Specialisation

**Mechanical Engineering**

**MECHAH**

The Mechanical Engineering stream provides a versatile, comprehensive coverage of areas involving the conception and design of machinery and mechanical plant, the supervision of its construction, operation and maintenance, the planning and supervision of large engineering projects, and general engineering management. Due to its wide range, a number of options are provided as Technical Elective courses in the final year. These are preferentially linked to provide a direction appropriate to the needs of Australian industry and to the specific interests of students, although some flexibility is available if required. Typical fields which may be encompassed by the program include building services, computer-aided design, power generation, energy and environmental systems, gas and liquid handling, biomechanics, materials handling, control systems and transport. An emphasis is placed on the application of engineering science, development and management in these fields.
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

Bachelor of Engineering (Honours) - **BE (Hons)**
Master of Biomedical Engineering - **MBiomedE**

**3768 Engineering (Honours)/Biomedical Engineering**
Faculty: Faculty of Engineering
Campus: Kensington
Units of Credit: 240
Typical Duration: 5 Years
Specialisation Structure

Students must complete 168 UOC.

Level 1 Core Courses

Students must take 42 UOC of the following courses.

Note: ENGG1811 is the preferred computing course for the MECH Stream.

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:
COMP1511  |  6 UOC
Programming Fundamentals

COMP1911  |  6 UOC
Computing 1A

ENGG1811  |  6 UOC
Computing for Engineers

**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

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

One of the following:
MATH2019  |  6 UOC
Level 3 Core Courses

Students must take 30 UOC of the following courses.

MECH3110 | 6 UOC
Mechanical Design 1

MECH3610 | 6 UOC
Advanced Thermofluids

MMAN3000 | 6 UOC
Professional Engineering and Communication

MMAN3200 | 6 UOC
Linear Systems and Control

MMAN3400 | 6 UOC
Mechanics of Solids 2

Level 4 Core Courses

Students must take 12 UOC of thesis courses.

MECH4100 | 6 UOC
Mechanical Design 2

MMAN4010 | 6 UOC
Thesis A

MMAN4020 | 6 UOC
Thesis B

MMAN4951 | 4 UOC
Research Thesis A
Discipline Electives

Students must take at least 18 UOC of the following courses.

Students may select discipline electives from other streams within the BE(Hons) program subject to approval of the Head of School.


**ENGG3060 | 6 UOC**
Maker Games

**MANF6860 | 6 UOC**
Strategic Manufacturing Management

**MANF9400 | 6 UOC**
Industrial Management

**MANF9420 | 6 UOC**
Operations and Supply Chain Management in Engineering

**MANF9472 | 6 UOC**
Production Planning and Control

**MECH4305 | 6 UOC**
Fundamental and Advanced Vibration Analysis

**MECH4320 | 6 UOC**
Engineering Mechanics 3
<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MECH4620</td>
<td>6</td>
<td>Computational Fluid Dynamics</td>
</tr>
<tr>
<td>MECH4880</td>
<td>6</td>
<td>Refrigeration and Air Conditioning 1</td>
</tr>
<tr>
<td>MECH4900</td>
<td>6</td>
<td>Mechanics of Fracture and Fatigue</td>
</tr>
<tr>
<td>MECH9325</td>
<td>6</td>
<td>Fundamentals of Acoustics &amp; Noise</td>
</tr>
<tr>
<td>MECH9420</td>
<td>6</td>
<td>Composite Materials and Mechanics</td>
</tr>
<tr>
<td>MECH9650</td>
<td>6</td>
<td>Introduction to Microfluidics</td>
</tr>
<tr>
<td>MECH9720</td>
<td>6</td>
<td>Solar Thermal Energy Design</td>
</tr>
<tr>
<td>MECH9761</td>
<td>6</td>
<td>Automobile Engine Technology</td>
</tr>
<tr>
<td>MMAN4410</td>
<td>6</td>
<td>Finite Element Methods</td>
</tr>
<tr>
<td>NAVL4140</td>
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<td>Design of Yachts</td>
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</tbody>
</table>

**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 elective 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.

<table>
<thead>
<tr>
<th>Code</th>
<th>UOC</th>
<th>Description</th>
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<tbody>
<tr>
<td>BABS1201</td>
<td>6</td>
<td>Molecules, Cells and Genes</td>
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<tr>
<td>BIOM1010</td>
<td>6</td>
<td>Engineering in Medicine and Biology</td>
</tr>
<tr>
<td>BIOS1301</td>
<td>6</td>
<td>Ecology, Sustainability and Environmental Science</td>
</tr>
<tr>
<td>CEIC1000</td>
<td>6</td>
<td>Sustainable Product Engineering and Design</td>
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<td>CHEM1011</td>
<td>6</td>
<td>Chemistry 1A: Atoms, Molecules and Energy</td>
</tr>
<tr>
<td>CHEM1021</td>
<td>6</td>
<td>Chemistry 1B: Elements, Compounds and Life</td>
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<td>CHEM1031</td>
<td>6</td>
<td>Higher Chemistry 1A: Atoms, Molecules and Energy</td>
</tr>
<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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<td>CHEM1821</td>
<td>6</td>
<td>Engineering Chemistry 1B</td>
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<td>COMP1521</td>
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<td>COMP1531</td>
<td>6 UOC</td>
<td>Software Engineering Fundamentals</td>
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<td>CVEN1701</td>
<td>6 UOC</td>
<td>Environmental Principles and Systems</td>
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<tr>
<td>ELEC1111</td>
<td>6 UOC</td>
<td>Electrical and Telecommunications Engineering</td>
</tr>
<tr>
<td>ENGG1100</td>
<td>6 UOC</td>
<td>Grand Challenges for Engineering</td>
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<tr>
<td>ENGG1200</td>
<td>6 UOC</td>
<td>Undergraduate Special Projects</td>
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<td>ENGG1300</td>
<td>6 UOC</td>
<td>Engineering Mechanics</td>
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<tr>
<td>ENGG1400</td>
<td>6 UOC</td>
<td>Engineering Infrastructure Systems</td>
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<tr>
<td>GEOS1111</td>
<td>6 UOC</td>
<td>Fundamentals of Geology</td>
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<td>GMAT1110</td>
<td>6 UOC</td>
<td>Surveying and Geospatial Engineering</td>
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<tr>
<td>MATH1081</td>
<td>6 UOC</td>
<td>Discrete Mathematics</td>
</tr>
<tr>
<td>MATS1101</td>
<td>6 UOC</td>
<td>Engineering Materials and Chemistry</td>
</tr>
</tbody>
</table>
MINE1010 | 6 UOC
Mineral Resources Engineering

PHYS1231 | 6 UOC
Higher Physics 1B

PSYC1001 | 6 UOC
Psychology 1A

SOLA1070 | 6 UOC
Sustainable Energy

**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.

**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.
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.
Unless advised otherwise by your program authority, you should follow the rules for the handbook for the year you commenced your program. You are also 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.
Additional Information

Thesis Arrangements

• MMAN4010 and MMAN4020 must be undertaken in two consecutive semesters which are the final two semesters of candidature.

• A student must not be enrolled in more than 24 units of credit in any semester involving MMAN4010 and MMAN4020.

• A single thesis project is commenced in MMAN4010 and completed in MMAN4020. MMAN4020 carries the mark for the thesis project.

• MMAN4010 is a graded course, carrying 25% 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 reatempt MMAN4010.

• If the project is abandoned during MMAN4020, or if MMAN4020 is failed, a completely new topic must be chosen and the student must enrol again in both MMAN4010 and MMAN4020. (For BE/MBiomedE students, read BIOM5001 instead of MMAN4010 and BIOM5003 instead of MMAN4020).
Pre-2019 Handbook Editions

Access past handbook editions (2018 and prior)

Pre-2019 Handbook Editions