IFE Level 4 Certificate in Aviation Fire Operations

Qualification Specification

Qualification Number: 603/6615/1

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 Aviation Fire Operations

Introduction
The IFE Level 4 Certificate in Aviation Fire Operations has been developed by the Institution of Fire Engineers (IFE) in partnership with aviation fire experts (civilian and military).

The qualification focuses on the strategies and activities required to manage airport fire and rescue services and to resolve fire and rescue incidents in aviation contexts. It covers pre-planning for incidents, resolving incidents and post-incident activities as well as working with partners to plan for emergencies and to ensure operational readiness.

This qualification can be used as an optional Certificate to achieve 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 has been designed for individuals who are based within an airport fire and rescue service and who are carrying out strategic roles overseeing airport fire stations and working with partners to ensure that emergency planning arrangements are in place. It will also be of interest to those who are based in fire and rescue services close to airports and who may be called upon to attend fire and rescue incidents in a strategic role either at an airport (to support the airport team) or off-airfield within their geographical area of responsibility.

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

- assess incidents in aviation contexts (civil and military) and identify appropriate strategies to resolve them
- explain the principles that underpin the provision of firefighting and rescue facilities at airports and airfields
- understand the issues to be taken into account in reviewing and determining incident status, assuming responsibility and taking over command and control operations
- understand how to provide leadership and how to work with colleagues and external stakeholders.

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 qualification **in addition to** the following:

- The mandatory Level 4 Certificate in Fire Engineering Science
- The mandatory Level 4 Certificate in Fire Safety
- One additional IFE Level 4 Certificate

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 presenting 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 140 hours:

- 137 hours of learning/study. Study may be self-study (please see the section on recommended reading material 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.

Further Information
Further information on examination conditions is available on the IFE website.

Recommended Reading
This qualification covers an extensive range of aircraft and aviation contexts and candidates are advised to reflect this in their study when preparing for examinations.

Candidates are also advised to review past examination papers. Past papers, together with the associated examiner reports on the papers, can be downloaded, free of charge, from the IFE website - https://www.ife.org.uk/Qualifications/Past-Papers-and-Exam-Reports.
Candidates preparing for the examination are advised to refer to the list below:

- Heliport Manual Doc 9261 Part 1. ICAO
- Annex 14 Aerodromes Volume II - Heliports Fifth Edition (Amendment 9)
- Fire Service Manual Volume 2: Fire Service Operations - Aircraft Incidents, TSO*
- CAA, CAP 168, http://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=6114
- CAA, CAP 699, http://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=235
- Fire and Rescue Service Operational Guidance: Generic Risk Assessments – GRA 4.3, Chief Fire & Rescue Adviser, published by Gov.UK
- Fire and Rescue Service Operational Guidance: Aircraft Incidents, Chief Fire & Rescue Adviser, published by Gov.UK
- Airport Services Manual – Doc 9137 Part 1 Rescue & Firefighting, International Civil Aviation Authority
- Airport Services Manual - Doc 9137 Part 7 Airport Emergency Planning, International Civil Aviation Authority
- Fire and Rescue Manual Volume 2 Fire Service Operations Incident Command incidentcommand.pdf (publishing.service.gov.uk)
- Fire and Rescue Incident: A Practical Guide to Incident Ground Management by Tony Prosser and Mark Taylor. ISBN: 978-1-912755-09-7
- Environment Agency and DCLG environmental handbook.pdf (ukfrs.com) Chapter 3 & Appendix 1

Content

1. Emergency Planning and Procedures

Assessment Criteria	Knowledge and Understanding
1.1 Understand the importance of pre-planning for emergencies and know how to develop a plan	• Preparing for appropriate response • How to protect responders, the public and the environment • How to mitigate the impact of an incident
1.2 Identify and assess the issues to take into consideration when planning for emergencies	• Airport location and topography • Access • Rendezvous points and marshalling areas • Water supplies and drainage systems • Rescue and firefighting response and capability • Communications • Air traffic control • Aircraft hazards • Features that are useful for planning procedures • Determining the best position for standby for emergency vehicles • Observation and watching duties
1.3 Explain the involvement of external partners in pre-planning and explain how to engage with each partner	• Stakeholders and local partners • Joint working in planning and incident review • Importance of involving the local community • Detail the role of each emergency service at the scene of an aircraft accident
1.4 Detail the categorisation (civil and military) of emergencies at airports and assess the implications	• Aircraft Accident • Aircraft Accident Imminent • Aircraft Crash – Off-airfield • Full Emergency • Local Standby • Aircraft Ground Incident • Bomb Alert/Bomb Suspected • Weather Standby • Domestic Fire
1.5 Describe the areas of an airport, explain safety implications and be able to plan for incidents	• Areas to include: • Runway • Aircraft stand • Air bridge • Apron • Airside/landside security • Taxiway • Airport terminal buildings • Airport cargo buildings • Baggage areas • Maintenance facilities • Fuel storage

1.6 Describe the range of aircraft, explain safety implications and be able to plan for incidents	• Types of aircraft: ♦ Fixed wing ♦ Rotary wing (helicopters, autogyro etc.) ♦ Gliders ♦ Microlights ♦ Civilian and military contexts • Incidents on and off airport to include the following types of flights: ♦ Scheduled ♦ Chartered ♦ Military ♦ Private • Air shows and other events
1.7 Explain the importance of maintaining operational readiness and explain how this can be managed	• Training requirements of rescue and firefighting personnel • Training needs analysis • Methods of training available to test contingency and pre-determined emergency plans and how they can be improved • Large-scale training exercise involving all responding emergency services to major aircraft disasters • Maintaining availability of resources • Procedures in relation to operational readiness
1.8 Assess how the lessons learned from aviation disasters can used in pre-planning and maintaining operational readiness	• Dissemination of information nationally and internationally

2. Incident Command and Management in Aviation Contexts

Assessment Criteria	**Knowledge and Understanding**
2.1 Understand the key roles, responsibilities, and limits of authority	• Role and responsibilities of the Incident Commander at Tactical level • Performance criteria involved in leading, monitoring and supporting people to resolve operational incidents • Role and responsibilities of Command Support at Tactical level incidents, including the role of Command Support Officer • Potential limits to the authority of the Incident Commander
2.2 Understand the importance of successful leadership and the application of effective decision making during operational incidents	• Need for effective command decision making • How to select and apply a range of tactics to resolve different types of operational incidents • “Situational awareness” and its relevance to the role of Incident Commander • Elements of leadership within the role of Incident Commander

2.3 Understand the principles of successful risk management at operational incidents	• Minimising and controlling risks to operational personnel • Relationship between the analytical risk assessment process and the safe and effective management of risk at operational incidents • How to identify and control a strong appetite for risk in others
2.4 Understand the benefits of inter-operability and the contribution of other agencies to the provision of specialist advice and support	• Effective liaison with other agencies to achieve desired outcomes • Provision of information to other agencies which may assist in their decision making • Benefits of inter-operability in obtaining and acting upon specialist advice and support from other agencies
2.5 Explain the principles for general control, tactics, and strategy in relation to resolving emergency aviation incidents on airport and off airport	• Objectives of ventilation at fires and the principles involved • Strategy and tactics involved in rescue work and how they are used in practice to accomplish efficient rescues • Procedures for ensuring the safety of fire and rescue personnel and of the public • Need for evacuation and how this can be achieved • Firefighting procedures and tactics in fires involving hazardous materials. • Inter-relationship of logistics operations and technical support at incidents • Salvage/Damage control operations and the principles and technicalities involved • Problems of command and control in the early stages of major civilian aircraft accidents • Issues to take into consideration in establishing inner and outer cordon distances
2.6 Detail the principles of good site management at the scene of a major aircraft incident	• The concepts of critical areas and control
2.7 Analyse the environmental hazards that might be encountered and determine approaches to minimise negative effects	• Prevention of pollution of water courses and rivers by collection and impounding of firefighting run-off water • Environmental hazards associated with firefighting foams • Hazards of vapour cloud/toxic gas cloud off site during and after fire or other operations
2.8 Assess the implications of liaison with the media before, during and after a major incident	• Role of a media centre at a major incident and the liaison agreements with the emergency services • Factors to be considered in running a press conference during a major incident

3. Provision for Firefighting and Rescue Facilities at Airports and Airfields

Assessment Criteria	Knowledge and Understanding
3.1 Outline the criteria to be taken into account when designing and providing airport fire stations	• Specification and considerations to be taken into account when designing and providing new airport fire appliances
3.2 Explain how to deploy equipment and other resources to resolve incidents including fires and other emergencies on airport and off airport scenarios	• Different types of firefighting media and equipment and its operational use • Selection and deployment of resources • Capabilities and limitations of personnel, appliances, special appliances and equipment

4. Communications

Assessment Criteria	Knowledge and Understanding
4.1 Understand the methods and types of communication systems available both at incidents and remotely	• Importance of effective communication in recognising poor or inaccurate information and taking action to rectify • Types and methods of communication available to an Incident Commander at Tactical level • Range of remote information sources available to an Incident Commander • Role of Command Support in establishing effective communications at incidents • Requirement to ensure effective briefings
4.2 Describe the planning, design, operation, and functions of control centres suitable for emergency services	• Methods by which stations can be alerted from a control centre
4.3 Describe and evaluate the communications equipment available	• Types of radio schemes and systems for fire service general and incident use • Computer aided mobilising systems

5. Heliports

Assessment Criteria	Knowledge and Understanding
5.1 Explain how to deploy equipment and other resources to resolve incidents including fires and other emergencies in relation to heliports	• “Obstacle limitation surfaces” and “transitional surfaces” and • The main features to be considered in the designing of off-shore heliports • Concept of critical area as applied to helicopters • Response times for firefighting and rescue personnel at surface level and at elevated heliports • Provision of Aerodrome Rescue and Firefighting (ARFF) Services for helicopters at Unlicensed Onshore operating sites.

6. Post-incident Procedures and Considerations

Assessment Criteria	Knowledge and Understanding
6.1 Understand the principles of debriefs	• How to conduct a post-incident debrief appropriate to the type and scale of incident • Types of de-brief: ♦ hot ♦ cold ♦ critical incident • How to gather and review all relevant information from internal and external sources • How to implement remedial measures to improve future practice and performance • How to identify trends and their implications on performance • How to provide constructive feedback to other agencies to assist inter-operability
6.2 Evaluate the effects and consequences of incidents	• Indirect socio-economic consequences of fires, other emergency incidents and major disasters • Environmental effects and control measures in relation to fires • Post-incident/crash groups (including external partners) to analyse and formulate reports/recommendations
6.3 Understand fire investigation principles and determine the requirements for preservation of evidence at a scene and for post-incident actions	• Techniques of fire investigation into the cause and damage that is inflicted by fire, emergency incident or major disaster • How to preserve the site and evidence and the gathering of other evidence
6.4 Explain the need for post-accident counselling for rescue personnel	• Critical Incident Stress in the context of rescue workers and ways in which the effects can be minimised
6.5 Explain the procedures and implications in dealing with fatalities	• Removal and moving of bodies including the recording of positions and locations • Factors to be taken into account in setting up a temporary morgue • Hazards of handling human remains at the site of a major aircraft accident and at the temporary morgue • Health and safety legal considerations to be taken into account when planning and establishing a temporary morgue