The Mechanical and Manufacturing Engineering stream is designed for students with a mechanical engineering major whose interests also lie in realising, commercialising and implementing mechanical and mechatronic systems and designs. The five core courses included as part of this stream have been designed on the basis of world best practice in manufacturing and industrial engineering and reflect a top-down - bottom-up approach, spanning the disciplines of Strategy and Management, Operations and Supply Chains, Analysis and Decision-making, Design of Product-Process Systems and Technology & Automation.

Within each discipline area this new stream will cover many conceptual and analytical techniques, all supporting fact- and data-based analysis and decision making with the aim of improved product and process performance, economy and sustainability. This stream is designed to help you to learn how to transform a design from a conceptual stage into a prototype and ultimately into a commercially realisable and viable product. This stream focuses on technical as well as commercial aspects and particularly in developing the ability to build a business or commercial case for making engineering related decisions, such as investment in plant, equipment and processes. Although the main emphasis will be on product and process, consideration will also be given to designing compatible and appropriate engineering support services. The stream also emphasises the strategic impact of operations decisions and the interfaces between operations and the other functional areas of organisations, including of course, finance. This stream encompasses the key elements of operations management and investment analysis and pulls them together in a coherent format that allows you to understand the 'big picture' as well as 'the specific details'. It is aimed at integrating the knowledge gained from the mechanical engineering courses you have studied into a framework and process that allows you to implement your designs, solutions and ideas in a commercial environment.
Mechanical engineers have traditionally played the major role in the analysis and design of complex machinery, devices such as actuators and sensors, as well as energy transformation, heat transfer and electro-mechanical processes. In an environment of global competition, sustainability (energy, environment as well as cost and capital), increasingly complex customer requirements and statutory regulations as well as the increasing pace of technological change and new product innovation, it is vital for modern engineers to possess the skills to not only design but equally importantly, implement and realize their designs in the most appropriate way. In this increasingly complex environment, successful organizations - public, private or governmental - need engineers with analytical and diverse skills, especially in integrating technical with commercial and organisational issues, analyses and ultimately solutions. It is the purpose and aim of the Mechanical and Manufacturing Engineering stream to equip you with this knowledge and understanding to become a global engineer, indeed a leader, with the ability to apply analytical methods and quality processes to create short and long term value for your organization, your customers, and the community. It encapsulates the key elements of mechanical engineering and combines them with the five core disciplines of manufacturing and industrial engineering.

An engineer trained in Mechanical and Manufacturing Engineering may be employed in a very flexible and diverse range of disciplines and areas of industrial activity, including; product design, process design, computer aided design, computer aided manufacturing, quality improvement, technical and commercial analysis and decision making, strategic decision making, consulting, sales support, technical and organisational maintenance, and supply chain management.
<table>
<thead>
<tr>
<th><strong>Faculty</strong></th>
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<tbody>
<tr>
<td>Faculty of Engineering</td>
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<td><strong>School</strong></td>
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<td>School of Mechanical and Manufacturing Engineering</td>
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<td><strong>Study Level</strong></td>
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<tr>
<td><strong>Minimum Units of Credit</strong></td>
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<tr>
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<tr>
<td><strong>Specialisation Type</strong></td>
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<tr>
<td>Honours</td>
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</tbody>
</table>
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.

Note: ENGG1811 is the preferred Computing course for the MANFBH 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:

**MATH2018 | 6 UOC**
Engineering Mathematics 2D

MATH2019  |  6 UOC
Engineering Mathematics 2E

**Level 3 Core Courses**

Students must take 42 UOC of the following courses.

MANF3100  |  6 UOC
Product and Manufacturing Design

MANF3510  |  6 UOC
Process Technology and Automation

MANF4430  |  6 UOC
Reliability and Maintenance Engineering

MANF4611  |  6 UOC
Process Modelling and Simulation

MECH3110  |  6 UOC
Mechanical Design 1

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.

MANF4430  |  6 UOC
Reliability and Maintenance Engineering
**Discipline Electives**

Students can take up to a maximum of 12 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.

Courses marked with an asterisk (*) are postgraduate level courses and are subject to enrolment restrictions. Seek prior School approval before enrolment.


**ENGG3060**  |  6 UOC  
Maker Games

**MANF6860**  |  6 UOC  
Strategic Manufacturing Management
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.

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

CHEM1031  6 UOC  
Higher Chemistry 1A: Atoms, Molecules and Energy

CHEM1041  6 UOC  
Higher Chemistry 1B: Elements, Compounds and Life

CHEM1811  6 UOC  
Engineering Chemistry 1A

CHEM1821  6 UOC  
Engineering Chemistry 1B

COMP1521  6 UOC  
Computer Systems Fundamentals
<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
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<tbody>
<tr>
<td>COMP1531</td>
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<tr>
<td>CVEN1701</td>
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<tr>
<td>ELEC1111</td>
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<td>ENGG1100</td>
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<tr>
<td>GEOS1111</td>
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<td>GMAT1110</td>
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<tr>
<td>MATH1081</td>
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<tr>
<td>MATS1101</td>
<td>6</td>
</tr>
<tr>
<td>MINE1010</td>
<td>6</td>
</tr>
</tbody>
</table>
PHYS1231 | 6 UOC
Higher Physics 1B

PSYC1001 | 6 UOC
Psychology 1A

SOLA1070 | 6 UOC
Sustainable Energy

**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 p

MMAN4951 | 4 UOC
Research Thesis A

MMAN4952 | 4 UOC
Research Thesis B
**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**

Thesis B

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