Specialisation

Aerospace Engineering

AEROAH

The Aerospace Engineering stream covers the analysis, design and operation of aircraft and spacecraft. Graduates work mainly on the design and manufacture of flight vehicles, their operation with major or satellite airlines and research for civil and military aerospace organisations. Owing to the international nature of aerospace industry, the topics studied cover a similar area and, in general, to the same depth of understanding as professional training programs in aerospace in other industrial countries. The aerospace industry is one of Australia's major exporters of high value added manufactured goods.
### Faculty
Faculty of Engineering

### School
School of Mechanical and Manufacturing Engineering

### Study Level
Undergraduate

### Minimum Units of Credit
168

### Specialisation Type
Honours
Available in Program(s)

Program(s) in which this honours is available

Bachelor of Engineering (Honours) - BE (Hons)

3707 Engineering (Honours)

Faculty: Faculty of Engineering
Campus: Kensington
Units of Credit: 192
Typical Duration: 4 Years
**Specialisation Structure**

Students must complete 168 UOC.

**Level 1 Core Courses**

Students must take 42 UOC of the following courses.

- **ELEC1111** | 6 UOC
  Electrical and Telecommunications Engineering

- **ENGG1000** | 6 UOC
  Introduction to Engineering Design and Innovation

- **ENGG1300** | 6 UOC
  Engineering Mechanics

  One of the following:
  - **MATH1131** | 6 UOC
    Mathematics 1A

  - **MATH1141** | 6 UOC
    Higher Mathematics 1A

  One of the following:
  - **MATH1231** | 6 UOC
    Mathematics 1B

  - **MATH1241** | 6 UOC
    Higher Mathematics 1B

  One of the following:
  - **PHYS1121** | 6 UOC
    Physics 1A

  - **PHYS1131** | 6 UOC
    Higher Physics 1A

  One of the following:
<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMPI511</td>
<td>6</td>
</tr>
<tr>
<td>Programming Fundamentals</td>
<td></td>
</tr>
<tr>
<td>COMPI911</td>
<td>6</td>
</tr>
<tr>
<td>Computing 1A</td>
<td></td>
</tr>
<tr>
<td>ENGG1811</td>
<td>6</td>
</tr>
<tr>
<td>Computing for Engineers</td>
<td></td>
</tr>
</tbody>
</table>

**Level 2 Core Courses**

Students must take 48 UOC of the following courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGG2400</td>
<td>6</td>
</tr>
<tr>
<td>Mechanics of Solids 1</td>
<td></td>
</tr>
<tr>
<td>ENGG2500</td>
<td>6</td>
</tr>
<tr>
<td>Fluid Mechanics for Engineers</td>
<td></td>
</tr>
<tr>
<td>MATH2019</td>
<td>6</td>
</tr>
<tr>
<td>Engineering Mathematics 2E</td>
<td></td>
</tr>
<tr>
<td>MATH2089</td>
<td>6</td>
</tr>
<tr>
<td>Numerical Methods and Statistics</td>
<td></td>
</tr>
<tr>
<td>MMAN2100</td>
<td>6</td>
</tr>
<tr>
<td>Engineering Design 2</td>
<td></td>
</tr>
<tr>
<td>MMAN2130</td>
<td>6</td>
</tr>
<tr>
<td>Design and Manufacturing</td>
<td></td>
</tr>
<tr>
<td>MMAN2300</td>
<td>6</td>
</tr>
<tr>
<td>Engineering Mechanics 2</td>
<td></td>
</tr>
<tr>
<td>MMAN2700</td>
<td>6</td>
</tr>
<tr>
<td>Thermodynamics</td>
<td></td>
</tr>
</tbody>
</table>
Level 3 Core Courses

Students must take 36 UOC of the following courses.

AERO3110  |  6 UOC  
Aerospace Design 1

AERO3410  |  6 UOC  
Aerospace Structures

AERO3630  |  6 UOC  
Aerodynamics

AERO3660  |  6 UOC  
Flight Performance and Propulsion

MMAN3000  |  6 UOC  
Professional Engineering and Communication

MMAN3200  |  6 UOC  
Linear Systems and Control

Level 4 Core Courses

Students must take 24 UOC of the following courses.

AERO4110  |  6 UOC  
Aerospace Design 2

AERO4620  |  6 UOC  
Dynamics of Aerospace Vehicles, Systems and Avionics

MMAN4010  |  6 UOC  
Thesis A

MMAN4020  |  6 UOC  
Thesis B
Disciplinary Electives

Students must take at least 6 UOC of the following courses. Students may select disciplinary electives from other streams within the BE(Hons) program subject to approval of the Head of School. School approval is required prior to enrolment in the following postgraduate level courses - *MECH9325, *MECH9400,*MECH9420.

AERO9610 | 6 UOC
The Space Segment

ENGG3060 | 6 UOC
Maker Games

MECH4305 | 6 UOC
Fundamental and Advanced Vibration Analysis

MECH4320 | 6 UOC
Engineering Mechanics 3

MECH9325 | 6 UOC
Fundamentals of Acoustics & Noise

MECH9400 | 6 UOC
Mechanics of Fracture and Fatigue

MECH9420 | 6 UOC
Composite Materials and Mechanics
One of the following:

AERO9500 | 6 UOC
Space Systems Architectures and Orbits

MECH4620 | 6 UOC
Computational Fluid Dynamics

MMAN4410 | 6 UOC
Finite Element Methods

**Level 1 Prescribed Electives**

Students can take up to a maximum of 12 UOC of the following courses. Note: Students take ENGG1300 and ELEC1111 as Level 1 Core and are not required to take further Level 1 electives and may choose to substitute L1 electives for higher level electives later in the program. ENGG1300 excludes CVEN1300, MINE1300, and MMAN1300. CHEM1031 and CHEM1041 will only be available to students enrolled in a program which has a Chemistry major.

BABS1201 | 6 UOC
Molecules, Cells and Genes

BIOM1010 | 6 UOC
Engineering in Medicine and Biology

BIOS1301 | 6 UOC
Ecology, Sustainability and Environmental Science

CEIC1000 | 6 UOC
Sustainable Product Engineering and Design

CHEM1011 | 6 UOC
Chemistry 1A: Atoms, Molecules and Energy

CHEM1021 | 6 UOC
Chemistry 1B: Elements, Compounds and Life
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM1031</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Higher Chemistry 1A: Atoms, Molecules and Energy</td>
<td></td>
</tr>
<tr>
<td>CHEM1041</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Higher Chemistry 1B: Elements, Compounds and Life</td>
<td></td>
</tr>
<tr>
<td>CHEM1811</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Engineering Chemistry 1A</td>
<td></td>
</tr>
<tr>
<td>CHEM1821</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Engineering Chemistry 1B</td>
<td></td>
</tr>
<tr>
<td>COMP1521</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Computer Systems Fundamentals</td>
<td></td>
</tr>
<tr>
<td>COMP1531</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Software Engineering Fundamentals</td>
<td></td>
</tr>
<tr>
<td>CVEN1701</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Environmental Principles and Systems</td>
<td></td>
</tr>
<tr>
<td>ELEC1111</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Electrical and Telecommunications Engineering</td>
<td></td>
</tr>
<tr>
<td>ENGG1100</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Grand Challenges for Engineering</td>
<td></td>
</tr>
<tr>
<td>ENGG1200</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Undergraduate Special Projects</td>
<td></td>
</tr>
<tr>
<td>ENGG1300</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Engineering Mechanics</td>
<td></td>
</tr>
<tr>
<td>ENGG1400</td>
<td>6 UOC</td>
</tr>
<tr>
<td>Engineering Infrastructure Systems</td>
<td></td>
</tr>
</tbody>
</table>
Research Thesis Rule

• Research thesis is optional to all Undergraduate students.
• Student must seek a primary supervisor from the School of Mechanical and Manufacturing Engineering, UNSW.
• MMAN4951, MMAN4952 and MMAN4953 must be undertaken in three consecutive terms which are the final three terms of candidature.
• A student must not enrol in more than a standard full-time load involving MMAN4951, MMAN4952 and MMAN4953.
• A single thesis project is commenced in MMAN4951, proceed to MMAN4952, and completed in MMAN4953.
• MMAN4951, MMAN4952, MMAN4953 are graded courses. MMAN4951 carries 10%
of the total thesis mark, MMAN4952 carries 20% of the total thesis mark, MMAN4953 carries 70% of the total thesis mark (for Honours weighting purposes).

- If a student receives a failure (FL) in MMAN4951, MMAN4952, or MMAN4953 a student cannot proceed to the next Research Thesis course and must reattempt MMAN4951, or discontinue Research Thesis.
- If the project is abandoned during MMAN4951, MMAN4952 and MMAN4953, a completely new topic must be chosen, and the student must enrol again in MMAN4951 or discontinue with Research Thesis.

**MMAN4951 | 4 UOC**
Research Thesis A

**MMAN4952 | 4 UOC**
Research Thesis B

**MMAN4953 | 4 UOC**
Research Thesis C

**Practical/Industry-based Thesis Rule**

- Practical/Industry-based Thesis is compulsory to all Undergraduate students who do not wish to conduct Research Thesis.
- MMAN4010, MMAN4020 must be undertaken in two consecutive terms which are the final two terms of candidature.
- A student must not enrol in more than a standard full-time load involving MMAN4010 and MMAN4020
- A single thesis project is commenced in MMAN4010 and completed in MMAN4020.
- MMAN4010 and MMAN4020 are graded course, MMAN4010 carries 25% of the total thesis mark, and MMAN4020 carries 75% of the total thesis mark (for Honours weighting purposes).
- If a student receives a failure (FL) in MMAN4010, a student cannot proceed with MMAN4020, and must reattempt MMAN4010.
- If the project is abandoned during MMAN4010 or MMAN4020, a completely new topic and project team must be chosen and the student must enrol again in both MMAN4010 and MMAN4020.

**MMAN4010 | 6 UOC**
Thesis A

**MMAN4020 | 6 UOC**
Level 1 Electives - Chemistry options

Students without any prior Chemistry should choose CHEM1001. Other students with HSC Chemistry who wish to study Chemistry in more depth should choose CHEM1011.

Enrolment Disclaimer

You are responsible for ensuring you enrol in courses according to your program requirements. myUNSW enrolment checks that you have met enrolment requirements such as pre-requisites for individual courses but not that a course will count towards your program requirements. Do not assume that because you have enrolled in a course that the course will be credited towards your program.
Pre-2019 Handbook Editions

Access past handbook editions (2018 and prior)

Pre-2019 Handbook Editions
© UNSW Sydney (CRICOS Provider No.: 00098G), 2019. The information contained in this Handbook is indicative only. While every effort is made to keep this information up-to-date, the University reserves the right to discontinue or vary arrangements, programs and courses at any time without notice and at its discretion. While the University will try to avoid or minimise any inconvenience, changes may also be made to programs, courses and staff after enrolment. The University may also set limits on the number of students in a course.

Authorised by Deputy Vice-Chancellor (Academic)
CRICOS Provider Code 00098G
ABN: 57 195 873 179