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:
Level 2 Core Courses

Students must take 48 UOC of the following courses.

ENGG2400  |  6 UOC
Mechanics of Solids 1

ENGG2500  |  6 UOC
Fluid Mechanics for Engineers

MATH2019  |  6 UOC
Engineering Mathematics 2E

MATH2089  |  6 UOC
Numerical Methods and Statistics

MMAN2100  |  6 UOC
Engineering Design 2

MMAN2130  |  6 UOC
Design and Manufacturing

MMAN2300  |  6 UOC
Engineering Mechanics 2

MMAN2700  |  6 UOC
Thermodynamics
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.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
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<tbody>
<tr>
<td>AERO9610</td>
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<td>The Space Segment</td>
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<tr>
<td>ENGG3060</td>
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<td>Maker Games</td>
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<tr>
<td>MECH4305</td>
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<td>Fundamental and Advanced Vibration Analysis</td>
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<thead>
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<td>MECH4320</td>
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<td>Engineering Mechanics 3</td>
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<th>UOC</th>
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<tbody>
<tr>
<td>MECH9325</td>
<td>6</td>
</tr>
<tr>
<td>Fundamentals of Acoustics &amp; Noise</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
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</thead>
<tbody>
<tr>
<td>MECH9400</td>
<td>6</td>
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<tr>
<td>Mechanics of Fracture and Fatigue</td>
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
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<tbody>
<tr>
<td>MECH9420</td>
<td>6</td>
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<tr>
<td>Composite Materials and Mechanics</td>
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</tbody>
</table>
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>UOC</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CHEM1031</td>
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<td>Higher Chemistry 1A: Atoms, Molecules and Energy</td>
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<tr>
<td>CHEM1041</td>
<td>6</td>
<td>Higher Chemistry 1B: Elements, Compounds and Life</td>
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<td>CHEM1811</td>
<td>6</td>
<td>Engineering Chemistry 1A</td>
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<tr>
<td>CHEM1821</td>
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<td>Engineering Chemistry 1B</td>
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<td>COMP1521</td>
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<td>Computer Systems Fundamentals</td>
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<td>COMP1531</td>
<td>6</td>
<td>Software Engineering Fundamentals</td>
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<tr>
<td>CVEN1701</td>
<td>6</td>
<td>Environmental Principles and Systems</td>
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<tr>
<td>ELEC1111</td>
<td>6</td>
<td>Electrical and Telecommunications Engineering</td>
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<tr>
<td>ENGG1100</td>
<td>6</td>
<td>Grand Challenges for Engineering</td>
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<td>ENGG1200</td>
<td>6</td>
<td>Undergraduate Special Projects</td>
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<td>ENGG1300</td>
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<td>Engineering Mechanics</td>
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<tr>
<td>ENGG1400</td>
<td>6</td>
<td>Engineering Infrastructure Systems</td>
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<td>Course Code</td>
<td>Units</td>
<td>Course Name</td>
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<tr>
<td>GEOS1111</td>
<td>6 UOC</td>
<td>Fundamentals of Geology</td>
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<tr>
<td>GMAT1110</td>
<td>6 UOC</td>
<td>Surveying and Geospatial Engineering</td>
</tr>
<tr>
<td>MATH1081</td>
<td>6 UOC</td>
<td>Discrete Mathematics</td>
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<tr>
<td>MATS1101</td>
<td>6 UOC</td>
<td>Engineering Materials and Chemistry</td>
</tr>
<tr>
<td>MINE1010</td>
<td>6 UOC</td>
<td>Mineral Resources Engineering</td>
</tr>
<tr>
<td>PHYS1231</td>
<td>6 UOC</td>
<td>Higher Physics 1B</td>
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<tr>
<td>PSYC1001</td>
<td>6 UOC</td>
<td>Psychology 1A</td>
</tr>
<tr>
<td>SOLA1070</td>
<td>6 UOC</td>
<td>Sustainable Energy</td>
</tr>
</tbody>
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**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)