Overview

Engineering degrees offered by UNSW Canberra aim to provide outstanding engineering education to the future leaders of the Australian Defence Force and to civilian students to pursue excellence through contributions to the engineering profession, industry and the community.

The Bachelor of Engineering (Honours) in Aeronautical Engineering is of four years duration and the degree may be awarded at Honours Class I, Honours Class II, Division I or Honours Class II, Division II. 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 Engineering (Honours) in Aeronautical Engineering with no honours level displayed.

The engineering programs at UNSW Canberra have been granted full accreditation by Engineers Australia.

Aeronautical engineering is the study of the design, development, manufacture, maintenance and control of machines or vehicles operating in the Earth's atmosphere or in outer space.

The design of a flight vehicle is quite complex and demands a knowledge of many engineering disciplines such as aerodynamics, propulsion systems, structural design, materials, avionics, and stability and control systems. Maintaining and operating a flight vehicle requires an understanding of materials, reliability and maintenance, structural analysis for necessary repairs, together with knowledge of the disciplines within the design process.

Except for Electrical Engineering and those in the Chief of Defence Force Honours Program first-year engineering and technology students enrol in a common program taking foundation science and engineering courses. In second and increasingly in third and fourth years the programs diverge into their specialities although there are
some courses that span across programs in all years. A key element in all years is the design stream which emphasises complex problem solving. Other streams such as aerodynamics, stability, control, thermofluids, structures, mechanics, materials and management often incorporate project based learning informed by academic research and industrial practice. Electives and a final year thesis enable students to pursue particular interests both within and outside the specialist discipline.

At the end of the program students are expected to meet the graduate attributes of the University and Stage 1 Competencies of Engineers Australia, ready to practise in their chosen profession and with the ingenuity and resourcefulness to meet rapid technological change.
<table>
<thead>
<tr>
<th><strong>Faculty</strong></th>
<th>UNSW Canberra at ADFA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Campus</strong></td>
<td>Canberra</td>
</tr>
<tr>
<td><strong>Study Level</strong></td>
<td>Undergraduate</td>
</tr>
<tr>
<td><strong>Typical duration</strong></td>
<td>4 Years</td>
</tr>
<tr>
<td><strong>Delivery Mode</strong></td>
<td>Face-to-face</td>
</tr>
<tr>
<td><strong>Intake Period</strong></td>
<td>Semester 1</td>
</tr>
<tr>
<td><strong>Academic Calendar</strong></td>
<td>UNSW Canberra Calendar</td>
</tr>
<tr>
<td><strong>Minimum Units of Credit</strong></td>
<td>192</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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</tbody>
</table>
Learning Outcomes

1. Students will be able to relate a quantitative, theory-based understanding of the sciences and fundamentals of aeronautical engineering (encompassing aerodynamics, structural mechanics, instrumentation, propulsion and control of aeronautical and space systems).

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

3. Students will demonstrate a comprehensive understanding of flight vehicles and their systems, and articulate directions of future research and knowledge development in aeronautical engineering.

4. Students will synthesise flight vehicle design practice, contextual factors, norms and accountabilities in and the limitations on aeronautical engineering.

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

6. Students will demonstrate proficiency in applying systematic engineering synthesis and design processes, and critically evaluating and effectively communicating the results and implications to all audiences.

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

8. Students will demonstrate 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.

The Bachelor of Engineering (Honours) in Aeronautical Engineering degrees require a prescribed program structure as determined by the engineering program chosen. Each year of the program comprises a number of School-based courses (identified by the prefix ZEIT) and courses taught by other Schools within UNSW Canberra.

Completion of each year, thereby allowing progression to the next year, is normally achieved by satisfactory progress in each of the courses given in that year. At the discretion of the Head of School, students may be allowed to concurrently enrol in courses from more than one year of the program.

1. Core Courses - 162 UOC
2. Technical Elective Courses - 18 UOC
3. General Education Courses - 12 UOC

Level 1 Core Courses

Students must take 48 UOC of the following courses.

ZEIT1102 | 6 UOC
Introduction to Programming

ZEIT1501 | 6 UOC
Engineering Practice and Design

ZEIT1503 | 6 UOC
Engineering Mechanics

ZEIT1504 | 6 UOC
Introduction to Mechanical and Aeronautical Engineering

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

**Level 2 Core Courses**

Students must take 48 UOC of the following courses.

ZEIT2500 | 6 UOC
Thermofluids

ZEIT2501 | 6 UOC
Mechanical and Electronic Design

ZEIT2502 | 6 UOC
Fundamentals of Flight

ZEIT2503 | 6 UOC
Fluid Mechanics

ZEIT2504 | 6 UOC
Mechanics of Solids

ZINT2501 | 6 UOC
Engineering Materials and Chemistry

ZPEM2309 | 6 UOC
Engineering Mathematics 2A

ZPEM2310 | 6 UOC
Engineering Mathematics 2B

**Level 3 Core Courses**
Students must take 36 UOC of the following courses.

<table>
<thead>
<tr>
<th>Code</th>
<th>UOC</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZEIT3500</td>
<td>6</td>
<td>Engineering Structures</td>
</tr>
<tr>
<td>ZEIT3501</td>
<td>6</td>
<td>Engineering Materials</td>
</tr>
<tr>
<td>ZEIT3503</td>
<td>6</td>
<td>Aerodynamics</td>
</tr>
<tr>
<td>ZEIT3504</td>
<td>6</td>
<td>Aircraft and Systems Design 1</td>
</tr>
<tr>
<td>ZEIT3505</td>
<td>6</td>
<td>Flight Dynamics and Aircraft Control</td>
</tr>
<tr>
<td>ZEIT3506</td>
<td>6</td>
<td>Systems Engineering / Management</td>
</tr>
</tbody>
</table>

**Level 4 Core Courses**

Students must take 30 UOC of the following courses.

<table>
<thead>
<tr>
<th>Code</th>
<th>UOC</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZEIT4500</td>
<td>6</td>
<td>Engineering Project A</td>
</tr>
<tr>
<td>ZEIT4501</td>
<td>6</td>
<td>Engineering Project B</td>
</tr>
<tr>
<td>ZEIT4502</td>
<td>6</td>
<td>Aircraft and Systems Design 2</td>
</tr>
<tr>
<td>ZEIT4503</td>
<td>6</td>
<td>Applied Thermodynamics and Propulsion</td>
</tr>
<tr>
<td>ZINT2100</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>
**Technical Electives**

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

ZEIT3502 | 6 UOC  
Vibration and Control Engineering

ZEIT4001 | 6 UOC  
Engineering Structures 2

ZEIT4003 | 6 UOC  
Computational Fluid Dynamics

ZEIT4006 | 6 UOC  
Structural Integrity Assessment

ZEIT4007 | 6 UOC  
Rotorcraft Engineering

ZEIT4008 | 6 UOC  
Integrated Mechanical Design

ZEIT4011 | 6 UOC  
Occasional Elective 1

ZEIT4012 | 6 UOC  
Occasional Elective 2

ZEIT4013 | 6 UOC  
Hypersonics and Advanced Propulsion

ZEIT4014 | 6 UOC  
Impact Dynamics
<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZEIT4225</td>
<td>6</td>
<td>Satellite Communications</td>
</tr>
<tr>
<td>ZEIT4504</td>
<td>6</td>
<td>Electrical and Mechanical Plant</td>
</tr>
<tr>
<td>ZEIT4506</td>
<td>6</td>
<td>Orbital Mechanics</td>
</tr>
<tr>
<td>ZEIT4507</td>
<td>6</td>
<td>Space Situational Awareness</td>
</tr>
<tr>
<td>ZEIT4702</td>
<td>6</td>
<td>Instrumentation</td>
</tr>
</tbody>
</table>

Note: Enrolment in ZEIT4011 and ZEIT4012 require the approval of the SEIT Director of Undergraduate Studies.

Upper Level courses from other programs may be taken with approval from the SEIT Director of Undergraduate Studies. Not all electives may be offered in any year.

**General Education**

Students must take at least 12 UOC of the following courses, normally taken in the third or fourth year of study.

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.

**Technical Electives - Areas of Interest**

Students may choose to take elective courses in the following areas of interest:

**Structural Integrity:**
- ZEIT4001 Engineering Structures 2 (6 UOC)
- ZEIT4006 Structural Integrated Assessment (6 UOC)
- ZEIT4008 Integrated Mechanical Design (6 UOC)

**Rotorcraft:**
- ZEIT4006 Structural Integrated Assessment (6 UOC)
- ZEIT4007 Rotorcraft Engineering (6 UOC)

**High Performance Aerospace Vehicle:**
- ZEIT4003 Computational Fluid Dynamics (6 UOC)
- ZEIT4013 Hypersonics (6 UOC)

**Space Engineering. At least 2 electives chosen from:**
- ZEIT4225 Satellite Communications (6 UOC)
- ZEIT4506 Orbital Mechanics (6 UOC)
- ZEIT4507 Space Situational Awareness (6 UOC)

**Level 4 Maturity Requirements**

Students may not attempt to undertake Level 4 courses until they have successfully completed 102 UOC of their engineering program (excluding General Education courses).

**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
Related Double Degree Programs

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

**4480 Aeronautical Engineering (Honours) / Science**

Faculty: UNSW Canberra at ADFA
Campus: Canberra
Units of Credit: 240
Typical Duration: 5 Years

Read More

Related Programs

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

**4476 Aeronautical Engineering (Honours) (CDF)**

Faculty: UNSW Canberra at ADFA
Campus: Canberra
Units of Credit: 192
Typical Duration: 4 Years

Read More
Admission Requirements

Special Admission Requirements

Additional selection criteria for admission to this program:

- Other

Minimum ATAR or equivalent of 85 or above and successful selection by the Defence Force Recruiting organisation to be a trainee officer in one of the three ADF services for trainee officers or minimum ATAR for civilian students.

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

Domestic Students
International Student
**Program Requirements**

**Internships and Placements**

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.

**ADF 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

Career Opportunities

The Bachelor of Engineering (Honours) in Aeronautical Engineering program has been designed to meet the needs of the Australian Defence Force as Australia's largest aircraft operator and covers the design, and reliability and maintenance of fixed and rotary wing aircraft. Air Force Bachelor of Engineering (Honours) in Aeronautical Engineering graduates may be involved in the operation and maintenance of aircraft and then become responsible for the airworthiness and modification of aircraft and engines, or the acquisition and introduction of new equipment into the Service. Army Bachelor of Engineering (Honours) in Aeronautical Engineering graduates are most likely to be involved in the maintenance and repair of the Army's rapidly growing fleet of fixed wing and rotary wing aircraft. Navy Bachelor of Engineering (Honours) in Aeronautical Engineering graduates are required for maintenance and repair, modifications, operational deployments and airworthiness of Navy's fleet of rotary wing aircraft.
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 Aeronautical 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 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

Where candidates do not achieve Honours Class 1 or 2, the Class of Honours is not displayed.

Courses will be weighted according to the following:

- Foundation i.e. Level 2 and 3 courses: 1
- Disciplinary i.e. Level 4 courses (not including final year projects): 2
- Thesis i.e. Final Year projects: 3
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