Double Degree

Civil Engineering (Honours) / Science

4481  |  240 Units of Credit

Overview

This program is not available to international or Defence sponsored students.

The School of Engineering and Information Technology (SEIT) and the School of Physical, Environmental and Mathematical Sciences (PEMS) offer a dual degree program which qualifies students for two degrees after the equivalent of five years of successful full-time study leading to the award of the degrees Bachelor of Engineering (Civil) (Honours) and Bachelor of Science (BE (Civil) (Hons) BSc).

The School of Engineering and Information Technology (SEIT) will administer the program. Students should seek advice from the relevant School Office in the first instance, or from Student Administrative Services, UNSW Canberra.
Faculty
UNSW Canberra at ADFA

Campus
Canberra

Study Level
Undergraduate

Typical duration
5 Years

Academic Calendar
UNSW Canberra Calendar

Minimum Units of Credit
240

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

## 4473 - Civil Engineering (Honours)

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).

## Scholars

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.

## Scholars

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

## Scholars

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

## Scholars, Professionals, Leaders

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.

## Scholars, Professionals, Global Citizens, Leaders

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

## Global Citizens, Leaders, Professionals

7. Students will demonstrate independence, creativity and ethical conduct, and explain the importance of user-focused and sustainable solutions.

## Scholars, Global Citizens, Leaders, Professionals

## 4415 - Science

1. understand the content of their discipline and its interdisciplinary context. Students should be able to adequately determine the scope of their scientific discipline, its key insights, and what it adds to an understanding of the world. Students should be able to apply disciplinary knowledge and skills to solve problems.
2. engage in scientific practice with technical competence and adequate discipline-specific knowledge. Students should have the ability to construct new concepts and create new understanding through the process of inquiry, critical analysis, problem-solving, and scientific research.

3. demonstrate professional motivation and a capacity for creativity and long-term intellectual development. Students should have the ability to take responsibility for their own learning, motivated by curiosity and an appreciation of the value of knowledge.

4. communicate effectively and appropriately in a professional context (intra and inter disciplinary), or in a broader social context. Students should be able to speak competently about scientific issues in their discipline, and explain these issues to specialists and lay-people.

5. contribute positively to collaborative scientific research. Students should demonstrate a capacity for self-management, teamwork and leadership. Students should be capable of open-minded, objective and reasoned analysis, in order to achieve common goals and further the learning of themselves and others.

6. make appropriate and effective use of information and digital information-technology relevant to their discipline. Students should be familiar with important sources of information in their discipline and important tools of search and analysis.

7. reflect critically upon broad ethical ideas and specific codes of conduct in order to behave in accordance with ethical practice and social responsibility. Student should be able to reflect critically on their responsibilities within a professional community or broader social community.

**Graduate Capabilities:**

For more information on Graduate Capabilities, please click on this [link](#).
Stand Alone Programs

Click on the link below to find out more about each individual program.

Program 4473
Civil Engineering (Honours)

Program 4415
Science
Double Degree Structure

Students must complete 240 UOC.

Bachelor of Engineering (Civil) (Honours)/Bachelor of Science majoring in Mathematics and Statistics

1. Bachelor of Engineering (Civil) (Honours) – 144 UOC
2. Bachelor of Science majoring in Mathematics and Statistics – 72 UOC
3. Double Counted Courses: ZPEM1303, ZPEM1304, ZPEM2309, ZPEM2310 – 24 UOC

Bachelor of Engineering (Civil) (Honours)/Bachelor of Science majoring in Physics

1. Bachelor of Engineering (Civil) (Honours) – 144 UOC
2. Bachelor of Science majoring in Physics – 72 UOC
3. Double Counted Courses: ZPEM1303, ZPEM1501, ZPEM1304, ZPEM1502 – 24 UOC

Majors

4415 - Science

Students must complete one of the majors below.

MAJOR:

AMATA1  |  48 UOC
Mathematics and Statistics

APHYA1  |  48 UOC
Physics

ZITEK1  |  48 UOC
Computer Science

Computer Science (ZITEK1):

Only available to students enrolled in the Bachelor of Engineering (Electrical) (Hons)/Science (4482).
Mathematics and Statistics (AMATA1)

- ZPEM1301 Mathematics 1A and ZPEM1302 Mathematics 1B are substituted by ZPEM1303 Engineering Mathematics 1A and ZPEM1304 Engineering Mathematics 1B.

- ZPEM2311 Mathematical Modelling and ZPEM2303 Mathematical Tools for Science are substituted by ZPEM2309 Engineering Mathematics 2A and ZPEM2310 Engineering Mathematics 2B.

- Students take the Level 3 Core Courses ZPEM3301 Topics in Mathematics, ZPEM3311 Mathematical Methods, and ZPEM3313 Applied Nonlinear Dynamics.

**Level 1 Core Courses**

4473 - Civil Engineering (Honours)

Students must take 48 UOC of the following courses.

**ZEIT1102 | 6 UOC**
Introduction to Programming

**ZEIT1503 | 6 UOC**
Engineering Mechanics

**ZEIT1600 | 6 UOC**
Introduction to Civil Engineering

**ZPEM1102 | 6 UOC**
Chemistry 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

Level 2 Core Courses

4473 - Civil Engineering (Honours)

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

4473 - Civil Engineering (Honours)

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

ZEIT3607 | 6 UOC
Transportation Engineering

Level 4 Core Courses

4473 - Civil Engineering (Honours)

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

Science Electives
Students complete between 12 UOC - 36 UOC in Science electives depending on the specific Engineering Discipline and Science Major combination.

4480 BEng (Aero) / BSc:
- Students majoring in Maths & Stats complete any 36 UOC in Science electives as listed below.
- Students majoring in Physics complete any 12 UOC in Science electives as listed below. ZPEM3103 Quantum Theory and Applications in Spectroscopy is recommended.

4481 BEng (Civil) / BSc:
- Students majoring in Maths & Stats must complete ZPEM1102 Chemistry 1B and a total of 36 UOC in Science electives as listed below.
- Students majoring in Physics complete any 12 UOC in Science electives as listed below. ZPEM3103 Quantum Theory and Applications in Spectroscopy is recommended.

4482 BEng (Elec) / BSc:
- Students majoring in Computer Science complete any 24 UOC in Science electives as listed below.
- Students majoring in Maths & Stats must complete ZPEM1502 Physics 1B and a total of 36 UOC in Science electives as listed below.
- Students majoring in Physics complete any 18 UOC in Science electives as listed below. ZPEM3103 Quantum Theory and Applications in Spectroscopy is recommended.

4483 BEng (Mech) / BSc:
- Students majoring in Maths & Stats complete any 36 UOC in Science electives as listed below.
- Students majoring in Physics complete any 12 UOC in Science electives as listed below. ZPEM3103 Quantum Theory and Applications in Spectroscopy is recommended.

any Engineering and Information Technology course

any Physical, Environmental & Mathematical Sciences course

General Education

4415 - Science

Students must take at least 6 UOC of the following courses, normally taken in the
fourth or fifth year of study.

One of the following:
\[ \text{ZGEN2222} \quad 6 \text{ UOC} \]
Introduction to Strategic Studies

\[ \text{ZGEN2801} \quad 6 \text{ UOC} \]
Strategy, Management and Leadership

One of the following:
\[ \text{ZGEN2215} \quad 6 \text{ UOC} \]
Law, Force and Legitimacy

\[ \text{ZGEN2240} \quad 6 \text{ UOC} \]
Introduction to Military Ethics

\[ \text{ZINT2100} \text{ Cyber Security} \]

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For students majoring in Maths & Stats, ZINT2100 Cyber Security may be taken in Year 3, 4 or 5 as required. For students majoring in Physics, ZINT2100 Cyber Security may be taken in Year 2, 3, 4 or 5 as required.

\[ \text{Maturity Requirements} \]

4481 - Civil Engineering (Honours) / Science

- Students must complete 36 UOC of Level 1 courses before undertaking Level 2 courses.
- Student must complete 72 UOC of Level 1/2 courses before undertaking Level 3 courses.
- Students must complete 102 UOC of their engineering program (excluding General Education courses) before undertaking Level 4 courses.

\[ \text{Practical Experience Requirement} \]

4473 - Civil Engineering (Honours)

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.
Sample Double Degree(s)

To access sample program(s), please visit:

4481 Civil Engineering (Honours)/Science Sample Program

Please read the Double Degree Program rules as some specific rules apply to particular Double Degree combinations.

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.
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
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Authorised by Deputy Vice-Chancellor (Academic)
CRICOS Provider Code 00098G
ABN: 57 195 873 179