



THE INSTITUTION OF FIRE ENGINEERS
FOUNDED 1918 • INCORPORATED 1924

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.

About 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 ie:

- Facilitate awareness of fire issues and developments through the communication of ideas, knowledge, 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 aims. 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 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) as well as Fire and Rescue Service experts.

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 is derived from unit 4: Aviation Fire Operations which is recognised within the structure of the IFE Level 4 Certificate 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 in the same way as unit 4 is used. 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

Qualification Content

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

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. The examination is closed-book and provides a summative assessment of the full range of learning specified in the content below.

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 40% of the 120 marks available to them via the six questions (ie 48 marks).

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. Where candidates answer more than six questions, candidates will not benefit as only the six best responses will be included in the final mark.

Past papers for the last three years are available on the IFE website - <https://www.ife.org.uk/Qualifications/Past-Papers-and-Exam-Reports> Please see the papers (and associated examiner reports) for March examinations for the L4C4 Aviation Fire Operations unit (in the section for the Level 4 Certificate in Fire Science and Fire Safety).

Examinations are provided in English only.

Grading and 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 (ie 40% of the marks available) and 71 marks (59%).

Distinction - this is awarded where candidates achieve a mark of 72 or above (ie 60% or more of the marks available).

Fail - candidates who achieve 47 marks or fewer will receive a result showing Fail. Where candidates receive 24 marks (ie 20% of the marks available) or fewer, the result will show 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.

Note: The IFE reports results as described in the bands above. However, candidates who wish to know the specific mark awarded to them may email the IFE for this information.

Entry Requirements

There are no formal entry requirements. However, candidates are advised that extensive knowledge and understanding of the subject is required and therefore previous study at level 3 will be of benefit and will provide a good foundation when commencing study towards this qualification.

As the paper is provided in English only, candidates will need to be able to read English fluently in order to access the examination questions and the relevant recommended reading material.

Qualification Level

This qualification has been designed to enable candidates to demonstrate that they have attained skills and knowledge 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 individual.

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) ie 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 part of the syllabus have been covered. Recommended reading materials are provided below.

Progression

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

Candidates who wish to broaden their knowledge and understanding at Level 4 could consider working towards other fire-specific qualifications such as the IFE Level 4 Certificate in Fire Engineering Science or the IFE Level 4 Certificate in Fire Service Operations and Incident Command.

Reasonable Adjustments

The IFE permits reasonable adjustments to be made where candidates have disabilities (including medical conditions and learning disabilities such as Dyslexia). The IFE's policy on reasonable adjustments aims to enable candidates with disabilities and other difficulties to access the IFE qualifications without compromising the assessment process or the validity of the certificate.

The policy, which includes the types of arrangements that may be made (eg additional time, use of technology) and the procedure for applying for reasonable adjustments, is published on the IFE's website - <https://www.ife.org.uk/Qualification-FAQs>. The IFE will consider all requests for reasonable adjustments. All requests for reasonable adjustments must be submitted to the IFE as all decisions on reasonable adjustments rest with the IFE.

Booking Examinations and Additional Information on Examination Arrangements

This examination is available in March each year.

Individuals who wish to sit examinations may book examinations either through their examination centre (eg employer, IFE Branch) or they may book through the IFE. Where appropriate, the IFE will direct individuals to approach their employer, examination venue or branch contact.

Information on the examination timetable and other relevant dates (such as the last date for booking examinations) for March examinations, together with the booking form, the list of venues available to candidates, the terms and conditions for candidates and additional information on examination arrangements is provided on the IFE website on 1 September each year. A separate page for each March examination session is provided on the IFE website. Information on March 2021 examinations is available at: <https://www.ife.org.uk/March-2021-Examinations>

Detailed guidance for candidates on examination arrangements is provided in the *Rules and Information for Candidates* booklet. This booklet sets out the rules to be followed by candidates and also the dates for publication of results and the timetable for candidates to query examination results.

Complaints and Appeals

Procedures for making a complaint or lodging an appeal are available on the IFE website - <https://www.ife.org.uk/Qualification-FAQs>

Information for Examination Centres

Organisations that would like to provide a venue for IFE examinations, should contact the IFE to discuss the requirements for centres – please email exams@ife.org.uk in the first instance.

Centres will need to comply with the Terms and Conditions for centres. Information for centres, including the Examination Centre Handbook which contains detailed guidance on running a centre, is available on the IFE website. Please see - <https://www.ife.org.uk/Information-for-Examination-Centres>. Centres are required to re-confirm their compliance with the Terms and Conditions prior to each examination session and to provide an Examination Centre Invigilation Report following the completion of examinations.

The IFE operates a centre inspection programme based on unannounced visits. All centres should anticipate visits from centre inspectors.

Recommended Reading

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

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>.

The IFE has applied the following criteria in determining which resources should be included on this recommended reading list:

- the resource provides information which will be of benefit to the candidate in their professional life, providing depth and breadth of understanding;
- the resource contains some information that will be relevant to part of the syllabus;
- the resource is recognised by industry professionals as providing valuable information.

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

- Heliport Manual Doc 9261 Part 1. 3rd Edition, ICAO
- Fire Service Manual Volume 1: Fire Service Technology, Equipment and Media - Firefighting Foam – Technical, TSO*
- Fire Service Manual Volume 2: Fire Service Operations - Aircraft Incidents, TSO*
- Fire Service Manual Volume 2: Fire Service Operations - Firefighting Foam (Operational), TSO*
- Fire Service Manual Volume 2: Fire Service Operations - Environmental Protection, 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>
- CAA, CAP 748,
<http://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=1357>
- CAA, CAP 789 Requirements and Guidance Materials for Operators,
<https://publicapps.caa.co.uk/docs/33/CAP%20789.pdf>
- 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
- The Foundation for Incident Command- <https://www.ukfrs.com/guidance/knowledge-base?page=1>

*Note: *PDF copies can be ordered through TSO <https://www.tsoshop.co.uk/Safety/Fire-Service/>*

Further Information

Further information on examination conditions is available in the IFE booklet, *Rules and Information for Candidates Taking IFE Examinations*. This booklet can be downloaded from the IFE's website.

Candidates may also find the general guide for candidates which provides information on question times and levels helpful - https://www.ife.org.uk/write/MediaUploads/Exams/Candidate_Guide.pdf

Please address any queries to the IFE by emailing: exams@ife.org.uk

Content

1. Emergency Planning and Procedures

Assessment Objective	Knowledge, Understanding and Skills
1.1 Understand the importance of pre-planning for emergencies and know how to develop a plan	<ul style="list-style-type: none"> • Preparing for appropriate response • How to protect responders, the public and the environment • How to mitigate the impact of incident
1.2. Identify and assess the issues to take into consideration when planning for emergencies	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<p>Areas to include:</p> <ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Types of aircraft: <ul style="list-style-type: none"> ○ Fixed wing ○ Rotary wing (helicopters, autogyro etc.) ○ Gliders ○ Microlights • Civilian and military contexts • Incidents on and off airport to include: <ul style="list-style-type: none"> ○ Scheduled/chartered flights ○ Military ○ Private flights ○ Air shows and other events
1.7 Explain the importance of maintaining operational readiness and explain how this can be managed	<ul style="list-style-type: none"> • 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 be used in pre-planning and maintaining operational readiness	<ul style="list-style-type: none"> • Dissemination of information nationally and internationally

2. Incident Command and Management in Aviation Contexts

Assessment Objective	Knowledge, Understanding and Skills
2.1 Understand the key roles, responsibilities and limits of authority	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Need for effective command decision making • How to select and apply a range of tactics to resolve different types of operational incidents • The term 'situational awareness' and its relevance to the role of Incident Commander • Key elements of leadership within the role of Incident Commander
2.3 Understand the principles of successful risk management at operational incidents	<ul style="list-style-type: none"> • Key points in minimising and controlling risks to operational personnel

	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Need for 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	<ul style="list-style-type: none"> • 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 both personnel and 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 • Aims of 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	<ul style="list-style-type: none"> • The concepts of critical areas and control
2.7 Analyse the environmental hazards that might be encountered and determine approaches to minimise negative effects	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 Objective	Knowledge, Understanding and Skills
3.1 Outline the criteria to be taken into account when designing and providing airport fire stations	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 Objective	Knowledge, Understanding and Skills
4.1 Understand the methods and types of communication systems available both at incidents and remotely	<ul style="list-style-type: none"> • 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 are undertaken
4.2 Describe the planning, design, operation and functions of control centres suitable for emergency services	<ul style="list-style-type: none"> • Methods by which stations can be alerted from a control centre
4.3 Describe and evaluate the communications equipment available	<ul style="list-style-type: none"> • Types of radio schemes and systems for fire service general and incident use • Computer aided mobilising systems • Possible future developments in the use of technologically advanced systems for mobilisation and communications and their implications

5. Heliports

Assessment Objective	Knowledge, Understanding and Skills
5.1 Explain how to deploy equipment and other resources to resolve incidents including fires and other emergencies in relation to heliports	<ul style="list-style-type: none"> • Define and show an understanding of the terms “obstacle limitation surfaces” and “transitional surfaces” • 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 Objective	Knowledge, Understanding and Skills
6.1 Understand the principles of debriefs	<ul style="list-style-type: none"> • How to conduct a post-incident debrief appropriate to the type and scale of incident through open and constructive discussion and review • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Removal and moving of bodies including the recording of positions and locations • Factors to be taken into account in setting up a temporary morgue

	<ul style="list-style-type: none">• 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
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