Overview

The Chief of Defence Force Honours Program in Engineering offers the opportunity for students entering UNSW Canberra with a high Entrance Rank, and who maintain a high level of performance in their studies, to undertake research in a range of disciplines that will develop their critical thinking and independent research skills beyond that available in the standard Engineering program.

In Year 1 of the program students will be engaged with cohort activities so as to develop and maintain their interest and continuing involvement in the program via invited lectures, seminars, general reading and social events.

Commencing in Year 2, the research projects, each offered as separate courses, will be supervised by academic staff from the same or closely related discipline. Students in the research courses may work independently or as part of a team, depending on the nature of the project undertaken, though all students will submit individual assessment. Final assessment, due by the end of semester, will be based on a written paper and an oral presentation.

The Bachelor of Engineering (Honours) (CDF) in Electrical Engineering is built on a foundation of mathematics, computing science and physical science. The program is specifically designed for undergraduate students who have shown academic excellence in their studies and it incorporates significant elements of training in research methods at all years of the program. A small component of electrical engineering is introduced in the first year, with progressively larger components in second and third year. The final year is almost exclusively devoted to electrical engineering courses. Each year of the program comprises a number of discipline-based courses, courses taught by other discipline areas and problem-based learning courses.

Electrical Engineering is one of the newer branches of engineering. It has its origin in
the turning to practical use of the discoveries of Faraday, Ampere, Maxwell and a number of other eminent 19th century physicists. It has remained the most strongly science-oriented branch of engineering. At first it had its major impact by providing the means for the generation, distribution and utilisation of electric power. However, while this remains an important sub-area of the whole discipline, the last few decades particularly have seen a rapid and extensive diversification into the fields of computers and control as well as electronics and communications, and beyond them into such areas as biology, medicine and space technology. It is now true to say that there are very few areas of civilised activity that have remained untouched by the ideas and products of modern electrical engineering. The absorption of recent scientific development has been very rapid and has demanded a fully developed scientific outlook on the part of electrical engineers for a proper understanding of the problems involved. Many devices, scarcely more than laboratory prototypes a decade ago, are now in widespread use as fully engineered hardware.

The Bachelor of Engineering (Honours) (CDF) in Electrical Engineering has program objectives and learning outcomes in common with the standard Bachelor of Engineering (Honours) in Electrical Engineering program. The program extends the educational principles embodied in the Bachelor of Engineering (Honours) in Electrical Engineering) to a higher level of the degree. In the program, students will be exposed in first year to research methods in Engineering and will be offered significant extensions to the ideas and analysis performed in the standard degree program. This will allow them to undertake research projects, at the appropriate level, in their later years, thereby, more fully integrating research into the standard coursework undergraduate degree. The individual projects undertaken in close association with academic staff on research topics of mutual interest underpin the program and give the students the ability to develop their full potential.
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<tr>
<th><strong>Faculty</strong></th>
<th>UNSW Canberra at ADFA</th>
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<td><strong>Campus</strong></td>
<td>Canberra</td>
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<tr>
<td><strong>Study Level</strong></td>
<td>Undergraduate</td>
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<td><strong>Typical duration</strong></td>
<td>4 Years</td>
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<td><strong>Delivery Mode</strong></td>
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<td><strong>Academic Calendar</strong></td>
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<td><strong>Minimum Units of Credit</strong></td>
<td>192</td>
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<td><strong>Award type</strong></td>
<td>Bachelors Honours</td>
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<td><strong>Award(s)</strong></td>
<td>Bachelor of Engineering (Honours) - BE (Hons)</td>
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Learning Outcomes

1. Graduates will be able to relate a quantitative, theory-based understanding of the sciences and fundamentals of electrical engineering (encompassing circuit analysis and design, signal processing, dynamical systems, control, power systems and communications).

2. Graduates will be able to appropriately select and apply the mathematical, statistical, programming and computational tools and techniques which underpin electrical engineering.

3. Graduates will have demonstrated a comprehensive understanding of electrical systems and components, and articulate directions of future research and knowledge development in electrical engineering.

4. Graduates will be able to synthesise circuit and systems design practice, contextual factors, norms and accountabilities in and the limitations on electrical engineering.

5. Graduates will be able to define, conduct experiments on and analyse complex, open-ended problems and apply appropriate methods for their solution.

6. Graduates will have demonstrated proficiency in applying systematic engineering synthesis and design processes, and critically evaluating and effectively communicating the results and implications to diverse audiences.

7. Graduates will have reviewed fields of contemporary research, identified a research objective, pursued this research objective through design, analysis, and experiment, and evaluated and communicated the results of this research.

8. Graduates will be able to operate in collaborative environments, as leader or member of interdisciplinary teams.

9. Graduates will have demonstrated independence, creativity and ethical conduct, and explain the importance of user-focused and sustainable solutions.
Graduate Capabilities:

For more information on Graduate Capabilities, please click on this link.
Program Structure

Students must complete 192 UOC as a standalone program.

1. Compulsory courses - 180 UOC
2. General Education courses - 12 UOC

Level 1 Core Courses

Students must take 48 UOC of the following courses.

ZEIT1102  6 UOC
Introduction to Programming

ZEIT1290  6 UOC
Electrical Engineering Research 1A

ZEIT1291  6 UOC
Electrical Engineering Research 1B

ZPEM1303  6 UOC
Engineering Mathematics 1A

ZPEM1304  6 UOC
Engineering Mathematics 1B

ZPEM1307  6 UOC
Computational Problem Solving

ZPEM1501  6 UOC
Physics 1A: Mechanics, Waves and Thermodynamics

ZPEM1502  6 UOC
Physics 1B: Electromagnetism and Modern Physics

Level 2 Core Courses
Students must take 48 UOC of the following courses.

**Level 2 Course**

- **ZEIT2103** 6 UOC  
  Data Structures and Representation

- **ZEIT2207** 6 UOC  
  Design of Electronic Circuits 2

- **ZEIT2901** 6 UOC  
  Engineering Research 2A

- **ZEIT2902** 6 UOC  
  Engineering Research 2B

- **ZEIT3506** 6 UOC  
  Systems Engineering / Management

- **ZPEM2309** 6 UOC  
  Engineering Mathematics 2A

- **ZPEM2310** 6 UOC  
  Engineering Mathematics 2B

- **ZPEM2502** 6 UOC  
  Physics 2B: Electrons, Photons and Matter

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**Level 3 Core Courses**

Students must take 48 UOC of the following courses.

- **ZEIT3215** 6 UOC  
  Signals and Systems

- **ZEIT3216** 6 UOC  
  Design of Electronic Circuits 3

- **ZEIT3218** 6 UOC  

Communications Techniques

ZEIT3220  |  6 UOC
Engineering Electromagnetics

ZEIT3221  |  6 UOC
Digital Signal Processing and Control

ZEIT3222  |  6 UOC
Control Engineering

ZEIT3901  |  6 UOC
Engineering Research 3A

ZEIT3902  |  6 UOC
Engineering Research 3B

Level 4 Core Courses

Students must take 36 UOC of the following courses.

ZEIT4224  |  6 UOC
Electrical Power, Machines and Power Electronics

ZEIT4901  |  12 UOC
Engineering Research 4A

ZEIT4902  |  12 UOC
Engineering Research 4B

ZINT2100  |  6 UOC
Introduction to Cyber-Security: Policy & Operations

General Education

Students must take at least 12 UOC of the following courses.
One of the following:
ZGEN2222 | 6 UOC
Introduction to Strategic Studies

ZGEN2801 | 6 UOC
Strategy, Management and Leadership

One of the following:
ZGEN2215 | 6 UOC
Law, Force and Legitimacy

ZGEN2240 | 6 UOC
Introduction to Military Ethics

**Practical Experience**

Before graduation a student shall complete 60 days of approved practical engineering experience which must be done in blocks of at least 20 working days each, each block being in the service of a single employer.

**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.
Admission Requirements

Special Admission Requirements

Additional selection criteria for admission to this program:

- Other

Selection and job offer by Defence Force Recruiting with the Australian Defence Force (ADF) for military undergraduates or meeting the min. required ATAR min for civilian students.

For more information about admission requirements for various UNSW programs, visit the following website(s):

Domestic Students
International Student
Program Requirements

Progression Requirements

To qualify for the degree of Bachelor of Engineering (Honours) (CDF) in Electrical Engineering, a student shall usually maintain a sessional Weighted Average Mean (WAM) of 80. Usually, a student who does not maintain a WAM of 80 shall be transferred to candidature for the degree of Bachelor of Engineering (Honours) in Electrical Engineering, although exceptions may be made at the discretion of the Head of School. Such review will occur at the end of each semester. This rule shall not usually be invoked for students with Potential Graduand status.

A student for the degree of Bachelor of Engineering (Honours) in Electrical Engineering may, at the discretion of the Head of School, transfer to the degree of Bachelor of Engineering (Honours) (CDF) in Electrical Engineering upon completion of 24 units of credit with a WAM of 85 or greater in semesters 1 or 2 of the Year 1 program.

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

Internships and Placements

Practical Experience Requirements

Before graduation a candidate shall complete 60 days of approved practical engineering experience which must be done in blocks of at least 20 working days each, each block being in the service of a single employer.

Service Training and Practical Experience Requirements

Service training conducted during the degree program is recognised as partially satisfying practical experience requirements in the following ways:

Naval Midshipmen, 30 days for experience gained at a defence establishment between second and third years. (Time at sea prior to arrival at UNSW Canberra at ADFA is not eligible for consideration.)

Army Cadets, 30 days for the year spent at Royal Military College between third and fourth years.

Air Force Cadets, 30 days for experience gained at a defence establishment between second and third years.
Professional Outcomes

Accreditations

Professional institutes that offer accreditation on completion of this program:

- Engineers Australia

This degree is accredited by Engineers Australia, 2015, and has been recognised by the Institute of Electrical and Electronics Engineers.

Career Opportunities

The Electrical Engineer in the Navy is known as a WEO – a Weapons Electrical Officer, and is responsible for electronic systems associated with gun and missile control systems, navigation systems, air and ground communications, radar and sonar systems and data systems. WEOs are not only responsible for technical matters but are a vital link in management: they may become involved also in personnel, financial and resource management.

RAAF Electrical Engineers usually are employed to manage a wide variety of operations including the repair and maintenance of modern radar, navigation, communications and computing equipment. They may be posted to a squadron in charge of an avionics section, or to a development area working on technical problems associated with new equipment. As they gain experience they can be expected to be posted to one of the commands, usually as a project officer concerned with the management and funding of projects.

Army Electrical Engineers usually pursue a career either in the Royal Australian Corps of Signals or the Royal Australian Corps of Electrical and Mechanical Engineers. New graduates may be involved in such areas as the operation, management and repair of state-of-the-art communications equipment or the management of guided weapons systems, laser designation and range finding equipment and radar.
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

The degree of Bachelor of Engineering (Honours) in Electrical Engineering shall be conferred as a Bachelor Honours degree at Level 8 in the AQF. Honours in recognition of meritorious performance may be awarded in the following categories:

- Honours Class I
- Honours Class II, Division I
- Honours Class II, Division II

The Class of Honours is calculated as follows:

- Honours Class 1: Honours WAM of at least 80.0 and Thesis Mark of at least 65
- Honours Class 2 Division 1: Honours WAM of at least 75.0 and Thesis Mark of at least 65
- Honours Class 2 Division 2: Honours WAM of at least 65.0 and Thesis Mark of at least 65.

These Honours levels will be displayed on the final testamur. Candidates who do not achieve Honours Class 1 or 2 will receive a Bachelor of Electrical Engineering (CDF) (Hons) with no honours level displayed.
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