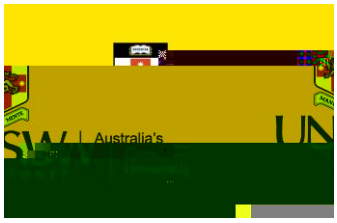

Course Outline

MATS1192

Design and Application of Materials in Science and Engineering

Materials Science and Engineering

Science

T1, 2022

2.3 Course learning outcomes (CLO)

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

1. Describe basic property-structure relationships in materials
2. Understand context of materials science and engineering in design and applications within society
3. Communicate above using a range of media

2.4 Relationship between course and program learning outcomes and assessments

Course Learning Outcome (CLO)	LO Statement	Program Learning Outcome (PLO)	Related Tasks & Assessment

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.

4. Course schedule and structure

This course consists of 47 hours of class contact hours and 20 online contact hours over the term. You are expected to take an additional 83 hours of non-class contact hours to complete assessments, readings and exam preparation spread over the term.

Week	Topics	Activity
1	Introduction Atomic bonding Atomic packing	Online tutorial
2	Defects Diffusion Atomic structure of metals WHS Welcome to the School of Materials Science and Engineering	Online tutorial
3	Phase diagrams Elastic deformation Laboratory: Energy materials	Online tutorial Lab
4	Plastic deformation Dislocations Introduction to fast fracture Ethics in engineering Laboratory: Energy materials	Online tutorial Lab
5	Strengthening Fast fracture Laboratory: Tensile testing	Online tutorial Lab
6	Revision class (optional) Site visit	Online tutorial Site visit
7	Steels Non-ferrous alloys Laboratory: Tensile testing	Online tutorial Lab
8	Polymers Ceramics Laboratory: Steel microstructures	Online tutorial Lab
9	Composites and nanomaterials Revision Site visit Laboratory: Steel microstructures	Online tutorial Site visit Lab
10	Student conference	Student conference

5. Assessment

5.1 Assessment tasks

Assessments	Description	Weight	Due date

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

Online Tutorials and Quizzes

Tutorials will become available on the course Moodle site in the same week as the relevant material is taught in the lectures (or earlier). Some tutorials need to be completed before the start of the relevant class; details will be given in class and on Moodle. There will be assessed quizzes for the topics of atomic bonding, phase diagrams, tensile properties and fracture, ferrous and non-ferrous alloys, and polymers, ceramics and composites. Apart from the quiz on atomic bonding, which can be done any time and can be attempted multiple times, students will have approximately 2 days to complete each quiz, which must be done in 1.5 hours once started, with only one attempt allowed. Students are

due to class clashes should make a r

Lab reports: Students will receive their mark and individualised feedback on the areas they excelled at and which areas of the reports that were not answered correctly. Feedback will be provided through Moodle, two weeks after submission.

Final exam: Students will receive their final mark.

6. Academic integrity, referencing and plagiarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism. Number referencing styles are preferred.

Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits**:** honesty, trust, fairness, respect, responsibility and courage.[1] At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity and **plagiarism** can be located at:

The *Current Students* site https://student.unsw.edu.au/plagiarism

Principles of Materials Science and Engineering, W.F. Smith, McGraw-Hill. Engineering Materials and Their Applications, R.A. Flinn and P.K. Trojan, Haughton.

Materials for Engineering, L.H. Van Vlack, Addison-Wesley.

Materials for the Engineering Technicians, R.A. Higgins, Edward Arnold.

Materials Science – A Multimedia Approach (electronic resource), John Russ, PWS Publishing Co.

R.E. Smallman and R. Bishop, Metals and Materials, 1996

8. Administrative matters

School Office: Room 137, Building E10 School of Materials Science and Engineering
School Website: http://www.materials.unsw.edu.au/
Faculty Office: Robert Webster Building, Room 128
Faculty Website: http://www.science.unsw.edu.au/

9. Additional support for students

The Current Students Gateway: https://student.unsw.edu.au/

Academic Skills and Support: https://student.unsw.edu.au/academic-skills

Student Wellbeing, Health and Safety: https://student.unsw.edu.au/wellbeing

Disability Support Services: https://student.unsw.edu.au/disability-services

UNSW IT Service Centre: https://www.it.unsw.edu.au/students/index.html

Assessment Implementation Procedure:
https://www.gs.unsw.edu.au/policy/documents/assessmentimplementationprocedure.pdf