

ENGR 1008 ENGINEERING MATERIALS

Credit Points 10

Legacy Code 300965

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Description This subject 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 fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 1 subject

Equivalent Subjects ENGR 1014 - Engineering Design Concepts (EDC) ENGR 1034 - Engineering and Design Concepts (UWSC) LGYB 0481 - Engineering and Design Concepts (UWSC Assoc Deg) ENGR 1009 - Engineering Materials (WSTC Assoc Deg) ENGR 1010 - Engineering Materials (WSTC)

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.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
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	N
Quiz	Two quizzes 15 marks each 1 hour each quiz.	30	N	Individual	N
Practical	2 hours each	20	N	Both (Individual & Group)	N
Final Exam	2 hours	30	N	Individual	N

Prescribed Texts

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