

# PROC 2003 MATERIALS SELECTION AND DESIGN

**Credit Points** 10

**Legacy Code** 301415

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

**Description** Materials are a critical point of consideration when designing a solution to a technical problem. However, materials can also be quite complex by themselves and can possess a range of properties which may only partially suit an intended solution. In this unit, students use real world scenarios to learn to make decisions concerning material selection under different circumstances, based upon technical requirements, and balanced against sustainability and cost.

**School** Eng, Design & Built Env

**Discipline** Materials Engineering

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

Check your fees 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 2 subject

## Learning Outcomes

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

1. Analyse the environmental issues associated with the potential use of a material in a design solution
2. Identify materials properties that are relevant to a specific technical problem
3. Apply a systematic approach towards the selection of materials for a given scenario
4. Provide material selection recommendations with appropriate justification
5. Apply collaborative skills in a team setting to address a technical problem
6. Professionally communicate methodology, analysis, and outcomes of a materials selection process in a range of different verbal and written formats.

## Subject Content

1. Introduction to software for materials selection
2. Overview of materials extraction, refinement and end of life
3. Addressing common engineering design scenarios
4. Materials selection for sustainability
5. Materials selection for advanced manufacturing

## 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
Quiz	45 Minutes	30	Y	Individual	Y
Report	2500 Words	30	N	Individual	N
Report	2000 Words	25	N	Group	N
Presentatio	10 Minutes	15	N	Both (Individual & Group)	N

Prescribed Texts

- Ashby, MF 2017, *Materials selection in mechanical design*, 5th edn, Butterworth-Heinemann, Oxford.

Teaching Periods

## Autumn (2024)

### Penrith (Kingswood)

**Hybrid**

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View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=PROC2003\\_24-AUT\\_KW\\_3#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=PROC2003_24-AUT_KW_3#subjects))

### Parramatta City - Macquarie St

**Hybrid**

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## Sydney City Campus - Term 1 (2025)

### Sydney City

**On-site**

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

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=PROC2003\\_25-SC1\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=PROC2003_25-SC1_SC_1#subjects))

## Sydney City Campus - Term 3 (2025)

### Sydney City

#### On-site

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

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=PROC2003\\_25-SC3\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=PROC2003_25-SC3_SC_1#subjects))