Overview

The School of Electrical Engineering & Telecommunications offers a wide range of undergraduate and postgraduate study in all areas of the professions of Electrical Engineering and Telecommunications. The School's streams within the undergraduate Bachelor of Engineering (Hons) program in Electrical and Telecommunications Engineering continue to act as models for educating engineers in tomorrow's technology. Options within Electrical Engineering include: Telecommunications, Photonics, Systems and Control, Energy Systems, Microelectronics, and Signal Processing. The BE degree programs in Electrical Engineering are accredited by the Engineers Australia as meeting the requirements for admission to graduate membership.

The undergraduate curricula are being progressively revised to provide flexible training to suit the future needs of students. Individual student needs can be further met by substitution provisions within the programs.
<table>
<thead>
<tr>
<th><strong>Faculty</strong></th>
<th>Faculty of Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>School</strong></td>
<td>School of Electrical Engineering &amp; Telecommunications</td>
</tr>
<tr>
<td><strong>Study Level</strong></td>
<td>Undergraduate</td>
</tr>
<tr>
<td><strong>Minimum Units of Credit</strong></td>
<td>168</td>
</tr>
<tr>
<td><strong>Specialisation Type</strong></td>
<td>Honours</td>
</tr>
</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

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 48 UOC of the following courses.

- **COMP1521** | 6 UOC  
  Computer Systems Fundamentals

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

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

- **PHYS1231** | 6 UOC  
  Higher Physics 1B

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
One of the following:

**COMP1511 | 6 UOC**  
Programming Fundamentals

**COMP1911 | 6 UOC**  
Computing 1A

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**Level 2 Core Courses**

Students must take 36 UOC of the following courses.

**DESN2000 | 6 UOC**  
Engineering Design and Professional Practice

**ELEC2133 | 6 UOC**  
Analogue Electronics

**ELEC2134 | 6 UOC**  
Circuits and Signals

**ELEC2141 | 6 UOC**  
Digital Circuit Design

**MATH2069 | 6 UOC**  
Mathematics 2A

**MATH2099 | 6 UOC**  
Mathematics 2B

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**Level 3 Core Courses**

Students must take 42 UOC of the following courses.

**ELEC3104 | 6 UOC**  
Digital Signal Processing
ELEC3105 | 6 UOC
Electrical Energy

ELEC3106 | 6 UOC
Electronics

ELEC3114 | 6 UOC
Control Systems

ELEC3115 | 6 UOC
Electromagnetic Engineering

ELEC3117 | 6 UOC
Electrical Engineering Design

TELE3113 | 6 UOC
Analogue and Digital Communications

**Level 4 Core Courses**

Students must take 24 UOC of the following courses.

ELEC4122 | 6 UOC
Strategic Leadership and Ethics

ELEC4123 | 6 UOC
Electrical Design Proficiency

ELEC4951 | 4 UOC
Research Thesis A

ELEC4952 | 4 UOC
Research Thesis B

ELEC4953 | 4 UOC
Research Thesis C
**Level 1 Prescribed Electives**

Students can take up to a maximum of 12 UOC of the following courses.

Note:
- Students choosing the recommended ELEC1111 and COMP1521 Year 1 electives will gain two Level 3/Level 4 Electives later in the program.
- CHEM1031 and CHEM1041 will only be available to students enrolled in a program which has a Chemistry major.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>BABS1201</td>
<td>6</td>
<td>Molecules, Cells and Genes</td>
</tr>
<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>
</tr>
<tr>
<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>
</tr>
<tr>
<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>
</tr>
<tr>
<td>CHEM1811</td>
<td>6</td>
<td>Engineering Chemistry 1A</td>
</tr>
<tr>
<td>Course Code</td>
<td>UOC</td>
<td>Course Title</td>
</tr>
<tr>
<td>-------------</td>
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</tr>
<tr>
<td>CHEM1821</td>
<td>6</td>
<td>Engineering Chemistry 1B</td>
</tr>
<tr>
<td>COMP1521</td>
<td>6</td>
<td>Computer Systems Fundamentals</td>
</tr>
<tr>
<td>COMP1531</td>
<td>6</td>
<td>Software Engineering Fundamentals</td>
</tr>
<tr>
<td>CVEN1701</td>
<td>6</td>
<td>Environmental Principles and Systems</td>
</tr>
<tr>
<td>ELEC1111</td>
<td>6</td>
<td>Electrical and Telecommunications Engineering</td>
</tr>
<tr>
<td>ENGG1100</td>
<td>6</td>
<td>Grand Challenges for Engineering</td>
</tr>
<tr>
<td>ENGG1200</td>
<td>6</td>
<td>Undergraduate Special Projects</td>
</tr>
<tr>
<td>ENGG1300</td>
<td>6</td>
<td>Engineering Mechanics</td>
</tr>
<tr>
<td>ENGG1400</td>
<td>6</td>
<td>Engineering Infrastructure Systems</td>
</tr>
<tr>
<td>GEOS1111</td>
<td>6</td>
<td>Fundamentals of Geology</td>
</tr>
<tr>
<td>GMAT1110</td>
<td>6</td>
<td>Surveying and Geospatial Engineering</td>
</tr>
<tr>
<td>MATH1081</td>
<td>6</td>
<td>Discrete Mathematics</td>
</tr>
</tbody>
</table>
MATS1101 | 6 UOC  
**Engineering Materials and Chemistry**

MATS1110 | 6 UOC  
**Introduction to Materials for Engineering Applications**

MINE1010 | 6 UOC  
**Mineral Resources Engineering**

PHYS1231 | 6 UOC  
**Higher Physics 1B**

PSYC1001 | 6 UOC  
**Psychology 1A**

SOLA1070 | 6 UOC  
**Sustainable Energy**

**Level 3 Electives**

Students can take up to a maximum of 6 UOC of the following courses.

COMP2041 | 6 UOC  
**Software Construction: Techniques and Tools**

COMP3211 | 6 UOC  
**Computer Architecture**

COMP3231 | 6 UOC  
**Operating Systems**

ELEC2146 | 6 UOC  
**Electrical Engineering Modelling and Simulation**

ELEC3111 | 6 UOC
<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC3145</td>
<td>6</td>
<td>Distributed Energy Generation</td>
</tr>
<tr>
<td>ELEC3705</td>
<td>6</td>
<td>Real Time Instrumentation</td>
</tr>
<tr>
<td>ENGG3001</td>
<td>6</td>
<td>Fundamentals of Quantum Engineering</td>
</tr>
<tr>
<td>ENGG3060</td>
<td>3</td>
<td>Fundamentals of Humanitarian Engineering</td>
</tr>
<tr>
<td>ENGG4060</td>
<td>6</td>
<td>Maker Games</td>
</tr>
<tr>
<td>ENGG4102</td>
<td>6</td>
<td>Student Initiated Project</td>
</tr>
<tr>
<td>ENGG4102</td>
<td>6</td>
<td>Humanitarian Engineering Project</td>
</tr>
<tr>
<td>MATH3101</td>
<td>6</td>
<td>Computational Mathematics for Science and Engineering</td>
</tr>
<tr>
<td>MATH3121</td>
<td>6</td>
<td>Mathematical Methods and Partial Differential Equations</td>
</tr>
<tr>
<td>MATH3161</td>
<td>6</td>
<td>Optimization</td>
</tr>
<tr>
<td>MATH3201</td>
<td>6</td>
<td>Dynamical Systems and Chaos</td>
</tr>
<tr>
<td>MATH3261</td>
<td>6</td>
<td>Fluids, Oceans and Climate</td>
</tr>
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</table>
Level 4 Electives

Students must take at least 12 UOC of the following courses. Students who have chosen ELEC1111 and COMP1521 as their Year 1 electives may take up to 12 UOC more of the courses below

ELEC4445 | 6 UOC
Entrepreneurial Engineering

ELEC4601 | 6 UOC
Digital and Embedded Systems Design

ELEC4602 | 6 UOC
Microelectronic Design and Technology

ELEC4603 | 6 UOC
Solid State Electronics

ELEC4604 | 6 UOC
Radio Frequency Electronics

ELEC4605 | 6 UOC
Quantum Devices and Computers

ELEC4611 | 6 UOC
Power System Equipment
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC4612</td>
<td>6 UOC</td>
<td>Power System Analysis</td>
</tr>
<tr>
<td>ELEC4613</td>
<td>6 UOC</td>
<td>Electrical Drive Systems</td>
</tr>
<tr>
<td>ELEC4614</td>
<td>6 UOC</td>
<td>Power Electronics</td>
</tr>
<tr>
<td>ELEC4617</td>
<td>6 UOC</td>
<td>Power System Protection</td>
</tr>
<tr>
<td>ELEC4621</td>
<td>6 UOC</td>
<td>Advanced Digital Signal Processing</td>
</tr>
<tr>
<td>ELEC4622</td>
<td>6 UOC</td>
<td>Multimedia Signal Processing</td>
</tr>
<tr>
<td>ELEC4623</td>
<td>6 UOC</td>
<td>Biomedical Instrumentation, Measurement and Design</td>
</tr>
<tr>
<td>ELEC4631</td>
<td>6 UOC</td>
<td>Continuous - Time Control System Design</td>
</tr>
<tr>
<td>ELEC4632</td>
<td>6 UOC</td>
<td>Computer Control Systems</td>
</tr>
<tr>
<td>ELEC4633</td>
<td>6 UOC</td>
<td>Real-Time Engineering</td>
</tr>
<tr>
<td>PHTN4661</td>
<td>6 UOC</td>
<td>Optical Circuits and Fibres</td>
</tr>
<tr>
<td>PHTN4662</td>
<td>6 UOC</td>
<td>Photonic Networks</td>
</tr>
</tbody>
</table>
Recommended Prescribed Elective

When undertaking the specialisation as a part of a single degree program, the program consists of the Electrical Engineering stream plus 12 UOC of General Education plus 12 UOC of foundational or disciplinary Prescribed Electives.

Recommended Level 1 Prescribed Electives for this specialisation are:
- COMP1521 Computer Systems Fundamentals (6 UOC)
- ELEC1111 Electrical and Telecommunications Engineering (6 UOC)

NOTE: When ELEC1111 and COMP1521 are chosen as the L1 electives in Year 1, an additional 12 UOC of Foundational or Disciplinary electives are taken in Year 4.

Industrial Training

Students undertake 60 days of industrial training.

Enrolment Disclaimer

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

Industrial Experience Requirements

All students are required to undertake mandatory industrial training. Each student is personally responsible for arranging and completing the full 60 days compulsory industrial training prescribed as part of the requirements for the award of the degree. Industrial training should be concurrent with enrolment and is best accumulated in the summer recesses at the end of the second and third years of the program, but it must be completed before graduating. Industrial training should be in the area of engineering design and/or project work, but limited credit may be given for work of a non-engineering nature. It is preferable that all 60 days be completed with one or two organisations. Students should, in general, work with professional engineers and take an active part in their work in the design of equipment, solving of engineering problems, or any other work that is relevant to the profession of Engineering.

Students are required to submit a written report on their industry placements, typically 2000-3000 words, describing the organisation of the Company, summarising the work done and the training received. The report must be accompanied by certification of their industrial placement by a senior company representative.

Industrial Training will be assessed as a compulsory part of the course ELEC4122 Strategic Leadership and Ethics. Students must complete the industrial training requirement in order to receive a completed assessment for this course, but the industrial training assessment does not affect the mark received for ELEC4122.
Pre-2019 Handbook Editions

Access past handbook editions (2018 and prior)

Pre-2019 Handbook Editions
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