Overview

The School of Electrical Engineering and Telecommunications offers a five year integrated degree program (240 UOC) leading to a Bachelor of Engineering (Honours) and Master of Engineering (BE ME) in Electrical Engineering. The program includes a compulsory 24 UOC minor in a discipline outside the area of electrical engineering and telecommunications. Flexibility and choice are maintained throughout the entire structure by providing many elective courses.

The program outcomes are achieved through the learning outcomes of all courses including project work, electives and compulsory and relevant industrial training within the BE ME integrated degree program. The 5-year BE ME structure is designed such that at graduation, students would be expected to have desired skills competency, such as creative problem solving, innovative design, capacity for analytical and critical thinking, independent in reflective learning, in-depth discipline specific knowledge, good communication skills, professional attitude and ethical practice, and teamwork.
<table>
<thead>
<tr>
<th><strong>Faculty</strong></th>
<th>Faculty of Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Campus</strong></td>
<td>Kensington</td>
</tr>
<tr>
<td><strong>Study Level</strong></td>
<td>Undergraduate</td>
</tr>
<tr>
<td><strong>Typical duration</strong></td>
<td>5 Years</td>
</tr>
<tr>
<td><strong>Delivery Mode</strong></td>
<td>Face-to-face</td>
</tr>
<tr>
<td><strong>Intake Period</strong></td>
<td>Term 1, Term 3</td>
</tr>
<tr>
<td><strong>Academic Calendar</strong></td>
<td>3+ Calendar</td>
</tr>
<tr>
<td><strong>Minimum Units of Credit</strong></td>
<td>240</td>
</tr>
<tr>
<td><strong>Award type</strong></td>
<td>Bachelors Honours</td>
</tr>
<tr>
<td><strong>Award(s)</strong></td>
<td>Bachelor of Engineering (Honours) - BE (Hons)</td>
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<td></td>
<td>Master of Engineering - ME</td>
</tr>
<tr>
<td><strong>UAC Code</strong></td>
<td>425150</td>
</tr>
<tr>
<td><strong>CRICOS Code</strong></td>
<td>088841J</td>
</tr>
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</table>
Program Structure

Students must complete 240 UOC as a standalone program.

The program incorporates the following components in order to meet the Honours level outcomes:

At least 66 UOC Disciplinary Knowledge and Enquiry-based Courses

1. 18 UOC of disciplinary elective courses
2. 48 UOC enquiry-based courses (research and/or design) including:
   - 24 UOC of thesis project courses
   - 24 UOC of electrical design courses

Level 1 Core Courses

Students must take 48 UOC of the following courses.

COMP1511 | 6 UOC
Programming Fundamentals

ELEC1111 | 6 UOC
Electrical and Telecommunications Engineering

ELEC2141 | 6 UOC
Digital Circuit Design

ENGG1000 | 6 UOC
Introduction to Engineering Design and Innovation

PHYS1131 | 6 UOC
Higher Physics 1A

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

**Level 2 Core Courses**

Students must take 36 UOC of the following courses.

ELEC2117 | 6 UOC
Electrical Systems Design

ELEC2133 | 6 UOC
Analogue Electronics

ELEC2134 | 6 UOC
Circuits and Signals

ELEC2142 | 6 UOC
Embedded Systems Design

MATH2069 | 6 UOC
Mathematics 2A

MATH2099 | 6 UOC
Mathematics 2B

**Level 3 Core Courses**

Students must take 30 UOC of the following courses.

ELEC3104 | 6 UOC
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 5 Core Courses

Students must take 12 UOC of the following courses.
ELEC9451 | 4 UOC  
Masters Project A

ELEC9452 | 4 UOC  
Masters Project B

ELEC9453 | 4 UOC  
Masters Project C

**Engineering and Technical Management Electives**

Students must take at least 6 UOC of the following courses.

GSOE9210 | 6 UOC  
Engineering Decision Structures

GSOE9445 | 6 UOC  
Entrepreneurial Engineering

GSOE9820 | 6 UOC  
Engineering Project Management

GSOE9830 | 6 UOC  
Economic Decision Analysis in Engineering

**Level 3 Discipline Electives**

Students must take at least 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

ELEC3106  |  6 UOC
Electronics

MATH3101  |  6 UOC
Computational Mathematics for Science and Engineering

MATH3121  |  6 UOC
Mathematical Methods and Partial Differential Equations

MATH3161  |  6 UOC
Optimization

MATH3201  |  6 UOC
Dynamical Systems and Chaos

MATH3261  |  6 UOC
Fluids, Oceans and Climate

MATH3411  |  6 UOC
Information, Codes and Ciphers

TELE3113  |  6 UOC
Analogue and Digital Communications

TELE3118  |  6 UOC
Network Technologies

TELE3119  |  6 UOC
Trusted Networks

Level 4 Discipline Electives

Students must take at least 18 UOC of the following courses.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELEC4445</td>
<td>6</td>
<td>Entrepreneurial Engineering</td>
</tr>
<tr>
<td>ELEC4601</td>
<td>6</td>
<td>Digital and Embedded Systems Design</td>
</tr>
<tr>
<td>ELEC4602</td>
<td>6</td>
<td>Microelectronic Design and Technology</td>
</tr>
<tr>
<td>ELEC4603</td>
<td>6</td>
<td>Solid State Electronics</td>
</tr>
<tr>
<td>ELEC4604</td>
<td>6</td>
<td>Radio Frequency Electronics</td>
</tr>
<tr>
<td>ELEC4611</td>
<td>6</td>
<td>Power System Equipment</td>
</tr>
<tr>
<td>ELEC4612</td>
<td>6</td>
<td>Power System Analysis</td>
</tr>
<tr>
<td>ELEC4613</td>
<td>6</td>
<td>Electrical Drive Systems</td>
</tr>
<tr>
<td>ELEC4614</td>
<td>6</td>
<td>Power Electronics</td>
</tr>
<tr>
<td>ELEC4621</td>
<td>6</td>
<td>Advanced Digital Signal Processing</td>
</tr>
<tr>
<td>ELEC4622</td>
<td>6</td>
<td>Multimedia Signal Processing</td>
</tr>
<tr>
<td>ELEC4623</td>
<td>6</td>
<td>Biomedical Instrumentation, Measurement and Design</td>
</tr>
<tr>
<td>Course Code</td>
<td>UOC</td>
<td>Course Name</td>
</tr>
<tr>
<td>-------------</td>
<td>-----</td>
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<tr>
<td>ELEC4631</td>
<td>6</td>
<td>Continuous - Time Control System Design</td>
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<tr>
<td>ELEC4632</td>
<td>6</td>
<td>Computer Control Systems</td>
</tr>
<tr>
<td>ELEC4633</td>
<td>6</td>
<td>Real-Time Engineering</td>
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<tr>
<td>PHTN4661</td>
<td>6</td>
<td>Optical Circuits and Fibres</td>
</tr>
<tr>
<td>PHTN4662</td>
<td>6</td>
<td>Photonic Networks</td>
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<tr>
<td>TELE4642</td>
<td>6</td>
<td>Network Performance</td>
</tr>
<tr>
<td>TELE4651</td>
<td>6</td>
<td>Wireless Communication Technologies</td>
</tr>
<tr>
<td>TELE4652</td>
<td>6</td>
<td>Mobile and Satellite Communications Systems</td>
</tr>
<tr>
<td>TELE4653</td>
<td>6</td>
<td>Digital Modulation and Coding</td>
</tr>
</tbody>
</table>

**Level 5 Discipline Electives**

Students must take at least 24 UOC of the following courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>ELEC9701</td>
<td>6</td>
<td>Mixed Signal Microelectronic Design</td>
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<td>ELEC9702</td>
<td>6</td>
<td>Radio Frequency Integrated Circuit Design</td>
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<td>Course Code</td>
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<td>Course Title</td>
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<tr>
<td>-------------</td>
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</tr>
<tr>
<td>ELEC9703</td>
<td>6</td>
<td>Microsystems Design and Technology</td>
</tr>
<tr>
<td>ELEC9704</td>
<td>6</td>
<td>VLSI Technology</td>
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<tr>
<td>ELEC9705</td>
<td>6</td>
<td>Quantum Devices</td>
</tr>
<tr>
<td>ELEC9711</td>
<td>6</td>
<td>Power Electronics for Renewable and Distributed Generation</td>
</tr>
<tr>
<td>ELEC9712</td>
<td>6</td>
<td>High Voltage Systems</td>
</tr>
<tr>
<td>ELEC9713</td>
<td>6</td>
<td>Industrial and Commercial Power Systems</td>
</tr>
<tr>
<td>ELEC9714</td>
<td>6</td>
<td>Electricity Industry Planning and Economics</td>
</tr>
<tr>
<td>ELEC9715</td>
<td>6</td>
<td>Electricity Industry Operation and Control</td>
</tr>
<tr>
<td>ELEC9716</td>
<td>6</td>
<td>Electrical Safety</td>
</tr>
<tr>
<td>ELEC9721</td>
<td>6</td>
<td>Digital Signal Processing Theory and Applications</td>
</tr>
<tr>
<td>ELEC9722</td>
<td>6</td>
<td>Digital Image Processing</td>
</tr>
<tr>
<td>ELEC9723</td>
<td>6</td>
<td>Speech Processing</td>
</tr>
<tr>
<td>Course Code</td>
<td>UOC</td>
<td>Course Title</td>
</tr>
<tr>
<td>-------------</td>
<td>-----</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>ELEC9725</td>
<td>6</td>
<td>Satellite Navigation: Systems, Signals &amp; Receivers</td>
</tr>
<tr>
<td>ELEC9731</td>
<td>6</td>
<td>Robust and Linear Control Systems</td>
</tr>
<tr>
<td>ELEC9732</td>
<td>6</td>
<td>Analysis and Design of Non-linear Control</td>
</tr>
<tr>
<td>ELEC9733</td>
<td>6</td>
<td>Real Computing and Control</td>
</tr>
<tr>
<td>ELEC9781</td>
<td>6</td>
<td>Special Topics in Electrical Engineering 1</td>
</tr>
<tr>
<td>ELEC9782</td>
<td>6</td>
<td>Special Topics in Electrical Engineering 2</td>
</tr>
<tr>
<td>GMAT9200</td>
<td>6</td>
<td>Principles of GPS Positioning</td>
</tr>
<tr>
<td>GSOE9758</td>
<td>6</td>
<td>Network Systems Architecture</td>
</tr>
<tr>
<td>TELE9751</td>
<td>6</td>
<td>Switching Systems Architecture</td>
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<tr>
<td>TELE9752</td>
<td>6</td>
<td>Network Operations and Control</td>
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<tr>
<td>TELE9753</td>
<td>6</td>
<td>Advanced Wireless Communications</td>
</tr>
<tr>
<td>TELE9754</td>
<td>6</td>
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</tr>
</tbody>
</table>
Coding and Information Theory

**TELE9755 | 6 UOC**  
Microwave Circuits, Theory and Techniques

**TELE9756 | 6 UOC**  
Advanced Networking

**TELE9757 | 6 UOC**  
Quantum Communications

**TELE9781 | 6 UOC**  
Special Topics in Telecommunications 1

**TELE9782 | 6 UOC**  
Special Topics in Telecommunications 2

**Free Electives**

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

Note: For minors taken inside the Faculty of Engineering, students are required to take a general education course (strictly outside the Faculty) instead of a free elective (both within and outside the Faculty).

*any course*

**General Education**

Students must take at least 12 UOC of the following courses.

*any General Education course*

**Level 3 Maturity Requirement**

Students must have completed 48 UOC before taking any of the following courses.

*any level 3 course*
Level 4 Maturity Requirement

Students must have completed 102 UOC before taking any of the following courses.

any level 4 course

Minor Specialisations

Students may satisfy the minor requirement of this program by completing the course requirements in one of the Commerce minors listed below or by completing 4-6 nominated courses in the disciplines of Music, Language, Psychology, Mechatronics, Photovoltaics, Computing, Mathematics, or Physics.

ACCTB2 Accounting
FINSA2 Finance
ECONC2 Business Economics
ECONB2 Business Strategy
IBUSB2 International Business
MGMTA2 Management
MGMTB2 Human Resource Management
MARKB2 Marketing

INDUSTRIAL EXPERIENCE REQUIREMENT

Students must complete a minimum of 60 days of Industrial Training to graduate. Industrial Training must be undertaken concurrently with enrolment in the program.

For more information on Industrial Training, please visit https://www.engineering.unsw.edu.au/study-with-us/engineering-students-industrial-training

Sample Programs

To access sample program(s), please visit:

BE (Hons) ME Elec Eng

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.
Related Programs

Bachelor of Engineering (Honours) - **BE (Hons)**

**3707 Engineering (Honours)**

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

Read More
Program Requirements

Progression Requirements

Students must show cause not to be excluded from the program if they have any of the following:

- 2 fails in any given core course
- a WAM of less than 65%.

For more information on university policy on progression requirements please visit Academic Progression.
Professional Outcomes

Career Opportunities

Technical careers in electrical engineering (refer to 425100 B Engineering (Hons) (Electrical) and in areas of specialisation such as satellite systems, nuclear engineering, geospatial systems, photovoltaics, mechatronics.
Recognition of Achievement

University Medal

The University Medal is awarded to recognise outstanding academic performance by a bachelor degree student in line with the University Medal Policy and University Medal Procedure.

Honours Classes

Award of Class of Honours

- Class 1: WAM of at least 80 and Thesis Mark of at least 65
- Class 2 Division 1: WAM of at least 75 and Thesis Mark of at least 65
- Class 2 Division 2: WAM of at least 65 and Thesis Mark of at least 65

Honours WAM

Courses will be weighted according to the following:

- General Education: 1
- Level 1 Courses: 1
- Level 2 Courses: 2
- Level 3 Courses: 3
- Level 4 Courses: 4

First attempt counts and Honours WAM to be calculated to one decimal place.

See Additional Information below for further details.
Additional Information

Award with Excellence

A student may also be eligible for the *Award with Excellence* for the Master’s degree.

Marking of written report

Thesis marks should be provided by the two assessors independently, without collusion or knowledge of the other mark.

- For any mark difference less than or equal to 10 marks, the unweighted average.
- For any mark difference of 11-15 marks, the Thesis Coordinator discusses with the two markers about why they gave their marks and assists the two markers to come to an agreement on a final mark.
- For any mark difference greater than 15 marks, and third assessor must be used. An unweighted average of the three marks will be used.
- If the situation arises that one mark is invalid, the Thesis Coordinator has the discretion to eliminate that mark and average the other two (if they fail within the 10 mark difference).
Program Fees

At UNSW fees are generally charged at course level and therefore dependent upon individual enrolment and other factors such as student's residency status. For generic information on fees and additional expenses of UNSW programs, click on one of the following:

- Domestic Students
- Commonwealth Supported Students
- International Students
Pre-2019 Handbook Editions

Access past handbook editions (2018 and prior)

Pre-2019 Handbook Editions