

ENGG4102

Humanitarian Engineering Project

Term 3, 2022



Course Overview

Staff Contact Details

Convenors

Name	Email	Availability	Location	Phone
Andrew Dansie	a.dansie@unsw.edu.au	Please arrange time to meet	H20 Room 306	+61 2 9385 6176

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 provides students with the opportunity to undertake a design project related to Humanitarian Engineering. The course will be problem based, with context aligned with clearly identified needs for a marginalised community, either locally or internationally. The course is intended to be predominantly team-based with groups working on humanitarian related challenges, as approved by the course coordinator.

Projects could include any or all of the following components as appropriate to the identified problem:

- background review of needs, context
- development of potential solutions, including review of existing data, research and technologies as appropriate
- evaluation of solutions
- economic
- social
- environmental
- technical
- possible prototyping and/or lab investigations and/or field work
- implementation strategy including involvement of the local community and consideration of long term sustainability.

Students will be encouraged to undertake community consultation e.g. via interviews or surveys or similar research to assist in the evaluation of solutions. The course is structured as independent project work with regularly scheduled meetings with an assigned academic advisor and/or industry mentor.

Course Aims

This course enables engineers to undertake a project to contribute towards solving a specific challenge faced by individuals and communities in marginalised circumstances that is affecting their well-being and welfare.

The course aims to develop students who:

- are aware of challenges impacting communities on a global scale
- have the skills required to make meaningful contributions to disadvantaged and marginalised communities
- can apply engineering discipline knowledge in new and challenging contexts.

Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. Critically analyse engineering problems in new and challenging contexts and develop creative solutions applying engineering discipline knowledge.	PE1.3, PE1.4, PE1.5
2. Apply appropriate technology and engineering system design principles to humanitarian engineering contexts incorporating social, economic and environmental factors	PE1.6, PE2.2
3. Apply systematic engineering approaches to the management of an engineering project.	PE2.4
4. Effective communication and collaboration skills in the context of cross-cultural community and multi-disciplinary work.	PE3.2, PE3.4, PE3.6
5. Show respect for ethical practice and social responsibility.	PE3.1
6. Demonstrate the ability to engage in independent and reflective learning.	PE3.3, PE3.5

Teaching Strategies

Experiential and problem based learning will be the feature of this course. As a fourth year course, the focus will be on design and research skills, collaboration within groups and/or external partners (including community and/or industry)

Teaching will focus on providing students with support to investigate, analyse and evaluate complex problem in a humanitarian engineering context.

Academics involved in this course are expected to have some experience in humanitarian engineering either through field experience, research or teaching. Industry mentors may be appointed to further assist with this.

Assessment

Assessment task	Weight	Due Date	Course Learning Outcomes Assessed
1. Project journal (1 of 2)	5%	30/09/2022 05:00 PM	1, 2, 3, 4, 5, 6
2. Project journal (2 of 2)	10%	24/11/2022 05:00 PM	1, 2, 3, 4, 5, 6
3. Mid Project Presentation	25%	28/10/2022 11:59 PM	1, 2, 3, 4, 5, 6
4. Project Interview	15%	18/11/2022 11:59 PM	4, 6
5. Project report	45%	18/11/2022 05:00 PM	3, 4, 5, 6

Assessment 1: Project journal (1 of 2)

Due date: 30/09/2022 05:00 PM

Weekly journal documenting learning and observations, meeting minutes and personal reflections. Week 3 submission is worth 5% of course grade.

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

Assessment criteria

See assignment sheet on Moodle

Assessment 2: Project journal (2 of 2)

Due date: 24/11/2022 05:00 PM

Weekly journal documenting learning and observations, meeting minutes and personal reflections. Final submission is worth 15% of course grade.

Assessment criteria

Please see assignment sheet on Moodle

Assessment 3: Mid Project Presentation

Submission notes: This is a group presentation given face to face on campus

Due date: 28/10/2022 11:59 PM

The project presentation is designed to provide students with the opportunity to get feedback on their ideas, research and progress so far to strengthen the final outcomes of your project

Assessment 4: Project Interview

Due date: 18/11/2022 11:59 PM

Mock interview based on ENGG4102 project with expert interview panel. Demonstration of clear project management skills, sustained involvement during term and reflective learning on humanitarian engineering.

This is not a Turnitin assignment

Assessment 5: Project report

Due date: 18/11/2022 05:00 PM

The final report is a summary of the group's outcomes for the project. The report should be prepared and/or edited as a group and provide a holistic summary of the project aims, background, results and conclusions. The contribution of each student to the report will be assessed by peers and the academic mentor.

Attendance Requirements

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

Course Schedule

The Humanitarian Engineering project is a group project in which each student works under the guidance of a nominated member of the Faculty's academic staff (supervisor). Mentors (including from industry) may also be nominated depending on the set up of the project. The focus will be on design and research skills, collaboration within groups and/or external partners (including community and/or industry).

Supervisors will work with groups to define scope of problem, brainstorm solutions for problems as they arise, provide feedback on progress and suggestions for contacts for information, directions to try or new methods.

The following teaching strategies will be used in the course:

Private Study/ Group work	<ul style="list-style-type: none">• As a rough guide students are expected to spend approximately 10 hours per week on work related to the course• Team meetings• Undertake research, design, field trials• Complete reflective journal• Prepare assessment tasks
Meetings with supervisor	<ul style="list-style-type: none">• Discuss progress and plan tasks• Brainstorm problem faced and possible solutions• Discuss useful contacts or sources of information• Review journal
Assessments	<ul style="list-style-type: none">• Demonstrate your knowledge and skills• Demonstrate higher understanding and problem solving

[View class timetable](#)

Timetable

Date	Type	Content
Week 1: 12 September - 16 September	Lecture	Meet your group; arrange regular meeting times, research project and familiarise self with context.
	Workshop	Makers Space inductions, awareness of resources.
Week 2: 19 September - 23 September	Lecture	Finalise project plan and group roles.
	Workshop	Prototype design and development.
Week 3: 26 September - 30 September	Lecture	Desktop review and project work. Submit your preliminary reflective journal.
	Workshop	Prototype design and development.

	Assessment	Project journal (1 of 2)
Week 4: 3 October - 7 October	Lecture	External partner consultation, finalise presentation based on preliminary research and plan for final submissions.
	Workshop	Prototype design and development.
Week 6: 17 October - 21 October	Lecture	No classes in Week 6
	Workshop	No workshop in Week 6
Week 7: 24 October - 28 October	Lecture	Gather feedback from presentation. Continue with project.
	Workshop	Prototype design, development and testing.
	Assessment	Mid Project Presentation: This is a group presentation given face to face on campus
Week 8: 31 October - 4 November	Lecture	Complete final project stages and draft report.
	Workshop	Prototype design, development and testing.
Week 9: 7 November - 11 November	Lecture	Prepare for interviews, seek feedback on report drafts.
	Workshop	Prototype finalisation and manual preparation.
Week 10: 14 November - 18 November	Lecture	Sustainability and appropriateness of solution.
	Workshop	Interviews (assessment item)
	Assessment	Project Interview
	Assessment	Project report
Study Week: 21 November - 24 November	Assessment	Project journal (2 of 2)

Resources

Prescribed Resources

As provided on Moodle

Course Evaluation and Development

Feedback on the course is gathered periodically using various means, including the UNSW myExperience process, informal discussion in the final class for the course, and the School's Student/Staff meetings. Your feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

In this course, recent improvements resulting from student feedback include adjusting the project journal to more easily capture student learnings.

Laboratory Workshop Information

Students will need to complete Makers Space induction and training as part of this course, information to be provided in Week 1.

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 T3 2022 will be held online between 25th November - 8th December 2022 inclusive, and supplementary exams between 9th - 13th January 2023 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

Photo credit: A. Dansie

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	✓