ENGR 1010 ENGINEERING MATERIALS (WSTC)

Credit Points 10

Legacy Code 700152

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

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

Pre-requisite(s) Students enrolled in 6033 Diploma in EngineeringBachelor of Engineering Studies or 7034 Diploma in Engineering or 7066 Diploma in Engineering Extended must pass MATH 0008 Mathematics 2 before enrolling in this unit

Equivalent Subjects ENGR 1014 - Engineering and Design Concepts ENGR 1008 - Engineering Materials ENGR 1034 - Engineering and Design Concepts (UWSC) LGYB 0481 - Engineering and Design Concepts (UWSC Assoc Deg) ENGR 1009 - Engineering Materials (WSTC Assoc Deg)

Restrictions

Students must be enrolled at Western Sydney University, The College. Students enrolled in Extended Diplomas must pass 40 credit points from the preparatory subjects listed in the program structure prior to enrolling in this University level subject. Students enrolled in the combined Diploma/Bachelor programs listed below must pass all College Preparatory subjects listed in the program structure before progressing to the Year 2 subjects.

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
Applied Project	1000 words	10	N	Individual
Practical	2 hours x 6	30	N	Group
Case Study	2 hours	40	N	Individual
Applied Project	2 hours	20	N	Individual

Prescribed Texts

- Callister, WD & Rethwisch, DG 2015, Fundamentals of Materials Science and Engineering: An Integrated Approach, 5th edn, John Wiley & Sons, New York.

Teaching Periods

Term 2 (2024)

Penrith (Kingswood)

On-site

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

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ENGR1010_24-T2_KW_1#subjects)

Term 3 (2024)

Penrith (Kingswood)

On-site

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View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=ENGR1010_24-T3_KW_1#subjects)