

# ENGR 7008 FIRE ENGINEERING DESIGN AND ASSESSMENT

**Credit Points** 10

**Legacy Code** 300718

**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** This subject helps to develop a high level of knowledge of fire safety systems relevant to life protection and the design and assessment of such systems. The subject covers the process of fire safety engineering design and assessment including the fire engineering brief, conceptual design, regulatory objectives, fire safety engineering subsystems, verification methods, timeline analysis, design fires, evaluation of performance of passive and active fire protection systems, risk analysis and fire engineering project reporting.

**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 7 subject

**Equivalent Subjects** LGYB 5425 - Fire Safety Systems (Life Safety)

## Restrictions

Students must be enrolled in a postgraduate program.

## Assumed Knowledge

Fire safety engineering principles, building regulations, fire dynamics, building fire services, fire modelling and human behaviour in fires.

## Learning Outcomes

1. explain the fundamentals of building fire modelling
2. undertake a range of calculation methods and utilise computational tools to tackle different aspects of fire safety engineering problems;
3. apply computational methods and simple fire modelling tools to predict fire behaviour and smoke movement in buildings and solve fire safety engineering problems.
4. conduct literature reviews to appreciate the range of model application in fire safety engineering and to obtain data for model input and evaluation.

## Subject Content

Correlations and dimensional analysis  
 Fire plume calculations  
 Fire severity and fire resistance  
 Building structure and steel, concrete, timber and glazing elements behaviour  
 Radiation models  
 Detector and sprinkler activation models  
 Zone model and its application  
 Fundamentals of field models  
 Literature review

## Special Requirements

Essential equipment

Calculator, PC or laptop.

## 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/<br>Group Task | Mandatory |
|--------|-------------|---------|-----------|---------------------------|-----------|
| Report | 1000 words  | 15      | N         | Individual                | Y         |
| Report | 1500 words. | 20      | N         | Group                     | Y         |
| Report | 2000 words  | 25      | N         | Group                     | Y         |
| Report | 3000 words  | 40      | N         | Individual                | Y         |

## Prescribed Texts

- ABCB, 2005, International Fire Engineering Guidelines Edition 2005, Australian Building Codes Board, Canberra.
- Drysdale, D., 2011. An Introduction to Fire Dynamics, 3rd edn, John Wiley and Sons, Chichester, UK.

## Teaching Periods

## Spring (2025)

### Online

#### Online

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View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ENGR7008\\_25-SPR\\_ON\\_2#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR7008_25-SPR_ON_2#subjects))