

School of Civil and Environmental Engineering UNSW Engineering

CVEN4102

Operations and Projects

Term 1, 2023



Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Dr X Shen	x.shen@unsw.edu.au	Available during lectures and consultation sessions, or Email to make appointment on any urgent or personal matters	Civil Engineering Building (H20) Level 2, Room 212 Kensington Campus	+61 2 9385 0483

School Contact Information

<u>Engineering Student Support Services</u> – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

<u>UNSW Study Abroad</u> – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students - potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 - Nucleus Student Hub

- (+61 2) 9385 7661 Engineering Industrial Training
- (+61 2) 9385 3179 UNSW Study Abroad and UNSW Exchange (for inbound students)

Course Details

Units of Credit 6

Summary of the Course

This course is designed to extend your knowledge on construction methods, engineering design and operations planning. It covers three categories of operations: heavy civil construction, building construction, and underground infrastructure construction. Examples will be given to introduce design theory and best practice in engineering construction, such as how to improve the productivity in earthmoving, how to design a concrete formwork, and how to install a utility tunnel without opening up the ground. At the end of the course, you will have a better understanding about a variety of construction processes, practical engineering design and state-of-the-art construction techniques.

Course Aims

The aim of this course is to introduce students to:

- Understand a variety of construction processes and methods;
- Identify the key factors adopted in the design of permanent or temporary structures;
- Provide you with procedures and tools for engineering design.

Course Learning Outcomes

After successfully completing this course, you should be able to:

Learning Outcome	EA Stage 1 Competencies
1. Explain the process of construction operations	PE1.1, PE3.2, PE3.6
2. Work independently on the design a permanent or temporary structure	PE1.5, PE2.1, PE2.2
3. Select a suitable method for constructing underground tunnels.	PE1.6, PE2.2, PE2.3
4. Work effectively in teams for group assignments.	

Teaching Strategies

Lectures: Find out what you must learn, Follow worked examples, Hear announcements on course changes.

Workshops: Be guided by demonstrators, Practice solving set problems, Ask questions.

Private Study: Review lecture material and look up books in the library if necessary, Do set problems and assignments, Reflect on class problems and assignments, Download materials from Moodle, Keep up with notices and find out marks via Moodle.

Assessments (examinations and assignments): Demonstrate your knowledge and skills, Demonstrate higher understanding and problem solving, Learn teamwork skills.

Observation: Go to construction sites and look through the fence to see what happens! Feel free to ask about what you see during the workshops.

Guest Lecture: Hear what actually happens in construction sites from practitioners.

Additional Course Information

Pre-requisites for Undergraduate students: CVEN2101 Engineering Construction; and CVEN3101 Engineering Operations and Control.

Excluded Course for Postgraduate students: CVEN9723 Design of Construction Operations.

Assessment

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Individual Assignment	5%	09/03/2023 05:00 PM	1
2. Group Assignment	20%	20/04/2022 05:00 PM	1, 4
3. Quiz	20%	31/03/2022 11:30 AM	1, 2
4. Final Exam	55%	Not Applicable	1, 2, 3

Assessment 1: Individual Assignment

Start date: 23/02/2023 12:00 PM Assessment length: 2 weeks Due date: 09/03/2023 05:00 PM

The purpose of the short individual assignment is to develop a general understanding about the opportunities and challenges faced by the construction industry in Australia.

Assessment 2: Group Assignment

Start date: 09/03/2023 12:00 PM Assessment length: 6 weeks Due date: 20/04/2022 05:00 PM

Engineering design is generally a team-based activity. The group assignment will help students to learn how to work effectively in a team-based environment. Each group can be up to 4 students. Detailed descriptions of the group assignments will be provided in Moodle.

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Assessment 3: Quiz

Start date: 31/03/2023 10:30 AM **Assessment length:** 1 hour **Due date:** 31/03/2022 11:30 AM

The quiz will assess the basic knowledge covered in the main topics of the course. Students who perform poorly in the quiz will have a chance to discuss progress with the lecturer during the term. The quiz will be of one hour duration and will be open book. It consists of both quantitative and theoretical questions.

This is not a Turnitin assignment

Assessment 4: Final Exam

The final exam provides an opportunity to assess higher capabilities in understanding and applying the knowledge learned throughout the semester. It will be of two hours duration in the formal exam period

and will be closed book.

Hurdle requirement

A mark of at least 40% in the final examination is required before the class work is included in the final mark.

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Course Schedule

Lectures: Wed 10:00 - 13:00 (Weeks:1-5,7-10), Mathews Theatre B (K-D23-203)

Workshops: Fri 10:00 - 12:00 (Weeks:1-5,7,9-10), Central Lecture Block 6 (K-E19-103)

Week 6: Flexibility week for all courses (non-teaching)

Week 8: Fri, Public Holiday (no workshop)

View class timetable

Timetable

Date	Туре	Content	
Week 1: 13 February - 17 February	Lecture	Topic: Dewatering	
	Workshop	Topic: Dewatering	
Week 2: 20 February - 24 February	Lecture	Topic: Shoring	
	Workshop	Topic: Shoring	
Week 3: 27 February -	Lecture	Topic: Bracing	
3 March	Workshop	Topic: Bracing	
Week 4: 6 March - 10	Lecture	Topic: Lifting	
March	Workshop	Topic: Lifting	
	Assessment	Individual Assignment	
Week 5: 13 March - 17	Lecture	Topic: Concrete Formwork	
March	Workshop	Topic: Concrete Formwork	
Week 7: 27 March - 31	Lecture	Topic: Piling	
March	Assessment	Quiz	
Week 8: 3 April - 7 April	Lecture	Topic: Tunnelling	
Week 9: 10 April - 14	Lecture	Topic: TBM Tunnelling	
Aprıl	Workshop	Topic: Tunnelling	

Week 10: 17 April - 21 April	Lecture	Topic: Trenchless Techniques	
	Assessment	Group Assignment	

Resources

Prescribed Resources

There is no prescribed textbook for this course.

Recommended Resources

There are numerous books in the library covering Construction Methods and Project Management. If you are having trouble following the lectures or understanding how a construction process works then it is recommended that you look at one of these.

Submission of Assessment Tasks

Please refer to the Moodle page of the course for further guidance on assessment submission.

UNSW has a standard late submission penalty of:

• 5% per day, for all assessments where a penalty applies, capped at five days (120 hours), after which a student cannot submit an assessment, and no permitted variation.

Academic Honesty and Plagiarism

Beware! An assignment that includes plagiarised material will receive a 0% Fail, and students who plagiarise may fail the course. Students who plagiarise are also liable to disciplinary action, including exclusion from enrolment.

Plagiarism is the use of another person's work or ideas as if they were your own. When it is necessary or desirable to use other people's material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism at:

https://student.unsw.edu.au/plagiarism

Academic Information

Final Examinations:

Final Exams in T1 2023 will be held on campus between the 28th of April and the11th of May, and Supplementary Exams between the 22nd of May and the 26th of May. You are required to be available on these dates. Please do not to make any personal or travel arrangements during this period.

ACADEMIC ADVICE

- Key Staff to Contact for Academic Advice (log in with your zID and password): <u>https://intranet.civeng.unsw.edu.au/key-staff-to-contact-during-your-studies-at-unsw</u>
- <u>Key UNSW Dates</u> eg. Census Date, exam dates, last day to drop a course without academic/financial liability etc.
- CVEN Student Intranet (log in with your zID and password): <u>https://intranet.civeng.unsw.edu.au/student-intranet</u>
- Student Life at CVEN, including Student Societies: <u>https://www.unsw.edu.au/engineering/civil-and-environmental-engineering/student-life</u>
- Special Consideration: https://student.unsw.edu.au/special-consideration
- General and Program-Specific Questions: The Nucleus: Student Hub
- Book an Academic Advising session: https://unswengacademicadvising.as.me/schedule.php

Disclaimer

This course outline sets out description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle should be consulted for the up to date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline (as updated in Moodle), the description in the Course Outline/Moodle applies.

Image Credit

Courtsey: Sydney Metro TBM Tunelling

CRICOS

CRICOS Provider Code: 00098G

Acknowledgement of Country

We acknowledge the Bedegal people who are the traditional custodians of the lands on which UNSW Kensington campus is located.

Appendix: Engineers Australia (EA) Professional Engineer Competency Standard

Program Intended Learning Outcomes		
Knowledge and skill base		
PE1.1 Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline	1	
PE1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline		
PE1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline		
PE1.4 Discernment of knowledge development and research directions within the engineering discipline		
PE1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline	1	
PE1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline	1	
Engineering application ability		
PE2.1 Application of established engineering methods to complex engineering problem solving	1	
PE2.2 Fluent application of engineering techniques, tools and resources	1	
PE2.3 Application of systematic engineering synthesis and design processes	1	
PE2.4 Application of systematic approaches to the conduct and management of engineering projects		
Professional and personal attributes		
PE3.1 Ethical conduct and professional accountability		
PE3.2 Effective oral and written communication in professional and lay domains	1	
PE3.3 Creative, innovative and pro-active demeanour		
PE3.4 Professional use and management of information		
PE3.5 Orderly management of self, and professional conduct		
PE3.6 Effective team membership and team leadership	1	