ENGR 1009 ENGINEERING MATERIALS (WSTC ASSOCD)

Credit Points 10

Legacy Code 700147

Coordinator Upeka Kuruppu (https://directory.westernsydney.edu.au/search/name/Upeka Kuruppu/)

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 and Design Concepts ENGR 1034 - Engineering and Design Concepts (UWSC) LGYB 0481 - Engineering and Design Concepts (UWSC Assoc Deg) ENGR 1008 - Engineering Materials ENGR 1010 - Engineering Materials (WSTC)

Restrictions Students must be enrolled at Western Sydney University, The College in 7022 - Associate Degree in Engineering

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 the various properties of materials (eg 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

1. Atomic structure and interatomic bonding
2. Crystalline structure and defects in solids
3. Mechanical and physical properties
4. Metals, ceramics and glasses, polymers, composites and advanced materials
5. Materials selection
6. 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
Practical	6 hours	15	N	Individual	N
Quiz	10 x 0.5 hours = 5 hours	30	N	Individual	N
Intra-session Exam	1 hrs + 30 minutes for online submission	15	N	Individual	N
End-of-session Exam	Part 1: 2 hours + 30 minutes for online submission Part 2: 20 minutes per student	40	Y	Individual	Y

Prescribed Texts

- Callister, WD & Rethwisch, DG 2012, Fundamentals of Materials Science and Engineering: An Integrated Approach, 4th edn, John Wiley & Sons, New York.

Teaching Periods

Quarter 4 (2025)

Nirimba Education Precinct

Hybrid

Subject Contact Abbas Ranjbar (https://directory.westernsydney.edu.au/search/name/Abbas Ranjbar/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR1009_25-Q4_BL_3#subjects)

Penrith (Kingswood)

Hybrid

Subject Contact Upeka Kuruppu (https://directory.westernsydney.edu.au/search/name/Upeka Kuruppu/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR1009_25-Q4_KW_3#subjects)