IFE Level 3 Award in Fire Safety

Qualification Specification

Qualification Number: 610/5536/0

About the Institution of Fire Engineers (IFE)

The IFE is the professional institution for those working in the fire sector.

The IFE is a registered charity working for societal benefit. Founded in 1918, the IFE's mission is to promote, encourage and improve the science, practice and professionalism of fire engineering with the overall aim of protecting and saving lives. Members of the IFE share a commitment to ensuring that the fire profession remains relevant and valued, protecting people, property and the environment from fire.

The IFE Awarding Organisation
The IFE's awarding organisation is non-profitmaking.

The aim of the of the awarding organisation is to encourage those who work in the sector to engage with, and develop, the critical understanding needed to operate effectively and safely and to best professional standards so that they can protect and save lives. In doing this, the awarding organisation contributes to three of the IFE's (six) over-arching strategic priorities i.e.:

- *Facilitate awareness of fire issues and developments through the communication of ideas, knowledge and information.*
- *Foster professionalism by establishing and maintaining pathways and recognised standards of fire professionalism and competency.*
- *Increase knowledge in the science, practice and professionalism of fire engineering.*

All of the IFE's qualifications are designed for those working in the fire sector and to meet the above priorities. Qualifications and their associated assessments (examinations and practical activities/assignments) provided by the IFE are designed, assessed and quality assured by experts with extensive experience of working within the fire sector.

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IFE Level 3 Award in Fire Safety

Introduction
The IFE Level 3 Award in Fire Safety has been developed by the Institution of Fire Engineers (IFE), representatives of Fire and Rescue Services and other fire professionals. The content and structure of the qualification has been established to reflect best professional practice.

Aims of the Qualification
The IFE Level 3 Award in Fire Safety has been designed to enable individuals to demonstrate a wide range of critical knowledge and understanding relevant to fire science, fire protection systems and fire risk management necessary for life safety in the built environment.

Target Audience
The qualification will meet the needs of:

- those employed in fire and rescue service roles across the world, particularly those who are either already in a first line manager role or those who are preparing for promotion to develop and demonstrate knowledge and understanding relevant to fire related life safety systems in the built environment.
- those working in or are preparing to move into fire safety regulation, such as fire protection/fire safety roles, who need to develop and apply a wide range of knowledge and understanding in their role;
- fire professionals and those within allied sectors (architects, designers, Building Control Officers) of the Built Environment who wish to demonstrate their knowledge and understanding of life safety systems relating to fire.

Qualification Content
The content of the Award is set out in the information presented below. The relevant sections below provide information on the range of topics that must be studied to achieve the Award including the way in which candidates need to show their understanding (Assessment Criteria) and the scope/range/contents in which they can be tested (Knowledge and Understanding).

Candidates are advised to prepare for each examination by covering all topics in the unit content so that they are able to provide comprehensive responses.

Assessment
The assessment takes the form of a 120-minute examination. The examination is closed book and provides a summative assessment of the full range of learning specified in the unit content. There are 100 marks available in the examination.

Examinations are provided in English only.

Examinations are designed to ensure that all sections of the unit content are tested in each examination and to provide candidates with the opportunity to demonstrate their knowledge and understanding across the content specified in the unit.

Certification

Achievement

In order to achieve the Award, candidates must obtain at least 70 marks out of the available 100 in the relevant examination.

Achievement is not graded. Successful candidates are issued an Award which recognises that candidates have passed the examination.

Certificate Achievement

In order to achieve the IFE Level 3 Certificate in Fire Science, Operations, Fire Safety and Management, candidates must achieve a Pass in all four mandatory Award examinations. The qualification certificate is not graded. Successful candidates will be awarded a Pass Certificate.

Candidates do not need to achieve a Pass in all four awards at the same examination session.

Candidates must achieve all four awards within five years to achieve the Level 3 Certificate. The five-year period starts from 1 January of the year in which they take and pass their first examination. Candidates who take examinations in March 2023 and October 2023 will be able to combine these with passes from examinations that they sat in 2022, 2021, 2020 and 2019.

The IFE will automatically issue a full Level 3 Certificate in Fire Science, Operations, Fire Safety and Management certificate at the point where candidates have achieved passes in all four of the unit required.

Candidates may re-sit unit examinations as often as necessary in order to achieve a Pass.

Entry Requirements

There are no formal entry requirements. As the examination is provided in English only, candidates will need to have a comprehensive understanding of the English language in order to access the examination questions

Qualification Level

This qualification has been designed to enable candidates to demonstrate that they have attained knowledge and understanding at Level 3.

Other types of qualifications that are set at Level 3 include A level, AS level, international Baccalaureate diploma, level 3 diploma, and level 3 NVQ.

The qualifications regulator, Ofqual, has provided the following descriptors to illustrate the knowledge and understanding expected from those who hold qualifications at Level 3.

Level 3 Knowledge descriptor

The holder (of the qualification):

- has factual, procedural and theoretical knowledge and understanding of a subject or field of work to complete tasks and address problems that while well-defined, may be complex and non-routine.
- can interpret and evaluate relevant information and ideas.
- is aware of the nature of the area of study or work.
- is aware of different perspectives or approaches within the area of study or work

Candidates are advised to bear these descriptors in mind in preparing for examinations and when presenting responses during examinations.

Progression

Candidates who are successful in achieving the IFE Level 3 Award in Fire Safety, can progress to the remaining awards to achieve the full IFE Level 3 Certificate in Fire Science, Operations, Fire Safety and Management. They will then have developed knowledge and understanding that will prepare them to undertake further study.

Qualification Learning Time

The length of time needed to complete this qualification will vary depending upon the starting point (i.e., previous knowledge and experience) for each individual.

Research suggests that most candidates should spend around 60 hours preparing for each Award although some candidates may wish to allocate a higher proportion of their preparation time to one or more Awards depending on their pre-existing knowledge.

Total qualification time for this Award is 62 hours comprising:

- 60 hours of learning e.g., self-study/course training. Study may be self-study (please see the section on recommended reading below) and may include relevant employer training programmes.
- 2 hour of assessment.

Most candidates prepare for IFE examinations via self-study or by drawing on training provided by their employer that covers aspects of the syllabus. Candidates are advised to cross-map their study/training against the content of the unit to ensure that all parts of the unit have been covered. Recommended reading materials are listed below.

Recommended Reading

Candidates should be aware that this reading list is advisory rather than definitive. Candidates should use the content of the units as their guide in deciding what reading materials they need to help them prepare for the examination – please see Content section below. The IFE recommends that all candidates should read widely in order to extend the depth and breadth of their knowledge and understanding.

Candidates preparing for the examinations are advised to refer to the list below:

- Elementary Fire Engineering Handbook (IFE 50), Version issued 2017, available via IFE online shop or Google Books.
- IFE Resources https://ife.org.uk/Home/Events-and-resources/Articles
- NFCC Guidance: Reduction of False Alarms and Unwanted Fire Signals Unwanted Fire Signals – NFCC
- Fire Safety Risk Assessment - Sleeping Accommodation (Section 4 and Appendix D Glossary of terms), UK Gov https://www.gov.uk/government/publications/fire-safety-riskassessment-sleeping-accommodation
- Fire safety risk assessment: means of escape for disabled people HM Government
- Fire Risk Assessments https://www.gov.uk/workplace-fire-safety-your-responsibilities/fire-risk-assessments
- FPA Photovoltaic systems

Candidates may also refer to the sample examination and examiner reports (short answer questions sections) on previous examinations which are available on the IFE's website - Past papers and exam reports (ife.org.uk).

Award 3: Fire Safety

Introduction
This Award focuses on fire safety issues in relation to the built environment. It covers;

- methods of construction
- systems for detecting fires and raising the alarm, and
- protecting people and buildings from fire.

Learning Outcomes
Candidates who achieve this Award should be able to:

- understand the basic methods of building construction and the implications of different structures and materials in case of fire
- analyse fire resistance in relation to buildings, building materials used and building services installed
- understand and explain the operation of automatic fire protection/suppression systems
- understand the basic principles of fire detection and warning systems
- explain and apply the basic principles of fire safety and fire risk management

Content

1. Building Construction and Fire Resistance

Assessment Criteria	**Knowledge and Understanding**
1.1 Explain the principal types of building construction and explain how this affects behaviour in fire	• Solid or traditional • Structural steel frame • Reinforced concrete • Precast reinforced concrete • Composite • Modular • Lift slab • Portal frame • Prefabricated methods e.g., Structural Insulated Panels (SIPS) and Cross Laminated Timber (CLT) • Sandwich panels • Building boards, building slabs and insulating materials • Fire retardant/fire resisting materials that can be applied • External cladding
1.2 Describe the elements of structure within a building, their function and the factors affecting fire resistance	• Beams • Columns • Floors • Roofs • Stairs and stairways

	• Walls (load bearing and non-load bearing) • Demountable partitions • Windows • Compartmentation • Fire resisting partitions • Active fire barrier systems • Firefighting shafts and stairwells
1.3 Define the terms 'fire door' and 'doorset' and explain their functions and differences	• Fire Door • Doorset • Locations of fire doors
1.4 Describe the features and the components of a fire doorset or assembly and explain the factors affecting fire resistance	• Door leaf • Door frame • Door ironmongery • Air transfer grills • Intumescent seals • Smoke seals • Glazing apertures • Signage
1.5 Understand factors that affect the fire resistance of a building and components within the building	• Stability/ Loadbearing capacity • Integrity • Insulation

2. Building Materials and Systems and Fire Resistance

Assessment Criteria	**Knowledge and Understanding**
2.1 Describe the materials used in buildings, their usual behaviour in fire and the methods used to improve fire resistance	• Timber • Masonry • Building blocks • Building slabs • Steel, aluminium and other metals • Cement • Concrete (reinforced and pre-stressed) • Stone • Building boards • Glass • Insulating boards and materials • Paint • Photovoltaic panels • Plastics
2.2 Describe the basic types of services likely to be found in modern buildings, explain the implications in fire and relevant methods to improve fire resistance	• Natural ventilation • Mechanical ventilation • Air conditioning systems • Fume extraction plants • Mechanical conveyors and chutes • Machinery drives • Heating systems

	• Fire stopping and cavity barriers • Ductwork • Dampers

3. Fixed installations

Assessment Criteria	**Knowledge and Understanding**
3.1 Describe the function, water supplies and main components of various types of automatic sprinkler systems	• Wet • Dry • Alternate • Pre-action • Deluge • Life safety • Recycling
3.2 Describe the function and operation of other fixed installations using water	• Drenchers • Water spray projector systems • Water mist systems • Rising mains (Wet and Dry) • Private hydrants
3.3 Describe the function and operation of fixed installations *not* using water	• Carbon Dioxide (CO2) • Powder systems • Inert gas • Foam installations
3.4 Explain the basic principles underlying smoke control and ventilation systems	• Smoke ventilation • Smoke and heat exhaust ventilation systems (SHEVS) • Smoke and heat control systems • Ventilation in multi-storey buildings • Pressurisation

4. Fire Warning and Detection Systems

Assessment Criteria	**Knowledge and Understanding**
4.1 Describe the types of fire alarm systems	• Manual systems (including types of call points) • Automatic systems

4.2 Explain the basic principles of Automatic Fire Detection (AFD) and describe the types of detectors and systems	• Definition of a detector
	• Smoke detectors:
	  ○ Ionisation
	  ○ Optical
	  ○ Multi-sensor or combined
	• Heat detectors
	• Other types of detectors:
	  ○ Video
	  ○ Linear beam
	  ○ Flame
	  ○ Aspirating

4.3 Describe the operation and control of basic fire alarm systems	• Zones • Power supplies • Restricted alarms • Phased evacuation • Types of alarm signals • Control and indicating equipment • Faults • Silencing and resetting alarms
4.4 Describe the types and operation of alarms, their siting and advantages and disadvantages of different systems	• Battery operated • Mains operated • Wireless linked • Ionisation • Optical • Heat • Combined smoke and heat • Combined smoke and carbon monoxide • For disabled people
4.5 Describe how false alarms of fire can occur and their impact	• The impact of false alarms • Methods of reducing false alarms and unwanted fire signals

5. Fire Safety Practice

Assessment Criteria	**Knowledge and Understanding**
5.1 Define and explain the basic principles of means of escape in case of fire	• Means of escape • Occupancy • Construction • Evacuation time • Travel distance • Escape route • Places of safety (Reasonable/Relative and Total) • Management control • Responsible person • Compartmentation
5.2 Explain the factors that affect behaviour when faced with a threat of fire in a building	• Knowledge of the building layout • Regularity of the alarm being heard (e.g., history of false alarms/tests) • Fire drill discipline • Physical state (e.g., sleeping, under the influence of medication/alcohol/drugs etc) • Whether physically or mentally impaired • Friends or family in the building • Whether senses recognise danger e.g., sight, smell • Advice from trusted sources

5.3 Explain the special arrangements that may be needed for people who are especially at risk	• How the wellbeing of people can affect evacuation e.g., mobility, disability, health, age. • Pre-planning arrangements for ensuring the safety of people who are at special risk - personal emergency evacuation plan (PEEP) • Facilities including refuges

5.4 Describe the importance of a fire safety risk assessment and explain the principles underpinning the process	• The significance of a fire safety risk assessment
	• The terms “hazard” and “risk” in relation to fire safety
	• The key elements of a good fire safety management system:
	  ○ Identify the risks
	  ○ Identify the people at risk
	  ○ Evaluate, remove, reduce and protect from risk
	  ○ Record, plan, inform, instruct and train
	  ○ Review

5.5 Describe the responsibilities of the owners of properties for fire safety arrangements and the steps that they can take to ensure that fire safety provisions are maintained	• Fire risk assessment • Testing and maintenance of measures • Monitoring of activities that might affect performance of fire measures e.g., amendments to buildings that could breach essential fire compartmentation • Use of signage (including locations) • Use of emergency lighting (including locations) • Monitoring building for risks such as fire doors propped open and obstructions to fire exits