

CVEN9881

Hazardous Waste Management

Term 2, 2022



Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Ailar Hajimohammadi	ailar.hm@unsw.edu.au		Room 308, Level 3, H20	+61 2 9385 5066

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

Waste audits and characterisation of hazardous wastes in regions and industries; control of generation and transport of hazardous waste, manifest systems; waste minimisation; on-site treatment methods; integrated off-site treatment facilities; management of residues from treatment facilities; introduction to planning of regional hazardous waste management systems. Characteristics of individual waste types (dioxins, PCBs, pesticides, heavy metal, etc.) and waste management in individual industries (steel, pulp and paper, petro-chemical, food processing, etc.).

Course Aims

The objectives of this subject are to:

- Provide an appreciation of the management of hazardous waste in a systems context; ie to understand the inter-relationships between the various functional elements of waste generation, minimisation, transport, treatment and residue disposal.
- Provide students with the knowledge and skills to be able to undertake investigations and prepare concept designs of key elements of regional hazardous waste management systems; including waste audits of industrial facilities, assessment of waste generation in a region, assessment of waste minimisation opportunities and outline designs of treatment and disposal facilities.

Students will be provided with the basic tools by way of Guided Learning Units and Course notes and then will be expected to prepare workable solutions to assignment problems that have been drawn from a composite of real world problems.

Access to spreadsheet facilities (Excel) will greatly enhance the quality of assignment answers and understanding of the concepts in the subject

Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. To describe the basic principles underpinning the management of hazardous wastes including generation, minimisation, transport, treatment and residue disposal.	PE1.1, PE1.5, PE1.6
2. To apply these principles for different hazardous waste types in an Australian context in general and NSW in particular.	PE2.1, PE2.2, PE2.3, PE2.4
3. To present the results and understanding in written and spoken formats	PE3.2, PE3.4

Teaching Strategies

Private Study	<ul style="list-style-type: none"> • Review lecture material and course readings • Contribute to group discussions and assessments • Prepare for quiz/ workshops • Download materials from Moodle • Keep up with notices and find out marks via Moodle
Lectures	<ul style="list-style-type: none"> • Prepare for the lecture and workshops before attending • Take notes from guest lectures • Review recommended references on Moodle • Hear announcements on course changes
Workshops	<ul style="list-style-type: none"> • Be active in workshops and group activities • Participate in lecture / workshop activities • Ask questions on assessment tasks
Assessments	<ul style="list-style-type: none"> • Demonstrate your knowledge and skills in assignments • Demonstrate higher understanding and problem solving on real world problems and develop into sustainable solutions • Demonstrate time management skills through group work and distribution of projects tasks • Seek informal discussions via guest lectures and lecturers

Additional Course Information

- No prerequisites, but it is suggested that CVEN9872 Solid Waste Management, CVEN9884 Environmental Engineering Science I (or equivalent course) be completed prior to this subject.
- Waste audits and characterisation of hazardous wastes in regions and industries.
- Control of generation and transport of hazardous waste, manifest systems.
- Waste minimisation; on-site treatment methods; integrated off-site treatment facilities; management of residues from treatment facilities.
- Introduction to planning of regional hazardous waste management systems
- Characteristics of individual waste types (dioxins, PCBs, heavy metals etc) and waste management in individual industries (steel, pulp and paper, petro chemical etc) by way of assignments and seminars

See link to virtual handbook:

<https://www.handbook.unsw.edu.au/undergraduate/courses/2022/CVEN9881?year=2022>

Assessment

Details about the submission dates and timelines will be provided in Moodle and in workshop 1.

Students need to bring laptop to the class. There will be online quiz and class activities that need to be completed in the class.

These activities are part of the assessment and cannot be accessed later. Late access to submission links can only be granted in special conditions.

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Assignment	30%	Not Applicable	1, 2, 3
2. Quizzes	25%	Not Applicable	1, 2, 3
3. Class activities	15%	Not Applicable	1, 2, 3
4. Presentation	30%	Not Applicable	3

Assessment 1: Assignment

This is a group assignment about hazardous waste. They work in groups of 3 to provide a high quality engineering report which includes legal, technical and economic considerations. They provide recommendations in relation to the management of these hazardous wastes. The aim is to demonstrate their capacity to work as a team, understand hazardous waste management at a regional level and provide recommendation to the Federal Government.

Assessment 2: Quizzes

8 Quizzes worth 25% of the course total each. The quizzes directly relate to the content previously taught in lectures and workshops.

Assessment 3: Class activities

There will be in class activities for each lecture, and the students need to submit their answers to the activity.

Assessment 4: Presentation

Video presentation, screen capture recording of what you learned in this class

Attendance Requirements

Students must attend the class face to face (or online if discussed and agreed by the lecturer).

Students need to bring laptop to the class. There will be online quiz and class activities that need to be completed in the class.

These activities are part of the assessment and cannot be accessed later. Late access to submission links can only be granted in special conditions.

Course Schedule

Date	Lecture Topic (11 am- 1Pm)	Lecturer	Workshop Content (2 Pm-4Pm) (Demonstrator: Ayesha Siddika)
02/06/2022 (Week 1)	Introduction and background/ Classification of Hazardous Waste	Ailar Hajimohammadi	Introduction, assessment, assignment and rubric
09/06/2022 (Week 2)	Characterisation of Hazardous Waste	Ailar Hajimohammadi	Characterisation of Hazardous Waste
16/06/2022 (Week 3)	Basel convention and National Pollutant Inventory	Ailar Hajimohammadi	Basel convention and National Pollutant Inventory
23/06/2022 (Week 4)	Manifest Procedures, Prediction of Regional Hazardous Waste Quantities	Ailar Hajimohammadi	Manifest Procedures, Prediction of Regional Hazardous Waste Quantities
30/06/2022 (Week 5)	Cleaner Production and Waste Minimisation	Ailar Hajimohammadi	Cleaner Production and Waste Minimisation
Flexibility week for all courses (non teaching)			
14/07/2022 (Week 7)	Integrated Off-site Hazardous Waste Treatment Facilities 1	Ailar Hajimohammadi	Integrated Off-site Hazardous Waste Treatment Facilities 1
21/07/2022 (Week 8)	Integrated Off-site Hazardous Waste Treatment Facilities 2	Ailar Hajimohammadi	Integrated Off-site Hazardous Waste Treatment Facilities 2

28/07/2022 (Week 9)	Scheduled Waste and Immobilisation	Ailar Hajimohammadi	Schedule Waste and Immobilisation
04/08/2022 (Week 10)	Radioactive waste	Ailar Hajimohammadi	Radioactive waste

Resources

Prescribed Resources

All materials will be presented in the class

- Additional materials provided on Moodle.
- Recommended Internet sites.

Refer to MyUNSW for Important Dates available at: <https://student.unsw.edu.au/dates>

Course Evaluation and Development

Assessment Item	Description	Weight of final Grade	Max possible mark	Results Source (explained below)
Assignment	Research, analysis and discussion	30%	100	Moodle
Weekly Quizzes	Online quiz about last week lecture	25%	100	Moodle
Attendance to activities	Class and workshop activities	15%	100	In class/ Moodle
Participation in discussions	Participation in discussions and answering questions	0	5 Bonus marks	In class
Presentation	Video submission (screen capture recording)	30%	100	Moodle

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 T2 2022 will be held online between 12th - 25th August 2022 inclusive, and supplementary exams between 5th - 9th September 2022 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	