

# ENGR 1008 ENGINEERING MATERIALS

**Credit Points** 10

**Legacy Code** 300965

**Coordinator** Qinghua Zeng ([https://directory.westernsydney.edu.au/search/name/Qinghua Zeng/](https://directory.westernsydney.edu.au/search/name/Qinghua%20Zeng/))

**Description** This unit will introduce fundamentals of engineering materials. The topics will include materials structure, properties, processing and applications, degradation of materials, sustainability, and the selection of materials for various engineering applications.

**School** Eng, Design & Built Env

**Discipline** Other Engineering And Related Technologies

**Student Contribution Band** HECS Band 2 10cp

Check your HECS Band contribution amount via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 1 subject

**Assumed Knowledge**

HSC mathematics (not General Mathematics), physics and chemistry.

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. describe and identify the atomic structure, bonding, crystal structure and defects of materials;
2. explain and determine the various properties of materials (e.g., mechanical, thermal, electrical, optical, magnetic);
3. identify and explain the mechanical failures, corrosion, and degradation of materials and how to prevent them;
4. select an appropriate material for a given application;
5. apply sustainability principles in engineering practice.

## Subject Content

Atomic structure and interatomic bonding  
 Crystalline structure and defects in solids  
 Mechanical and physical properties  
 Metals, ceramics and glasses, polymers, composites, and advanced materials  
 Materials selection  
 Materials and sustainability

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Item	Length	Percent	Threshold	Individual/Group Task
Self-Assessment	(1) Total mark for tutorials will be 20. (2) There are 10 weekly online tutorials, and each weights 2 marks. 1 hour	20	N	Individual
Quiz	Two quizzes 15 marks each 1 hour each quiz.	30	N	Individual
Practical	2 hours each	20	N	Both (Individual & Group)
Final Exam	2 hours	30	N	Individual

Prescribed Texts

- Callister, WD & Rethwisch, DG 2015, Fundamentals of materials science and engineering: an integrated approach, 5th edn, Wiley, Hoboken, NJ.

Teaching Periods

## Sydney City Campus - Term 1 Sydney City

**Day**

**Subject Contact** Peter Lendrum ([https://directory.westernsydney.edu.au/search/name/Peter Lendrum/](https://directory.westernsydney.edu.au/search/name/Peter%20Lendrum/))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ENGR1008\\_22-SC1\\_SC\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ENGR1008_22-SC1_SC_D#subjects))

## Sydney City Campus - Term 3 Sydney City

**Day**

**Subject Contact** Peter Lendrum ([https://directory.westernsydney.edu.au/search/name/Peter Lendrum/](https://directory.westernsydney.edu.au/search/name/Peter%20Lendrum/))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=ENGR1008\\_22-SC3\\_SC\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ENGR1008_22-SC3_SC_D#subjects))