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Fire Safety Engineering

Area of Practice / Area of Engineering

Fire safety engineering deals with the protection of life, property, and environment through the application of engineering principles, rules and judgement to the phenomenon of fire, its physical effects and the reaction and behaviour of people to fire.

Some of the activities that may be undertaken when practising fire safety engineering include, but are not limited to:

- asset management
- design, analysis and documentation
- construction and construction management
- installation, testing and commissioning
- operation and maintenance
- manufacture and supply of products, systems and materials
- risk management, quality assurance and compliance
- third party review and/or verification
- fire authority review/advice/testing
- testing, reporting and/or certification
- research and development
- training and education.

These activities could take place in any of the following domains:

- buildings and structures
- transport infrastructure and vehicles
- community infrastructure, including energy distribution, telecommunications, water supply and sewerage
- industrial and/or processing
- mining and oil and gas
- manufacturing, including consumer items
- fire authority
- fire investigation
- bushfire design, protection and/or management.



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Fire safety engineering requires the application of knowledge, skills and attributes which may relate to some or all the following technical areas of fire safety engineering:

- fire prevention
- fire chemistry and combustion
- fire dynamics
- fire protection systems, both active and passive
- evacuation of people from fire
- interaction between fire and people
- compartmentation and structural protection
- smoke management
- fire safety management and maintenance
- fire safety strategy development
- fire risk assessment
- fire brigade intervention
- fire insurance
- fire investigation
- fire safety codes and standards (performance and prescriptive based).

To find out more about fire safety engineering visit our [Engineering communities](#) page.

How to apply

This area of practice is available to those who want to become Chartered and is available to all occupational categories. Learn more about becoming [Chartered](#) and how to apply.

If you want to add fire safety engineering as an additional area of practice, [email](#) us to enquire about the process.

Registration eligibility

Fire safety engineers may need to hold statutory registration in an Area of Engineering in accordance with relevant legislation. Check the [State registration](#) page for more information.

Additional information for applicants

Recognition in the fire safety engineering area of practice requires:

- a) A Washington Accord or equivalent undergraduate engineering degree in fire safety engineering, or a Washington Accord or equivalent undergraduate engineering degree combined with a post graduate qualification (at least graduate diploma or master's degree) in fire safety engineering. In exceptional circumstances significant experiential learning and other qualifications may be deemed sufficient in lieu of these requirements.
- b) A minimum of five years of supervised fire safety engineering experience
- c) fire safety engineering is a significant proportion of your professional employment or practice.

To learn more about fire safety engineering read the [University of Sydney's Fire Safety Engineering competencies report](#).

Training and experience report

All applications for Chartered in Fire Safety Engineering must be accompanied by a verified training and experience report. A sample template for a fire safety engineering training and experience report is below.

[Note that examples below are indicative only]

1 Formal Education

Name of Qualification	University	Date
Master of Engineering Hons (FSE)	University of Canterbury, NZ	2014-2016
Bachelor of Engineering (Mechanical)	Monash University	2006-2010

1.1 Master of Engineering – Fire Safety Engineering

Topic	Related FSE Activities
Advanced Fire Dynamics	<ul style="list-style-type: none"> • Fire Science (chemistry) • Fire Science (dynamics) • Smoke Control This course covered.....
Basics of Structural Engineering	<ul style="list-style-type: none"> • Passive fire protection engineering This course introduced the basics of structural.....
Human Behaviour in Fire	<ul style="list-style-type: none"> • Interaction between fire and people The course covered.....
etc	etc



1.2 Seminars

The table below provides a summary of key seminars attended while working in a supervised FSE role

Title	Date
Battery energy storage and research into battery fires	21 May 2021
Detailed fire safety design for timber buildings	19 June 2019
etc	etc

2 Supervised Experience

This section provides examples of supervised experience in relation to:

- fire science
- smoke control
- codes and standards
- etc

Area	Project Name	Training received
Fire science	Renal Dialysis Centre	Radiative heat transfer
Fire science	Retail	Use of FDS modelling to study the smoke & fire behaviour
Smoke control	Bunnings	Use of FDS modelling and Pathfinder modelling to design the smoke exhaust system serving the warehouse
Fire ground operation	Correction Centre Tarneit	Specific requirements for fire brigade intervention in high security area
Fire safety design and management of transport	Flinders St Station	Fire safety management strategy including fuel load control and restricted access
Codes and standards	Royal Prince Alfred Hospital	Use of NCC and associated Australian Standards such as AS~2118.1, AS~1670.1 and AS~1670.4 in developing the fire performance solution.
etc	etc	etc

3 Responsible Experience

Description

Responsibility	Tasks	Relevant Projects
Lead projects	Main contact person Plan resources	<ul style="list-style-type: none"> • Melbourne High School • Westpac Fountain Gate
Undertake quantitative fire modelling	<ul style="list-style-type: none"> • identify modelling inputs including fire size, soot yield growth rate etc 	<ul style="list-style-type: none"> • Qantas Business lounge • St Francis College • Murdoch Uni



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	<ul style="list-style-type: none">• determine acceptance criteria• analyse modelling outputs	
etc	etc	etc

4 Other

Currently a member of Society of Fire Safety Brisbane.

5 Verification

Verification of training and experience report by supervising fire safety engineer.