11.1.30 Bachelor of Engineering and Bachelor of Science (51160)

Note: (1) This course is only available to re-enrolling students.

(2) The Bachelor of Science component of this course is derived from the Bachelor of Science (50110) course.

(3) The Computer Engineering, Materials Engineering, Process Instrumentation and Control Engineering, and Software Engineering programs are only available to re-enrolling students who should refer to the 2010 Rules for these programs.

(4) The Oil and Gas Engineering program is only available to re-enrolling students who should refer to the 2007 Rules for the program.

(5) A student who, as a result of successive failures in a unit, is not permitted to re-enrol in that unit, or in further units in the same subject, in accordance with University Policy and Science Faculties’ Rule 9.2.2.7, may not be able to continue in the combined course.

Applicability of the general provisions

11.1.30.1 The general provisions in 11.1.1 apply to the course.

Course structure

11.1.30.2 The combined course for the degrees of Bachelor of Engineering and Bachelor of Science consists of a Bachelor of Engineering component as set out in Rule 11.1.30.4 and a Bachelor of Science component as set out in Rule 11.1.30.6 and comprises units to a total value of 240 to 270 points depending on the combination of engineering program and science major that is chosen.

Approved combinations

11.1.30.3(1) A student must complete one of the approved combinations of Science majors and Engineering programs set out in Table 11.1.30a (Approved combinations of Engineering programs and Science majors).

(2) Other combinations may be available with the approval of the Faculty of Life and Physical Sciences and the Faculty of Engineering, Computing and Mathematics.

Bachelor of Engineering component

11.1.30.4(1) The Bachelor of Engineering component consists of units to a total value of 168 to 174 points which, following the cross-crediting of units or groups of units completed in the Bachelor of Science component, as detailed in the Faculty Tables of Approved Equivalent or Alternative Units on the Faculty of Engineering, Computing and Mathematics website, will be reduced to 126 to 150 points depending on the combination of Bachelor of Engineering program and Bachelor of Science major chosen.

(2) The component comprises—
(a) all foundation core units required under Rule 6.2.2A.6(1)(a) in the Faculty of Engineering, Computing and Mathematics Rules—36 points

and

(b) the core units for the chosen Bachelor of Engineering program as prescribed in the respective rules for the relevant program in 6.2 of the Faculty of Engineering, Computing and Mathematics Rules, 90 to 144 points, except that—

(i) Electrical and Electronic Engineering students must take all units in Group A, one unit from Group B, three units from Group D, and are exempt from taking the unit in Group C in Table 6.2.2Ea (Electrical and Electronic Engineering core units)—126 points

and

(c) options from the table of options for the chosen program in the Faculty of Engineering, Computing and Mathematics Rules as follows:

(i) for the Chemical and Process Engineering program:

A. the requirement for one of the following majors: the Chemical Engineering major (MJ-ECHEM) as set out in Rule 6.2.2B.2 or the Hydrocarbon Processing major (MJ-EHCPR) as set out in Rule 6.2.2B.3—24 points

and

B. options to the value of 12 points comprising one unit from Group A and one unit from Group B in Table 6.2.2Bb (Chemical and Processing Engineering options);

(ii) for the Civil Engineering program:

units required to make up either—

A. the Civil Engineering major (MJ-ECIVM) as set out in Rule 6.2.2C.2—30 points

or

B. the Offshore Engineering major (MJ-EOFFM) as set out in Rule 6.2.2C.3—30 points

(iii) for the Electrical and Electronic Engineering program:

options to a total value of six points comprising one unit from Group A in Table 6.2.2Eb (Electrical and Electronic Engineering options);

(iv) for the Environmental Engineering program:

A. all units in one of Group A (Environmental Engineering major), Group B (Ocean Systems Engineering major) or Group C (Water Resources Engineering major) in Table 6.2.2Fb (Environmental Engineering; Ocean Systems Engineering; Water Resources Engineering major units)—30 points
and

B. one unit from Group A and one unit from Group B in Table 6.2.2Fc (Environmental Engineering options)—12 points

(v) for the Mechanical Engineering program:

A. all units in Group A or B in Table 6.2.2Hb (Mechanical Engineering Project units)—12 points

and

B. options to a total value of 36 points comprising one unit from Group A and five units from Group B in Table 6.2.2Hc (Mechanical Engineering options);

(vi) for the Mechatronics Engineering program:

options to a total value of 30 points comprising one unit from Group A and four units from Group B in Table 6.2.2Ib (Mechatronics Engineering options);

(vii) for the Mining Engineering program:

options to a total value of 18 points comprising three units from Group A in Table 6.2.2Kb (Mining Engineering options);

(viii) for the Petroleum Engineering program:

options to a total value of six points comprising one unit from Group A in Table 6.2.2.Ob (Petroleum Engineering options);

and

(d) practical experience through a professional practicum as set out in Rules 6.2.2A.10 to 6.2.2A.13 in the Faculty of Engineering, Computing and Mathematics Rules (GENG4010 Professional Practicum).\(^1\)

\(^1\) Students do not enrol in the Professional Practicum units. Upon successful completion, the appropriate unit will be added to their enrolment and the result released together with the results for the other enrolled units for the semester.


Award of Bachelor of Engineering with honours

11.1.30.5 The Faculty of Engineering, Computing and Mathematics may award the degree of Bachelor of Engineering with honours\(^1\) to a student who has completed the requirements of the Bachelor of Engineering course at a sufficiently high level.

\(^1\) For further information refer to http://www.ecm.uwa.edu.au/35382.
Bachelor of Science component

11.1.30.6(1) Subject to (4), the Bachelor of Science component consists of units to a total value of 114 to 120 points from Table 9.2.2a [Recognised units for the Bachelor of Science (50110)] in the Science Faculties’ Rules, including the units comprising the major sequence for at least one of the following majors as set out in 9.2.6 of those rules:

- Anatomy and Human Biology
- Applied Mathematics
- Astronomy and Astrophysics
- Biochemistry
- Botany
- Chemistry
- Computer Science
- Environmental Geoscience
- Geography
- Geology
- Land, Soil and Water
- Mathematical Sciences
- Mathematical Statistics
- Microbiology
- Pharmacology
- Physics
- Physiology
- Pure Mathematics
- Zoology

(2) Students must complete—

(a) Level 1 science units to the value of 30 to 48 points including—

(i) the units in Table 11.1.30b (Bachelor of Engineering and Bachelor of Science—Science core units)—18 points

and

either

(ii) the unit in Group A of Table 11.1.30c (Bachelor of Engineering and Bachelor of Science—Science options) and science units to the value of 6 to 24 points from Table 9.2.2a [Recognised units for the Bachelor of Science (50110)]—12 to 30 points

or

(iii) science units from Table 9.2.2a [Recognised units for the Bachelor of Science (50110)] including at least one pair of units leading to a second science major—12 to 30 points

and
(b) all units in Group B in Table 11.1.30c (Bachelor of Engineering and Bachelor of Science—Science options)—12 points

and

c Level 2 and 3 units to complete the major sequence for at least one of the majors in (1);

and

d if not already covered by (b), at least two Level 2 units in a second science subject area;

and

e if necessary to make up the required number of points for the component, other appropriate science units.

(3) All units for the Bachelor of Science component must be chosen in consultation with a Science adviser.

(4) A student taking the program in Electrical and Electronic Engineering may complete a science major in Nanotechnology, comprising—

(a) all units in Table 11.1.30d (Nanotechnology major sequence core units)—66 points

and

(b) both units from Group A in Table 11.1.30e (Nanotechnology major sequence options)—12 points

and

(c) one of the following:

(i) all units in Group B in Table 11.1.30e (Nanotechnology major sequence options)—36 points

or

(ii) all units in Group C in Table 11.1.30e (Nanotechnology major sequence options)—36 points.

Table 11.1.30a—Approved combinations of Engineering programs and Science majors

Chemical and Process Engineering

Applied Mathematics
Astronomy & Astrophysics

Chemistry
Computer Science
Geology
Mathematical Sciences
Mathematical Statistics
Physics
Pure Mathematics

Civil Engineering

Applied Mathematics

Astronomy & Astrophysics
Chemistry
Computer Science
Geology
Mathematical Sciences
Mathematical Statistics
Physics
Pure Mathematics

Electrical and Electronic Engineering

Anatomy and Human Biology
Applied Mathematics

Astronomy & Astrophysics
Biochemistry
Chemistry
Computer Science
Mathematical Sciences
Mathematical Statistics
Nanotechnology
Pharmacology
Physics
Physiology
Pure Mathematics

Environmental Engineering

Applied Mathematics

Astronomy & Astrophysics
Botany
Chemistry
Computer Science
Environmental Geoscience
Geography
Geology
Land, Soil and Water
Mathematical Sciences
Mathematical Statistics
Microbiology
Physics
Pure Mathematics
Zoology

**Mechanical Engineering**

Anatomy and Human Biology
Applied Mathematics

**Astronomy & Astrophysics**
Biochemistry
Chemistry
Computer Science
Geology
Mathematical Sciences
Mathematical Statistics
Pharmacology
Physics
Physiology
Pure Mathematics

**Mechatronics Engineering**

Anatomy and Human Biology
Applied Mathematics

**Astronomy & Astrophysics**
Biochemistry
Chemistry
Computer Science
Mathematical Sciences
Mathematical Statistics
Pharmacology
Physics
Physiology
Pure Mathematics

**Mining Engineering**

Applied Mathematics

**Astronomy & Astrophysics**
Chemistry
Computer Science
Geology
Mathematical Sciences
Mathematical Statistics
Physics
Pure Mathematics
Petroleum Engineering

Applied Mathematics

**Astronomy & Astrophysics**

Chemistry
Computer Science
Geology
Mathematical Sciences
Mathematical Statistics
Physics
Pure Mathematics

**Note:** (1) Students interested in biomedical studies take Electrical and Electronic, Mechanical or Mechatronics Engineering and one of the following majors in Science: Anatomy and Human Biology, Biochemistry, Pharmacology and Physiology.

(2) All courses must be decided upon in consultation with the Manager, Student Affairs of the Faculty of Engineering, Computing and Mathematics and either the Student Adviser of the Faculty of Life and Physical Sciences or the Manager, Student Office of the Faculty of Natural and Agricultural Sciences, as appropriate to the chosen science major.

**Table 11.1.30b—Bachelor of Engineering and Bachelor of Science—Science core units**

All units have a value of six points unless otherwise stated.

- MATH1001 Mathematical Methods 1
- MATH1002 Mathematical Methods 2
- PHYS1001 Physics for Scientists and Engineers

**Table 11.1.30c—Bachelor of Engineering and Bachelor of Science—Science options**

All units have a value of six points unless otherwise stated.

**Group A**

- PHYS1002 Modern Physics

**Group B**

- MATH2020 Multivariable Calculus and Linear Algebra
- MATH2209 Calculus and Probability

**Table 11.1.30d—Nanotechnology major sequence core units**

All units have a value of six points unless otherwise stated.
Level 1

MATH1001  Mathematical Methods 1
MATH1002  Mathematical Methods 2
PHYS1001  Physics for Scientists and Engineers
PHYS1002  Modern Physics

Level 2

MATH2020  Multivariable Calculus and Linear Algebra
MATH2209  Calculus and Probability

Level 3

SCIE3336  Nanotechnology Research Project Part 1
SCIE3337  Nanotechnology Research Project Part 2

Table 11.1.30e—Nanotechnology major sequence options

All units have a value of six points unless otherwise stated.

Group A

CHEM1001  Chemistry—Properties and Energetics
CHEM1002  Chemistry—Structure and Reactivity

Group B—Physics stream

MATH2200  Applied Mathematics
CITS2401  Computer Analysis & Visualisation

PHYS2201  Quantum Physics
PHYS2001  Quantum Mechanics 1 and Electromagnetism

PHYS2202  The Physics of Particles
PHYS2002  The Physics of Particles (Many Particle Systems)

PHYS3301  Quantum Mechanics and Electrodynamics
PHYS3302  Optics and Classical Mechanics
PHYS3312  Laboratory and Advanced Physics Topics

Group C—Chemistry stream

BIOL1130  Core ConceptsFrontiers in Biology
CHEM2001  Core Chemical Concepts and Techniques
CHEM2002  Physical and Analytical Chemistry
CHEM2003  Chemical Synthesis

Level 3 chemistry units to a total value of 12 points from Table 9.2.2a
[Recognised units for the Bachelor of Science (50110)]

1 Students are not permitted to include CHEM3309 Chemistry in the Workplace.