

CVEN4050

Thesis A

Term 1, 2023



Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Robert Holdom	robert.holdom@unsw.edu.au	email or office contact by phone or in person	CE211	02 9385 7773
William Glamore	w.glamore@wrl.unsw.edu.au	by email for Term 1, 2023	WRL, Manly Vale	02 8071 9868

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

This course is the first of two parts and is undertaken before CVEN4051 Thesis B, which should be taken in the following term. The Thesis involves formulating the designs for and solution to open-ended civil and/or environmental engineering problems. The problems will be drawn from industry and will be multi-disciplinary involving application of material learnt throughout the undergraduate program and will require creative thought. The course will include the preparation of relevant professional documents. Thesis A is a self-contained course and separate to Thesis B. In Thesis A students will develop specific solutions to the theme selected for the term of study and develop solutions to various contemporary engineering topics related to the course theme and and present their solutions to the specified engineering report format.

Course Aims

This course enhances the student's skills for undertaking scholarly enquiry by attempting to achieve a specific topic objective within a defined period of time. A significant component of the course relates to the review of literature, which promotes independent and reflective learning as well as increases students' capacity to develop information literacy. The thesis is expected to reinforce the student's ability and confidence in the written communication of technical information.

Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. Appraise and critique an aspect of an infrastructure system via a literature review or through use of accepted industry design processes	PE1.1, PE1.3, PE1.5, PE3.4
2. Assemble comprehensive and reliable data as part of a research project	PE1.1, PE1.3, PE1.4, PE2.1, PE3.1
3. Demonstrate critical thinking and research skills and critique industry practices in formulating responses to problems relating to the role of civil and environmental engineers	PE1.3, PE2.1, PE3.2, PE3.6
4. Apply engineering principles, such as risk management, decision making and design in developing solutions to real-world problems that are ethically sound	PE1.1, PE1.4, PE1.6, PE2.4, PE3.1, PE3.6
5. Demonstrate professional level written communication skills	PE1.2, PE1.6, PE2.1, PE2.4, PE3.2, PE3.5

Teaching Strategies

The Honours Thesis is an individual thesis in which each student works under the guidance of academic

staff with input from industry specialists. Topics are related to industry projects selected from contemporary practice. The work involves industry based investigations and design applications.

Additional Course Information

The Thesis A topic is presented to the student as it would be in industry and each student is required to prepare an individual Thesis submission by way of an *Engineering Report* that contains all of the elements required within the Assessment Overview.

The selected topic for Term 1, 2023 is focused on *Pavements used in commercial and industrial applications* and will be presented by Mr Robert Holdom.

As the course will involve several submissions throughout the term, Thesis A will be completed incrementally which can be compiled by a student into a single thesis volume.

Assessment

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Site Inspection Report - Pavements	20%	09/03/2023 05:00 PM	1, 2, 3, 5
2. Flexible Pavement design using Mechanistic Design Methods and Design of Segmental Block Pavement	30%	23/03/2023 05:00 PM	1, 2, 3, 4, 5
3. Construction Processes and materials of Construction in producing a Segmental Block Pavement	20%	13/04/2023 05:00 PM	1, 2, 3, 4, 5
4. Final Report submission (Thesis A Document)	30%	20/04/2023 05:00 PM	1, 2, 3, 5

Assessment 1: Site Inspection Report - Pavements

Start date: 13/02/2023 01:00 PM

Assessment length: Nominally 10 pages

Submission notes: Submissions are to align with each assessment task brief. Please note Assessment deadlines are hard deadlines with no extensions given. If you miss an Assessment Task submission deadline, then it is to be expected that you will fail the course.

Due date: 09/03/2023 05:00 PM

Marks returned: Within 2 weeks

Students are required to prepare a site report on two different pavements types as outlined in the Assessment Task 1.

Hurdle requirement

For each Assessment Task a student is required to achieve at least half of the marks allocated for the Assessment Task.

Additional details

Within the course Moodle site, each course Assessment Task Outline provides the due date and the submission requirements for that task. Unless otherwise notified, Assessment Task submissions will be marked by your Workshop Demonstrator and separately by another marker. This is to maintain quality standards across the course and within each workshop. Students who perform poorly in any of the Assessment Tasks are recommended to discuss their progress firstly with their Assigned Demonstrator or with the Lecturer at the first available opportunity (within a week) during the term on receipt of that poor performance.

Assessment 2: Flexible Pavement design using Mechanistic Design Methods and Design of Segmental Block Pavement

Start date: 27/02/2023 01:00 PM

Assessment length: Nominally 10 pages

Submission notes: Submissions are to align with each Assessment Task brief. Please note Assessment deadlines are hard deadlines with no extensions given. If you miss an Assessment Task submission deadline, then it is to be expected that you will fail the course.

Due date: 23/03/2023 05:00 PM

Marks returned: Within 2 weeks

Students will be required to make two (2) individual Pavement Design submissions as detailed in the Assessment Task 2.

Assessment criteria

Detailed in Assessment Task 2

Hurdle requirement

For each Assessment Task, a student is required to achieve at least half of the marks allocated for that Assessment Task.

Additional details

Within the course Moodle site, each course Assessment Task Outline provides the due date and the submission requirements for that task. Unless otherwise notified, Assessment Task submissions will be marked by your Workshop Demonstrator and separately by another marker. This is to maintain quality standards across the course and within each workshop. Students who perform poorly in any of the Assessment Tasks are recommended to discuss their progress firstly with their Assigned Demonstrator or with the Lecturer at the first available opportunity (within a week) during the term on receipt of that poor performance.

Assessment 3: Construction Processes and materials of Construction in producing a Segmental Block Pavement

Start date: 27/03/2023 01:00 PM

Assessment length: Nominally 10 pages

Due date: 13/04/2023 05:00 PM

Marks returned: Within two weeks of each Class Test sitting

In preparing this Engineering Report the student is required to produce a concise Specification of how a concrete segmental pavement should be constructed.

Assessment criteria

Detailed in Assessment Task 3.

Hurdle requirement

For each Assessment Task, a student is required to achieve at least half of the marks allocated for

that Assessment Task.

Additional details

Within the course Moodle site, each course Assessment Task Outline provides the due date and the submission requirements for that task. Unless otherwise notified, Assessment Task submissions will be marked by your Workshop Demonstrator and separately by another marker. This is to maintain quality standards across the course and within each workshop. Students who perform poorly in any of the Assessment Tasks are recommended to discuss their progress firstly with their Assigned Demonstrator or with the Lecturer at the first available opportunity (within a week) during the term on receipt of that poor performance.

Assessment 4: Final Report submission (Thesis A Document)

Start date: 03/04/2023 01:00 PM

Assessment length: 8 pages

Due date: 20/04/2023 05:00 PM

Marks returned: After Term end

This submission is the encapsulating document that links Assessment Tasks 1, 2 & 3 into a single final report.

Assessment criteria

Detailed in Assessment Task 4.

Hurdle requirement

For each Assessment Task, a student is required to achieve at least half of the marks allocated for that Assessment Task.

Additional details

Within the course Moodle site, each course Assessment Task Outline provides the due date and the submission requirements for that task. Unless otherwise notified, Assessment Task submissions will be marked by your Workshop Demonstrator and separately by another marker. This is to maintain quality standards across the course and within each workshop. Students who perform poorly in any of the Assessment Tasks are recommended to discuss their progress firstly with their Assigned Demonstrator or with the Lecturer at the first available opportunity (within a week) during the term on receipt of that poor performance.

Attendance Requirements

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

Course Schedule

[View class timetable](#)

Timetable

Date	Type	Content
Week 1: 13 February - 17 February	Lecture	Introduction to pavements used in Commercial and Industrial Applications. Outline of Thesis A requirements. Outline of Assessment Task 1. Your employment - preparing your Resume.
Week 2: 20 February - 24 February	Lecture	Pavement Types and Materials of Construction
Week 3: 27 February - 3 March	Lecture	Design of segmental pavements. Outline of Assessment Task 2.
Week 4: 6 March - 10 March	Lecture	Design of segmental pavements continued.
	Assessment	Site Inspection Report - Pavements: Submissions are to align with each assessment task brief. Please note Assessment deadlines are hard deadlines with no extensions given. If you miss an Assessment Task submission deadline, then it is to be expected that you will fail the course.
Week 5: 13 March - 17 March	Lecture	Design of segmental pavements continued.
Week 6: 20 March - 24 March	Homework	There is no scheduled classes in Week 6 as this Flexibility Week.
	Assessment	Flexible Pavement design using Mechanistic Design Methods and Design of Segmental Block Pavement: Submissions are to align with each Assessment Task brief. Please note Assessment deadlines are hard deadlines with no extensions given. If you miss an Assessment Task submission deadline, then it is to be expected that you will fail the course.
Week 7: 27 March - 31	Lecture	Special pavement types, material selection and

March		<p>construction considerations.</p> <p>Outline of Assessment Task 3.</p>
Week 8: 3 April - 7 April	Lecture	<p>Construction Processes.</p> <p>Pavement maintenance and management..</p> <p>Outline of Assessment Task 4.</p>
Week 9: 10 April - 14 April	Homework	<p>Monday 10th April, 2023 is Easter Monday. This day is a Public Holiday and there will be no scheduled Lecture.</p> <p>Students have access to all material needed to complete their remaining Assessment Tasks. For any additional course materials issued in Week 9, students will be notified by way of a course Announcement.</p>
	Assessment	<p>Construction Processes and materials of Construction in producing a Segmental Block Pavement</p>
Week 10: 17 April - 21 April	Lecture	<p>Finalisation of Thesis A.</p> <p>Guidance on CVEN4051 Thesis B Literature Search</p>
	Assessment	<p>Final Report submission (Thesis A Document)</p>

Resources

Prescribed Resources

There are no prescribed texts for this course. Specific resources will be provided on the Moodle.

Recommended Resources

Students are expected to search for information resources in their Thesis studies

Course Evaluation and Development

The theme for Thesis A changes annually. Students will be provided a formal feedback process by way of *myExperience* reporting. The lecturer has provided students with the opportunity of regular contact throughout the term and this will form the basis of gathering informal feedback that can be used in appraising the course format.

Laboratory Workshop Information

All students are to note that Workshop sessions require your compulsory attendance each week. The workshop sessions will commence in Week 2 and thereafter in Weeks: 3, 4, 5, 7, 8, & 10.

If you are unable to attend your weekly workshop session (and an excuse of your work (employment) scheduling is an unacceptable reason), then you are to inform your Demonstrator in advance of that particular Workshop date, and you need to complete a Special Consideration application with your proofs attached.

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 the 11th 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 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://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

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	✓