

# ENGR 6003 FIRE TECHNOLOGY AND ENGINEERING PRINCIPLES

**Credit Points** 10

**Coordinator** Sameera Wijesiri Pathirana ([https://directory.westernsydney.edu.au/search/name/Sameera Wijesiri Pathirana/](https://directory.westernsydney.edu.au/search/name/Sameera+Wijesiri+Pathirana/))

**Description** The subject introduces students to the basic principles of fire behaviour and fire safety design so that they can appreciate fire safety principles and interpret fire safety engineering design concepts. Students will learn the basics of combustion, building fire characteristics, smoke movement, responses of fire safety devices, building fire resistance, response of building occupants, fire safety engineering design and assessment methodology. The subject provides the basis for understanding fire safety engineering and the techniques and tools used in fire safety engineering. The subject is designed for building surveyors, who will be assessing performance solutions by fire safety engineers.

**School** Eng, Design & Built Env

**Discipline** Fire Technology

**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** Postgraduate Coursework Level 6 subject

**Incompatible Subjects** ENGR7011 Fire Technology Principles  
ENGR7009 Fire Engineering Principles

**Restrictions**

Students must be enrolled in a postgraduate program.

**Assumed Knowledge**

Building construction knowledge by working in the construction industry in an appropriate capacity for at least two years.

## Learning Outcomes

After successful completion of this Subject, students will be able to:

1. Interpret the basic principles of the fire phenomenon including the nature of fire, heat transfer, and initiation and propagation.
2. Analyse enclosure fire hazards and determine fire loads, fire growth rates and flashover.
3. Evaluate the principles used in fire engineering design and assessment.
4. Evaluate the functions of various fire safety subsystems, such as suppression, smoke and heat control, detection, warning and egress provisions, and risk management which are used in the development of fire safety engineering solutions.
5. Interpret fire safety engineering reports.

## Subject Content

1. The nature of fire and heat transfer processes
2. Fire initiation and propagation
3. Enclosure fires

4. Fire suppression
5. Smoke, heat control and tenability
6. Detection and warning
7. Fire Testing standards (AS1530.1, AS1530.2, AS 1530.4)
8. Australian Fire Engineering Guidelines methodology
9. Risk assessment (event trees and fault trees)
10. Human behaviour in fires
11. Occupant characteristics, movement and egress
12. Risk treatments and risk management
13. Fire engineering reports

## 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	Mandatory Task
Numerical Problem Solving	2000 words (equivalent)	30	N	Individual	N
Professional Task	1000 words	20	N	Individual	N
Final Exam	2 hours	50	Y	Individual	Y

Teaching Periods

## Autumn (2025)

**Online**

**Online**

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