



Course Outline

MATS1101

Engineering Materials and Chemistry

Materials Science and Engineering

Science

T3, 2022

1. Staff

Position	Name	Email	Consultation times and locations	Contact Details
Course Convenor and Lecturer (Materials)	Dr Caitlin Healy	caitlin.healy@unsw.edu.au	Room 401, Hilmer Building (E10), by appointment	Phone: 9065 0450
Lecturer (Chemistry)	Professor Timothy Schmidt	dongjun.kim@unsw.edu.au	Room 634, Science & Engineering Building (E8), by appointment	Phone: 9385 4568
Chemistry Laboratory Administrator (Chemistry)	Dr Ron Haines	r.haines@unsw.edu.au	Room 128, Dalton Building, by appointment.	Phone: 9385 4666
Chemistry Tutorial Administrator	Ms Trinah De Leon	firstyearchem@unsw.edu.au	Room 312 Robert Webster Building	Phone: 9385 4651

2. Course information

Units of credit: 6

Pre-requisite(s): None

Timetabling website: <https://timetable.unsw.edu.au/2022/MATS1101.html>

Teaching times and locations:

	Lecture	Tutorial	Lecture	Lecture	Lecture
Day	Monday	Monday	Thursday	Friday	Friday
Stream	Materials	Materials	Chemistry	Materials	Chemistry
Location	Rex Vowels Theatre	Rex Vowels Theatre	Ainsworth G03	Rex Vowels Theatre	Ainsworth G03
Time	12-1 pm	1-2 pm	1-2 pm	2-3 pm	5-6 pm
Weeks	1-3,5, 7-10	2-3, 5, 7-10	1-5, 7-10	1-5, 7-10	1, 3, 5, 7 & 9

Students will enrol 118 T J 0 T c 0 T w 1.398 0 T 1 0 T d >>BDC.udents

2.4 Relationship between course and program learning outcomes and assessments

Course Learning Outcome (CLO)	LO Statement	Program Learning Outcome (PLO)	Related Tasks & Assessment
CLO 1	Describe...	1 & 2	Mid-term exam, Materials laboratories & Final exam
CLO 2	Make...	1 & 2	Mid-term exam & Final exam
CLO 3	Connect...	1	Mid-term exam, Chemistry laboratories & Final exam
CLO 4	Demonstrate...	5 & 6	Materials laboratories & Chemistry laboratories

3. Strategies and approaches to learning

3.1 Learning and teaching activities

4. Course schedule and structure

This course consists of approximately 55 hours of class contact hours, including lectures, tutorials and labs. You are expected to take an additional 95 hours of non-class time to complete assessments, readings and exam preparation.

Week	Materials Topics	Chemistry Topics
1	Introduction Bonding between atoms	Elementary atomic structure Isotopes Nomenclature The mole concept Atomic and molar mass Stoichiometry Formulae
2	Packing of atoms in solids Young's modulus	Equations Chemical reaction types Precipitation reaction Acid-base reaction

		Isomer and stereochemistry Organic reactions Oxidation, reduction, addition, substitution, and elimination
10	Polymers Composites	Major types of polymers Properties of polymers Synthesis of polymers Application of polymers

Chemistry Tutorials

General times and locations are shown on your enrolment timetable on MyUNSW. Be aware that the routes may have changed in response to changes in the course structure. See the course website for more information.

Student should assemble outside the east end of the Hilmer building E10 for their demonstration activity. The demonstrator of the lab will come and collect the students. Please ensure that you arrive at least 5 minutes prior to the lab start time; otherwise you may miss out on the lab activity.

Safety

You need to do a pre-lab safety exerc j ET Q q 55 m9eh -1.1 (h[(ot)-1.1001 Tw 0.265 0 (emo)-12.3 (3-8 (af)0.7 7 0 Td

5. Assessment

5.1 Assessment tasks

Assessment task	Description	Weight	Due date
Mid-term exam:	2 hr exam that will cover the content taught in the first 5 weeks of both strands.	30%	Week 7

**Materials
laboratory
reports:**

4 laboratory worksheets that include short answers and numerical questions. All working must be shown.

The laboratories cover the following topics:

- 1) Tensile testing
- 2) Fracture of materials
- 3) Casting and recrystallisation
- 4) Composite mechanical

4) 1 .59 -1.31he f1lCoph<</MC2(c)-8 (a)-12.Tw 0.892 0 Td ()Tj -0.0if C -Td [(C)-5.emahans2 Tw 0.2712.0012.2 (nng 0.-8

7. Readings and resources