

CVEN9723

Design of Construction Operations

Term 3, 2022



Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Dr Johnson 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	+61293850483

School Contact Information

[Engineering Student Support Services](#) – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

[Engineering Industrial Training](#) – Industrial training questions

[UNSW Study Abroad](#) – 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

The course is designed to extend your knowledge on engineering design and planning of construction operations. It covers fundamental construction methods and design practices for a variety of construction processes, including heavy civil construction, building construction and tunnel and utility pipeline construction. Examples will be given to guide the students in planning and directing construction operations.

Course Aims

The objectives of this course are to:

- Understand a variety of construction methods and processes;
- Identify the key factors adopted in the design of permanent and temporary structures;
- Work independently for individual assignments;
- Investigate the state-of-the-art in construction technologies and operations.

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 of permanent and temporary structures	PE2.1, PE2.2, PE1.5
3. Report the findings from group assignments	PE1.3, PE3.2, PE3.6
4. Investigate the state-of-the-art in construction technologies and operations.	PE1.6, PE2.2, PE2.3
5. Work effectively in teams for group assignments.	PE3.1, PE3.5, PE3.6

For each hour of contact it is expected that you will put in at least 1.5 hours of private study.

Teaching Strategies

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.

Lectures: Find out what you must learn, Follow worked examples, Hear announcements on course changes, Practice solving set problems, Ask questions.

Assessments: Demonstrate your knowledge and skills, Demonstrate higher understanding and problem

solving.

Additional Course Information

Excluded Course: CVEN4102 Operations and Projects.

Assessment

The final grade for this course will normally be based on the sum of the scores from each of the assessment tasks. Students who perform poorly in the quizzes are recommended to discuss progress with the lecturer during the term.

Note: The lecturer reserves the right to adjust the final scores by scaling if agreed by the Head of School.

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Quizzes	60%	Not Applicable	1, 2, 4
2. Individual Assignment	10%	05/10/2022 05:00 PM	1, 2, 4
3. Group Assignment	30%	24/11/2022 05:00 PM	1, 2, 3, 4, 5

Assessment 1: Quizzes

The quizzes 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 semester. The quiz will be of one hour duration and will be open book. It consists of both quantitative and theoretical questions.

Assessment 2: Individual Assignment

Start date: 22/09/2022 12:00 AM

Due date: 05/10/2022 05:00 PM

The purpose of the individual assignments is to work independently on the engineering design of construction operations. Students can reflect and apply what they have learnt from the course by solving practical and open-ended engineering problems.

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

Assessment 3: Group Assignment

Start date: 13/10/2022 12:00 AM

Due date: 24/11/2022 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.

Attendance Requirements

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

Course Schedule

Hybrid Lectures: Thu 12:00 - 16:00 (Weeks:1, 3-10), Civil Engineering G1 (K-H20-G1)

Online Quizzes: Thu 14:00 - 15:00 (Weeks: 5, 9)

Week 2: Thu, Public Holiday (no lecture)

[View class timetable](#)

Timetable

Date	Type	Content
Week 1: 12 September - 16 September	Lecture	Topic: Earthwork Planning
Week 3: 26 September - 30 September	Lecture	Topic: Shoring Design
Week 4: 3 October - 7 October	Lecture	Topic: Piling Design
	Assessment	Individual Assignment
	Assessment	Individual Assignment
Week 5: 10 October - 14 October	Lecture	Topic: Cost Estimation
	Assessment	Quiz 1
Week 6: 17 October - 21 October	Lecture	Topic: Lifting Design
Week 7: 24 October - 28 October	Lecture	Topic: Concrete Form Design
Week 8: 31 October - 4 November	Lecture	Topic: Tunnelling Construction
Week 9: 7 November - 11 November	Lecture	Topic: Trenchless Techniques
	Assessment	Quiz 2
Week 10: 14 November - 18 November	Lecture	Topic: Construction Safety and Quality Management
Study Week: 21 November - 24 November	Assessment	Group Assignment
	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 T3 2022 will be held online between 25th November - 8th December 2022 inclusive, and supplementary exams between 9th - 13th January 2023 inclusive. 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): <https://intranet.civeng.unsw.edu.au/key-staff-to-contact-during-your-studies-at-unsw>
- [Key UNSW Dates](#) - 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): <https://intranet.civeng.unsw.edu.au/student-intranet>
- Student Life at CVEN, including Student Societies: <https://www.unsw.edu.au/engineering/civil-and-environmental-engineering/student-life>
- Special Consideration: <https://student.unsw.edu.au/special-consideration>
- General and Program-Specific Questions: [The Nucleus: Student Hub](#)
- Book an Academic Advising session: <https://app.acuityscheduling.com/schedule.php?owner=19024765>

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

Mike Gal.

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	✓
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	✓
PE1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline	✓
Engineering application ability	
PE2.1 Application of established engineering methods to complex engineering problem solving	✓
PE2.2 Fluent application of engineering techniques, tools and resources	✓
PE2.3 Application of systematic engineering synthesis and design processes	✓
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	✓
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	✓