

# CVEN3701

Environmental Frameworks, Law and Economics

Term 1, 2023



## Course Overview

### Staff Contact Details

#### Convenors

Name	Email	Availability	Location	Phone
Tommy Wiedmann	<a href="mailto:t.wiedmann@unsw.edu.au">t.wiedmann@unsw.edu.au</a>		Room 312, School of Civil & Environmental Engineering (Building H20)	+61 2 9065 2065

#### Lecturers

Name	Email	Availability	Location	Phone
Gerry Bates	<a href="mailto:t.wiedmann@unsw.edu.au">t.wiedmann@unsw.edu.au</a>		<a href="mailto:gerrybates@bigpond.com">gerrybates@bigpond.com</a>	
Amy Cheung	<a href="mailto:t.wiedmann@unsw.edu.au">t.wiedmann@unsw.edu.au</a>		<a href="mailto:CVEN3701.AC@gmail.com">CVEN3701.AC@gmail.com</a>	

### 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 builds on the introduction to environmental management in CVEN1701 and provides details of methods for Environmental Impact Statements (EIS) and the ISO14001 Environmental Management System (EMS) framework. It then provides an introduction for engineers on environmental law in Australia and NSW, focusing on planning law, and pollution laws. Environmental economics methods to account for environmental impacts in monetary terms, and the use of market mechanisms to achieve preferred environmental outcomes is covered at a level suitable for engineers.

The URL of the course online handbook

is: <http://www.handbook.unsw.edu.au/undergraduate/courses/2023/CVEN3701.html>

### Course Aims

This course builds on the broad multidisciplinary introduction to sustainability provided in the ENGG1000 Engineering Design and Innovation projects, and the range of environmental material accounting, environmental risk assessment, and sustainability assessment tools introduced in CVEN1701 Environmental Principles and Systems. The course will introduce Environmental Impact Statements (EISs), Environmental Management Systems (EMSs) and corporate and regional environmental reporting, each of which uses the tools covered in CVEN1701. The course then goes on to cover environmental law and economics, which can be used to implement sustainable strategies for corporations and regions. The course provides background material for application in the following courses in Year 3 and 4:

- CVEN3502 Water and wastewater engineering
- CVEN3702 Solid wastes and contaminant transport
- CVEN4104 Sustainability in construction
- CVEN4701 Planning sustainable infrastructure

The aim of this course is to enable students to undertake the preparation of EISs, EMSs and environmental reports, and to be able to have sufficient understanding of environmental law and economics to be able to work with professionals in these areas in order to implement sustainable strategies at corporate and regional levels.

The objectives of the course are to:

- know the standard formats for EISs, EMSs and sustainability reports, and to be able to use environmental analytical tools to critically analyse these documents, and be able to manage their preparation.
- acquaint students with the fundamental principles of Australian environmental law; and to explain how these principles are applied to important areas of environmental management and regulation relevant to you in your studies and future career. The course assumes that participants have little or no background in the law, and so the course also provides some basic instruction about important legal concepts and structures. Although NSW is the 'default' jurisdiction for this course, the concepts and principles that are discussed are referable to all jurisdictions throughout

Australia.

- introduce students in Engineering to the economic way of thinking about environmental issues. This section will begin with some elementary economic tools, and proceed to apply these tools to examine environmental issues. There is no attempt here to justify any particular economic method. If you like, it is a course in how to communicate with economists.

## Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. Explain and demonstrate the typical structure and format of Environmental Impact Statements (EIS) and Environmental Management Systems (EMS).	PE1.1, PE1.6, PE3.1
2. Apply environmental analytical tools to examine and develop an EIS, EMS and sustainability report for a typical project, organisation or region.	PE1.2, PE2.2, PE3.2, PE3.6
3. Interpret the laws that apply to environmental impacts of projects in NSW and Australia, and interpret their use in EIS, EMS and sustainability reports.	PE1.3, PE3.1, PE3.2
4. Explain economic analytical methods and evaluate their application in EIS, EMS and sustainability reports.	PE1.1, PE1.3, PE3.1, PE3.4
5. Collaborate with an environmental economist in a multidisciplinary team to develop and prepare EIS, EMS and sustainability reports by for a range of projects, corporations and regions	PE1.3, PE3.2, PE3.3, PE3.6, PE3.5

## Teaching Strategies

Lectures will provide an explanation of procedures to follow to prepare EISs and EMSs and to implement sustainability strategies in these documents by way of environmental law and economics. Examples will be given in these lectures. Students then need to learn these procedures by applying them to real world problems that they have some familiarity with, by way of assignments.

The approaches to learning are:

Lectures	<ul style="list-style-type: none"><li>• Find out what you must learn</li><li>• Take notes on lecture slides provided to get a full set of reference notes for the course.</li><li>• Learn developing environmental laws and economic tools for use in environmental problems; many of these are not well documented in reference books.</li><li>• Participate in class discussions and work out example problems in class.</li><li>• Ask questions on how the content of lectures applies to assignment questions.</li></ul>
Workshops	<ul style="list-style-type: none"><li>• Work actively in small ad hoc groups on problems set in class.</li><li>• Be guided by demonstrators, discussion questions and additional reading.</li><li>• Participate and attempt all problems and discuss solutions with other students.</li><li>• Ask questions on how the content of lectures applies to assignment questions.</li></ul>

Private Study	<ul style="list-style-type: none"> <li>• Review lecture material, reference books, and resources on UNSW Moodle.</li> <li>• Work in groups on class assignments.</li> <li>• Reflect on class problems and assignments.</li> <li>• Download and work through additional readings provided and prepare for lectures.</li> <li>• Join Moodle discussions of problems.</li> <li>• Keep up with notices and find out marks via Moodle</li> </ul>
Assessments (quizzes, examinations, assignments, group discussions and presentations etc.)	<ul style="list-style-type: none"> <li>• Answer quiz questions in class.</li> <li>• Demonstrate your knowledge and skills in workshops and assignments.</li> <li>• Demonstrate ability to work effectively in a group by completing the group assignment.</li> <li>• Demonstrate higher understanding and problem solving on real world problems in hypothetical, but realistic problem settings in workshops.</li> <li>• Formative and summative assessment of knowledge and skills in single and group assignments. Students are encouraged to seek feedback from the lecturer and demonstrator(s) during preparation of assignments.</li> <li>• Exams are summative assessments on knowledge gained in the course, particularly as indicated by the ability to quickly undertake exercises set in the Workshop problems.</li> <li>• Do not copy sections from textbooks or websites, always use appropriate references for sourced material</li> </ul>

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

## Additional Course Information

### Course content

#### Environmental frameworks component:

- Course overview and briefing on frameworks assignment; a comprehensive review of environmental material accounting tools undertaken in CVEN1701.
- An outline of the required content and conventional methods for completing an EIS, with illustration from a case study EIS that will be used in the frameworks assignment.
- An outline of ISO14001 EMS, and credibility issues associated with undertaking an EMS.
- An outline of suggested contents of environmental reports for corporations and regions, with critical examination of case studies.

#### Environmental Law component:

The law part of this Unit is designed to introduce to you, key principles of environmental law and policy that may be of use to you in your future careers as Environmental Engineers.

The course assumes that participants have little or no background in the law, and so the course also provides some basic instruction about important legal concepts and structures. Although NSW is the 'default' jurisdiction for this course, the concepts and principles that are discussed are referable to all jurisdictions throughout Australia.

The content of the course concentrates upon those aspects of environmental law that you are most likely to come across in day to day practice as an engineer; requirements for gaining development consent; environmental assessment of projects and activities; pollution and waste; climate change and enforcement of environmental laws. But first we have to appreciate the nature of the Australian legal

system and how it works.

### **Environmental economics component:**

- Economics and the environment – applying basic economic tools to environmental management.
- An economic view on “sustainable development”; Externalities, optimal pollution, cost benefit analysis and environmental valuation.
- Economic instrument of pollution control - “Internalising externalities”. Role of environmental regulation.
- Application of Cost-Benefit Analysis into environmental policy decisions.
- Global externalities: ozone, climate change. Concept of carbon trading.

### **Lecturers**

**Prof Tommy Wiedmann** is a Professor and leader of the Sustainability Assessment Program in the School of Civil and Environmental Engineering at UNSW. He has long-standing expertise in integrated sustainability assessment and environmental footprint analysis. His main research question is how to achieve human and planetary wellbeing concurrently. Tommy develops and applies environmental input-output analysis as part of a holistic concept to life cycle assessment, industrial ecology and sustainable consumption and production research.

**Dr Gerry Bates** is well known in Australia for his standard university text ‘Environmental Law in Australia’, now in its 10th edition. He is also the founder and Editor-in-Chief of the ‘Environmental and Planning Law Journal’ that has run continuously since its inception in 1983. Between 1986 and 1996, Dr Bates was a Green Independent Member of Parliament in Tasmania. Dr Bates served on the Board of the Environment Protection Authority of NSW from 1998 – 2010; and on the Board of Kimbriki Environmental Enterprises, a regional waste recovery centre and landfill on Sydney’s Northern Beaches from 2008-2013. He currently teaches postgraduate courses in environmental law and sustainability at the University of Sydney; and is working with the Law Committee of the Mulloon Institute to modify or remove legal impediments to landscape rehydration projects that involve engineered ‘leaky weirs’.

**Ms Amy Cheung** is a Senior Economist in the NSW government, specialising in economic appraisals and financial appraisals. Her doctoral thesis research was focused on developing a framework in economic theory to analyse the problem of salinity in Australia, and the use of possible market-based policies for its alleviation. Her other research interests include the economics of climate change, waste management, water trading and regulation.

## Assessment

Date for marks returned are two weeks after the due date for all assessments. All assignments will be marked on the basis of whether the student demonstrates an understanding of the material. The assignments are additionally assessed with respect to the depth of the analysis, the breadth of its consideration of the question at hand and the clarity of the way in which the answer is presented. The use of tables and diagrams is encouraged where appropriate. Please make sure you do not exceed the imposed word limits.

Students who perform poorly in the quick quizzes and workshops are recommended to discuss progress with the lecturer during the trimester.

**Students must submit their assignments as prescribed by each lecturer.** This may involve electronic submission via Turnitin on Moodle or by hard copy as requested by the lecturer. Please ensure all the details on the Assignment cover sheet provided on UNSW Moodle are included in your assignment.

### Penalties for late assignments apply!

If you are unwell or have other extenuating circumstances which prevent you from completing an assessment, you always have to **apply for Special Consideration before the submission deadline**. Otherwise the fit-to-submit rule applies, i.e. by sitting or submitting an assessment on the scheduled assessment date, the student is declaring that they are fit to do so and cannot later apply for Special Consideration. All requests for extensions and/or special consideration are to be submitted through the Special Consideration portal on MyUNSW (My Student Profile tab > My Student Services > Online Services > Special Consideration). See the following website for further information: <https://student.unsw.edu.au/special-consideration>.

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Critique of an EIS	20%	08/03/2023 08:00 PM	1, 2
2. Environmental Law	30%	05/04/2023 08:00 PM	3
3. Environmental Economics	20%	21/04/2023 08:00 PM	4, 5
4. Final Exam	30%	Final Exam period	1, 4

### Assessment 1: Critique of an EIS

**Start date:** Week 2

**Assessment length:** 8 pages

**Due date:** 08/03/2023 08:00 PM

A written critique of a real Environmental Impact Statement (EIS) to demonstrate understanding of ecologically sustainable development (ESD) principles, techniques for environmental impact assessment (EIA) and environmental management systems (EMS). This is a group assignment.

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

## Assessment 2: Environmental Law

**Start date:** Week 4

**Assessment length:** specified by lecturer

**Due date:** 05/04/2023 08:00 PM

This is an individual, written assignment worth 30% of the course mark and is designed to test students' understanding of the fundamental principles of Australian environmental law and how these principles are applied to important areas of environmental management and regulation.

## Assessment 3: Environmental Economics

**Start date:** Week 7

**Assessment length:** 3000-3500 words

**Due date:** 21/04/2023 08:00 PM

A group assignment aimed at applying elementary economic methods and tools to an environmental problem and at determining whether decisions about environmental policy should be made on the basis of economic analysis.

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

## Assessment 4: Final Exam

**Assessment length:** 2 hours

**Due date:** Final Exam period

Summative assessment on the frameworks and economics part of the course, related to course objectives and learning outcomes. The final exam will be a 2-hour **closed-book** exam (plus reading time during) the normal exam period. However, students will be allowed to bring **one A4-sized sheet of paper with any information (printed or handwritten) on both sides**. There will not be any law questions in the final exam. The questions will generally be similar to the exercises and questions discussed in workshops and lectures. There are no previous exam papers available.

### Hurdle requirement

**A mark of at least 40% in the final examination is required to pass the whole course.**

### Additional details

The Exam date is set by Exams Branch, and is confirmed in about Week 8 of session. You can access the time and date of the exam via your MyUNSW. Do not make arrangements that will prevent you from doing the exam in the Exam Period, or after the exam date is set in Week 8, on the day of the exam.

The final grade for this course will normally be based on the sum of the scores from each of the assessment tasks. The Final Examination is worth **30%** of the Final Mark if class work is included and **100%** if class work is not included. The class work is worth **70%** of the Final Mark if included. **A mark of at least 40% in the final examination is required before the class work (quiz and assignments) is included in the final mark.** Therefore, **A MARK OF AT LEAST 40% IN THE FINAL EXAMINATION IS REQUIRED TO PASS THE WHOLE COURSE!**



## Attendance Requirements

For courses with Workshops and/or Labs, attendance for those classes is a necessary part of the course. You must **attend at least 80% of the workshop/lab** in which you are enrolled for the duration of the session.

## Course Schedule

[View class timetable](#)

### Timetable

Date	Type	Content
Week 1: 13 February - 17 February	Blended	<b>FRAMEWORKS</b> - lecture + workshop  Course introduction & overview, Sustainable Development Principles, Introduction to Environmental Impact Assessment (EIA)
	Blended	<b>FRAMEWORKS</b> - lecture + workshop  Introduction to Environmental Impact Statements (EIS), Review of methods and tools from CVEN1701, Assignment 1 Briefing
Week 2: 20 February - 24 February	Blended	<b>FRAMEWORKS</b> - lecture + workshop  Preparation of Environmental Impact Statements (EIS)
	Blended	<b>FRAMEWORKS</b> - lecture + workshop  Environmental Management Systems (EMS), Sustainability reporting
Week 3: 27 February - 3 March	Blended	<b>LAW</b> - lecture + workshop  Part A: Fundamentals of the Australian legal system. Democracy in action; common law, legislation, state/federal responsibilities, property rights, relevant environmental legislation, Land and Environment Court of NSW
	Blended	<b>LAW</b> - lecture + workshop  Part B: Environmental assessment of development. Applications for development consent; major projects and infrastructure; State EIA; Commonwealth EIA; protection of

		biodiversity
Week 4: 6 March - 10 March	Blended	<b>LAW</b> - lecture + workshop  Sustainable Development. Origins and meaning of SD; translation into law; practical applications of SD; holding governments accountable for sustainable decision-making
	Blended	<b>LAW</b> - lecture + workshop  Part A: Pollution control; waste; contaminated sites; climate change
	Assessment	Critique of an EIS
Week 5: 13 March - 17 March	Blended	<b>LAW</b> - lecture + workshop  Part B: Remedies for breaches of environmental laws. Administrative, civil and criminal remedies; challenging environmental decision-making.
	Blended	<b>LAW</b> - lecture + workshop  Part A and B revision
Week 6: 20 March - 24 March	Homework	Week 6 is Flexibility Week, i.e. there is no lecture and no workshop. Use the time to work on assignments.
Week 7: 27 March - 31 March	Blended	<b>ECONOMICS</b> - lecture + workshop  Manage environmental issues with economics
	Blended	<b>ECONOMICS</b> - lecture + workshop  Economic instruments for pollution control 1
Week 8: 3 April - 7 April	Blended	<b>ECONOMICS</b> - lecture + workshop  Economic instruments for pollution control 2
	Blended	<b>ECONOMICS</b> - lecture + workshop  Global externalities and mitigation techniques 1
	Assessment	Environmental Law
Week 9: 10 April - 14 April	Blended	<b>ECONOMICS</b> - lecture + workshop  Global externalities and mitigation techniques 2
	Blended	<b>ECONOMICS</b> - lecture + workshop

		Cost Benefit Analysis 1
Week 10: 17 April - 21 April	Blended	<b>ECONOMICS</b> - lecture + workshop Cost Benefit Analysis 2
	Blended	<b>ECONOMICS</b> - lecture + workshop Cost Benefit Analysis 3, examination revision
	Assessment	Environmental Economics

## Resources

### Recommended Resources

#### Textbook

There are no required textbooks. The following are recommendations.

#### Environmental Law:

There is no required textbook. Discussion in class and use of power point presentations will provide the necessary detail. You may also consult Bates, G *Environment Law in Australia*. (2019), 10th. Ed. LexisNexis. It is available in the law library.

Accessing the Law – [www.austlii.edu.au](http://www.austlii.edu.au) (this will be explained in class).

#### Environmental Economics:

There is no required textbook. Students might wish to consult the following textbook in the library for further reading:

Perman, R., Yue, M., Common, M., Maddison, D., and McGilvray, J., 2012, *Natural Resource and Environmental Economics*, 4th edition, Pearson Education Limited, Essex.

An earlier edition of this textbook is available from the open reserve section at the UNSW library (S 333.7/381).

Additional Readings, standards and guideline documents will be provided throughout the lecture series on UNSW Moodle with each lecture.

### Course Evaluation and Development

We welcome student feedback throughout the course (e.g. through the Moodle Discussion Forum). This is very important to us – let us know what you think works well and what we can do better. This information will be used to continually improve the course.

## **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

Kanimbla Valley (photo taken by T. Wiedmann)

## 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	✓