Civil Engineering (Honours)

Overview

Background

Civil Engineering takes its name from the division of engineering in the Middle Ages between military and civilian works. The profession of Civil Engineering was recognized by the formation of the Institution of Civil Engineers (UK) in 1825. In the 19th Century, the broadening scope of engineering led to the division of civilian engineering into civil, mechanical and electrical, with further specializations (aeronautical, chemical, industrial, materials, electronic etc.) having developed in the 20th Century.

After contracting its sphere of interest over a long period of time, Civil Engineering is now broadening its scope with the recognition of the wider implications of its effects on modern society. Attention is given both to the interaction between civil engineering and other disciplines and to the effect of Civil Engineering works on the environment. Present day civil engineering has maintained strong commonality with military engineering - the design and construction of facilities such as roads, bridges, airfields, buildings, water supply and waste treatment facilities, structures of all types, and the associated planning and management of projects.

Program Description

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

The Bachelor of Engineering (Honours) in Civil Engineering program 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 I or II will receive a
Bachelor of Engineering (Honours) in Civil Engineering with no honours level displayed.

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

In the first year, students will complete most fundamental science, mathematics and computing courses. During the second and third years, students will be required to complete all core civil engineering courses in areas of structures, construction materials, geotechnics, transportation, hydraulics and environmental engineering. In the final year, all students will complete both final year thesis and integrated design project to enhance their skills in solving complex civil engineering problems. Furthermore, all students will also take two technical electives which will further enhance their technical knowledge in specific areas of civil engineering.
Faculty
UNSW Canberra at ADFA

Campus
Canberra

Study Level
Undergraduate

Typical duration
4 Years

Delivery Mode
Face-to-face

Intake Period
Semester 1

Academic Calendar
UNSW Canberra Calendar

Minimum Units of Credit
192

Award type
Bachelors Honours

Award(s)
Bachelor of Engineering (Honours) - BE (Hons)
Learning Outcomes

1. Students will be able to relate a quantitative, theory-based understanding of the sciences and engineering fundamentals of civil engineering (encompassing structural analysis and design, infrastructure planning and design, water and environmental technologies, and construction materials, technologies and project management).

2. Students will demonstrate a comprehensive understanding of design and construction techniques and standards, and articulate directions of future research and knowledge development in civil engineering.

3. Students will synthesise engineering design practice, contextual factors, norms and accountabilities in and the limitations on civil engineering.

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

5. 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.

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

7. 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 prescribed program structure of the Bachelor of Engineering (Honours) in Civil Engineering degree is shown below. 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 - 168 UOC
2. Technical Elective Courses - 12 UOC
3. General Education Courses - 12 UOC

Level 1 Core Courses

Students must take 48 UOC of the following courses.

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>ZEIT1102</td>
<td>6 UOC</td>
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<tr>
<td>Introduction to Programming</td>
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<th>Course</th>
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<td>6 UOC</td>
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<td>Engineering Mechanics</td>
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<td>6 UOC</td>
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<th>Course</th>
<th>Units</th>
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<td>ZPEM1102</td>
<td>6 UOC</td>
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<td>Chemistry 1B</td>
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<th>Units</th>
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<td>ZPEM1303</td>
<td>6 UOC</td>
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<tr>
<td>Engineering Mathematics 1A</td>
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<td>ZPEM1304</td>
<td>6 UOC</td>
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<tr>
<td>Engineering Mathematics 1B</td>
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Level 2 Core Courses

Students must take 48 UOC of the following courses.

- **ZEIT2500 | 6 UOC**
  Thermofluids

- **ZEIT2504 | 6 UOC**
  Mechanics of Solids

- **ZEIT2601 | 6 UOC**
  Soil Mechanics and Engineering Geology

- **ZEIT2602 | 6 UOC**
  Hydraulic Engineering

- **ZEIT2603 | 6 UOC**
  Civil Engineering Materials

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

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

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

Level 3 Core Courses
Students must take 42 UOC of the following courses.

ZEIT3600 | 6 UOC
Structural Analysis

ZEIT3601 | 6 UOC
Environmental Engineering

ZEIT3602 | 6 UOC
Geotechnical Design

ZEIT3603 | 6 UOC
Design of Steel and Timber Structures

ZEIT3605 | 6 UOC
Design of Concrete and Prestressed Concrete Structures

ZEIT3606 | 6 UOC
Foundation and Pavement Engineering

ZEIT3607 | 6 UOC
Transportation Engineering

Level 4 Core Courses

Students must take 30 UOC of the following courses.

ZEIT4500 | 6 UOC
Engineering Project A

ZEIT4501 | 6 UOC
Engineering Project B

ZEIT4600 | 6 UOC
Civil Design Practice

ZEIT4601 | 6 UOC
Civil Design Practice Extension

ZEIT4604 | 6 UOC
Hydrology and Environmental Engineering Practice

Technical Electives

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

ZEIT4004 | 6 UOC
Geosynthetics and Ground Improvement

ZEIT4014 | 6 UOC
Impact Dynamics

ZEIT4015 | 6 UOC
Advanced Design of Steel Structure

ZEIT4016 | 6 UOC
Airport Engineering

ZEIT4603 | 6 UOC
Finite Element Methods

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:
ZEIT4022 | 6 UOC
Introduction to Strategic Studies

ZEIT4801 | 6 UOC
Strategy, Management and Leadership

One of the following:
ZEIT2215 | 6 UOC
Law, Force and Legitimacy
ZGEN2240 | 6 UOC
Introduction to Military Ethics

**Practical Experience Requirement**

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.

**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

4481 Civil Engineering (Honours) / Science

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

For defence students, 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

For defence graduates, a Civil Engineer in the ADF may be employed in the Royal Australian Engineers Corps of the Australian Army or as an Airfield Engineering Officer in the RAAF. The degree will provide graduates with professional engineering design, construction and management skills on a broad spectrum of engineering tasks required by the Australian Defence Force. Graduates will also develop enhanced planning and decision making skills and technical expertise to provide guidance to superiors and direction to subordinates, as required of Service officers.

For non-defence graduates, they will have a wide range of career prospects in different areas of civil and infrastructure engineering including buildings and construction, geotechnical and infrastructure designs, transportation and traffic planning, project management, sustainable development, environmental protection and management.
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 Civil 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
- Final Year Thesis: 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