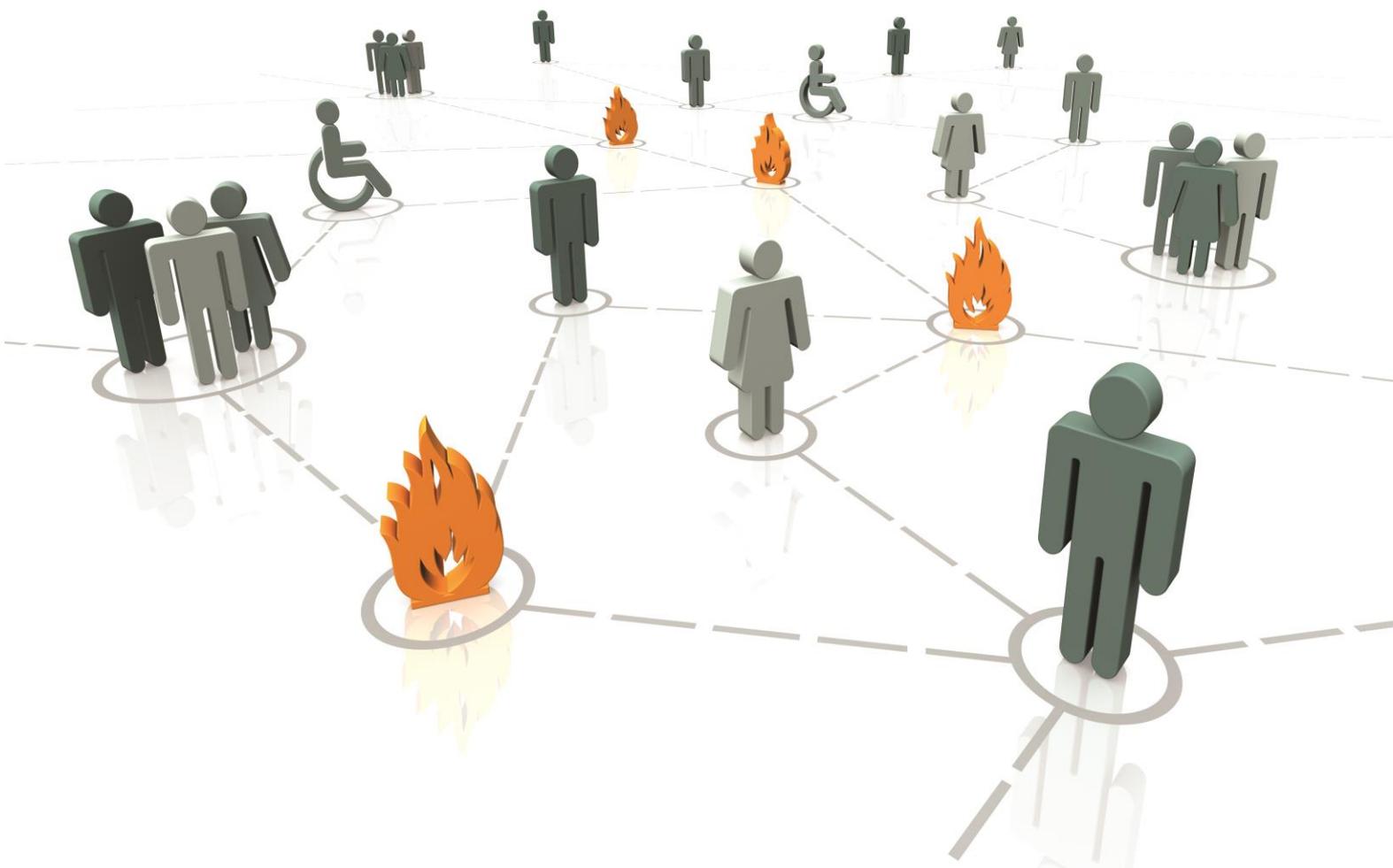


Level 5 Diploma in Fire Engineering Design



Contents

1.	Introduction	1
2.	Qualification	3
3.	Level 5 Diploma Activities	7
3.1	Course: Fire Engineering Design 1	8
3.2	Course: Fire Engineering Design 2	10
3.3	Course: Fire Engineering Design 3	12
3.4	Self-study Module: Fire Engineering Design 4	14
4.	Course and Qualification Costs	15
5.	iVC Interactive Virtual Classroom	16
6.	XLE: On-line Portal	18
7.	Company details	19

1. Introduction

This document is designed to help individuals and organisations inform their training decisions by presenting the core courses we offer, their content, costs and flexible methods of delivery.

1.1 Qualification: Level 5 Diploma in Fire Engineering Design

This document identifies activities individuals need to complete to achieve the above qualification.

1.2 Target audience

The qualification is aimed at building control officers, approved inspectors, fire engineers, fire safety auditors, inspectors, risk assessors, managers, surveyors and fire safety professionals.

It enhances previous experience in applying fire safety guidance such as Approved Document B and BS 9999 fire safety in design, management and use of buildings.

Note: Individuals must demonstrate their suitability for attending the above courses.

1.3 Qualification activities

The following courses and self-study module are required to achieve the qualification:

- i) Fire Engineering Design 1: 5 day course
- ii) Fire Engineering Design 2: 5 day course
- iii) Fire Engineering Design 3: 5 day course
- iv) Fire Engineering Design 4: Self-study Module

Note: For more details, please see Section 3.

1.4 NFCC Competency Framework for Fire Safety Regulators

This qualification is part of the knowledge and skills competency requirements for a Fire Engineering Design Technician, an individual who can review building control consultations including complex premises submissions and provide guidance to Fire Safety Regulators for complex premises. This group may audit buildings based upon fire engineering principles while being aware of the scope of their competency and prepared to request appropriate assistance where necessary.

1. Introduction

National Fire Chiefs Council (NFCC) competency framework for fire safety professionals recommends that national qualifications are completed sequentially i.e. they complete a Level 4 Diploma in Fire Safety (or its equivalent) before the Level 5 Diploma qualification.

Note: See 2.5 for more details about study commitment.

1.5 Qualification requirements and National Occupational Standards (NOS)

This qualification consists of five NOS. Please see Section 2. Qualification for more details.

1.7 Continual Professional Development Certificates

Individuals receive CPD certificates on completion of each course.

1.8 Open-courses booking

For [on-line booking](#)

1.9 Terms and conditions

Please also see [website link](#) for a copy of our Terms and Conditions.

All orders and bookings made will be subject to our Terms and Conditions.

2. Qualification

2. Qualification

2.1 Qualification: Level 5 Diploma in Fire Engineering Design

The qualification is for those who work or intend to work in a position involving auditing or risk assessing fire engineering premises and designing or assessing fire engineering design submissions.

This Level 5 qualification is aimed at building control officers, approved inspectors, fire engineers, fire safety auditors, inspectors, fire risk assessors, managers, surveyors, architects and fire safety professionals, allowing them to work towards achieving professional accreditation Fire Engineering Technician EngTech or Incorporated Engineering status IEng. See Section 2.8 for details.

This qualification provides individuals with a practical understanding of fundamental engineering principles, enabling them to identify proven techniques and procedures to solve practical fire engineering problems and, when appropriate, to hand over to a fire engineer.

2.2 Qualification Awarding Bodies

This qualification is provided via awarding bodies Skills for Justice Awards and IFE: Institution of Fire Engineers. Xact is an Approved Assessment Centre for both awarding bodies.

2.3 Qualification Units

The qualification has ten mandatory units:

NOS	Unit title	Credit	TQT	GLH
1	Principles of Fire Development and Spread	2	20	10
2	Principles of Fire Engineering	6	60	40
3	Review the Effectiveness of Automatic Fire Suppression Systems	7	70	50
4	Fire Engineering Design and its Impact on Human Behaviour	3	30	20
5	Fire Engineering Design and its Impact on the Fire Resistance of Materials and Structures	3	25	20
6	Smoke Control and Heat Exhaust Ventilation Systems	6	60	30
7	Pressure Differential Systems	5	45	30
8	Fire Engineering Design and its Impact on the External Spread of Fire	2	20	10
9	Fire Engineering Design and its Impact on Access and Facilities for Fire-Fighting	2	20	10
10	Principles of Fire and Evacuation Modelling	2	20	10
			370	230

2. Qualification

Note 1: Guided learning hours (GLH): The number of hours with specific guidance towards learning.

Note 2: Total qualification time (TQT): GLH plus number of hours a learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment.

2.4 Qualification specification

The qualification specification states: “Candidates should note that significant reading and self-study will also be required as attainment of this qualification requires candidates to develop awareness and understanding of an extensive range of industry-specific regulations and approved documents as well as developing underpinning understanding of relevant scientific and engineering principles.”

2.5 Study commitment

To complete this qualification individuals are committing to a programme of study of 370 TQT (Total Qualification Time) which consists of a wide variety of activities, including:

- a) Attending courses
- b) Self-study and research:
 - i) Reading course reference material
 - ii) Researching papers, academic journals, alternative sources
 - iii) Viewing online videos
- c) Application of learning and writing assignments

Note: Diploma programme consists of 105 hours attending courses with remainder being from self-study, research, application of learning and written assignments. See Section 2.3.

2.5.1 Learning agreement

To ensure individuals and their organisations understand the commitment required for the Level 5 qualification, Xact invites them to enter into a learning agreement.

Each individual is required to return a copy of the learning agreement to Xact, signed by both them and their sponsoring organisation.

2.6 Cross mapping of activities with qualification units

The table below cross maps activities with qualification units

Activity title	Days	Unit	Page
Fire Engineering Design 1	5	3	8
Fire Engineering Design 2	5	2, 4, 6	10
Fire Engineering Design 3	5	5, 7, 8, 9, 10	12
Fire Engineering Design 4	SS	1	14

2. Qualification

Notes

Note 1: Days: Course duration in days

Note 2: Unit: Unit number activity includes. See Section 2.3 for details

Note 3: Page: Document page number of course/activity

Note 4: SS: Self-study module

2.7 Qualification requirements

Government regulator Ofqual provides the following guidance on the requirements for individuals to demonstrate that they possess the following knowledge for a Level 5 qualification:

2.7.1 Knowledge requirement

- a) Practical, theoretical or technological knowledge and understanding of a subject or field of work to find ways forward in broadly defined, complex contexts.
- b) Ability to analyse, interpret and evaluate relevant information, concepts and ideas.
- c) Awareness of the nature and scope of the area of study or work.
- d) Informed awareness of different perspectives or approaches within area of study or work.
- e) Ability to understand different perspectives, approaches or schools of thought and the reasoning behind them.

2.7.2 Skills requirement

- a) Determine, adapt and use appropriate methods, cognitive and practical skills to address broadly defined, complex problems.
- b) Use relevant research or development to inform actions.
- c) Evaluate actions, methods and results.

2.8 Professional Accreditation

Two professional accreditation routes are available to those who achieve the Level 5 Diploma in Fire Engineering Design:

2.8.1 Engineering Technician (EngTech)

Engineering Technicians (EngTech) apply safe systems of work and contribute to either the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services.

For information about Engineering Technician (EngTech) see:

[Fire Engineering Council](#)

[Institution of Fire Engineers](#)

2. Qualification

2.8.2 Incorporated Engineer (IEng)

Incorporated Engineers (IEng) maintain and manage applications of current and developing technology and may undertake engineering design, development, manufacture, construction and operation (see Engineering Council website).

To achieve professional accreditation as an Incorporated Engineer, individuals will also need to demonstrate that they have achieved maths at an advanced level e.g. a maths degree.

For information about Incorporated Engineer (IEng) see:

[Fire Engineering Council](#)

[Institution of Fire Engineers](#)

2.9 Fire Engineering Degrees



Glasgow Caledonian University admissions department recognises Xact's Level 5 Diploma in Fire Engineering Design as acceptable for entry onto their BEng Hons Degree at Part Time 3. This is entry level in London College and Level 2 in Glasgow and would entail three years of part-time study to achieve the honours degree. Part-time applicants are required to be employed or self-employed in a relevant field. For more details contact the university directly.

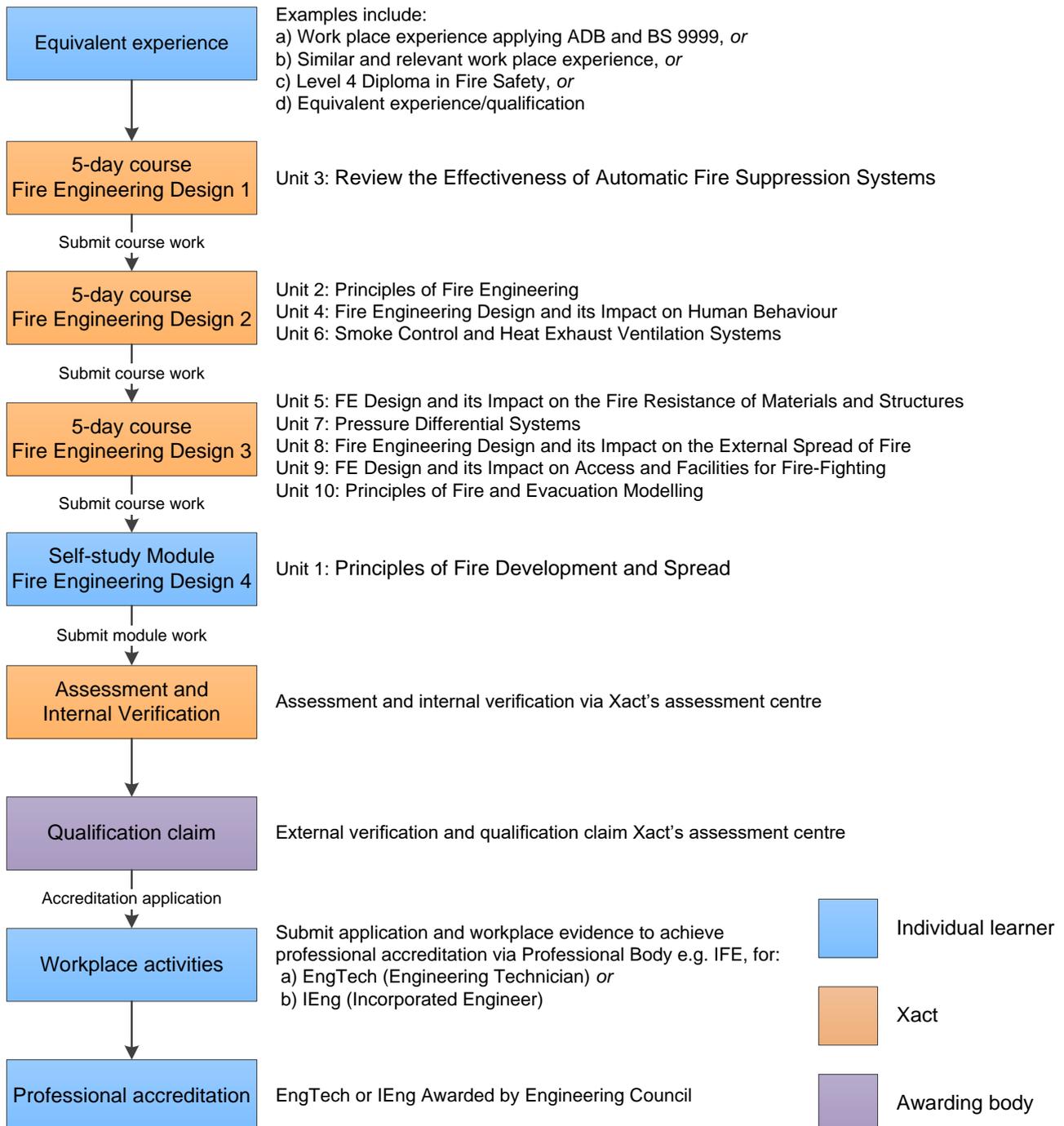
Xact is currently developing arrangements with other universities offering fire engineering degrees.

3. Level 5 Diploma Fire Engineering Design

3. Level 5 Diploma Fire Engineering design

Introduction

The flowchart below illustrates progression of Level 5 Diploma in Fire Engineering Design activities from start to finish.



3.1 Course: Fire Engineering Design 1

3.1 Fire Engineering Design 1

Aim

Part 1 (of four activities) which aims to enable individuals to design fire engineering solutions or assess fire engineering design submissions.

Core content

In-depth study and research into:

- Principles of automatic fire suppression systems
- Residential and domestic sprinklers: BS 9251
- Residential water mist systems: NFPA 750, BS 8458
- Commercial sprinklers: BS EN 12845
- LPC Sprinkler rules and ESFR: Early Suppression Fast Response Fire Sprinkler Systems
- Hazard review of commercial sprinkler systems
- Commercial water mist systems: NFPA 750, BS 8489
- Oxygen Reduction Fire Prevention Systems: BS EN 16750
- Gaseous and foam systems: BS EN 1365-9: Foam systems
- Case studies of Automatic Fire Suppression Systems

Qualification units

Course includes assessment criteria for qualification unit 3: Review the Effectiveness of Automatic Fire Suppression Systems

Delivery

Sessions will be delivered using PowerPoint, whiteboard presentation, interactive group discussion, individual tuition and practical exercises.

Note: Due to current situation the courses will be delivered using iVC. See Section 5 for more details.

Duration

5 days

3.1 Course: Fire Engineering Design 1

Prior learning

This course is part of a qualification to enable attendees to develop an understanding of fire engineering at technician level. It is a natural progression from achieving qualification: Level 4 Diploma in Fire Safety (Fire Inspectors) or an equivalent qualification or experience.

Individuals must have an in-depth working knowledge of the functional requirements of the building regulations and fire safety guidance documents such as Approved Document B, Volume 2 and BS 9999 fire safety in the design, management and use of buildings.

Note Individuals must demonstrate their suitability for attending this course.

Post course

Individuals must complete course work within six weeks of course completion.

Course assessment

Assessment of all course work is to the qualification assessment criteria.

3.2 Fire Engineering Design 2

Aim

Part 2 (of four activities) which aims to enable individuals to design fire engineering solutions or assess fire engineering design submissions.

Core content

In-depth study and research into:

- BS 7974 Application of fire engineering principles
- Tenability principles
- Principles of smoke obscuration/visibility
- Human behaviour in fire
- QDR: Qualitative Design Review
- Fire engineering design and consultations
- Probabilistic risk assessment
- Business impact assessment
- ASET – RSET timelines
- Fire Safety management and control procedures
- Interactions between fire safety systems
- Design fires and radiation shape factors
- SHEVS: Smoke and heat exhaust ventilation systems
- Commissioning, testing and maintenance programmes

Qualification units

Course includes assessment criteria for qualification units:

- Unit 2: Principles of Fire Engineering
- Unit 4: Fire Engineering Design and its Impact on Human Behaviour
- Unit 6: Smoke Control and Heat Exhaust Ventilation Systems

Delivery

Sessions will be delivered using PowerPoint, whiteboard presentation, interactive group discussion, individual tuition and practical exercises.

Note: Due to current situation the courses will be delivered using iVC. See Section 5 for more details.

3.2 Course: Fire Engineering Design 2

Duration

5 days

Prior learning

Individuals must have completed course: Fire Engineering Design 1.

Post course

Individuals must complete course work within six weeks of course completion.

Course assessment

Assessment of all course work is to the qualification assessment criteria.

3.3 Fire Engineering Design 3

Aim

Part 3 (of four activities) which aims to enable individuals to design fire engineering solutions or assess fire engineering design submissions.

Core content

- BS 7974 Application of fire engineering principles
- Radiation shape factors
- Applying fire engineering to the functional requirements of the building regulations:
 - B2: Internal fire spread (linings)
 - B3: Internal fire spread (structure)
 - B4: External fire spread
 - B5: Access and facilities for FRS
- Series and parallel pressure differential systems
- Principles of fire and evacuation modelling

Qualification units

- Unit 5: FE Design and its Impact on the Fire Resistance of Materials and Structures
- Unit 7: Pressure Differential Systems
- Unit 8: Fire Engineering Design and its Impact on the External Spread of Fire
- Unit 9: FE Design and its Impact on Access and Facilities for Fire-Fighting
- Unit 10: Principles of Fire and Evacuation Modelling

Delivery

Sessions will be delivered using PowerPoint, whiteboard presentation, interactive group discussion, individual tuition and practical exercises.

Note: Due to current situation the courses will be delivered using iVC. See Section 5 for more details.

Duration

5 days

3.3 Course: Fire Engineering Design 3

Prior learning

Individuals must have completed course: Fire Engineering Design 2.

Post course

Individuals must complete course work within six weeks of course completion.

Course assessment

Assessment of all course work is to the qualification assessment criteria.

3.4 Self-study Module: Fire Engineering Design 4**Aim**

Part 4 (of four activities) which aims to enable individuals to design fire engineering solutions or assess fire engineering design submissions.

Core content

- Explain the principles of fire development
- Explain how fires are initiated and develop within enclosure of origin
- Explain how smoke and toxic gases spread within and beyond enclosure of origin

Qualification unit

Unit 1: Principles of Fire Development and Spread

Self-study

This module requires individuals to conduct research and self-study into fire development and spread.

Prior learning

Individuals must have completed course: Fire Engineering Design 3.

Post course

Individuals must complete self-study module within four weeks of issue.

Course assessment

Assessment of all course work is to the qualification assessment criteria.

4. Course and Qualification Costs

4. Course and Qualification Costs

4.1 Costs

Item	Activity	Duration	Page	Cost ^{1, 2}
1	Fire Engineering Design 1	5 days	8	890
2	Fire Engineering Design 2	5 days	10	890
3	Fire Engineering Design 3	5 days	12	890
4	Fire Engineering Design 4	NA	14	00
5	Qualification registration		3	60
	Inclusive cost³			£2,730

Note¹: Cost per individual

Note²: Costs will increase from April 2021 will increase by 5%

Note³: **Inclusive cost:** Includes all elements detailed in Section 3 i.e. Course development, design, course documents, self-study module, postage, assessments, internal verification and qualification fee.

Note 3: **IT Resources:** Costs based on assumption that individuals will have the resources identified in Section 5.1 iVC Individual Requirements. See also 5.4 Restrictions to using iVC software.

Note 4: **VAT** will be added at the current rate.

Note 5: **Payment terms:** Within 30 days of invoice date.

Note 6: Additional fees are incurred when:

- i) Submission deadlines are missed for non-valid reasons
- ii) Resubmission amounts to over 25% of original submission
- iii) Re-submission does not achieve a pass

4.2 COVID-19 Pandemic

The above presents increased risks of infection and other negative consequences to both tutors and individuals in attending classroom courses. These potentially entail:

- a) Disruption due to Government or local area restrictions or lock down
- b) Health risks to tutors and their families/social bubble
- c) Impact on insurance cover
- d) Requirement to self-isolate
- e) Non-availability for work due to self-isolation or infection
- f) Additional risks come from the requirement to use hotel accommodation, training facilities and public transport

Xact continues to review the situation. Should risk levels return to those pre March 2020, other options, such as classroom delivery, may be considered subject to Government guidelines.

5. iVC Interactive Virtual Classroom

5. iVC Interactive Virtual Classroom

5.1 iVC Individual Requirements

Individuals require the following to participate in Interactive Virtual Classroom:

- Laptop: Integral web camera, microphone, speakers or equivalent
- Internet connection
- Ability to receive course notes by post directly to home address or posted to work address from where notes can be sent on to their home address

5.2 iVC Delivery

iVC means individuals can access Xact's high quality training safely and securely while enjoying real-time, face-to-face contact with expert tutors.

Highly trained in our innovative format, they facilitate – currently in pairs – interactive learning where individuals are actively engaged in the learning process from the safety and convenience of their own preferred locations.

With **iVC**, customers save on accommodation and travelling fees while ensuring that individuals can train from home, if necessary. And it is family friendly too - welcomed by employees who prefer not to stay away from their own locations overnight to receive training.

Customers who have experienced **iVC** training courses and our hugely-popular demonstration sessions have been impressed with the polished, professional presentation and how easy it is to:

- View and interact with expert tutors and other course attendees
- Ask questions, discuss and share ideas
- Work in syndicates
- Enjoy enhanced learning via video, PowerPoint, virtual reality exercises

5.3 iVC Provision

On all **iVC** courses, Xact provides:

- Two tutors with experience and expertise in course subject areas
- Course design
- Comprehensive course manuals
- Exercises to practise learning outcomes
- Reference documents
- Course evaluation and assessment

5. iVC Interactive Virtual Classroom

5.4 Restrictions to using iVC software:

Common restrictions to using iVC software:

- Poor broadband connection
- VPN connections restrict video and audio. It is likely that the software will not function unless VPN is disabled.
- Some company systems are locked down preventing access. Either request that your IT department lifts the restriction on your device to access the software or that you use an alternative unrestricted device

5.5 iVC Software Security

Download details about the [security](#) measures imbedded in our iVC software.

6. XLE: On-line Portal

6. XLE: On-line Portal

6.1 XLE: Xact Learning Environment

A secure area of Xact's website built on Moodle educational platform used by schools, colleges and universities which gives customers and users access to:

6.2 Guidance Notes

Such as educational process, responding to questions, related policies and procedures.

6.3 Course reference documents

Reference documents used on the programme are provided either online or within course folder.

6.4 Submission deadlines

On-line calendar detailing deadlines.

6.5 Electronic submissions

All activity is submitted electronically online, enabling individuals to upload course work using electronic formats e.g. word and pdf.

6.6 Similarity check

Turnitin software is used to check submitted documents for originality using its database containing fire safety guidance and legislation, previous submissions and content of other websites with the aim of identifying plagiarism. This facility, which is used by colleges and universities, is applied to all submissions.

6.7 Assessor Reports

Assessor reports and feedback are available on the XLE portal.

7. Company details

7. Xact Consultancy and Training Limited

Company Registration No: 05295715
VAT Registration No: 855 4570 04
Web site: www.xact.org.uk
Email: info@xact.org.uk

Insurance

Xact are insured for:

Public and Employers Liability
Professional Indemnity

Office

Telephone: 01386 277980
Address: 3 Abbey Lane Court
Evesham
Worcestershire
WR11 4BY

Contact

Telephone: 01386 277980
Email: courses@xact.org.uk