Course Outline

MATS6007

Sustainable Materials Engineering

Materials Science and Engineering

Science

(T3, 2022)

1. Staff

Position	Name	Email	Consultation times and locations
Course Convenor	Samane Maroufi	s.maroufi@unsw.edu.au	Room 439, School of Materials Science and Engineering (Building E10), by appointment
Lecturer	Samane Maroufi	s.maroufi@unsw.edu.au	Room 439, School of Materials Science and Engineering (Building E10), by appointment

2.3 Course learning outcomes (CLO)

At the successful completion of this course you should be able to:

1. **evaluate** the impacts of main groups of materials on the environment at different stages of their life cycle;
2. **examine** key principles underpinning a sustainable system and critique current strategies towards creating a sustainable system in different sectors (i.e., transportation, infrastructure, energy production/storage and etc);
3. **apply** the life cycle assessment framework to **evaluate** the use of sustainable technologies and materials;
4. **build** an awareness of waste generated by human activities and explain appropriate approaches to minimise human footprint on environment;

2.4 Relationship between course and program learning outcomes and assessments

Complete the table with your own course and program learning outcomes, tasks and assessments.

Course Learning Outcome (CLO)	LO Statement	Program Learning Outcome (PLO)	Related Tasks & Assessment
CLO 1	Evaluate	1, 2, 4 & 5	Assignment 1
CLO 2		1, 2, 3, 4 & 5	Assignment 2&3 and final exam
CLO 3		1, 2, 4 & 5	Assignment 3
CLO 4	Build	1, 2, 3, 4 & 5	All assignment

3. Strategies and approaches to learning

3.1 Learning and teaching activities

The roadmap of weekly activities in-class and out-of-class are listed in the Appendix (please refer to page 10).

(*Students are actively engaged in the learning process.*

It is expected that, in addition to attending classes, students read, write, discuss, and be engaged in analysing the course content.

Effective learning is supported by a climate of inquiry where students feel appropriately challenged.

Students are expected to be challenged by the course content and to challenge their own preconceptions, knowledge, and understanding by questioning information, concepts, and approaches during class and study.

Learning is more effect
built on.

Coursework, assignments, laboratories, examinations, and other forms of learning and assessment are intended to provide students with the opportunity to cross-reference these activities in a meaningful way with their own experience and knowledge.

Students become more engaged in the learning process if they can see the relevance of their studies to professional and disciplinary context.

The course content is designed to incorporate both theoretical and practical concepts, where the latter is intended to be applicable to real-world situations and contexts.

3.2 Expectations of students

Students must attend at least 80% of all classes with the expectation0(y)18( )-b44(4(s)-5(eu)-8(de)4(nts)-2( )-1

5

Assessment 2: ***Formative*** Discussion, peer assessment, individual written essay	In your group, each student need to find one real-world example related to one of the five material-focused transformative strategies which have been taught in the class. In your group discussions you need to discuss and assess how the strategy can contribute to creating a sustainable system. Based on your assessment, you will propose recommendations for improvement and draw implications for efforts to create a sustainable system more broadly. In each group: **Facilitator** (manage the group, arrange the time for the group discussion, facilitate the discussion, seek guidance/ask questions from other groups or teacher in the case of ambiguity) **Reflector** (carefully observe members during discussion, make sure discussion is on track and all members are actively involved), **Reporter** (take note of discussion and share the summary of the discussion and what they have learned from group discussion with class via Forum in week 3). **Presenter** (give 5 min presentation of what they have learned in their group discussion to the class in week 4). Students needs to fill peer review assessment form (5%). Individual submission: 10% Group submission:5%	20%	Weeks 4-8
Assessment 3: ***Formative*** Written essay & oral presentation (individual)	i. You need to select a **sustainable product**, as an alternative to a **less sustainable one** that is currently in use and justify you choice. ii. You will then apply the LCA framework to compare these two in terms of [illegible]		

	essay)		

Further information

UNSW grading system: https://student.unsw.edu.au/grades

UNSW assessment policy: https://student.unsw.edu.au/assessment

5.2 Assessment criteria and standards

Assessment criteria and standards for each assessment tasks are available on the course Moodle page.

Students who fail to achieve a score of at least 40% for the overall exam component (i.e., mid-session exam and final exam marks combined), but achieve a final mark >50% for the course, will be awarded a UF (Unsatisfactory Fail) for the course.

Please refer to the UNSW guide to grades: https://student.unsw.edu.au/grades

Rules governing conduct during exams are given at: https://student.unsw.edu.au/exam-rules

5.3 Submission of assessment tasks

UNSW operates under a Fit to Sit/ Submit rule for all assessments. If a student wishes to submit an application for special consideration for an exam or assessment, the application must be submitted prior to the start of the exam or before an assessment is submitted. If a student sits the exam/ submits an assignment, they are declaring themselves well enough to do so. Information on this process can be found here: https://student.unsw.edu.au/special-consideration. Medical certificates or other appropriate documents must be included. Students should also advise the lecturer of the situation.

Unless otherwise specified in the task criteria, all assignments must be uploaded via Moodle prior to the due date for submission.

Assignments/lab reports submitted after the due date for submission will receive a 10% of maximum grade penalty for every day late, or part thereof.

Students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course coordinator prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equity and Diversity Unit: https://student.unsw.edu.au/disability

Course activity roadmap