



FOSE3901

Advanced STEM III

Session 2, In person-scheduled-weekday, North Ryde 2023

Science and Engineering Faculty level units

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General Information

Unit convenor and teaching staff

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Credit points

10

Prerequisites

Admission to BAdvSci and Permission by Special Approval

Corequisites

Co-badged status

Unit description

In this unit students undertake a large scale project applying Science and Technology to a significant real world problem. Students will work in groups to select a topic area and develop innovative and practical solutions to their chosen problem. Project topics will be chosen from across the spectrum of challenges facing modern society, such as sustainable development, climate change, resource management, data security, health and global decision making and other areas identified in the UN sustainability goals. The project groups will consist of second and third year students, with the students enrolled in this unit providing leadership to their groups.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Analyse a complex sustainability problem and propose a solution to an instance of that problem.

ULO2: Apply core knowledge from their discipline to the solution of a real world problem.

ULO3: Plan and implement a project, including the design of necessary processes, information management and records keeping.

ULO4: Communicate project outcomes, in written and verbal forms, to a variety of audiences.

ULO5: Work effectively, constructively and safely, as an individual and as part of a team, applying knowledge of ethical principles and professional conduct.

ULO6: Demonstrate leadership and management skills to achieve team deliverables.

General Assessment Information

Late Assessment Submission Penalty

From 1 July 2022, students enrolled in Session based units with written assessments will have the following university standard late penalty applied. Please see <https://students.mq.edu.au/study/assessment-exams/assessments> for more information.

Unless a Special Consideration request has been submitted and approved, a **5% penalty** (of the total possible mark) will be applied each day a written assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. Submission time for all written assessments is set at 11:55 pm. A 1-hour grace period is provided to students who experience a technical concern.

For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, students need to submit an application for Special Consideration.

Assessments where Late Submissions will be accepted

In this unit, late submissions will accepted for all assessments.

Assessment Tasks

Name	Weighting	Hurdle	Due
Participation in Workshops	0%	Yes	Throughout the semester
Project Plan	30%	No	Sunday, August 20, 11:55pm
Project Report	40%	No	Sunday, October 29, 11:55pm
Pitch	20%	No	Week 13, date/time TBA
Journal	10%	No	Sunday, November 5, 11:55pm

Participation in Workshops

Assessment Type ¹: Participatory task

Indicative Time on Task ²: 0 hours

Due: **Throughout the semester**

Weighting: **0%**

This is a hurdle assessment task (see [assessment policy](#) for more information on hurdle assessment tasks)

Assessment of the extent of active and consistent participation in activities and workshops held.

On successful completion you will be able to:

- Plan and implement a project, including the design of necessary processes, information management and records keeping.
- Work effectively, constructively and safely, as an individual and as part of a team, applying knowledge of ethical principles and professional conduct.

Project Plan

Assessment Type ¹: Project

Indicative Time on Task ²: 40 hours

Due: **Sunday, August 20, 11:55pm**

Weighting: **30%**

Detailed description of problem and plan to address it

On successful completion you will be able to:

- Analyse a complex sustainability problem and propose a solution to an instance of that problem.
- Apply core knowledge from their discipline to the solution of a real world problem.
- Plan and implement a project, including the design of necessary processes, information management and records keeping.
- Communicate project outcomes, in written and verbal forms, to a variety of audiences.
- Work effectively, constructively and safely, as an individual and as part of a team, applying knowledge of ethical principles and professional conduct.
- Demonstrate leadership and management skills to achieve team deliverables.

Project Report

Assessment Type ¹: Project

Indicative Time on Task ²: 50 hours

Due: **Sunday, October 29, 11:55pm**

Weighting: **40%**

Final project report detailing proposed solution

On successful completion you will be able to:

- Analyse a complex sustainability problem and propose a solution to an instance of that problem.
- Apply core knowledge from their discipline to the solution of a real world problem.
- Plan and implement a project, including the design of necessary processes, information management and records keeping.
- Communicate project outcomes, in written and verbal forms, to a variety of audiences.
- Work effectively, constructively and safely, as an individual and as part of a team, applying knowledge of ethical principles and professional conduct.
- Demonstrate leadership and management skills to achieve team deliverables.

Pitch

Assessment Type ¹: Presentation

Indicative Time on Task ²: 30 hours

Due: **Week 13, date/time TBA**

Weighting: **20%**

The pitch will be conceptually aimed at investors and backers to demonstrate the worth and feasibility of the proposed projects

On successful completion you will be able to:

- Analyse a complex sustainability problem and propose a solution to an instance of that problem.
- Communicate project outcomes, in written and verbal forms, to a variety of audiences.
- Work effectively, constructively and safely, as an individual and as part of a team, applying knowledge of ethical principles and professional conduct.

Journal

Assessment Type ¹: Report

Indicative Time on Task ²: 16 hours

Due: **Sunday, November 5, 11:55pm**

Weighting: **10%**

Individual journal showing evidence of work, including demonstration of leadership and group

management

On successful completion you will be able to:

- Apply core knowledge from their discipline to the solution of a real world problem.
- Communicate project outcomes, in written and verbal forms, to a variety of audiences.
- Demonstrate leadership and management skills to achieve team deliverables.

¹ If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the [Writing Centre](#) for academic skills support.

² Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Teaching and Learning Strategy

Each student group is responsible for the delivery of a Research Report on an environmental or sustainability project for a client. The client may be either inside or outside the University. The projects prepared by each client are an example of work practice - they are real projects that the client wants done to advance their environmental or sustainability practice in one way or another.

Each student group will act like a professional in all of their relations with the client and in all activities undertaken on their behalf. The teaching and learning strategy includes:

- three skills workshops - using small group teaching and discussion we will canvass communication and presentation skills; ethics in the workplace; and group project management. Students should attend each workshop prepared to contribute to discussion.
- self learning resources on handling group work and consultancies;
- regular group mentoring meetings on managing team processes, project management, and substantive components of the task with the convenor/ mentor;
- group interaction, dialogue and problem solving in a participative way;
- through class interaction, practice of presentations;
- learning to give and receive professional feedback from peers and mentors;
- reflection on your own professional practice;
- feedback from clients.

As students are involved in a real life situation it is valuable to keep an individual log of hours

and task completed. Also, there is an expectation of self reflection to assess own performance in client and team interaction and to assist in writing the final professional reflection on experience. Some guidelines are set out below to help student groups in their relations with, and activities for their client organisation.

Relations with the client

Whenever the group meets with the client, each member should be appropriately dressed (smart casual) as becomes professionals. In order to manage the client-consultant relation it is advised to schedule at least four formal contacts between the group and the client representative or representatives. These should be planned and agreed upon with the client at the first meeting.

1. Client Briefing: An initial meeting to define and scope the project. The unit staff will have already met with all clients to do preliminary work towards this and will accompany each group at the first meeting to give advice as necessary.
2. A progress meeting (or report without meeting) in about the sixth week of semester. At this point the group should indicate clearly to the client whether all planned outputs will be achieved and any necessary modifications to the contract put forward for agreement by both parties.
3. A findings meeting (draft report) to the client before the presentation and formal submission of the final report to foreshadow the key findings.
4. A final reporting meeting at the end of semester for the group to present their final report to the client.

Some clients will only be prepared to commit to these four meetings, but others will welcome additional contact.

One of the first tasks for each group after the first meeting with the client will be to determine exactly what information they will require from the client. A consolidated list should be prepared and communicated to the client representative by the nominated group leader. This sort of contact with the client should be limited to ONE group member whose responsibility it is to keep the rest of the group informed.

The client has 'contracted' the group to do the work and research necessary to complete the project. Your feedback sessions with the client are to see that you are on track to deliver what the client wants. In between the agreed formal meetings, the group representative should provide a monthly or fortnightly email update on progress - this too should be agreed at the first meeting.

In the course of their work the group may be made privy to commercially, or otherwise sensitive material, and there may be a requirement to a confidentiality clause. In any case all members of every group are to respect the confidentiality of information or knowledge they acquire from the client in the course of completing their contract with them.

SOME PROJECTS MAY REQUIRE ETHICS APPROVAL. The time involved in achieving these approvals may restrict what activities can be undertaken.

Activities on behalf of the client

Group members must remember that when doing anything on behalf of the client, the reputation

of the client will be affected by their behaviour and actions. So, any survey or similar actions must also be cleared by the client.

Technology

There is an iLearn site associated with this unit. This will be the main form of communication for detailed information and updates. Students must be able to access the internet to research background for these projects. **Students MUST check their student email regularly (preferably daily).**

Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- [Academic Appeals Policy](#)
- [Academic Integrity Policy](#)
- [Academic Progression Policy](#)
- [Assessment Policy](#)
- [Fitness to Practice Procedure](#)
- [Assessment Procedure](#)
- [Complaints Resolution Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit [Policy Central \(https://policies.mq.edu.au\)](https://policies.mq.edu.au) and use the [search tool](#).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: <https://students.mq.edu.au/admin/other-resources/student-conduct>

Results

Results published on platform other than [eStudent](#), (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in [eStudent](#). For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe [academic integrity](#) – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the

expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free [online writing and maths support](#), [academic skills development](#) and [wellbeing consultations](#).

Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

The Writing Centre

[The Writing Centre](#) provides resources to develop your English language proficiency, academic writing, and communication skills.

- [Workshops](#)
- [Chat with a WriteWISE peer writing leader](#)
- [Access StudyWISE](#)
- [Upload an assignment to Studiosity](#)
- [Complete the Academic Integrity Module](#)

The Library provides online and face to face support to help you find and use relevant information resources.

- [Subject and Research Guides](#)
- [Ask a Librarian](#)

Student Services and Support

Macquarie University offers a range of [Student Support Services](#) including:

- [IT Support](#)
- [Accessibility and disability support](#) with study
- Mental health [support](#)
- [Safety support](#) to respond to bullying, harassment, sexual harassment and sexual assault
- [Social support including information about finances, tenancy and legal issues](#)
- [Student Advocacy](#) provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via [AskMQ](#), or contact [Service Connect](#).

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

Changes since First Published

Date	Description
28/09/2023	"tutorials" replaced with "workshops"