



CVEN9000

Civil Engineering Design Practice

Term One // 2021

Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Babak Shahbodagh	b.shahbodagh@unsw.edu.au		CE 507, Civil Engineering Building	

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

Credit Points 6

Summary of the Course

The course involves undertaking and completing a series of design tasks in either civil or environmental engineering depending on whether students are undertaking the civil or environmental stream.

Civil Engineering Stream (T1, 2021):

This project-based integrating course involves formulating designs for and solution to real-world civil engineering problems in the areas of geotechnical, structural, and pavement engineering. The problems will be drawn from industry and will be multi-disciplinary involving the application of material learnt throughout the undergraduate program. The course will involve group project work and the preparation of working drawings and project reports similar to those required in industry. The objective is to further develop the students' research, teamwork, managerial and self-directed learning skills.

This year, the course involves the detail design of various structural components of a container port in Australia, including the realignment of the port access road, design of the floor for the terminal and the port warehouse, according to Australian Standards.

Course Aims

To provide students with the opportunity to undertake practical civil engineering projects and to develop final detailed designs including the preparation of working drawings and project reports similar to those required in industry.

To build on the skills developed in any previous Civil Engineering Practice classes including:

- An in-depth engagement with the relevant disciplinary knowledge in its inter-disciplinary context
- Capacity for analytical and critical thinking and for creative problem solving
- Ability to engage independent and reflective learning
- Skills for collaborative and multi-disciplinary work
- Skills for effective communication
- Enhance your research skills

Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. Grasp conceptual design ideas in Civil Engineering	PE1.1, PE1.5, PE2.3
2. Provide students with an experience more typical of what	PE2.1, PE2.2, PE2.4

Learning Outcome	EA Stage 1 Competencies
graduate engineers may encounter	
3. Improve students' capacity for analytical and critical thinking and problem solving skills	PE1.2, PE2.2, PE2.3
4. Develop skills for collaborative and multi-disciplinary work and research	PE3.3, PE3.6
5. Ability to engage independent and reflective learning	PE1.2, PE2.2, PE2.3

Teaching Strategies

The main aim of the course is to give you the opportunity for self-directed learning. You need to make decisions on your design data and methodology. The course involves one major project with a range of design tasks. A 4-hour period is allocated per week to the course. Two hours is common to all students for lectures and 2 hours for workshops. During the 2 hours workshop, students will work on the project under the guidance of the demonstrators.

Students will work in groups of 3. The teaching strategies that will be used include:

Private Study

- Review lecture materials and textbook
- Understand the design process
- Conduct research on the topic
- Join Moodle discussions of problems
- Study relevant sources and references

Lectures

- Attend the lectures to keep yourself updated on the teaching materials
- Discuss your queries with the lecturers
- Hear announcements on course changes

Workshops

- Self-directed learning and solving the problems
- Meet with group members and develop strategies
- Be guided by demonstrators
- Work on design problems
- Ask questions

Assessments

- Demonstrate your knowledge and skills
- Demonstrate higher understanding and problem solving
- Demonstrate understanding of concept design and provide complete design solutions

Assessment

Late submissions will be penalised at the rate of 10% per day after the due time and date have expired

Assessment Tasks

Assessment task	Weight	Due Date	Student Learning Outcomes Assessed
First Report	10%	02/03/2021 05:00 PM	1, 2, 4
Second Report	20%	19/03/2021 05:00 PM	1, 2, 3, 4, 5
Individual Design/Research Report	15%	16/04/2021 05:00 PM	3, 4, 5
Final Design Report	55%	26/04/2021 05:00 PM	1, 2, 3, 4, 5

Assessment Details

Assessment 1: First Report

Details:

Evaluate Subgrade Strength

Assessment 2: Second Report

Details:

Design traffic & Design granular pavement with thin asphalt surfacing

Assessment 3: Individual Design/Research Report

Details:

Individual Design/Research Report

Assessment 4: Final Design Report

Details:

Final Design Report:

- Design pavement for the port access road
- Design industrial floor for the port
- Design the port storage

Attendance Requirements

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

Course Schedule

[View class timetable](#)

Timetable

Date	Type	Content
O Week: 8 February - 12 February		
Week 1: 15 February - 19 February		Lecture & workshop: Introduction & Subgrade Evaluation
Week 2: 22 February - 26 February		Lecture & workshop: Design Traffic
Week 3: 1 March - 5 March		Lecture & workshop: Design flexible pavement
Week 4: 8 March - 12 March		Lecture & workshop: Design flexible pavement (Cont'd) - Introduction to software Circly
Week 5: 15 March - 19 March		Lecture & workshop: Design industrial floor for the port
Week 6: 22 March - 26 March		Flexibility Week - No Lectures/Workshops
Week 7: 29 March - 2 April		Lecture & workshop: Loading; permanent, imposed and wind actions
Week 8: 5 April - 9 April		Lecture & workshop: Design of portal frames
Week 9: 12 April - 16 April		Lecture & workshop: Design of portal frames (cont'd)- Introduction to software
Week 10: 19 April - 23 April		Self-study (No lecture) Workshop: Work on the entire project

Resources

Prescribed Resources

Moodle:

Materials including class and demonstration links, lecture notes, project description, field and laboratory test data, and traffic data will be provided through Moodle.

References:

- Austroads: Guide to Pavement Technology Part 2: Pavement Structural Design
- Guide to Industrial Floors and Pavements - Design, Construction and Specification, Cement Concrete and Aggregates Australia
- Australian Standard for Structural Design Actions - Part 0: General Principles – AS1170.0
- Australian Standard for Structural Design Actions - Part 1: Permanent, Imposed and Other Actions – AS1170.1
- Australian Standard for Structural Design Actions - Part 2: Wind Actions – AS1170.2
- Australian Standard for Steel Structures – AS4100

Recommended Resources

- Pavement analysis and design, Huang, Y.H., 2004.
- Handbook: Design of structural steel connections, Australian Steel Institute, T. J. Hogan & S. A Munter.
- Design of portal frame buildings including crane runway beams and monorails, Woolcock, S.T., Kitipornchai, S., Bradford, M.A. and Haddad, G.A.
- Bowles, J.E. Foundation Analysis and Design, McGraw-Hill

Course Evaluation and Development

The course is reviewed annually through the myExperience survey. All responses are considered and we make changes to the course annually in response. We are also always happy to get feedback during the course for immediate consideration.

Submission of Assessment Tasks

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

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

[Key UNSW Dates](#) - eg. Census Date, exam dates, last day to drop a course without academic/financial liability etc.

Final Examinations:

Final exams in Term 1 will be held online between 30th April - 13th May inclusive. You are required to be available on these dates. Please do not to make any personal or travel arrangements during this period.

Supplementary Examinations:

Supplementary Examinations for Term 1 2021 will be held on 24th - 28th May inclusive should you be required to sit one. You are required to be available on these dates. Please do not to make any personal or travel arrangements during this period.

ACADEMIC ADVICE

For information about:

- Notes on assessments and plagiarism;
- Special Considerations: student.unsw.edu.au/special-consideration;
- General and Program-specific questions: [The Nucleus: Student Hub](#)
- Year Managers and Grievance Officer of Teaching and Learning Committee, and
- CEVSOC/SURVSOC/CEPCA

Refer to Academic Advice on the School website available at:

<https://www.engineering.unsw.edu.au/civil-engineering/student-resources/policies-procedures-and-forms/academic-advice>

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CRICOS

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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	✓