviser.

### 4.2.2.4 Economics and Commerce courses

Level II courses listed for the degree of B.Ec. and approved by the Faculty Program Adviser.

### 4.2.2.5 Science courses

Level II Science courses listed for the degree of B.Sc. in the Faculty of Sciences

## 4.2.3 Level III courses

### 4.2.3.1 Mathematical Sciences courses

MATHS 3xxx Advanced Mathematical Perspectives III .....3

#### Applied Mathematics

APP MTH 3000 Computational Mathematics III .....3

APP MTH 3001 Applied Probability III .....3

APP MTH 3002 Fluid Mechanics III.....3

APP MTH 3004 Mathematical Biology III .....3

APP MTH 3010 Variational Methods & Optimal Control III.....3

APP MTH 3012 Financial Modelling: Tools & Techniques III .....3

APP MTH 3013 Differential Equations III .....3

APP MTH 3014 Optimisation III .....3

APP MTH 3016 Random Processes III .....3

APP MTH 3017 Waves III .....3

APP MTH 3019 Mathematical Modelling in Nanotechnology III .....3

APP MTH 3020 Stochastic Decision Theory III.....3

#### Pure Mathematics

PURE MTH 3002 Topology and Analysis III.....3

PURE MTH 3003 Number Theory III .....3

PURE MTH 3007 Groups and Rings III.....3

PURE MTH 3009 Integration and Analysis III..... 3

PURE MTH 3012 Fields and Geometry III.....3

PURE MTH 3018 Coding and Cryptology III.....3

PURE MTH 3019 Complex Analysis III.....3

PURE MTH 3020 Methods of Modern Mathematics III .....3

PURE MTH 3021 Logic and Computability .....3

PURE MTH 3022 Geometry of Surfaces III.....3

These Program Rules should be read in conjunction with the University's policies (<http://www.adelaide.edu.au/policies>).

PURE MTH 3023 Fields and Modules III.....3  
 PURE MTH 3024 Finite Geometry III .....3  
**Statistics**  
 STATS 3001 Statistical Modelling III .....3  
 STATS 3003 Sampling Theory and Practice III .....3  
 STATS 3005 Time Series III.....3  
 STATS 3006 Mathematical Statistics III .....3  
 STATS 3008 Biostatistics III .....3

#### 4.2.3.2 Miscellaneous (non Maths & Comp Sc courses)

MATHS 3015 Communication Skills III .....3

#### 4.2.3.3 Computer Science

COMP SCI 3001 Computer Networks & Applications.....3  
 COMP SCI 3002 Programming Techniques.....3  
 COMP SCI 3004 Operating Systems.....3  
 COMP SCI 3005 Computer Architecture .....3  
 COMP SCI 3006 Software Engineering & Project ...3  
 COMP SCI 3007 Artificial Intelligence .....3  
 COMP SCI 3009 Advanced Programming Paradigms .....3  
 COMP SCI 3012 Distributed Systems.....3  
 COMP SCI 3013 Event Driven Computing.....3  
 COMP SCI 3014 Computer Graphics .....3

#### 4.2.3.4 Humanities and Social Sciences courses

Advanced Level or Level III Language courses listed for the degree of B.A. and approved by the Faculty Program Adviser.

#### 4.2.3.5 Economics and Commerce courses

Level III courses listed for the degree of B.Ec. and approved by the Faculty Program Adviser.

#### 4.2.3.6 Science courses

Level III Science courses listed for the degree of B.Sc. in the Faculty of Sciences.

### 4.3 Graduation

Subject to Chapter 89 of the Statutes, candidates who have satisfied the requirements for any award of the University shall be admitted to that award.

### 5 Special circumstances

When in the opinion of the relevant Faculty special circumstances exist, the Council, on the recommendation of the Faculty in each case, may vary any of the provisions of the Academic Program Rules for any particular award.

### 1 General

There shall be a degree of Bachelor of Mathematical and Computer Sciences and an Honours degree of Bachelor of Mathematical and Computer Sciences. A candidate may obtain either degree or both.

### 2 Duration of program

The program of study for the Bachelor degree shall extend over three years of full-time study or the equivalent part-time study.

### 3 Assessment and examinations

- 3.1 A candidate shall not be eligible to attend for examination unless the prescribed work has been completed to the satisfaction of the teaching staff concerned.
- 3.2 In determining a candidate's final result in a course (or part of a course) the examiners may take into account oral, written, practical and other work, provided that the candidate has been given adequate notice at the commencement of the teaching of the course of the way in which such work will be taken into account and of its relative importance in the final result.
- 3.3 There shall be four classifications of pass in the final assessment of any course for the Bachelor degree, as follows: Pass with High Distinction, Pass with Distinction, Pass with Credit, Pass.
- 3.4 A candidate who fails a course for the Bachelor degree and who desires to take that course again shall, unless exempted wholly or partially therefrom by the Head of the School concerned, again complete the required work in that course to the satisfaction of the teaching staff concerned.
- 3.5 A candidate who has twice failed any course for the Bachelor degree may not enrol for that course again or for any other course which in the opinion of the Faculty contains a substantial amount of the same material, except by permission of the Faculty and then only under such conditions as the Faculty may prescribe.

### 4 Qualification requirements

#### 4.1 General: Bachelor of Mathematical and Computer Sciences

- 4.1.1 To qualify for the Bachelor degree a candidate shall, subject to the conditions and modifications speci-

fied under 3.3 above, pass courses from 4.2 below to the value of at least 72 units which satisfy the following requirements:

- a A candidate shall pass in Mathematical and Computer Sciences courses to the value of at least 36 units, of which courses to the value of at least 12 units shall be Level III Mathematical and Computer Sciences courses.
- b A candidate shall present either  
 MATHS 1011 Mathematics IA  
*and*  
 MATHS 1012 Mathematics IB  
*or*  
 MATHS 1013 Mathematics IM  
*and*  
 MATHS 1011 Mathematics IA  
*and*  
 MATHS 1012 Mathematics IB  
 for the degree, obtaining a Pass standard or higher for each course presented.
- c A candidate shall pass Level I courses to the value of at least 18 units
- d A candidate shall pass Level II courses to the value of at least 21 units
- e A candidate shall pass Level II and Level III courses to a minimum value of 45 units, with at least 21 units being Level III courses, including MATHS 3015 Communication Skills III.

- 4.1.2 A candidate who has been previously enrolled in an Engineering degree and who has presented the following courses toward a Bachelor of Engineering degree may present them as Mathematical and Computer Sciences courses:
- APP MTH 2004 Numerical Methods in Engineering (Chemical) .....2  
 APP MTH 2009 Numerical Analysis & Probability & Statistics .....2  
 APP MTH 2010 Differential Equations and Statistical Methods (Civil) .....3  
 CHEM ENG 1002 Engineering Computing .....3  
 CHEM ENG 1008 Engineering Computing .....3  
 STATS 2004 Laplace Transforms & Probability & Statistical Methods .....2

APP MTH 2000 Differential Equations & Fourier Series.....2

APP MTH 2002 Vector Analysis & Complex Analysis.....2

MATHS 2201 Engineering Mathematics I .....3

MATHS 2202 Engineering Mathematics II .....3

In addition, such a candidate may present Level I and II Engineering courses that are not listed under 4.2.1 and 4.2.2 of these Academic Program Rules. These courses do not count as Mathematical and Computer Sciences courses.

**Note (not forming part of the Academic Program Rules)**

This clause enables Engineering students to complete the first three years of their program and to qualify for the B.Ma.&Comp.Sc. within four years, by fulfilling the requirements of 4.1.6. Students wishing to qualify for the B.Ma.&Comp.Sc. in this way must apply for admission to the B.Ma&Comp.Sc. program.

4.1.3 Except with the permission of the Faculty, a candidate may pass or be enrolled in no more than 18 units of courses offered by Schools other than the School of Mathematical Sciences and the School of Computer Science before passing at least two out of MATHS 1013 Mathematics IM, MATHS 1011 Mathematics IA and MATHS 1012 Mathematics IB. These courses to the value of not more than 18 units shall not include courses in which a candidate has failed or from which a candidate has withdrawn.

4.1.4 A candidate may present no more than 12 units of courses offered at Level II by the Schools of Economics and Commerce.

4.1.5 Except with the permission of the Faculty, a candidate may present courses to the value of no more than 51 units offered by Schools other than the School of Mathematical Sciences and the School of Computer Science.

4.1.6 A graduate who wishes to qualify for the degree of Bachelor of Mathematical and Computer Sciences and to count towards that degree courses which have already been presented for another degree may do so providing such a candidate presents a range of courses which fulfils the requirements of 4.1.1 above and courses to the value of at least 24 units from 4.2.2 and 4.2.3 below that have not been presented for any other degree. At least 18 of these 24 units must be at Level III and at least 12 units must be chosen from 4.2.3.1 below.

4.1.7 No candidate will be permitted to count for the degree any course together with any other course that, in the opinion of the Faculty, contains a substantial amount of the same material; and no course may be counted twice towards the degree. No candidate

may present the same section of a course in more than one course for the degree.

4.1.8 Students who commenced their program of study for the degree prior to 1989 may qualify for the degree by fulfilling the requirements of the regulations and schedules in force prior to 1989, with such modifications as the Faculty may deem necessary to take account of changes to courses from 1989 onwards. Alternatively, students may complete their programs of study under present Academic Program Rules, with such modifications as the Faculty may deem necessary to ensure that courses validly passed under previous regulations and schedules may be counted under the present Rules. For the purposes of this clause the following equivalences will be used:

First year course 6 units at Level I

Second year course 8 units at Level II

Third year course 12 units at Level III.

4.1.9 Except with permission of the Faculty, students who have completed at another institution part of the equivalent of the requirements for the Adelaide degree of Bachelor of Mathematical and Computer Sciences will be required to complete Level III courses from 4.2.3 to the value of at least 24 units of which at least 12 units must be from 4.2.3.1.

4.1.10 With permission of the Faculty a student who has completed most of the courses for the degree of Bachelor of Mathematical and Computer Sciences at the University of Adelaide including courses from 4.2.3 to the value of at least 9 units may be permitted to complete the requirements for the degree at another institution. Applications must be made in writing to the Faculty.

4.1.11 To complete a major in a Mathematical and Computer Sciences Discipline, a candidate shall satisfy the criteria specified below and present Pass or better in the required courses:

**Applied Mathematics**

Level III courses offered in Applied Mathematics to the value of at least 12 units.

**Computer Science**

Level II courses offered in Computer Science to the value of 9 units and Level III Computer Science courses to the value of at least 12 units, including COMP SCI 3006 Software Engineering & Project.

**Mathematical Sciences**

Students who do not otherwise qualify for a major in Applied Mathematics, Pure Mathematics or Statistics and who have successfully completed at least 12 units of Level III courses offered across those Disciplines will qualify for the award of a major in Mathematical Sciences.

**Pure Mathematics**

Level III courses offered in Pure Mathematics to the value of at least 12 units.

**Statistics**

Level III courses in Statistics to the value of at least 12 units, including STATS 3001 Statistical Modelling III, and STATS 3006 Mathematical Statistics III, and at least 6 units chosen from:

APP MTH 3001 Applied Probability III\*

APP MTH 3016 Random Processes III\*

APP MTH 3020 Stochastic Decision Theory III\*

STATS 3003 Sampling Theory and Practice III

STATS 3005 Time Series III

STATS 3008 Biostatistics III

\*These courses may be presented towards a major in Statistics or a major in Applied Mathematics but not both.

4.1.12 To complete a double major in Mathematical Sciences Disciplines, a candidate shall satisfy the criteria specified below and present Pass or better in the required courses:

**Applied Mathematics and Pure Mathematics**

Level III courses offered in Applied Mathematics to the value of at least 12 units and Level III courses offered in Pure Mathematics to the value of at least 9 units.

**Applied Mathematics and Statistics**

Level III courses offered in Applied Mathematics to the value of at least 12 units and Level III courses offered in Statistics to the value of at least 9 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III.

**Pure Mathematics and Applied Mathematics**

Level III courses offered in Pure Mathematics to the value of at least 12 units and Level III courses offered in Applied Mathematics to the value of at least 9 units.

**Pure Mathematics and Statistics**

Level III courses offered in Pure Mathematics to the value of at least 12 units and Level III courses offered in Statistics to the value of at least 9 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III.

**Statistics and Applied Mathematics**

Level III courses offered in Statistics to the value of at least 12 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical Statistics III, and Level III courses offered in Applied Mathematics to the value of at least 9 units.

**Statistics and Pure Mathematics**

Level III courses offered in Statistics to the value of at least 12 units including STATS 3001 Statistical Modelling III and STATS 3006 Mathematical

Statistics III, and Level III courses offered in Pure Mathematics to the value of at least 9 units.

**4.1.13 Other Majors**

Majors in other Disciplines are available, including:

**Physics**

Refer to rule 5.4 of the Bachelor of Science Academic Program Rules for science Discipline major requirements.

**Theoretical Physics**

Refer to rule 5.4 of the Bachelor of Science Academic Program Rules for science Discipline major requirements.

**4.2 Program of study for the degree of Bachelor of Mathematical and Computer Sciences**

Students are advised that some courses cannot be counted with others towards the degree of Bachelor of Mathematical and Computer Sciences. Notwithstanding the Academic Program Rules published in this volume, a number of the courses listed in the program leading to the degree of Bachelor of Mathematical and Computer Sciences may not be offered in every calendar year.

**4.2.1 Level I courses**

**4.2.1.1 Mathematical & Computer Sciences courses**

COMP SCI 1012 Scientific Computing.....	3
COMP SCI 1003 Internet Computing.....	3
COMP SCI 1102 Object Oriented Programming .....	3
COMP SCI 1009 Algorithm Design & Data Structures.....	3
COMP SCI 1103 Puzzle Based Learning .....	3
MATHS 1008 Mathematics for Information Technology I .....	3
MATHS 1011 Mathematics IA .....	3
MATHS 1012 Mathematics IB.....	3
MATHS 1013 Mathematics IM .....	3
STATS 1005 Statistical Analysis and Modelling I .....	3

**4.2.1.2 Humanities and Social Sciences courses**

Level I courses listed for the degree of B.A. and approved by the Faculty Program Adviser.

**4.2.1.3 Economics and Commerce courses**

Level I courses listed for the degree of B.Ec. and approved by the Faculty Program Adviser.

**4.2.1.4 Law courses\***

LAW 1501 Foundations of Law .....	3
LAW 1502 Law of Torts I .....	3
LAW 1504 Principles of Public Law.....	3

LAW 1505 Law of Torts II .....	3
<b>*Available only to students who have been accepted for candidature to the LL.B.</b>	
<b>4.2.1.5 Engineering courses*</b>	
Courses listed at Level I of the Bachelor of Engineering and approved by the Faculty Program Adviser.	
<b>*Candidates who have been previously enrolled in an Engineering degree at the University of Adelaide are also directed to Academic Program Rule 4.1.2.</b>	
<b>4.2.1.6 Science courses</b>	
Level I Science courses listed for the degree of B.Sc. in the Faculty of Sciences.	
<b>4.2.2 Level II courses</b>	
<b>4.2.2.1 Mathematical and Computer Sciences courses</b>	
<b>Applied Mathematics</b>	
APP MTH 2105 Optimisation and Operations Research .....	3
MATHS 2104 Numerical Methods .....	3
<b>Computer Science</b>	
COMP SCI 2000 Computer Systems .....	3
COMP SCI 2002 Database & Information Systems .....	3
COMP SCI 2005 Systems Programming C and C++ .....	3
COMP SCI 2006 Introduction to Software Engineering .....	3
COMP SCI 2201 Algorithms & Data Structure Analysis.....	3
<b>Mathematics</b>	
MATHS 2100 Real Analysis .....	3
MATHS 2101 Multivariable & Complex Calculus ....	3
MATHS 2102 Differential Equations .....	3
MATHS 2103 Probability and Statistics .....	3
<b>Pure Mathematics</b>	
PURE MTH 2106 Algebra .....	3
<b>Statistics</b>	
STATS 2107 Statistical Modelling & Inference.....	3
<b>4.2.2.2 Humanities and Social Sciences courses</b>	
Advanced Level or Level II Language courses listed for the degree of B.A. and approved by the Faculty Program Adviser.	
<b>4.2.2.3 Economics and Commerce courses</b>	
Courses listed for the degree of B.Ec; Level II courses listed for the degree of B.Com; Courses for the degree of B.Fin. All Economics and Commerce courses require the approval of the Faculty Program Adviser.	

<b>4.2.2.4 Engineering Courses</b>	
Candidates who have been previously enrolled in an Engineering degree at the University of Adelaide are directed to Academic Program Rule 4.1.4.	
<b>4.2.2.5 Law courses*</b>	
LAW 1503 Contracts .....	3
LAW 1506 Property Law .....	3
<b>*Available only to students who have been accepted for candidature to the LL.B.</b>	
<b>4.2.2.6 Science courses</b>	
Level II Science courses listed for the degree of B.Sc. in the Faculty of Sciences.	
<b>4.2.3 Level III courses</b>	
<b>4.2.3.1 Mathematical and Computer Sciences courses</b>	
<b>Applied Mathematics</b>	
APP MTH 3000 Computational Mathematics III .....	3
APP MTH 3001 Applied Probability III .....	3
APP MTH 3002 Fluid Mechanics III .....	3
APP MTH 3004 Mathematical Biology III .....	3
APP MTH 3010 Variational Methods & Optimal Control III .....	3
APP MTH 3012 Financial Modelling: Tools & Techniques III .....	3
APP MTH 3013 Differential Equations III .....	3
APP MTH 3014 Optimisation III .....	3
APP MTH 3016 Random Processes III .....	3
APP MTH 3017 Waves III .....	3
APP MTH 3019 Mathematical Modelling in Nanotechnology III .....	3
APP MTH 3020 Stochastic Decision Theory III.....	3
<b>Computer Science</b>	
COMP SCI 3001 Computer Networks and Applications .....	3
COMP SCI 3002 Programming Techniques .....	3
COMP SCI 3004 Operating Systems .....	3
COMP SCI 3005 Computer Architecture .....	3
COMP SCI 3006 Software Engineering & Project ..	3
COMP SCI 3007 Artificial Intelligence .....	3
COMP SCI 3009 Advanced Programming Paradigms .....	3
COMP SCI 3012 Distributed Systems .....	3
COMP SCI 3013 Event Driven Computing .....	3
COMP SCI 3014 Computer Graphics .....	3
<b>Pure Mathematics</b>	
PURE MTH 3002 Topology and Analysis III .....	3

PURE MTH 3003 Number Theory III .....	3
PURE MTH 3007 Groups and Rings III .....	3
PURE MTH 3009 Integration and Analysis III .....	3
PURE MTH 3012 Fields and Geometry III .....	3
PURE MTH 3018 Coding and Cryptology III .....	3
PURE MTH 3019 Complex Analysis III .....	3
PURE MTH 3020 Methods of Modern Mathematics III .....	3
PURE MTH 3021 Logic and Computability .....	3
PURE MTH 3022 Geometry of Surfaces III .....	3
PURE MTH 3023 Fields and Modules III.....	3
PURE MTH 3024 Finite Geometry III .....	3
<b>Statistics</b>	
STATS 3001 Statistical Modelling III .....	3
STATS 3003 Sampling Theory & Practice III .....	3
STATS 3005 Time Series III .....	3
STATS 3006 Mathematical Statistics III .....	3
STATS 3008 Biostatistics III .....	3
<b>4.2.3.2 Miscellaneous (non Maths &amp; Comp Sc courses)</b>	
MATHS 3015 Communication Skills III .....	3
<b>4.2.3.3 Humanities and Social Sciences courses</b>	
Advanced Level or Level III Language courses listed for the degree of B.A. and approved by the Faculty Program Adviser.	
<b>4.2.3.4 Economics and Commerce courses</b>	
Courses listed for the degree of B.Ec; Level III courses listed for the degree of B.Com; courses listed for the degree of B.Fin. All Economics and Commerce courses require the approval of the Faculty Program Adviser.	
<b>4.2.3.5 Law courses*</b>	
LAW 2501 Australian Constitutional Law.....	3
LAW 2502 Equity .....	3
LAW 2505 Corporate Law .....	6
<b>*Available only to students who have been accepted for candidature to the LL.B.</b>	
<b>4.2.3.6 Science courses</b>	
Level III Science courses listed for the degree of B.Sc. in the Faculty of Sciences.	
<b>4.3 The Honours degree of Bachelor of Mathematical and Computer Sciences</b>	
To be eligible to be admitted to an Honours degree program, a candidate shall complete the requirements for a Bachelor degree or equivalent to a standard that is acceptable to the Faculty for the purpose of admission to the Honours degree.	

A candidate who satisfies the requirements for Honours shall be awarded the Honours degree, but the Faculty shall decide within which of the following classes and divisions the degree shall be awarded:

- 1 First Class
- 2A Second Class div A
- 2B Second Class div B
- 3 Third Class

NAH Not awarded.

#### 4.3.1 The Honours degree of Bachelor of Mathematical and Computer Sciences

- 4.3.1.1 A candidate may, subject to the approval of the Head of School concerned, proceed to the Honours degree in one of the following courses, each with the value of twenty-four units:
- APP MTH 4011A/B Honours Applied Mathematics and Computer Science
  - APP MTH 4015A/B Honours Applied Mathematics and Genetics
  - APP MTH 4017A/B Honours Applied Mathematics and Statistics
  - APP MTH 4018A/B Honours Applied Mathematics and Environmental Biology
  - COMP SCI 4999A/B Honours Computer Science
  - MATHS 4000A/B Honours Mathematical Sciences
  - PURE MTH 4001A/B Honours Pure Mathematics and Statistics
  - PURE MTH 4003A/B Honours Pure and Applied Mathematics
  - PURE MTH 4004A/B Honours Computer Science and Pure Mathematics
  - PURE MTH 4005A/B Honours Pure Mathematics
  - STATS 4000A/B Honours Statistics
  - STATS 4003A/B Honours Statistics and Computer Science
  - STATS 4004A/B Honours Statistics and Genetics
- 4.3.1.2 A candidate may, subject to the approval of the Faculty in each case, enrol in an Honours course taught in a School in another faculty. Such candidates must consult the Head of the School concerned and apply in writing to the Faculty for admission to the Honours program.
- 4.3.1.3 In exceptional circumstances, the Faculty may permit a candidate to spread the work over two years on the recommendation of the Head of School.
- 4.3.1.4 A candidate may not enrol a second time for the Honours program in the same course if he/she:

- a has already qualified for Honours in that course  
*or*
- b has presented himself/herself for examination in that course but has failed to obtain Honours  
*or*
- c has withdrawn from the program unless the Faculty under 4.3.1.5 permits re-enrolment.

4.3.1.5 The Faculty may permit a candidate, who has previously withdrawn from an Honours program, to re-enrol under such conditions (if any) as it may determine.

The Faculty may permit the candidate to re-enrol for an Honours degree under such conditions (if any) as it may determine.

#### **4.4 Graduation**

Subject to Chapter 89 of the Statutes, candidates who have satisfied the requirements for any award of the University shall be admitted to that award.

#### **5 Special circumstances**

When in the opinion of the relevant Faculty special circumstances exist, the Council, on the recommendation of the Faculty in each case, may vary any of the provisions of the Academic Program Rules for any particular award.

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