School of Civil and Environmental Engineering

Term 2, 2021

CVEN4003/9000
DESIGN PRACTICE B

COURSE DETAILS

Units of Credit	6	
Contact hours	5 hours per week	
Class	Tuesday, 5-6 pm	ONLINE via Blackboard Ultra link in Moodle
	and	
	Wednesday, 2-4 pm	ONLINE via Blackboard Ultra link in Moodle
Workshop 1 or 2	Wednesday 4-6 pm	ONLINE via Blackboard Ultra link in Moodle Select correct workshop number link.
Course Coordinator and Lecturer	Dr James McDonald email: jamesmcdonald@unsw.edu.au office: Vallentine Annexe (H22) room 113	
Secondary Course Coordinator	Dr Adele Jones email: adele.jones1@unsw.edu.au office: Vallentine Annexe (H22) room 133B	

INFORMATION ABOUT THE COURSE

Design practice is a final year course intended to enable students to integrate material learnt in several sub-disciplines of civil or environmental engineering. Working in groups, students undertake a multi-disciplinary real world design project. The objective is to develop the students' self-directed learning, design, teamwork and managerial skills. The projects assigned to the groups focus on urban water systems particularly relating to drinking water supply, stormwater and wastewater management, bioremediation of urban runoff and improvement of recreational water quality.

The philosophy of this course is to promote engagement and understanding of the learning outcomes by challenging students to solve applied and practical real world problems. Therefore, the course is structured with a large proportion of self-directed work supported by close interaction with demonstrators in workshops and assessments intended to promote a deep understanding of the learning outcomes. In addition, lectures are provided in separate streams to expose students to relevant specialist knowledge and also refresh students understanding of core design, communication and project management skills. Students doing CVEN9000 should be enrolled in Program 8621.

HANDBOOK DESCRIPTION

https://www.handbook.unsw.edu.au/undergraduate/courses/2021/CVEN4003/

or

https://www.handbook.unsw.edu.au/postgraduate/courses/2021/CVEN9000/

OBJECTIVES

This course aims:

- To stimulate the intellectual curiosity of students so that they will be motivated to undertake independent learning as a lifelong skill
- To teach students how to define, analyse and solve problems clearly and logically and in doing so be able to find, evaluate, interpret and collate information
- To develop independent critical thought within students so that when necessary they will be able to challenge current knowledge and thinking
- To encourage proactive behaviour in students and to give them the associated entrepreneurial skills necessary to develop evidenced based and profitable outcomes
- To promote a respect within students for individual human rights and dignity, particularly when it relates to members of the public or other people who will be affected by the projects that they design and execute
- To acquaint students with their social, cultural, legal and environmental responsibilities as professional engineers and to generate within them the ability to make ethical decisions with Integrity
- To nurture the skills required for effective leadership including an ability to manage and deliver projects, an understanding of the social dynamics of group performance and the ability to value diverse backgrounds and opinions and function effectively in multidisciplinary teams
- To assist students with development of good oral and written communication skills and the ability to negotiate and persuade
- To instil in students the principles of sustainable design and development
- To foster effective self-management skills and
- To develop skills for collaborative and multi-disciplinary work

TEACHING STRATEGIES

One of the main aims of this practice course is to give students the opportunity for self-directed learning. It will be necessary for the student project teams to make decisions in difficult circumstances and perhaps with insufficient data. Incidences of poor quality or insufficient data often occur in real life and professional engineers need to develop and refine their critical thinking and strategic problem solving skills to find solutions to real world problems, even in the face of uncertainty. To meet this challenge, students are encouraged to collect as much relevant data as possible and make educated decisions, remembering that the ultimate responsibility for any decision rests with the decision maker (even when incorrect advice may have been received). To achieve the learning outcomes of this course, the class will be divided into small groups and assigned different projects. Project briefs will be available for review on the Moodle page prior to, and discussed in the first lecture of the course.

Private Study	• Independent and group research (e.g. literature searching and data gathering) and self-directed learning • Work with your group-develop effective relationships in meeting task deliverables and deadlines • Review lecture material • Download and read materials from Moodle • Keep up with notices and find out marks via Moodle
Lectures	• Find out what you must research and deliver as a group • Learn to use online tools and develop research skills • Hear announcements on course changes

Workshops	• Address group management and set individual tasks • Ask your demonstrators to review the team work in progress ideas and outputs • Maintain timesheets and meeting minutes • Ask questions
Assessments	• Demonstrate your knowledge and skills • Demonstrate higher understanding and problem solving • Demonstrate the ability to work in a team • Demonstrate time management • Demonstrate oral and written technical communication skills

EXPECTED LEARNING OUTCOMES

The expected learning outcomes for this course are to gain practical knowledge on how to manage projects, work independently and within a team, the development of communication skills and to apply contemporary sustainable planning theory in a practical situation.

This course is designed to address the learning outcomes below and the corresponding Engineers Australia (EA) Stage 1 Competency Standards for Professional Engineers as shown. The full list of Stage 1 Competency Standards may be found in Appendix A. After successfully completing this course, you should be able to:

Learning Outcome		**EA Stage 1 Competencies**
1.	*Gain in-depth knowledge of relevant discipline and its interdisciplinary context*	*PE1.3, PE2.3*
2.	*Develop ability to incorporate social, political, environmental and economic issues within an engineering based solution to community sensitive projects*	*PE1.5, PE1.6, PE3.1, PE3.4*
3.	*Develop the capacity for analytical and critical thinking and its application in creative problem solving*	*PE2.1, PE2.2*
4.	*Ability to engage independent and reflective learning*	*PE3.3*
5.	*Develop communication, negotiation and advocacy skills*	*PE1.5, PE3.2*
6.	*Develop skills for collaborative and multi-disciplinary projects*	*PE2.4, PE3.5, PE3.6*
7.	*Engage in leadership and member roles in group related professional engineering project completion*	*PE3.5*
8.	*Undertake and execute self-contained applied research report*	*PE1.4, PE3.2*
9.	*A respect for ethical practice and social responsibility*	*PE1.5, PE3.1*

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

COURSE PROGRAM

A table of lecture content and workshop activities for each week is included below.

TRIMESTER 2 2021

Date	Lecture Tuesday 5 – 6pm ONLINE via Blackboard Ultra link in Moodle	Lecture Wednesday 2-4pm ONLINE via Blackboard Ultra link in Moodle	Suggested workshop activities Wednesday 4-6pm ONLINE via Blackboard Ultra link in Moodle
1st and 2nd June 2021 (Week 1)	• Course overview • Project description • Assessments Dr James McDonald	Guest Lecture: **Randwick Council** Peter Maganov	Review assessment timeline, meet your group and plan the trimester.
8th and 9th June 2021 (Week 2)	**Introduction to water quality in urban systems** Dr James McDonald	Guest Lecture: **Australian Rainfall and Runoff Handbook and Modelling** Maryam Farzadkhoo Water Research Laboratory	Finalise Assessment 1 – Project Proposal. Get feedback on drafts from demonstrators. Install freeware GIS software for Wednesday Week 3 lecture.
15th and 16th June 2021 (Week 3)	**Referencing and research skills** Dr Adele Jones	Guest Lecture: **Using GIS in urban design** Philippa Higgins Water Research Centre	Work on Assessment 2 – Annotated Bibliography. Get feedback from demonstrators on search terms, ideas and review journal articles.
22nd and 23rd June 2021 (Week 4)	Guest Lecture: **Life Cycle Assessment** Dr Ruth Fisher Water Research Centre	**Water Reuse Risk Assessment** Dr Adele Jones	Finalise Assessment 2 – Annotated Bibliography. Last chance to get feedback from demonstrators on search terms, ideas and review journal articles.
29th and 30th June 2021 (Week 5)	**Presentation Techniques** Dr Adele Jones	**Water Sensitive Urban Design (WSUD)** Dr James McDonald	Draft your presentation and Share your ideas with the demonstrators. Write report.
Week 6	***Non-teaching week for all courses***	***Non-teaching week for all courses***	***No Workshop***
13th and 14th July 2021 (Week 7)	Guest Lecture: **Stopping Pollution Entering Our Waterways** Blake Allingham from Ocean Protect	**What does good community engagement look like?** Dr Adele Jones	**Assess. 3– Team Presentation:** Wednesday 14th July 2021 Present online via blackboard in workshops
20th and 21st July 2021 (Week 8)	Guest Lecture: TBA	**Report Writing, Multi Criteria Decision Analysis (MCDA) and Sensitivity Analysis (SA)** Adele Jones	Review presentation feedback and plan to incorporate it into the report

Date	Lecture Tuesday 5 – 6pm ONLINE via Blackboard Ultra link in Moodle	Lecture Wednesday 2-4pm ONLINE via Blackboard Ultra link in Moodle	Suggested workshop activities Wednesday 4-6pm ONLINE via Blackboard Ultra link in Moodle
27th and 28th July 2021 (Week 9)	**Course Overview** James McDonald	**Professionals Australia** Maria Nguyen	Work on project report: get demonstrator feedback on framework and draft sections.
3rd and 4th August 2021 (Week 10)	*No Lecture*	*No Lecture*	Finalise Assessment 4 - Project Report. Last chance for demonstrator feedback.

ASSESSMENT

To the extent appropriate at university, assessments will reflect the kinds of deliverables expected at the professional level in such industries as environmental engineering consulting and government public works. The final mark for each student will be determined by a combination of individual and group contributions. Each group will consist of 7-9 members and groups will be responsible for assigning roles and individual tasks within the team.

Each group member will be assessed individually on the above roles and will also be required to submit his/her own assessment of the other individual contributions within the group. On the basis of these peer evaluations the mark for each group member will be adjusted into an individual contribution to determine the final mark. There will be no written examination or quiz in this subject. An outline of the course assessment is set out below. Detail of each assessment including the submission date, marks assigned and the general criteria by which marks are assigned will be found in Moodle and in the table in the assessment overview section of this document. The course coordinator reserves the right to adjust the final scores by scaling if agreed with the Head of School.

There will be NO formal examination. The final marks for the course will be determined based on the scores from each of the 4 assessment tasks. Each group task will include a peer evaluation component that transforms the group mark into a final individual mark.

Assessment 1 Project Proposal and Risk Assessment:	15%
Assessment 2 Annotated Bibliography:	20%
Assessment 3 Presentation:	20%
Assessment 4 Final Report:	45%

PENALTIES

In keeping with real-world expectations, each project task should be completed within the specified time period and by the due date. Late submissions will attract a penalty of **20% of the assessment task value per day**. Students who are impacted by short term events beyond their control must notify course coordinators as soon as an issue arises and fill out a formal application for special consideration:

https://student.unsw.edu.au/special-consideration

ASSESSMENT OVERVIEW

The table below contains details of all assessments and due dates planned for the CVEN4003/9000 course in Trimester 2 2021.

Item	Length	Weighting	Learning outcomes assessed	Assessment Criteria	Due date and submission requirements	Deadline for absolute fail	Marks returned
1. Project Proposal and risk assessment	*< 5 pages + HS017 form*	*15%*	*2, 3, 5, 6 and 7*	This is a group assessment; peer evaluation will be used to determine an individual mark. Students are expected to display an understanding of the key issues of the project. Demonstrate an ability to plan and describe decision making processes and assess risk of field work involved in the project.	*Friday 8 pm 18/06/2021 (Week 3) Submit online via Moodle*	*Wednesday 23/06/2021 (Week 4)*	*Friday 25/06/2021 (Week 4) via Moodle*
2. Annotated bibliography	< 10 pages	20%	1, 4 and 8	This is an individual assessment. Students are expected to display evidence of in-depth understanding of the topic. Provide evidence of ability to research and synthesise information. Students will be marked on presentation, clarity, organisation and depth of research and demonstration of critical analysis of source content.	*Friday 8 pm 02/07/2021 (Week 5) Submit online via Moodle*	*Wednesday 07/07/2021 (Week 6)*	*Monday 12/07/2021 (Week 7) via Moodle*
3. Presentation	18 minutes + 5 minutes questions	20%	1, 3, and 5	This is a group assessment; peer evaluation will be used to determine an individual mark. Each student will be marked on both content and presentation technique. Students are expected to display a knowledge of their topic and communicate their findings clearly.	Wednesday 4-6pm 14/07/2021 Present online via blackboard (Week 7 workshops)	Students *must* present on the due date	*Friday 23/07/2021 (Week 8) via Moodle*
4. Final Report	< 100 pages	45%	1, 2, 3, 5, 6, 7, 8, 9	This is a group assessment; peer evaluation will be used to determine an individual mark. Students will be expected to display and communicate in-depth knowledge of their project issues and solutions. Evidence of analytical thinking and problem solving as well as organisation and presentation of the report will be assessed.	*Friday 8 pm 06/08/2021 (Week 10) Submit online via Moodle*	*Wednesday 11/08/2021 (Week 11)*	*Monday 23/08/2021 (Week 13) via Moodle*

RELEVANT RESOURCES

Additional resources will be found on Moodle

Stormwater Management

Stormwater NSW Library

http://stormwaternsw.asn.au/resources/external-links/

Stormwater Source Control Handbook

https://www.unisa.edu.au/siteassets/episerver-6-files/documents/itee/afmg/johnargue-wsud-basic-procediures-for-source-control-student-edition.pdf

CRC for Water Sensitive Cities Comprehensive stormwater management handbook

https://watersensitivecities.org.au/content/stormwater-biofilter-design/

Australian Rainfall and Runoff Guidelines

http://arr.ga.gov.au/home

Organisations for urban waterway improvement

Cooks River Alliance

http://cooksriver.org.au/

Cooks Net

Parramatta River Catchment Group

http://www.parramattariver.org.au/

Life Cycle Assessment

https://nexus.openlca.org/

http://www.openlca.org/

http://www.lcatextbook.com/

DATES TO NOTE

Refer to MyUNSW for Important Dates available at:

https://student.unsw.edu.au/dates

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 constiWorkshopes Plagiarism at:

https://student.unsw.edu.au/plagiarism

ACADEMIC ADVICE

For information about:

- Notes on assessments and plagiarism,
- School policy on Supplementary exams,
- Special Considerations: student.unsw.edu.au/special-consideration
- Solutions to Problems,
- Year Managers and Grievance Officer of Teaching and Learning Committee, and
- CEVSOC.

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

Appendix A: Engineers Australia (EA) Competencies

Stage 1 Competencies for Professional Engineers

	Program Intended Learning Outcomes
PE1: Knowledge and Skill Base	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals
	PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing
	PE1.3 In-depth understanding of specialist bodies of knowledge
	PE1.4 Discernment of knowledge development and research directions
	PE1.5 Knowledge of engineering design practice
	PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice
PE2: Engineering Application Ability	PE2.1 Application of established engineering methods to complex 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
PE3: Professional and Personal Attributes	PE3.1 Ethical conduct and professional accountability
	PE3.2 Effective oral and written communication (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