IFE Level 4 Certificate in Fire Safety

Qualification Specification

Qualification Number: 603/6613/8

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 the 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. The qualifications and the 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 4 Certificate in Fire Safety

Introduction
This qualification has been developed by the Institution of Fire Engineers (IFE), Fire Risk Assessors and Fire Safety specialists in both private sector roles and public sector roles in the Fire and Rescue Services.

This qualification focuses on the application of fire safety measures in complex premises and environments. Complex premises and environments include premises with a large number of occupants, premises with longer distances to escape routes and premises used for storage/processes involving high or higher risk materials and processes, public access areas and historic buildings. It covers protection equipment and systems as well as safety management arrangements.

This qualification is derived from unit 2: Fire Safety within the Level 4 Diploma in Fire Science and Fire Safety. It is directly equivalent to that unit in that the content and assessment remain exactly the same. Individuals who achieve this qualification may use it towards the achievement of the Level 4 Diploma in Fire Science and Fire Safety. For information, please see - https://www.ife.org.uk/IFE-Qualifications-with-Syllabus-Links

Target Audience
This qualification will be appropriate for individuals who provide fire safety advice and/or carry out fire safety assessments/audits in diverse and complex contexts. It will be of interest to:

- Fire Safety/Protection Officers working in Fire and Rescue Services
- Fire Risk Assessors
- Fire Inspectors
- Fire/Safety Officers/Managers with responsibility for fire safety
- Individuals working in areas such as construction, building design and fire safety equipment design and manufacture

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

- evaluate risks in complex buildings and environments where traditional fire safety approaches may not be sufficient, having regard to construction, occupancy, and layouts
- identify and evaluate options to reduce risks, drawing on extensive knowledge of precautions and protection options including trade-offs and compensatory measures
- determine appropriate solutions, synthesising information from diverse angles
- comment on the design of new buildings as well as existing buildings and alterations to existing buildings

Membership of the IFE
Achievement of this qualification enables candidates to meet the academic requirement for membership of the Institution at **Technician (TIFireE) Grade**.

Achievement of **three Level 4 Certificates** enables candidates to meet the academic requirement for membership of the Institution at **Associate (AIFireE) Grade** or **Member (MIFireE) Grade**.

To achieve the full **Level 4 Diploma**, candidates must complete this mandatory qualification **in addition to** the following:

- The mandatory Level 4 Certificate in Fire Engineering Science
- Two additional IFE Level 4 Certificates

All four qualifications must be achieved **within a five-year period**.

Qualification Content
The content of the qualification is set out in the section entitled "Content" below. This section provides information on the range of topics that must be studied including the way that candidates need to show their understanding (Assessment Criteria) and the scope/range/contexts in which they can be tested (Knowledge and Understanding).

The syllabus content is very broad and deep and therefore not all topics can be tested in all examinations. Candidates are advised to prepare for the examination by covering all topics so that they are able to provide comprehensive responses.

Assessment
The assessment takes the form of one three-hour examination and provides a summative assessment of the full range of learning specified in the content below.

Examinations are provided in English only.

Candidates will be required to complete **six** questions from a choice of **eight** questions. There will be 20 marks available for each of the questions.

In order to achieve a Pass, candidates will be required to attain at least 48 of the 120 marks available to them via the six questions.

Candidates who answer fewer than six questions will be able to achieve a Pass as long as they achieve the minimum pass mark of 48. Should candidates answer more than six questions, they will not benefit as only the six best responses will be included in the final mark.

Certification
Results of examinations will be reported as follows:

Pass - this is awarded where candidates achieve a mark between the minimum pass mark of 48 marks and 71 marks.

Distinction - this is awarded where candidates achieve a mark of 72 or above.

Fail - candidates who achieve 47 marks or fewer will receive a result showing Fail. Where candidates receive 24 marks or fewer, the result will show as Fail (X).

Candidates who are unsuccessful in the examination may re-sit the examination. There is no limit on the number of times that candidates may re-sit.
Candidates will be issued with the mark achieved out of a total of 120.

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 4. Other types of qualifications that are set at Level 4 include Certificate of Higher Education (CertHE), Higher National Certificate (HNC) and Level 4 NVQs.

The qualifications regulator, Ofqual, has provided the following descriptors to illustrate the knowledge and understanding expected from those who hold qualifications at Level 4.

Level 4 Knowledge Descriptor

The candidate:

- Has practical, theoretical, or technical knowledge and understanding of a subject or field of work to address problems that are well defined but complex and non-routine.
- Can analyse, interpret, and evaluate relevant information and ideas.
- Is aware of the nature of approximate scope of the area of study or work.
- Has an informed awareness of different perspectives or approaches within the area of study or work.

Candidates are advised to bear these descriptors in mind when preparing for assessment and when composing responses to examination questions.

Qualification Learning Time

The length of time needed to prepare for this examination will vary depending upon the starting point for each candidate.

Total qualification time is 170 hours:

- 167 hours of learning/study. Study may be self-study (please see the section on recommended reading below) and may include relevant CPD and employer training programmes.
- 3 hours of assessment (directed time) i.e. one three-hour examination.

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 syllabus to ensure that all parts of the syllabus have been covered. Recommended reading materials are listed below.

Progression
Candidates who are successful in achieving this qualification may consider progression to specialist degree or Foundation Degree programmes.

Recommended Reading
This qualification covers an extensive range of contexts and candidates are advised to reflect this breadth in their examination preparation.

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

- Relevant graphical symbols - https://www.firesafe.org.uk/graphical-symbols-and-abbreviations-for-fire-protection-drawings/
- Guidance documents on business and domestic fire safety available online from https://www.gov.uk/government/collections/fire-safety-law-and-guidance-documents-for-business
  - Fire safety risk assessment: small and medium places of assembly
  - Fire safety risk assessment: large places of assembly
  - Making your premises safe from fire
  - Fire safety risk assessment: sleeping accommodation
  - Fire safety risk assessment: educational premises
  - Fire safety: guidance for the hospitality industry
  - Fire safety risk assessment: animal premises and stables
  - Fire safety risk assessment: means of escape for disabled people
  - Fire safety risk assessment: open-air events and venues
  - Fire safety risk assessment: transport premises and facilities
  - Fire safety risk assessment: healthcare premises
  - Fire safety risk assessment: residential care premises
  - Fire safety risk assessment: theatres, cinemas and similar premises
  - Fire safety risk assessment: 5-step checklist
  - Fire safety risk assessment: factories and warehouses
  - Fire safety risk assessment: offices and shops
- Guidance on fire safety provisions for certain types of existing housing produced by the Local Authorities Coordinators of Regulatory Services (LACORS)
- The BS 9999 handbook. Effective fire safety in the design, management and use of buildings, BSI
- Fire Detection and Fire Alarm Systems: BS 5839 Parts 1 and Part 6, The Design, Installation, Commissioning and Maintenance of Fire Detection and Fire Alarm Systems – A Guide to BS Code 5839, BSI
- Approved Document B Volume 1 - Dwelling Houses
- Approved Document B Volume 2 - Buildings other than dwelling houses
- Fire Service Manual Volume 3: Fire Safety – Basic Principles of Building
- A guide to health, safety and welfare at music and similar events HSG 195 HSE 1999
- Guidance on the emergency use of lifts or escalators for evacuation and fire and rescue service operations BD 2466 www.highrisefirefighting.co.uk/docs/guidanceemergemcylifts.pdf
- Emergency Lighting: BS 5266 https://www.firesafe.org.uk/emergency-lighting/
- ASFP Guide to Passive Fire Protection for Fire Risk Assessors
- ASFP Ensuring Best Practice for Passive Fire Protection in Buildings
- BWF-Certifire, Fire Doors and Doorsets Best Practice Guide

- Hardware for fire and escape doors, Code of Practice jointly published by the Door and Hardware Federation and the Guild of Architectural Ironmongers
- ASFP Grey Book - Volume 1: Fire dampers (European standards) E (integrity) & ES (integrity and leakage) classified, 2nd Edition
- Jesip Incident Reports and Inquiries - https://www.jesip.org.uk/incident-reports-and-inquiries/

Content

1. Fire Safety and Fire Engineering Principles

Assessment Criteria	Knowledge and Understanding
1.1 Explain and apply the fire safety systems which may be used when designing, using, or altering complex buildings	• Passive fire safety • Active fire safety • Pressurisation • Leakage paths • Automatic suppression systems • Smoke control and air handling • Compartmentation • Fire detection and warning systems
1.2 Explain the underlying concepts that support fire safety in the built environment	• Design fire size • Smoke movement • ASET/RSET and factors that affect different phases of evacuation • Fire resistance
1.3 Explain how computer modelling can support fire engineering	• Fire load • Fire growth • Limits of tenability • t^2 growth rate • Design Fire Size • Zone and field models • Use of flow chart to support design process • Fire/Smoke modelling, examples of programmes • Pedestrian flow/evacuation modelling

2. Human Behaviour in Emergency Situations

Assessment Criteria	Knowledge and Understanding
2.1 Explain the human behaviour factors that affect safety from fire	• Interaction between fire safety systems and human behaviour • The physiological, behavioural and psychological effects on people confronted by a fire situation • How behaviour of people in a fire can adversely affect evacuation and means of escape
2.2 Explain the special arrangements that may be needed for means of escape for individuals with particular requirements and assess implications in different contexts	• Emergency procedures for the safe evacuation of people from a fire situation • Individuals with particular requirements to include the young, the old, the disabled, those with poor health, short term and long-term conditions, cognitive impairment and people from different cultures • Behavioural aspects of people in fire and implications when planning/reviewing means of escape and evacuation procedures
2.3 Apply learning from significant fires in assessing situations or drawing conclusions	• Major incidents of note • Identification of patterns and application of learning from previous incidents

3. Fire Protection Equipment

Assessment Criteria	Knowledge and Understanding
3.1 Describe the design features, installation, maintenance and operation of automatic fire detection systems and assess which systems would be appropriate in different situations	• Types of system • Success or failure of operation • Automatic Fire Detectors - Radio Systems • Automatic Fire Detection - Detector Circuits • Zones, addressable for complex evacuation strategies, double knock, multi-purpose detectors • Aspirating systems • Control and indicating equipment
3.2 Describe the design features, installation, maintenance and operation of extinguishing media and assess which systems would be appropriate in different situations	• Sprinkler systems: commercial, residential, and domestic (life safety) • Other water- based systems, drenchers, foam, water mist • Gaseous systems • Oxygen depletion systems
3.3 Describe and explain the design features, installation, maintenance and operation of explosion detection and control systems	• Explosion detection systems • Explosion venting systems • Explosion suppression systems • Control of flammable atmospheres
3.4 Describe and explain the design features, installation, maintenance and operation of other protection equipment	• Fire curtains • Shutters

4. Building Design

Assessment Criteria	Knowledge and Understanding
4.1 Interpret plans of buildings	• Evaluate plans to identify risk and provide fire safety solutions
4.2 Explain the way in which building materials can be used, comment on their behaviour in fire and assess the implications for fire safety	• Applied protection • Modern Methods of Construction • Cross Laminated Timber • Steel frame • Glulam • Large structural timber • Structural Insulated Panels • Modular construction • Fire retardant, intumescent treatments • Upgrading fire resisting doors

4.3 Describe structures and building design components stating their function and assessing their impact on fire safety	• Atria • Glazing • Separating walls • Compartment walls and floors • Junctions formed by elements of structure • Protected shafts and protecting structures • Fire resisting doors and other enclosures • Claddings • Facades • Tunnels
4.4 Describe heating, ventilation and air conditioning systems that are used in buildings, assess the effects they may have on a fire and explain the fire suppression methods used in these systems	• Heating systems • Ventilation • Air conditioning systems • Stairwell pressurisation systems • Ventilation and smoke handling systems
4.5 Describe mechanised pedestrian transport systems, their role in the movement of people in buildings and implications for fire safety	• Lifts/Elevators • Escalators • Travellators
4.6 Evaluate risks associated with modern construction design and development process	• Describe consultation process • Qualitative Design Review (QDR) • Interaction and compatibility between different materials • Unexpected consequences of inappropriate selection, use, location, orientation and interaction of materials • Impact of quality of construction • Impact of modern methods of construction • During construction and alterations

5. Fire Safety Management, Review and Advice

Assessment Objective	**Knowledge and Understanding**
5.1 Explain how to assess fire risks within complex premises and environments	• Principles and methods of risk assessment in complex premises and environments • Impact of structure, materials and access • Identification of people who may be at risk • Identification of risks to property and the environment • How to explain risks to members of the public and property owners/managers • Common causes of fire in different occupancies • How to review effectiveness of current measures • How to provide feedback on effectiveness of current measures • Impact of organisational constraints

5.2 Identify and evaluate methods of improving fire safety in the community and increasing public awareness and perception of general fire safety matters	• Strategic thinking • The use of fire statistics to inform decisions on fire safety programmes • Risks in the community and prioritising fire safety programmes • Objectives of fire safety education in the community • Contents of fire safety programmes and their purpose • Methods to engage diverse community members and stakeholders • Methods to evaluate success of programmes
5.3 Explain and assess the role of management and control of fire safety in large buildings and organisations	• Strategic thinking • Level of fire safety knowledge and responsibility at different parts of the organisation • Engaging and training employees in different premises/workplaces and in different roles • Identification of training requirements for people with fire safety responsibility • Importance of testing and reviewing precautions in place and how to do this