Level 2 Certificate in Knowledge of Electronic Security and Emergency Systems (1853-02)

Qualification handbook
500/6209/8

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Qualification handbook

Qualification title	Number	Ofqual ref.
Level 2 Certificate in Knowledge of Electronic Security and Emergency Systems	1853-02	500/6209/8

Version and date	Change detail	Section
1.2 Jan 2012	Amend rules of combination	Error! Reference source not found.
1.3 March 2012	Amend Unit numbers to match Walled Garden	Units
	UAN amended	Structure
2.0 November 2013	Amended UANs for 007 and 008 and amended City & Guilds number to 007/106 and 008/105 Added UANs to the first page of each unit	Throughout handbook Units
2.1 July 2014	Amended the titles of units 003 and 004	Assessment
2.2 October 2017	Added GLH and TQT Removed QCF	Introduction to the qualification Appendix 1

Contents

1   Introduction to the qualification

This document contains the information that centres need to offer the following qualification:

Qualification title and level	Level 2 Certificate in Knowledge of Electronic Security and Emergency Systems
City & Guilds qualification number(s)	1853-02
Ofqual accreditation number(s)	500/6209/8
Last registration / Last certification date	See the online catalogue/Walled Garden for last dates

This Level 2 qualification provides the underpinning knowledge for engineers employed in the following security and emergency occupational areas

Intruder alarms systems
Fire detection systems
CCTV systems
Access control systems
Integrated Systems - Personnel alarm systems
Electronic article surveillance systems (EAS)

The qualification covers electrical and electronic principles and working effectively and safely in the electro technical environment and also the basic occupational knowledge for surveyors and designers and those involved in the commissioning, installation and maintenance of systems.

This qualification forms the technical certificate for the Electronic Emergency & Security Systems Foundation Modern Apprenticeship in England and Wales.

1.1   Qualification structure

To achieve the Level 2 Certificate in Knowledge of Electronic Security and Emergency Systems candidates must achieve 17 credits from the following 2 mandatory units

QCA Unit Reference Number	City & Guilds Unit Reference Number	Unit Title	Mandatory/Optional	Credit Value
Y/600/1146	Unit 001	Electrical and electronic principles of electro technology	Mandatory	12
L/600/1147	Unit 002	Working effectively and safely in electro technical environments	Mandatory	5

And a minimum of 16 credits from one of the following optional units

QCA Unit Reference Number	City & Guilds Unit Reference Number	Unit Title	Mandatory/Optional	Credit Value
R/600/1182	Unit 003	Access control systems	Optional	18
Y/600/1166	Unit 004	Intruder alarm systems	Optional	18
T/600/1188	Unit 005	Closed circuit television systems (CCTV)	Optional	16
T/600/1191	Unit 006	Fire detection and alarm systems	Optional	16
R/600/1196	Unit 007/106	Integrated electronic security systems – Stand alone personnel alarm systems	Optional	16
Y/600/1197	Unit 008/105	Electronic article surveillance systems	Optional	17

Total Qualification Time

Total Qualification Time (TQT) is the total amount of time, in hours, expected to be spent by a Learner to achieve a qualification. It includes both guided learning hours (which are listed separately) and hours spent in preparation, study and assessment.

Title and level	GLH	TQT
Level 2 Certificate in Knowledge of Electronic Security and Emergency Systems	258	330

1.2 Opportunities for progression

Candidates who have successfully completed the Level 2 Certificate in Knowledge of Electronic Security and Emergency Systems can progress onto the following qualifications

Level 3 Certificate in Knowledge of Security and Emergency Alarm Systems
Level 2 NVQ in Providing Security, Emergency and Alarm Systems
Level 3 NVQ in Providing Security, Emergency and Alarm Systems

Information regarding these qualifications can be found on the City & Guilds website at
www.cityandguilds.com

1.3 Qualification support materials

City & Guilds also provides the following publications and resources specifically for this qualification:

Description	How to access
Assignments	Available from City & Guilds website
Assignment marking guide	Available by contacting your External Verifier
GOLA examinations	Register on Walled Garden
fast track approval forms/generic fast track approval form	There is a generic form available on the City & Guilds website
Community & Society Guidance updates	Available at the City & Guilds website

2 Centre requirements

This section outlines the approval processes for Centres to offer the Level 2 Certificate in Knowledge of Electronic Security and Emergency Systems and any resources that Centres will need in place to offer the qualifications including qualification-specific requirements for Centre staff.

Centres already offering City & Guilds qualifications in this subject area

Centres approved to offer the qualification Level 3 Certificate in Knowledge of Security and Emergency Alarm Systems (1852-03) may apply for approval for the new Level 2 Certificate in Knowledge of Electronic Security and Emergency Systems using the **fast track approval form**, available from the City & Guilds website.

Centres may apply to offer the new qualification using the fast track form

- providing there have been no changes to the way the qualifications are delivered, and
- if they meet all of the approval criteria specified in the fast track form guidance notes.

Fast track approval is available for 12 months from the launch of the qualification. After this time, the qualification is subject to the **standard** Qualification Approval Process. It is the centre's responsibility to check that fast track approval is still current at the time of application.

Important Note: Centres who are offering either the Level 2 or 3 NVQ in Providing Security, Emergency and Alarm Systems will not be able to use the fast track approval process and will have to apply for approval to offer this qualification using the standard approval process.

2.1 Resource requirements

Human resources

Staff delivering this qualification must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be technically competent and knowledgeable in the area for which they are tutoring, assessing or delivering training
- have recent relevant occupational experience in the specific area they will be tutoring, assessing or delivering training
- have credible experience of providing training.

Centre staff may undertake more than one role, eg tutor and quality assurance co-ordinator, but must never internally verify their own assessments.

Continuing professional development (CPD)
Centres are expected to support their staff in ensuring that their knowledge remains current of the occupational area and of best practice in delivery, mentoring, training, assessment and verification, and that it takes account of any national or legislative developments.

2.2 Candidate entry requirements

Candidates should not be entered for a qualification of the same type, content and level as that of a qualification they already hold.

There are no formal entry requirements for candidates undertaking this qualification. However, centres must ensure that candidates have the aptitude and opportunity to successfully gain the qualification.

Age restrictions

This qualification is not approved for use by candidates under the age of 16, and City & Guilds cannot accept any registrations for candidates in this age group.

3 Units

Availability of units

The units for this qualification follow.

The learning outcomes and assessment criteria are also viewable on the National Database of Accredited Qualifications (NDAQ) at **www.accreditedqualifications.org.uk**

Structure of units

The units in this qualification are written in a standard format and comprise the following:
- City & Guilds reference number
- title
- level
- credit value
- unit aim
- learning outcomes
- guided learning hours
- endorsement by a sector or other appropriate body
- information on assessment

Summary of units

City & Guilds unit number	Title	Unit Accreditation Number (UAN)	Credits
001	Electrical & electronic principles of electro technology	J/600/1146	12
002	Working effectively and safely in electro technical environments	L/600/1147	5
003	Access Control Systems	R/600/1182	18
004	Intruder alarm systems	Y/600/1166	18
005	Closed Circuit Television (CCTV) Systems	T/600/1188	16
006	Fire Detection and Alarm Systems	T/600/1191	16
007/106	Integrated Electronic Security Systems - Stand-alone Personnel Alarm Systems	R/600/1196	16
008/105	Electronic Article Surveillance Systems	Y/600/1197	17

Unit 001 Electrical & electronic principles of electro technology

Level: 2
Credit value: 12
UAN: Y/600/1146

Unit aim

To provide a broad basis of knowledge of the fundamental electrical and electronic principles within the electro technology sector.

Learning outcomes

There are **four** learning outcomes to this unit. The candidate will:

1. Know basic SI units and quantities

2. know basic electrical principles, use formulae, make calculations and understand the use of measuring equipment in electrical and electronic circuitry

3. Understand basic electrical applications, principles of fault protection, principles of system installation, maintenance and fault identification

4. Understand basic data transmission and information technology systems

Guided learning hours

It is recommended that **104** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Skills for Security (SSC).

Assessment

This unit will be assessed by:

- an online GOLA multiple choice test

Unit 001 Electrical & electronic principles of electro technology

Outcome 1 Know basic SI units and quantities

Assessment criteria

The learner can:

1.1 Identify basic SI units, derived units, sub-units and symbols
1.2 State the relationship between

a force and its effect on movement
b force, mass and acceleration (the Newton)
c mass and weight, the effect of gravitational pull
d force times distance moved in the direction of the force
1.3 Identify the basic SI Unit, multiple, sub-units, symbol and quantity for

a current
b potential/pressure/voltage
c resistance
d resistivity
e temperature
f mass
g force
h magnetic flux
i magnetic flux density
j period
k frequency
l power
m energy
n time
o length
p area
q weight
r capacitance
s inductance
t reactance

1.4 Describe how the SI Units in 1-3 (a-t) relate to the fundamental principles of

a electrical, electronic, magnetism and electromagnetism
b alternating current production
c electrical machine efficiency
d mechanical lifting devices
e electromechanical effects
f mechanics, heat and light

Unit 001   Electrical & electronic principles of electro technology

Outcome 2   Know basic electrical principles, use formulae, make calculations and understand the use of measuring equipment in electrical and electronic circuitry

Assessment criteria

The leaner can

2.1 State, in simple terms, the reaction of electrons when charged, forming the concept of electric current

2.2 State how an electromotive force may be produced by chemical, magnetic and thermal means

2.3 State the chemical, magnetic and thermal effects of an electric current

2.4 State the relationship of Current, Voltage and Resistance: Ohm's Law

2.5 State the relationship of resistance, length and cross-sectional area of conductors: Resistively

2.6 Calculate basic electrical quantities using formulae

2.7 Apply and transpose basic formulae to include base, derived units and related constants/factors

2.8 Apply calculations related to 'Ohm's Law' & resistively

2.9 Explain the operation of series and parallel circuits, d.c circuits and apply calculations

2.10 Describe the operation of a simple d.c. electrical circuit comprising the following

a power source
b fuse
c switch
d load

2.11 Show the difference between direct current (dc) and alternating current (ac) using a sinusoidal waveform to explain the principle of ac.

2.12 State, as a percentage, efficiency in terms of
output (energy or power) / input (energy or power)

2.13 Apply calculations involving force, mass, energy, power and efficiency

2.14 Describe the use of multi range meters for measurement of current, voltage and resistance

2.15 Identify typical values for continuity and insulation resistance

2.16 State the purpose of the following equipment for measuring and marking out

a rules, tapes
b gauges
c levels, plumbs
d squares
e scribes
f electronic devices

2.17 Describe how voltmeters and ammeters are connected into circuits in order to quantify circuit voltages, current and resistance

2.18 Describe the use of multi range meters for measurement of current voltage and resistance

2.19 Identify typical values for continuity and insulation resistance

2.20 List the materials used as electrical conductors within the electro technical industry

2.21 List the materials used as insulators within the electro technical industry

2.22 Explain the properties and application of conductor materials

2.23 Explain the properties and application of insulation materials

2.24 State the component elements of electrical cables

2.25 Explain the principle of the resistor, capacitor, inductor, silicone diode

2.26 State the function of Thyristors and Light Emitting Diodes (LEDs)

2.27 State types of:

a exposed conductive parts
b extraneous conductive parts of other metallic structures or services

2.29 Describe the magnet fields and flux patterns set up by
a differing arrangements of permanent magnets
b current carrying conductors
c electromagnets/solenoids

2.30 State the operating principles of basic transformers for the following
a change in flux linkage
b concept of mutual inductance
c turns ratio step up and step down configurations
d isolating transformer

2.31 Describe the construction of basic transformers in terms of
a laminations
b primary and secondary windings
c enclosures, cooling

2.32 Describe the nature of sound waves

2.33 Describe the principle of sound measurement

2.34 Describe the use of decibel sound meters

Unit 001   Electrical & electronic principles of electro technology

Outcome 3   Understand basic electrical applications, principles of fault protection, principles of system installation, maintenance and fault identification

Assessment criteria

The leaner can:

3.1 Describe the operation of a Primary and secondary power

3.2 Describe the operation of Power supplies: full wave and rectification and smoothing circuits

3.3 Describe the function of switched mode power supply and constant current regulators

3.4 Describe the operation of voltage regulators

3.5 Describe the operation of mains suppression filters

3.6 State the purpose of an earth connection

3.7 State the purpose of earthing: safety earth, functional earth

3.8 Explain the difference between the terms 'earthing' and 'bonding'

3.9 State the importance of ensuring that any live equipment, cables or circuits are safely and securely isolated and 'locked off'

3.10 State basic principles of shock protection, circuit overload and short-circuit protection

3.11 Describe how to select a protective device for a given circuit

3.12 State the need for correct 'discrimination' of devices when a number of devices are fitted between the supply and the load

3.13 State the need for supplementary protection against electric shock to earth by the use of a RCD or RCBO

3.14 State the factors affecting the use of trunking, cable basket work and conduit installations in terms of mechanical protection and segregation of cables

3.15 Describe how to support cables when installed, vertically or horizontally by means of clips, or saddles at intervals determined by size and by recommendations for spacing given within BS: 7671

3.16 State the practical applications for the following cables including any limitations on their use

a Thermoplastic or Thermosetting insulated (non-sheathed),
b Flat multicore Thermoplastic or Thermosetting insulated and sheathed
c Mineral insulated copper conductors and sheath.
d Multi-core thermoplastic (PVC)
e Data/communication cables
f PVC single wire armoured
g Co-axial

3.17 State the correct tools and fixings required to install enclosures and equipment to various types of surfaces: wood, brick, plastic, plastic board and concrete

3.18 Identify suitable support and installation methods for the following factors

a application
b load-bearing capacity
c fabric of structure
d environmental conditions
e aesthetic considerations

3.19 State the requirements and suitable methods of restoring building fabric on completion of installation

3.20 State the benefits and limitations of thermal joining and bonding with adhesives compared with mechanical fastenings and terminations

3.21 Describe the principles of determining intermittent faults using monitoring devices on circuit wiring

3.22 State the reasons for conducting corrective and preventative maintenance operations

3.23 Identify the factors that support a safe and effective maintenance programme

3.24 State the range and application of materials for plant, equipment and components that would be met or used within maintenance programmes

3.25 State the procedures required on completion of preventative and corrective maintenance for the following

a operational checks
b records and reporting

3.26 State the importance of minimizing downtime/shut down/meantime between failures

3.27 State the procedures for waste disposal following the completion of maintenance works

3.28 State the Health and Safety requirements for specific maintenance operations

3.29 State the hazards or obstructions that may impact upon the maintenance programme

Unit 001   Electrical & electronic principles of electro technology

Outcome 4   Understand basic data transmission and information technology systems

Assessment criteria

The leaner can:

4.1 Calculate using binary and decimal numbering systems

4.2 State typical applicators for each of the following network communication types RS232. RS422. and RS485 USB, Ethernet

4.3 Define Terminology: Bit, Byte, Word, Microprocessor, CPU, ROM, RAM, Input/output ports and clock

4.4 Describe basic Microcomputer operation and operating environments, equipment and consumables, operating environment and data security

4.5 Describe the basic operation of both internet and intranet systems, LAN and WAN

4.6 Describe the basic operation of GPS technology systems

4.7 Explain in simple terms each of the following

a Internet protocol (TCP/IP)
b Control protocol
c Datagram protocol

4.8 State how to save, store and print documents

4.9 Describe how to send and receive data over the internet

Unit 002   Working effectively and safely in electro technical environments

Level: **2**
UAN: **L/600/1147**
Credit value: 5

Unit aims

To provide a broad basis of knowledge for working effectively and safely when surveying, designing, installing, commissioning and maintaining electrical and electronic systems within the electro-technical sector

Learning outcomes

There are **three** learning outcomes to this unit. The learner will:

1. Know safe systems of working

2. Know statutory regulations, codes of practice and memorandum of guidance relevant to maintaining a safe working environment

3. Understand technical information and data supplied for working effectively and safely

Guided learning hours

It is recommended that **36** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Skills for Security (SSC).

Assessment

This unit will be assessed by:

• a GOLA online multiple choice examination

Unit 002 Working effectively and safely in electro technical environments

Outcome 1   Know safe systems of working

Assessment criteria

The leaner can:

1.1 State the application and safe use of hand and power tools and appropriate Personal Protective Equipment (PPE)

1.2 State the reasons for inspection checks on electrically operated tools

1.3 State the risks of electric shock when using extension leads and electrical tools/equipment

1.4 State the reasons for the safe handling and storage of tools, equipment and electrically operated tools

1.5 Identify basic types of electrical supply systems and their features

1.6 Identify safe methods for fitting and fixing activities

1.7 Describe how to deal appropriately with the following potential hazards

a working at heights
b lifting and handling

1.8 state good housekeeping requirements for the following

a making good any damage to building structures or surfaces

b dispersal of waste (hazardous and non-hazardous)

c disposal of surplus materials

1.9 State briefly the main health and safety risks, precautions and procedures associated with tasks in the workplace

1.10 State the main stages of a risk assessment process

1.11 State the importance of developing positive personal attitudes to safety in order to adopt safe systems of working

1.12 State basic safety procedures to prevent injury or accident within the workplace

1.13 State methods for controlling safe access and egress from site

1.14 State how to establish that access equipment is in safe working order

1.15 State the importance of securing tools and equipment and

1.16 State procedures for safe storage of tools and equipment

1.17 State the safe use of tools and equipment for fixing and installing cable containment

1.18 Identify emergency switches, isolators, alarms and emergency equipment in the workplace and describe methods of verifying and securing (locking off) isolation

1.19 Explain the following health and safety signs on construction sites

a mandatory
b warning
c prohibition
d safety

1.20 State the requirement to liaise with other contractors in order to maintain a safe working environment

1.21 State the purpose of a 'method statement'

1.22 State the purpose and methods of using measuring and marking out equipment

1.23 Identify the safety requirements of a 'mains voltage' tester (defined in HSE Guided Sheet GS38)

1.25 State the stages and tests involved in electrical installation testing

Unit 002 Working effectively and safely in electro technical environments

Outcome 2 Know statutory regulations, codes of practice and memorandum of guidance relevant to maintaining a safe working environment

Assessment criteria

The leaner can:

2.1 State the legal purpose and responsibilities within the Health and Safety at Work Act 1974 for

a Employer
b Employee

2.2 State how data from standards can be used to support electrical installations

2.3 Identify the generic roles of the following across the electro-technical industry

a Professional bodies
b Trade and employer associations
c Trade unions
d Regulatory bodies

2.4 State the main purpose of the Electricity at Work Regulations

2.5 State how current wiring regulatory requirements can impact upon the electrical installation process on site

2.6 State the purpose of BS 7671

2.7 State the purpose of the Building Regulations

2.8 State the difference between statutory and non-statutory requirements

2.9 State why hazardous installations are subject to statutory regulation

2.10 State the procedures to be followed during and after an accident or emergency

2.11 State the action to be taken in the event of electric shock

2.12 Identify types and applications of fire extinguishers

2.13 State the requirements for a 'permit to work' in hazardous areas

2.14 State the responsibilities of a designated 'duty holder'

2.15 Describe the electro technical roles played by people within an organisation

Unit 002   Working effectively and safely in electro technical environments

Outcome 3   Understand technical information and data supplied for working effectively and safely

Assessment criteria

The leaner can:

3.1 Calculate dimensions and measurements from scaled drawings and diagrams

3.2 Identify electro technical symbols from working drawings and specifications

3.3 State the functions of the following in respect of an installation

a Day work sheets
b Job sheets
c Time sheets
d Delivery records
e Reports

3.4 Explain briefly the methods of technical information retrieval

3.5 State the purpose and the relationship between drawings, diagrams and specifications

3.6 Describe the importance of presenting the right image to stakeholders

3.7 Interpret drawings and diagrams in order to produce, locate or install electrical/electronic systems, equipment, machines and cabling

Unit 003   Access control systems

Level: **2**
UAN: **R/600/1182**
Credit value: **18**

Unit aims

The aim of this unit is to provide the required underpinning knowledge for persons to participate in the design, installation, commissioning and maintenance of electronic access control equipment and systems.

Learning outcomes

There are **six** learning outcomes to this unit. The learner will:

1. Understand the relationship of access control to the security industry
2. Understand the basic principles and features of access control devices
3. Understand the basic principles and features of access control equipment
4. Understand the function and operation of common circuit configurations used in access control systems
5. Understand the basic principles and applications of common data communications technologies employed in access control systems
6. Understand the principles of typical primary and secondary power supplies employed in access control systems
7. Understand typical configuration and administration methods of access control systems
8. Understand the principles of commissioning, handover and maintenance of access control systems
9. Understand the principles of surveying, design, specification and auditing of access control systems

Guided learning hours

It is recommended that **134** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Skills for Security (SSC).

Assessment

This unit will be assessed by:
- a GOLA online multiple choice examination
- a City & Guilds set, centre marked assignment

Unit 003   Access control systems

Outcome 1   Understand the process of testing, commissioning and auditing Intruder and Hold-up Alarm Systems

Assessment criteria

The leaner can:

1.1 Explain the key function of the security industry to protect life, premises and property

1.2 Describe how access control integrates with CCTV, fire alarm systems, IHAS, and manned guarding

1.3 Explain, briefly, the role of the following bodies:

a National Security Inspectorate (NSI),
b Security Systems and Alarms Industry Board (SSAIB)
c Security Industry Authority (SIA)
d British Security Industry Association (BSIA)
e Association of Chief Police Officers (ACPO)
f Home Office Scientific Development Branch (HOSDB)

1.4 State the relationship of the following Standards and Codes of Practice to access control equipment and installation:

-BS EN 50133
-BS EN 50136
-BS 7671
-HASAWA
-COSHH
-RIDDOR
-TS 50398
-BSIA
-Inspectorates

1.5 Explain the reasons for maintaining confidentiality in the security industry

1.6 Describe methods of maintaining confidentiality

Unit 003   Access control systems

Outcome 2   Understand the basic principles and features of access control devices

Assessment criteria

The leaner can:

2.1 Describe, briefly, the operating principle of each of the following token types:

a Proximity
b Smart card
c Magnetic strip
d Bar code

2.2 Explain, briefly, the operating principle of each of the following reader technologies:

a Proximity
b Smart (Myfaire)
c Pin
d Dual technology
e Magnetic stripe
f Bar code
g Biometric types, including fingerprint, palm, signature, iris, voice and retina

2.3 Describe, briefly, the features of each of the following reader technologies:

a Proximity
b Smart (Myfaire)
c Pin
d Dual technology
e Magnetic stripe
f Bar code
g Biometric types, including fingerprint, palm, signature, Iris, voice, and retina

2.4 Describe, briefly, the operating principle of each of the following lock types:

a Maglock
b Shear mag
c Electric strike
d Shoot bolt
e Rim latch
f Solenoid handle lock
g Motorised lock

2.5 Explain the operating principle of each of the following input devices:

a Exit button (RTE)
b Door contact
c Door override (break glass)

2.6 Describe, briefly, each of the following door types:

a Hollow core
b Softwood
c Hardwood
d uPVC
e Aluminium Steel
f Anti-ballistic

2.7 Describe, briefly, each of the following barrier types:

a Gates
b Paddle
c Turnstile
d Rising kerb
e Rising bollard

2.8 Relate the following Standards and Codes of Practice to access control devices:

-BS EN 50133
-BS EN 50136
-BS 7671
-TS 50398
-BSIA
-Inspectorates
-COSHH

Unit 003   Access control systems

Outcome 3   Understand the basic principles and features of access control equipment

Assessment criteria

The leaner can:

3.1 State the function(s) of each of the following equipment items in an access control system:

a Door controller
b Reader interface
c Administration reader
d Administration PC/server

3.2 Describe the operational differences of stand alone and PC (software) networked administered access control systems

3.3 State the advantages and disadvantages of standalone and PC (software) networked administered access control systems

3.4 State the advantages and disadvantages of linking the PC to controller using the following methods:

a Direct Serial port
b Direct USB,
c Ethernet network
d GPRS modem
e PSTN modem
f GSM modem

3.5 Relate the following Standards and Codes of Practice to access control equipment:

-BS EN 50133
-BS EN 50136
-BS 7671
-TS 50398
-BSIA
-Inspectorates
-COSHH

Unit 003   Access control systems

Outcome 4   Understand the function and operation of common circuit configurations used in access control systems

Assessment criteria

The leaner can:

4.1 State the cable types used in each of the following access control circuits:

a Reader
b Lock
c Controller communications data bus networks
d RTE button
e Door contact

4.2 Explain the operation of schematic diagrams for each of the following door controller circuits:

a Reader power
b Reader data lines
c Exit button
d LED indicators
e Door contact

4.3 Explain the operation of schematic diagrams for each of the following lock circuits:

a Fail (fail safe)
b Fail locked (fail secure)
c Manual over-ride using break-glass
d Automatic over-ride from fire control equipment

4.4 Explain the operation of schematic diagrams for each of the following network circuits:

a RS-485
b RS-422
c UTP
d STP

4.5 State the function of the following circuit protection devices:

a In-line fuses
b On-board self-resetting protection devices
c Suppression diodes
d Metal oxide varistor (MOV)

4.6 Describe the following methods for overcoming the problems of induced noise (RFI/EMI) in system cables:

a Cable routing and installation
b Use of shielded cable
c Use of twisted pair cable
d Need for correctly configured functional earthing
e Avoidance of ground loops

4.7 List methods for cable fixing, containment, segregation and termination for the cable types employed in access control systems

4.8 Explain the following methods for overcoming the problem of voltage drop:

a Gauge of cable (cross sectional area)
b Local power supply

4.9 Relate the following Standards and Codes of Practice to cable installation and circuit configuration in access control equipment:

-BS EN 50133
-BS EN 50136
-BS 7671
-TS 50398
-BSIA
-Inspectorates
-COSHH

Unit 003   Access control systems

Outcome 5   Understand the basic principles and applications of common data communications technologies employed in access control systems

Assessment criteria

The leaner can:

5.1 State typical applications in access control systems for each of the following network communication types:

a RS-485
b RS-422
c RS-232
d USB
e Ethernet

5.2 State typical maximum cable lengths for each of the following network communication types:

a RS-485
b RS-422
c RS-232
d USB
e Ethernet

5.3 Relate the following Standards and Codes of Practice to data communications technologies employed in access control equipment:

-BS EN 50133
-BS EN 50136
-BS 7671
-TS 50398
-BSIA
-Inspectorates

Unit 003   Access control systems

Outcome 6   Understand the principles of typical primary and secondary power supplies employed in access control systems

Assessment criteria

The leaner can:

6.1 Describe the safety precautions to be observed when working with power supply units

6.2 State typical operating voltages for the following access control equipment:

a Readers
b Locks
c Door controllers

6.3 Explain briefly, the function of each of the following power supply types:

a Combined with door control unit
b Remote units
c BT approved units

6.4 State the function of primary and secondary cells, when incorporated in access control equipment

6.5 State the HASAWA and COSHH requirements for the safe disposal of primary and secondary cells

6.6 Relate the following Standards and Codes of Practice to power supply equipment:

-BS EN 50133
-BS 7671
-TS 50398
-BSIA
-Inspectorates
-HASAWA
-COSHH

Unit 003   Access control systems
Outcome 7   Understand typical configuration and administration methods of access control systems

Assessment criteria

The leaner can:

7.1 Explain the meaning of each of the following access control terms:

a APAS (Access Point Actuators and Sensors)
b Door
c Area
d Token/fob
e Push to exit
f Event
g Tailgating
h Anti-pass back
i Fail open (fail safe)
j Fail locked (fail secure)
k Airlock
l Duress

7.2 Explain the function of each of the following access control features:

a Access group/level
b Time profile
c Holiday profile
d Key holder
e Anti-pass back (local, area controlled, timed)
f Duress alarm
g Video verification
h Key trace
i Event log
j Event report
k Manual lock/unlock
l Time controlled locks
m Airlock
n Out of hours access
o Evacuation and muster
p Database backup
q Event archive

7.3 Describe typical alarm functions associated with access control systems

7.4 Relate the following Standards and Codes of Practice to access control systems:

-BS EN 50133
-BS EN 50136
-BSIA
-Inspectorates

Unit 003   Access control systems

Outcome 8   Understand the principles of commissioning, handover and maintenance of access control systems

Assessment criteria

The leaner can:

8.1 Explain the need to establish customer requirements and system specification prior to performing the following tasks:

a System commissioning
b System handover
d Preventative maintenance
e Corrective maintenance

8.2 List typical documentation required to perform each of the following tasks:

a System commissioning
b System handover
c Preventative maintenance
d Corrective maintenance

8.3 Describe methods of presenting a positive appearance and attitude to customers

8.4 Describe typical methods for controlling the environment whilst performing the following:

a System commissioning
b System handover
c Preventative maintenance
d Corrective maintenance

8.5 Describe the procedures for demonstrating and handing over a system to a customer

8.6 Describe methods for ensuring that the customer is conversant with their system, following system handover

8.7 State typical applications for each of the following items of test instrument, in relation to access control systems:

a Multimeter
b Insulation resistance tester
c Mains polarity tester
d Battery tester
e Network (Ethernet) cable tester

8.8 Explain the need for test equipment to be calibrated

8.9 Describe methods for establishing that an item of test equipment is calibrated

8.10 Describe procedures for performing the following tests:

-dc voltage
-dc current
-dc resistance
-insulation resistance
-mains supply isolation

8.11 Describe typical procedures for replacing, and verifying the operation of, the following system components:

a Power supply
b Stand-by battery
c Electronic locking device
d Reader
e Reader interface
f Exit device
g Door contact
h Door controller
i Cable removal

8.12 Explain the need for appropriate PC administration rights and network permissions when working with PC administered access control systems

8.13 State the relationship of the following Standards and Codes of Practice to commissioning, handover and preventative/corrective maintenance of access control systems:

-BS EN 50133
-BS EN 50136
-BS 7671
-TS 50398
-BSIA
-Inspectorates
-HASAWA
-COSHH
-RIDDOR

Unit 003   Access control systems

Outcome 9   Understand the principles of surveying, design, specification and auditing of access control systems

Assessment criteria

The leaner can:

9.1 Explain the need to identify the roles and levels of the customer and/or customer's representatives

9.2 Describe methods of presenting a positive appearance and attitude when dealing directly with the customer and customer's representatives

9.3 Explain the need to establish customer requirements prior to performing the following tasks:

a system design
b specification
c sales presentation

9.4 Explain the need to obtain site plans or drawings for the purposes of system design and specification

9.5 List typical documentation required to perform each of the following tasks:

a system design
b specification

9.6 Explain the purpose of a site survey

9.7 Explain the need for documenting the results of site surveys

9.8 Explain the purpose of a technical audit of an access control system

9.9 Relate the following Standards and Codes of Practice to access control systems:

-BS EN 50133
-BS EN 50136
-BS 7671
-TS 50398
-BSIA
-Inspectorates

Unit 004   Intruder alarm systems

Level: **2**
UAN: **Y/600/1166**
Credit value: 18

Unit aims

This is an occupational unit. The unit covers the underpinning knowledge principles related to the design, installation, testing, commissioning and Maintenance of intruder and hold-up alarm systems. It will include the understanding and implementation of current legislation, British and European standards, regulations, codes of practice and inspectorate requirements as they relate to Intruder and hold-up Alarm Systems.

Learning outcomes

There are **six** learning outcomes to this unit. The learner will:

1. Understand the architecture of Intrusion and Hold-up alarm systems with respect to the protection of buildings
2. Understand the component parts of intrusion alarm detection devices
3. Understand the features and components of intruder and hold up alarm control and indicating equipment CIE
4. Understand how Detection Devices, Control and Indicating Equipment and Ancillary Control Equipment ACE combine with buildings structure to provide protection against an intruder
5. Understand the process of surveying, design, quotation and management of Intruder and Hold up Alarm Systems
6. Understand the process of testing, commissioning and auditing Intruder and Hold-up Alarm Systems

Guided learning hours

It is recommended that **144** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Skills for Security (SSC).

Assessment

This unit will be assessed by:
- a GOLA online multiple choice examination
- a City & Guilds set, centre marked assignment

Unit 004   Intruder alarm systems

Outcome 1   Understand the architecture of Intrusion and Hold-up alarm systems with respect to the protection of buildings

Assessment criteria

The leaner can:

1.1 Explain how detection devices are used to form the protection in the following formats
a Fixed Protection
b Moveable Protection
c Trap Protection
d Perimeter Protection

1.2 Explain where detection is sited in the architecture of an Intruder & Hold-up Alarm system (I&HAS)

1.3 Explain the purpose of each of the following non-electrically powered detection devices listed, and briefly explain the functionality of each device
a Foil on Glass
b Closed Circuit Wiring
c Heavy Duty Contacts
d Roller Shutter Contacts
e Door and Window Contacts
f Magnetically operated switches
g Mechanically operated switches

1.4 Explain the purpose of each of type of the following electrically powered detection devices
a Active Movement Detection
b Passive Movement Detection
c Acoustic Vibration Detection (Glass break)
d Structural Vibration Detection (Impact)

1.5 Identify the purpose of Control and indicating Equipment (CIE) as part of the role of Intrusion Alarm Systems

1.6 Identify appropriate symbols for detection devices, Control and Indicating Equipment and Alarm Transmission, (Notification), Equipment

1.7 Identify the purpose of Alarm Transmission Equipment (Notification) in I & HAS

1.8 Identify the following current types of Alarm Transmission Paths
a Dedicated Path
b PSTN (Auto diallers and Digital Communicators)
c GSM
d Radio
e Internet Protocols (IP)

1.9 Explain the function and operation of the types of Alarm Transmission Equipment for Dedicated path

1.10 Describe briefly the role of the following responsible bodies governing different aspects of the intrusion alarm industry
a Association of Chief Police Officers (ACPO)
b Local police (policies)
c Local authorities (Noise Pollution Act)
d Security Industry Authority (SIA)
e National Security Inspectorate (NSI)
f Security Systems Alarm Inspectorate Board (SSAIB)
g British Security Industry Association (BSIA)
h Fire Security Association (FSA) Alarms Division

1.11 Describe the reasons for confidentiality when working with Intrusion and Hold up Alarm Systems

1.12 Explain the consequences of failure to maintain confidentiality in the Security Industry, in terms of the client, the employer and the employee

1.13 Describe measures to ensure the security of documentation and actions to be taken in the event of an "approach by criminals"

1.14 Explain the roles and responsibilities of Inspectorates

1.15 Explain the requirements for approval of a systems company

1.16 Identify the sanctions imposed by Inspectorates and Inspection Boards for non conformances

1.17 Explain the role of the following
a ACPO
b Local police policies
c Trade Association codes of practice

1.18 State the obligations of Local Authoritys with regards to the following
a DoE directive on noise pollution
b EC electro magnetic compatibility
c EMC Directive
d Disability Discrimination Act (DDA)

1.19 Identify the purpose and scope of the current industry standards and codes of practice

1.20 Identify the purpose of current standards for the Design, Installation, Management and Maintenance of Intrusion and Hold up Alarm Systems

1.21 Identify the scope of the current standards and codes of practice

1.22 Explain the need to observe related Codes of Practice, British European norms and statutory regulations

1.23 Identify the purpose of the following current standards for design, installation, management and maintenance of intrusion and hold up alarm systems
-PD6662
-DD243 (BS8243)
-DD263
-BS 8476
-BS EN 50131
-BS EN 50136
-TS 50131-7
-BS 50398
-IPCRes Guidance document "Alarm Signalling using the internet protocol: Part 1: An overview."
-ACPO policy
-BSIA guidance sheets
-Inspectorates codes of practice (Cop)

Unit 004   Intruder alarm systems
Outcome 2   Understand the component parts of intrusion alarm detection devices

Assessment criteria

The leaner can:

2.1 Describe the operational characteristics of the following types of Detection:

a Perimeter
i Electronic: Vibration both acoustic and structural
ii Physical Foil on Glass and Closed Circuit wiring

b Moveable
i Protective switches, mechanical and magnetic types
ii Flush, surface mount and heavy duty

c Movement
i Passive
ii Active: Doppler Shift and active Infra Red Beam

2.2 Describe the techniques associated with locating fixing and connecting moveable detection

2.3 Describe the techniques used for installing fixed detection devices

2.4 Describe the techniques for installing and testing movement detection

2.5 Describe three common methods of connecting I&HAS detector circuits and detectors

2.6 Explain the use of schematic diagrams, circuit diagrams and as installed diagrams for the following circuits

a Single pole
b Double pole wiring
c End of line (EOL), fully supervised loop (FSL)

2.7 Describe how double pole circuit may be configured to provide the detector power supply

2.8 Explain why the configuration in 2.6 may not be possible in some CIE

2.9 Identify the component parts required to locate, fix and connect moveable detection at a specified location and state the precautions to be taken when installing the moveable detection

2.10 State the requirements for installing wiring complete with specified mechanical protection between the CIE position and the point of detection

2.11 Describe the methods of installing and positioning surface mounted contacts on windows and doors ensuring that they are fixed with the correct fixings and interconnections

2.12 Identify the component parts required to locate, fix and connect fixed detection at a specified location

2.13 State the requirements for installing wiring complete with specified mechanical protection between the control position and the point of detection

2.14 Describe the methods of installing metal foil and take off blocks on glass and the types of interconnection utilized

2.15 Describe the methods of installing closed circuit wiring attached directly to the surface and protected from mechanical damage by hardboard, ply-wood and metal sheet covering

2.16 Explain why it is necessary to keep tools, plant, equipment and materials clean, secure and fit for purpose

2.17 Describe methods that ensure all tools, plant, equipment and materials are kept clean, secure and fit for purpose

2.18 Explain how to install, connect, set up and test the following movement detectors

a Passive infra-red
b Microwave

2.19 Explain the detection theory and operation dependent on the type of detector chosen in 2.18

2.20 Describe the techniques used when installing and testing vibration detection and analysers

2.21 Identify the operational characteristics of the following vibration devices:

a Structural
i Inertia
ii Shock

b Acoustic
i Break glass

2.22 Identify the appropriate sections in the following current standards, codes of practice, policy and guidelines which relate to I&HAS detection devices and all the above assessment criteria in Outcome 2

-PD 6662
-DD243
-BS 8243
-DD 263
-BS 8473
-BS EN 50131
-TS 50131-7
-ACPO policy
-Inspectorate and Codes of Practice (CoP)

Unit 004 Intruder alarm systems

Outcome 3 Understand the features and components of intruder and hold up alarm control and indicating equipment CIE

Assessment criteria

The leaner can:

3.1 Identify the facilities provided in simple Intruder Alarm control and indicating equipment

3.2 Explain the purpose of the following features of Intruder CIE
a Circuit attributes
b Control lines
c Auxiliary power
d Warning devices
e Timers
f Delays and duration
g Grade
h Classification

3.3 State the requirements of commercial CIE for the needs of customers in various facilities

3.4 Describe how a self latching relay can be used as a means of switching higher currents (Electronic switching)

3.5 Explain the purpose of the following
a Central processing unit CPU
b Terminations
c Setting devices
d Shunt switches
e Indicating equipment (Ancillary Control Equipment)ACE
f Remote keypads (Ancillary Control Equipment) ACE

3.6 Identify the appropriate sites and location for the CIE in an I&HAS

3.7 Explain the following British European norms requirements for the location of CIE
a Current BS EN Standards
b Building Regulations

3.8 Describe how the access levels and physical disabilities of users of the system impact on the design and selection of CIE

3.9 Identify the purpose of terminations in basic non-expandable control indicating equipment

3.10 Explain the application and operation of the following detector circuits
a Single pole
b Double pole wiring
c End of line monitoring devices (FSL, EOL)
d Wire free

3.11 Explain how the control and indicating equipment recognizes the following from the detection circuits

a Non Alarm conditions
b Alarm conditions
c Tamper conditions
d Anti-masking
e Reduction in range

3.12 Explain the difference between fully supervised loop and double pole circuits

3.13 List the terminals for the following:

a Control lines
b Indicating and warning devices

3.14 Explain how the requirements of the system design proposal are used to prepare a programming chart

3.15 Describe the process of programming basic non-expandable control and indicating equipment

3.16 Describe the types of power supply units used for the following systems:
a Combined with CIE
b Remote location
c Remote notification equipment housing
d BT Approved
e Standby capacity for the grade of system

3.17 Calculate the capacity of the secondary power supply (battery) required to support both CIE and each warning device installed, as specified in the current BS EN standards

3.18 Explain how calculating the size of a battery for given circumstances is applied in order to choose a suitable practical value for Type A, B, and C power supplies

3.19 Explain the hazards of primary and secondary cells

3.20 Explain the procedure for safe disposal under the Control of Substances Hazardous to Health (COSHH) Regulations

3.21 Explain the purpose of the following audible warning devices (external and internal) :
a Audible warning devices (external and internal)
b Electro-magnetic and motorised sounders
c Horn and Cone Sounders
d Self actuating sounders (SAB)
e Self contained sounders (SCB)
f Visual warning devices
g Categories of housing
h Charging circuits and standby secondary power supplies (batteries)

3.22 Describe the operational requirements for warning devices and state where environmental conditions affect the number, choice and location of devices

3.23 State the precautions to take for protection against hearing damage

3.24 Explain the employer/employee role and responsibility requirements of Health and Safety at Work Act 1974

3.25 Describe the use of ear defenders or technical interventions in reducing the risk of long term hearing loss

3.26 Identify the appropriate sections in the following current standards, codes of practice, policy and guidelines which relate to I&HAS control and indicating equipment and the above assessment criteria in Outcome 3

-PD 6662
-DD243 (BS 8243)
-DD263
-BS 8473
-BS EN 50131-1
-TS 50131-7
-ACPO policy
-BSIA guidance sheets
Inspectorates Codes of Practice (CoP)

Unit 004   Intruder alarm systems

Outcome 4   Understand how detection devices, control and indicating equipment and ancillary control equipment (ACE) combine with buildings structure to provide protection against an intruder

Assessment criteria

The leaner can:

4.1 Identify the adjustment facilities on the following electrically powered detectors

a Active movement detectors
b Passive movement detectors
c Structural vibration detectors
d Acoustic vibration detectors

4.2 Describe the effects the environment may have on detection devices in respect to their location

4.3 Describe the process by which detectors analyze and respond to sensors registering change in the environment

4.4 Explain how to select appropriate devices and adjust to suit the environmental conditions

4.5 Explain the following functions and how they are enabled from the CIE

a Walk test enable
b Latch
c Detector reset
d Fault tamper
e Anti mask
f Reduction in range

4.6 State the purpose of event verification

4.7 Explain the operation of event verification

a Sequential
b Video
c Audio

4.8 Explain the use of two technologies (Dual Technology) in one housing to reduce the risk of false alarms

4.9 Describe the operational characteristics and setting up procedures for the following Dual Technology devices

a Movement detectors
b Vibration detectors
c Structural
d Acoustic

4.10 Explain the purpose of the following anti false alarm features:

a Double knock
b Event verification (Review)
c Signal Processing
d First zone to alarm lockout
e Beam pairing
f Portable ancillary control equipment (PACE)
g Abort timers
h Engineer restore

4.11 Describe the methods of installation and connection and/or programming required to make the following features available to the customer

a how technical diagrams assist to make the relevant connection to CIE and system components

b instructing users in the operation of the I&HAS and anti false alarm attributes

c providing written instruction for the operation of equipment controlled by anti false alarm features

4.12 Identify the appropriate sections in the following current standards, codes of practice, policy and guidelines which relate to the above assessment criteria in Outcome 4

-PD 6662
-DD243 (BS 8243)
-DD263
-BS8473
-BS EN 50131
-BS EN 50136
-TS 50131-7
-BS 50398
-IPCRes Guidance document "Alarm Signalling using the internet protocol: Part 1: An overview
-ACPO Policy
-BSIA guidance sheets
-Inspectortaes Codes of Practice (CoP)

Unit 004   Intruder alarm systems

Outcome 5   Understand the process of surveying, design, quotation and management of intruder and hold up alarm systems

Assessment criteria

The leaner can:

5.1 Explain the term "risk assessment"

5.2 Describe the conditions that affect the grade of an I&HAS

5.3 Identify methods of minimizing risk of burglary

5.4 Describe a risk assessment based for a building with which the learners are familiar

5.5 Explain the benefits of using a plan drawing for a building

5.6 Describe the process of producing a system design proposal

5.7 State the full names of terms and abbreviation for current British European norms and regulations that would appear in customers documentation

5.8 Explain the following contents of a system design proposal

a Type of equipment
b Location
c Position
d Operation
e Function

5.9 Explain the following key features of a system design proposal to achieve BS EN standards

a Detection Devices
b Control Indicating Equipment
c Alarm Transmission Equipment (Notification)
d Cabling
e Customer responsibilities

5.10 Explain the following key sections for the preparation of a quotation

a Direct labour costs
b Materials cost
c Related costs
d Equipment hire
e Notification costs
f Sub-contract costs e.g electrician
g Cost uplift
h Price
i Gross Profit Margin

5.11 Explain the purpose of planning an Intruder and Hold-up Alarm System

5.12 Explain the following key stages in planning an intrusion and hold-up alarm system

a Health and Safety Construction Design and Management Regulations (CDM)
b Health and Safety Risk Assessment
c Site preparation
d First Fix
e Second Fix
f Testing
g Commissioning
h Handover

5.13 Describe the following key relationships involved in the installation of the Intruder and hold-up Alarm system

a Client
b Client's Agents
c Colleagues
d Other craft trades
e Authorities

5.14 Explain briefly the use of Gantt charts and the process of project management during the planning and installation stage of an Intruder and hold-up alarm system

5.15 Describe where the following interconnections would be used when installing an Intruder and hold-up alarm system

a Four line
b Six line
c Eight line
d Twelve line
e Multi-core

5.16 Explain the purpose of an earth reference when installing:

a Screened Cable
b Metal enclosures

5.17 Identify the correct termination, installation methods and mechanical protection appropriate to the following

a Planning of a first fix for a small system, taking into consideration:

Location of the cable run
The use of segregated enclosures
Electromagnetic interference (EMI) and radio frequency interference (RFI)
Risk of mechanical damage
Risk of deliberate damage
Aesthetics

b Reference wiring for Remote Power Supply Units to ensure correct operation of the control lines e.g.
Walk Test enable
Latch Freeze
Remote Detector Reset

5.18 Explain the effects of cable length and environmental conditions on the voltage supplied to detectors

5.19 Identify the appropriate sections in the following current standards, codes of practice, policy and guidelines which relate to surveying, design, quotation and management of I&HAS and the all the above assessment criteria in Outcome 5

-PD 6662
-DD 243 (BS 8243)
-DD263
-BS8473
-BS EN 50131
-BS EN 50136
-TS50131-7
-BS 50398
-IPCRes Guidance document "Alarm Signalling using the internet protocol: Part 1: An overview"
-ACPO policy
-BSIA guidance sheets

Unit 004   Intruder alarm systems

Outcome 6   Understand the process of testing, commissioning and auditing Intruder and Hold-up Alarm Systems

Assessment criteria

The leaner can:

6.1 Explain how the grade and classification of a system defines the type of Intrusion and Hold-up Alarm System component for the following:

a Detection
b Control and indicating equipment
c Ancillary control equipment
d Warning devices
e Alarm Transmission Equipment

6.2 Identify the appropriate symbols for the construction and amendments of the following drawings

a Floor plans and elevations
b Block Diagrams
c Schematic diagrams
d As installed diagrams
e Circuit diagrams

6.3 Describe the process of testing in preparation to commission

6.4 Explain the purpose of Commissioning the System (full operational test)

6.5 Describe how a demonstration to the system manager(s) and system users is planned and delivered

6.6 List the documentation required by the client at a handover of an Intrusion and Hold-up Alarm System

6.7 State the key purpose of a visual inspection

6.8 Identify the environmental conditions of a system and building that would have a detrimental affect on the performance of the intruder alarm system

6.9 Explain the following stages of a visual inspection using the system log or system design proposal:

a External
i Warning devices
ii Exit, Entry Points

b Internal
i System equipment
ii System wiring
iii Changes in the environment

6.10 Describe the process of recording and reporting changes detected during a visual inspection

6.11 State the action to be taken in the event of changes detected during the visual inspection

6.12 Describe the process leading to corrective maintenance and implementation of the customer responsibilities

6.13 Describe the appropriate test equipment for the following tests:

a Insulation resistance
b Continuity
c Voltage
d Current

6.14 State the parts of the system that undergo testing in 6.10

6.15 List the expected maximum and/or minimum values for each of the tests in 6.10

6.16 Describe the methods for connecting the test instruments for each of the tests listed in 6.10

6.17 Explain how the appropriate documentation to record the results of testing the system are completed

6.18 State the importance of providing a secure environment for all the Intrusion and Hold-up Alarm System documentation

6.19 Describe the process for reporting and correcting faults discovered during the testing procedure

6.20 Explain the procedure for auditing an Intrusion and Hold-up Alarm System with respect to the following

a System compliance to the 'as fitted' document
b Compatibility of customer and company records
c Comparison of test results taken at the time of commissioning
d On site documentation
i System log
ii Test results
iii Preventive maintenance visits
iv Corrective maintenance visits

e Customer access to operating guides and manufacturers, instructions
f False alarm history

6.21 Identify the important sections of documentation used when reporting non compliance outcomes when auditing an Intrusion and Hold-up Alarm Systems

6.22 Identify the appropriate sections in the following current standards, codes of practice, policy and guidelines which relate to testing, commissioning and auditing I&HAS and the above assessment criteria
-PD 6662
-DD243 (BS 8243)
-DD263
-BS 8473
-BS EN 50131
-BS EN 50136
-TS 50131-7
-BS 50398
-IPCRes Guidance document "Alarm Signalling using the internet protocol: Part 1: An overview."
-ACPO policy
-BSIA guidance sheets
-Inspectorates Codes of Practice (CoP)

Unit 005   Closed circuit television (CCTV) systems

Level: **2**
UAN: **T/600/1188**
Credit value: **16**

Unit aims

This is an occupational unit: The unit provides a broad knowledge for installation technicians, commissioning technicians, maintenance technicians, surveyors and designers of Closed Circuit Television Systems (CCTV) technology.

Learning outcomes

There are **six** learning outcomes to this unit. The learner will:

1. Know the security industry and the role of CCTV within it
2. Understand CCTV systems
3. Understand transmission systems for CCTV
4. Know how to identify, compare and select CCTV equipment
5. Understand scene lighting requirements for cameras
6. Understand equipment power supplies
7. Understand testing, commissioning, handover, corrective and preventative maintenance
8. Understand the principles of a site survey, system design and system audit for CCTV

Guided learning hours

It is recommended that **124** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Skills for Security (SSC).

Assessment

This unit will be assessed by:
* a GOLA online multiple choice examination
* a City & Guilds set, centre marked assignment

Unit 005 Closed circuit television (CCTV) systems
Outcome 1 Know the security industry and the role of CCTV within it

Assessment criteria

The leaner can:

1.1 Explain the key functions of the security industry to protect life, premises and property

1.2 Describe how CCTV integrates with the manned security sector including

Guarding
Aviation
Customs and excise
Retail
Close protection
Police
Emergency services

1.3 Describe how CCTV is used for public safety for the following

a Observation and control in
town centres
b Events
c Traffic control

1.4 Describe how CCTV combines with electronic and physical security technology including

Access control systems
Intruder alarm systems
Fire detection and alarm systems
Perimeter protection
Physical (mechanical) protection
Integrated systems
Electronic article surveillance systems

1.5 Describe briefly the role of the following security industry organisations

a Home Office Scientific Development Branch
(HOSDB)
b Association of Chief Police Officers(ACPO)
c National Security Inspectorate (NSI)
d Inspected Company of the National Security
Inspectorate (ICON)
e Security Systems and Alarms Inspection Board
(SSAIB)
f National Approvals Council for Security Systems
(NACOSS)
g Security Industry Authority (SIA)
h British Security Industry Association (BSIA)
i Association of British Insurers (ABI)
j Local Authorities
k CCTV user group

1.6 State the influence of the following current legislation for CCTV systems

a Human Rights Act
b Data Protection Act
d The Freedom of Information Act
e The Information Commissioners Office

1.7 State the reasons for maintaining confidentiality in the security industry

1.8 Describe measures which must be taken to ensure the security of information regarding CCTV systems

1.9 Explain the consequences of failure to maintain confidentiality within the security industry in terms of the client, employer and the employee

1.10 Identify the purpose of the following current standards and Code of Practice that relate to CCTV systems

-EN 50132
-BS 7671
-HASAWA
-DD243
-BS 5979
-BS 8418
-BS EN 50136
-BS 5958
-DD CLC/TS 50398
-COSHH
-CoP's produced by organisations listed in 1.5

Unit 005   Closed circuit television (CCTV) systems
Outcome 2   Understand CCTV systems

Assessment criteria

The leaner can:

2.1 Identify and explain briefly the function of the
following parts of a CCTV system
a Camera and lens
b Housing
c Control/switching equipment
d Display equipment
e Recording equipment
f Transmission system
g Composite video signal
h Scene lighting

2.2 Identify and explain briefly the purpose of the following private and public sector applications
for overt and covert surveillance

a Private property
b Retail business
c Office premises
d Transport authorities
e Public places
f Events
g Perimeter surveillance

2.3 Describe briefly the following methods for transmitting CCTV images
a CCIR
b PAL
c Digital
d Analogue

2.4 Explain briefly how bandwidth relates to CCTV signal transmission

2.5 Explain briefly how resolution can be described in terms of
a TVL
b Pixels

2.6 Describe the purpose of an Operational Requirement (OR)

2.7 Explain briefly the following stages and topics to consider when undertaking an OR
a OR level 1
b OR level 2
c Lighting
d Camera position
e Display requirements
f Image quality
g Recording requirements
h System validation
i Responses

2.8 State the relationship of the following standards and codes of practice to CCTV systems

-EN 50132
-BS 7671
-HASAWA
-DD243
-BS 5979
-BS 8418
-BS EN 50136
-BS 5958
-DD CLC/TS 50398
-COSHH
-COP's produced by organisations listed in Outcome 1.5

Unit 005   Closed circuit television (CCTV) systems

Outcome 3   Understand transmission systems for CCTV

Assessment criteria

The leaner can:

3.1 Describe the following cable transmission methods
for CCTV systems
a Coaxial
b Twisted pair
c Fibre optic
d Networked

3.2 Describe the basic construction of the following cable types
a Coaxial
b Twisted pair
c Fibre optic

3.3 Describe the following free space transmission methods for CCTV
a Infra red (IR)
b Microwave
c Radio (RF)

3.4 State the relative advantages and disadvantages of the CCTV transmission methods listed in 3.1
and 3.3 in terms of
a Cost
b Ease of installation
c Transmission distance
d Interference
e Installation environment
f Signal/data loss/corruption
g Security of data
h Transmission equipment required

3.5 Explain briefly the following terms that relate to CCTV signal transmission
a RG59, RG11,URM70
b BNC connector
c Signal attenuation/loss dB
d Dynamic impedance (Z)
e Termination
f Ground loop
g Launch amplifier
h Equalization amplifier
i EMI tolerance
j Modem
k Codec
l Balun
m Internet protocol (IP)
n 75 Ohm termination

3.6 State the relationship of the following standards and codes of practice to CCTV transmission systems

-EN 50132
-BS 7671
-HASAWA
-DD243
-BS 5979
-BS 8418
-BS EN 50136
-BS 5958
-DD CLC/TS 50398
-COSHH
-COP's produced by organisations listed in 1.5.

Unit 005   Closed circuit television (CCTV) systems

Outcome 4   Know how to identify, compare and select CCTV equipment

Assessment criteria

The leaner can:

4.1 Describe the purpose and basic requirements of various types of CCTV cameras

4.2 Explain briefly CCTV terminology

4.3 Explain terms that relate to lenses (Fixed focal length, Variable focal length, Zoom, Aspherical Pin hole, Angle of view, Field of view, Manual iris, Automatic Iris, f stop, Aperture Depth of field)

4.4 Explain the purpose of an auto iris lens

4.5 Explain terms that relate to auto iris lenses (Direct drive, Video drive)

4.6 Explain the reason for using colour corrected lenses

4.7 Explain the reason for using infra red corrected lenses

4.8 Describe the use of filters for lenses (Infra red pass, Infra red cut, Polarising Neutral density ND1 and ND3)

4.9 Describe the process of adjusting the back focus setting for a zoom lens attached to a camera

4.10 State the effect of an incorrect back focus adjustment for a zoom lens attached to a camera

4.11 Describe the purpose of lens selection aids (Calculator wheel, Software based programme Lens finder optic viewer, Manual calculation)

4.12 Identify types of monitor used to display CCTV images (Cathode ray tube, Liquid crystal display thin film transistor, Plasma display panel)

4.13 State the advantages and disadvantages of the types of monitor listed in 4.12 (Cost, Size, Life Fragility, Power consumption, Resolution Response time, Set up and adjustment)

4.14 State the relationship between the recommended viewing distance for a monitor and the display size of the screen

4.15 Describe briefly the following types of recording for CCTV images

a Analogue/VCR
b Digital/DVR

4.16 State the advantages and disadvantages of analogue and digital recording (in terms of Recording media, Image retrieval, Copy quality, Copy life, Copy security, Maintenance, Image compression requirements, Retention period)

4.17 Explain terms that relate to DVR equipment (Software, Inputs, Outputs, Signal processing Video motion detection (VMD), Storage Graphical user interface, Net work Video recorder (NVR))

4.18 Describe terms used in digital recording (Hard disk, Solid state, RAID, Secure server DVD, MTBF, Image file size, Capture rate Compression effects, Blocking, Compression artefacts)

4.19 State typical compression methods that are in current use (JPEG, MPEG-2, MPEG-4, MJPEG H264, Wavelet, and Fractal)

4.20 State the benefits of using compression techniques for storing images

4.21 Explain briefly the purpose of the following control equipment

a Switcher
b Quad

4.22 Explain briefly the purpose of a PC based CCTV control system

4.23 Describe features and terms that relate to PC based control equipment and systems (Control of fully functional cameras, Tour, Preset, Display Recording, Conditional refresh, Alarms Video motion detection, Video analytics Video based detection system, Remote video receiving centre, Inputs, Outputs)

4.24 Explain the need for environmental protection against

a Dust penetration
b Water penetration
c Corrosion
d Wind loads
e Temperature changes
f Humidity changes
g Lighting
h Index of protection

4.25 Explain the need for physical protection of equipment against

a Vandalism
b Vehicles
c People

4.26 Describe in basic terms the following equipment

a Camera housings
b Supports
c Brackets
d Towers
e Fully functional camera units)

4.27 State the relationship of the following standards and codes of practice to CCTV systems

EN 50132, BS 7671,HASAWA,DD243, BS 5979, BS 8418, BS EN 50136, BS 5958, DD CLC/TS 50398, COSHH, CoP's produced by organisations listed in 1.5.

Unit 005   Closed circuit television (CCTV) systems

Outcome 5   Understand scene lighting requirements for cameras

Assessment criteria

The leaner can:

5.1 State the range of the following levels of natural light in Lux units for which cameras are required to function

a Bright sun
b Overcast
c Twilight
d Full moon
e Starlight

5.2 State the range of typical artificial lighting illuminance levels over which cameras are required to operate in the following exterior situations

a Roads
b Car parks
c Flood lights for buildings

5.3 State standard levels of illuminance for interiors of buildings from daylight to emergency lighting

5.4 Explain how the following light sources can affect the colour rendering of objects

a Low pressure sodium
b Tungsten
c Fluorescent
d Infra red
e Natural light

5.5 Explain briefly the following terms that relate to the lighting of the scene

a Infra Red illumination of 715 nm
b Infra red illumination of 830nm
c Directional effects
d Flare
e Silhouette
f Surface reflectance
g Uneven lighting level

5.6 Explain briefly how the spectral response and sensitivity of a camera is related to the scene lighting

5.7 State the relationship of the following standards and codes of practice to the lighting requirements of cameras

-EN 50132
-BS 7671
-HASAWA
-DD243
-BS 5979
-BS 8418
-BS EN 50136
-BS 5958
-DD CLC/TS 50398
-COSHH
-CoP's produced by organisations listed in Outcome 1.5

Unit 005 Closed circuit television (CCTV) systems

Outcome 6 Understand equipment power supplies

Assessment criteria

The leaner can:

6.1 Describe the following types of power supply unit for CCTV equipment

a Line powered
b Power over Ethernet (Poe)
c Integral power supply
d External power supply(230V ac, extra low voltage 24V ac, 12V dc)
e BT approved
f Battery powered (lithium, sealed lead acid)

6.2 State the relationship of the following standards and codes of practice to equipment power supplies

-EN 50132
-BS 7671
-HASAWA
-DD243
-BS 5979
-BS 8418
-BS EN 50136
-BS 5958
-DD CLC/TS 50398
-COSHH
-CoP's produced by organisations listed in Outcome 1.5

Unit 005   Closed circuit television (CCTV) systems

Outcome 7   Understand testing, commissioning, handover, corrective and preventative maintenance

Assessment criteria

The leaner can:

7.1 Explain the reasons for testing a CCTV system and its component parts before commissioning

7.2 Explain that testing involves the use of measuring instrumentation in a correct and safe manner and the formal recording of clearly documented results to current BS/EN Standards and Codes of Practice

7.3 Describe the use of the following test equipment
a Multi-meter
b CCTV signal generator
c Pulse and bar generator
d Oscilloscope
e Cable length meter / time domain reflectometer
f Portable test monitor
g Video level meter
h Continuity tester
i Insulation resistance tester

7.4 State why calibrated instruments must be used for taking measurements

7.5 State the effect of simple faults in equipment and transmission lines on displayed CCTV images

7.6 State the procedure to rectify simple faults covered in 7.3

7.7 State the importance of objective testing and the documentation of test results

7.8 State how the Operational Requirement information must be used during the testing, commissioning, handover and maintenance of a CCTV system

7.9 Explain how the following documentation can used in the commissioning process
a Standards
b Codes of Practice
c Functional checklists
d Video image recording
e User instructional information
f Operational requirement

7.10 Describe the commissioning checks that must be made for the following system parts
a Cameras
b Lenses
c Lighting
d Control equipment
e Telemetry
f Video display
g Video records
h System integration
i Monitor

7.11 Explain briefly the notification requirements to the following

a Local authority
b Police
c Data Commissioner

7.12 Explain the importance of documented emergency procedures for the users of CCTV systems

7.13 Describe the process of handover, including the requirements for

a Maintaining confidentiality
b Arranging the handover process
c Demonstrating the system to the user
d Training the operators
e Recording images
f Export and archive of data
g The use of logs
h Maintaining Standards and Codes of Practice

7.14 Explain the following categories of maintenance

a Preventative
b Corrective

7.15 Explain how the frequency of maintenance depends on

a System complexity
b Environment
c Importance of evidential image quality

7.16 Describe typical maintenance checks that are required for the system and its component parts listed in the assessment criteria for learning outcomes 3,4 and 5

7.17 Explain the use and the importance of the following documentation during maintenance

a Previous commissioning records
b Standards and Codes of Practice
c System logs
d Maintenance logs
e User operator logs

7.18 State the relationship of the following standards and codes of practice to testing, commissioning, handover and maintenance

-EN 50132
-BS 7671
-HASAWA
-DD243
-BS 5979
-BS 8418
-BS EN 50136
-BS 5958
-DD CLC/TS 50398
-COSHH
-CoP's produced by organisations listed in Outcome 1.5

Unit 005   Closed circuit television (CCTV) systems

Outcome 8   Understand the principles of a site survey, system design and system audit for CCTV

Assessment criteria

The leaner can:

8.1 State the purpose of a site survey

8.2 State the following information that is recorded during a site survey :

a Site general layout
b Buildings
c Internal/external measurements and features
d Construction of building elements including walls/floors/windows
e Utility mapping
f Internal environment
g Floor plans
h Elevations
i Cross sections
j External surroundings
k Orientation
l Elevations
m Surfaces
n Trees
o Shrubs
p Water
q Environment; sheltered, exposed, costal, country, urban, inner city
r Vandalism risk
s Site/building access

8.3 State how the following information sources are used for design purposes

a Site/building plans
b Specification documents
c Building systems record drawings
d Existing/proposed security system records

8.4 State the purpose of a system design specification

8.5 State how the information required to design a system will include

a Customer Operational Requirements
b Equipment manufacturers data/manuals
c Installation requirements for equipment
d Current BS/EN Standards and Codes of practice

8.6 State the purpose of an audit

8.7 State that the stages in an audit process includes
a The range of the audit

b Organisation of the procedure with persons involved with CCTV operation
c Carry out functional and performance testing
d Record results of tests
e Production of a report to a standard format

8.8 State that the report will include information on

a Conclusion/recommendations
b Compliance
c Non compliance
d Proposals for rectification
e Proposals for improvement

8.9 State the relationship of the following standards and codes of practice to site survey, system design and audit for CCTV

-EN 50132
-BS 7671
-HASAWA
-DD243
-BS 5979
-BS 8418
-BS EN 50136
-BS 5958
-DD CLC/TS 50398
-COSHH
-CoP's produced by organisations listed in Outcome 1.5

Unit 006 Fire Detection and Alarm Systems

Level: **2**
UAN: **T/600/1191**
Credit value: **16**

Unit aim

The unit covers the basic underpinning knowledge principles related to the design, installation, testing, commissioning and Maintenance of Fire Detection and Alarm Systems. It will include the understanding and implementation of current legislation, British and European standards, regulations, codes of practice and inspectorate requirements as they relate to non-domestic Fire Detection and Alarm Systems.

Learning outcomes

There are **six** learning outcomes to this unit. The learner will:

1. Understand the Fire Safety Industry and Fire Detection and Alarm Systems (FD&A) within this industry

2. Understand the basic principles and features of Fire Detection and Alarm (FD&A) systems

3. Understand the basic principles and features of Fire Detection and Alarm (FD&A) systems' control and indicating equipment (CIE)

4. Know the function and operation of wiring and common circuit configurations used in Fire Detection and Alarm (FD&A) systems

5. Know typical power supplies used in Fire Detection and Alarm (FD&A) systems

6. Understand the basic principles of planning, specifying, quotations, auditing, commissioning, handover, corrective/preventative maintenance and administration of Fire Detection and Alarm

Guided learning hours

It is recommended that **118** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Skills for Security (SSC).

Assessment

This unit will be assessed by:

- a GOLA online multiple choice examination
- a City & Guilds set, centre marked assignment

(FD&A) systems

Unit 006   Fire Detection and Alarm Systems

Outcome 1   Understand the fire safety industry and fire detection and alarm systems (FD&A) within this industry

Assessment criteria

The leaner can:

1.1 State the key functions of the Fire Detection and Alarm Industry

1.2 Describe how FD&A systems integrate with the following systems

a ARC transmission equipment
b HVAC/BMS,
c Release door hold open devices,
d Access Control Systems

1.3 Explain, briefly, the role of the following bodies

a National Security Inspectorate (NSI)
b British Approvals of Fire equipment (BAFE)
c Loss Prevention Certificate Board (LPCB)
d Chief Fire Officers Association (CFOA)

1.4 Explain briefly the importance of Building Regulations to FD&A systems

1.5 State the key pieces of legislation that influence FD&A systems, and where information and guidance might be found

1.6 State the key Standards and Codes of Practice that govern FD&A systems installation and equipment

Unit 006   Fire Detection and Alarm Systems

Outcome 2   Understand the basic principles and features of fire detection and alarm (FD&A) systems

Assessment criteria

The leaner can:

2.1 Describe, in simple terms, the operating principle and the location and siting for each of the following Detector types to BS5839-1

a Manual Call Point
b Automatic Detectors: Point type heat (fixed temperature and rate of rise)
c Linear heat sensing cable
d Point type Smoke (ionisation and optical)
e Linear optical beam smoke
f Aspirating
g Video image processing
h Combustion gas (Carbon Monoxide (CO)
i Flame (Infra-red and Ultra-violet)
j Multi-sensor (e.g. heat and optical smoke)

2.2 State the radius of cover provided by common point type detectors and the coverage of beam type smoke detectors in accordance with BS 5839-1

2.3 State the purpose of a detector zone and state the limitations of a detection zone in accordance with BS 5839-1

2.4 State the location of call points, maximum travel distance and mounting height of call points in accordance with BS 5839-1

2.5 Explain the principle uses of each of the following interface devices

a Remote detector indicator
b Addressable switch monitor
c Zone monitor
d Sounder driver/control
e Input/output unit
f Short circuit isolator
g Relay and common alarm output from the CIE

2.6 Describe how the devices in 2.5 will interface with the FD&A system i.e. relay triggered from the common alarm output from the CIE or via an addressable interface device

2.7 State typical operating voltages for the following devices

a Bells
b Beacons
c Electronic sounders
d Voice sounders
e Radio pagers
f Pillow alarms

g Manual Call Point
h Automatic Detectors: Point type heat (fixed temperature and rate of rise)
i Linear heat sensing cable
j Point type Smoke (ionisation and optical)
k Linear optical beam smoke
l Aspirating
m Video image processing
n Combustion gas (Carbon Monoxide (CO))
o Flame (Infra-red and Ultra-violet)
p Multi-sensor (e.g. heat and optical smoke)

2.8 Explain the operating principle for the following common alarm devices

a Bells
b Beacons
c Electronic sounders
d Voice sounders
e Radio pagers
f Pillow alarms

Unit 006   Fire Detection and Alarm Systems

Outcome 3   Understand the basic principles and features of fire detection and alarm (FD&A) systems' control and indicating equipment (CIE)

Assessment criteria

The leaner can:

3.1 Describe the primary purpose of CIE

3.2 State the requirements of BS 5839-1 with regards to the siting of CIE equipment

3.3 State the faults CIE equipment should monitor

3.4 State the reasons for each of the following control functions

a Release fire door hold open devices
b Access control systems on doors on escape routes
c Shut down load music
d Open smoke ventilation
e Extinguishant release

3.5 Describe the operational differences between non-addressable and addressable analogue systems

3.6 State the purpose of the following standards

-BS 5839
-BS EN 54
-BS 7671

3.7 State the purpose of a FD&A system and who should define the need, purpose and category of system in accordance with BS 5839-1

3.8 List the categories and sub-categories of systems defined in BS 5839-1

Unit 006 Fire Detection and Alarm Systems

Outcome 4 Know the function and operation of wiring and common circuit configurations used in fire detection and alarm (FD&A) systems

Assessment criteria

The leaner can:

4.1 List typical cables employed in the critical signal path and the final mains supply to CIE

4.2 Describe the key features of the two grades of fire resisting cable described in 5389-1, including the makes and models commonly available

4.3 Describe the methods for avoiding the problems of induced noise (RFI/EMI) in system cables, and the function of the cables screen when used in a FD&A system

4.4 List methods for cable fixing, containment and termination for cable types employed in FD&A systems, including the use of junction boxes

Unit 006   Fire Detection and Alarm Systems

Outcome 5   Know typical power supplies used in fire detection and alarm (FD&A) systems

Assessment criteria

The leaner can:

5.1 Describe, in simple terms, the function of a power supply in the critical path in compliance with BS 5839

5.2 State the typical standby time and minimum alarm time for standby batteries in compliance with BS5839-1

Unit 006 Fire Detection and Alarm Systems

Outcome 6 Understand the basic principles of planning, specifying, quotations, auditing, commissioning, handover, corrective/preventative maintenance and administration of fire detection and alarm (FD&A) systems

Assessment criteria

The leaner can:

6.1 Explain the meaning of the following FD&A systems terminology

a Alarm receiving centre (ARC)
b Non-addressable detection system
c Addressable detection system
d Analogue fire detection system
e Mimic panel
f Repeater panel
g Networked systems
h User instructions
i Phased evaluation
j Staff alarm

6.2 State the purpose of commissioning

6.3 State the purpose and minimum size of a system and minimum period of a soak test in compliance with BS 5839

6.4 State the four certificates that should be provided to the user and who should sign them to satisfy the requirements of BS5839-1

6.5 State the maximum interval between periodic service visits and state typical reasons for shorter service intervals

6.6 State the main items that would require preventative maintenance at least once in a 12 month period for most types of FD&A systems

6.7 State the four categories of false alarm

6.8 State methods for limiting false alarms

6.9 Describe the main problems from repeated false alarms

6.10 State the likely consequences of no preventative maintenance

6.11 State the key points to be considered to design a simple system based on building plans and specification provided for a Cat L3 and L4 non addressable system

Unit 007/106 Integrated electronic security systems – Personnel alarm systems

Level: 2
UAN: R/600/1196
Credit value: 16

Unit aims

To provide a broad knowledge and understanding for surveyors and designers, Installation technicians, commissioning technicians and maintenance technicians for stand-alone personnel alarm systems

Learning outcomes

There are **six** learning outcomes to this unit. The learner will:

1 Be able to describe the electronic security industry and the role of stand-alone personnel alarm systems within it
2. Be able to describe the basic configuration of stand-alone personnel alarm system
3. Understand the basic principles and features of Electronic stand-alone personnel alarm systems
4. Understand the basic principles of survey and design
5. Understand the requirements of installing stand-alone personnel alarm systems
6. Understand how to commission and handover stand-alone personnel alarm systems
7. Understand how to Maintain the performance of stand-alone personnel alarm systems
8. Understand the basic principles of auditing any stand-alone personnel alarm system

Guided learning hours

It is recommended that **128** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Skills for Security (SSC).

Assessment

This unit will be assessed by:
- a GOLA online multiple choice examination
- a City & Guilds set, centre marked assignment

Unit 007/106 Integrated electronic security systems – Personnel alarm systems

Outcome 1   Be able to describe the electronic security industry and the role of stand-alone personnel alarm systems within it

Assessment criteria

The leaner can:

1.1 Describe how the electronic security systems industry protect life, property and premises

1.2 Explain the roles of advisory bodies, inspectorate bodies and associations including
-Home Office Scientific Development Branch (HOSDB)
-Association of Chief Police Officers (ACPO)
-National Security Inspectorate (NSI)
-Inspected Company of the National Security Inspectorate (ICON)
-Security Systems and Alarms Inspection Board (SSAIB)
-Security Industry Authority (SIA)
-British Security Industry Association (BSIA)
-Association of British Insurers (ABI),
-Local Authorities
-Data Protection Act
-Human Rights Act
-The Freedom of information Act
-The Information Commissioners Office
-The Disabled Living Foundation

1.3 State the six occupational disciplines as defined in the NOS suite relating to Electronic Security Systems

1.4 Explain how stand alone personnel alarm systems can be an integrated as part of an overall security system

1.5 Explain how stand-alone personnel alarm systems can be used with, intruder alarms, CCTV, access control and EAS systems to enhance customer security

1.6 Explain how stand-alone personnel alarm systems can be used in the following locations
a Retail outlets
b Immigration centres,
c Secure accommodation
d Prisons,
e Warden controlled and remote persons at risk
f Local authority monitoring
g Centres
h Mental health establishments
i Security personnel (static & beat patrol)
j Medical staff on call outs
k Cash-in-transit services
l High security premises (bank not printers, royal mint, nuclear power plants) and military establishments.

1.7 Explain how PD 6662, BS.EN. 50131 pt1, BS 50398 Health & safety at Work Act, BS 7671 IEE Wiring Regulations 17th edition, BSIA Guidance sheets and codes of practice including employers and customers impact upon any EAS installations

Unit 007/106 Integrated electronic security systems – Personnel alarm systems

Outcome 2 Be able to describe the basic configuration of stand-alone personnel alarm system

Assessment criteria

The leaner can:

2.1 Explain the function of the following basic components to a stand-alone personnel alarm system

a Hold up button
b Cabling,
c Radio or infra red transmitter
d Radio or infra red receiver
e Warning device and remote transmitting via networks
f Telephone lines or radio

2.2 Explain the purpose of an Arial antenna as a transmitting device and a receiving device

2.3 Explain why it is important to use shielded cables on wire free systems

2.4 Describe how the component parts of a stand alone personnel alarm systems interconnect

2.5 Explain in basic detail how the following systems operate

a Hard wired
b Radio or infra red
c GPS
d SMS messaging
e GPS alerts
f Mobile phone interconnections
g Pagers
h One & two way transmission
i Addressable systems,
j Central monitoring alarm receiving centres (local authority or private)

2.6 Explain why premises require zoned areas and how to avoid interference from zone to zone

Unit 007/106 Integrated electronic security systems – Personnel alarm systems

Outcome 3   Understand the basic principles and features of Electronic stand-alone personnel alarm systems

Assessment criteria

The leaner can:

3.1 Describe the principle operation of a stand-alone personnel alarm system and its primary function

3.2 Describe the additional functions available on more technically advanced systems

3.3 Explain why a stand-alone personnel alarm system might be preferable to one connected into an intruder alarm panel

3.4 Explain what a radio based systems is

3.5 Explain what an infra red transmitter system is

3.6 Explain the possible different users of a stand-alone personnel alarm system

3.7 Explain what a warden call system is

3.8 Explain how GPS based systems work

3.9 Describe the limitations or operating parameters of a radio stand-alone personnel alarm system

3.10 Describe the limitations or operating parameters of an infra red stand-alone personnel alarm system

3.11 Describe the limitations of a hard wired system

3.12 Explain a one way system and a two way communication system

3.13 Explain how a radio transmitter can be made "anti false alarm

3.14 Explain how a DOD (hold up button) can be made "anti false alarm" by using dual activated buttons

Unit 007/106   Integrated electronic security systems – Personnel alarm systems

Outcome 4   Understand the basic principles of survey and design

Assessment criteria

The leaner can:

4.1 Explain where to obtain accurate and up to date details for preparing system designs and specifications in relation to commercial, residential and government sites

4.2 Explain the importance of having accurate and up to date details of systems, sites and customer requirements
including use; occupancy; access; anticipated alterations to the site

4.3 Explain when to liaise with internal depts, architects, suppliers and main contractors to review drawings

4.4 Explain how the following legislation:

PD 6662
BS EN 50131
BS 7671
IEE Wiring regulations and codes of practice

impact upon the system to be installed

4.5 Explain how to read and interpret architectural and similar drawings and take appropriate measurements and record relevant details of review

4.6 Explain how to recognise factors that could affect system installation or operation, and how to record the details fully and accurately

4.7 Explain how the security requirements of customers would be met and why accurate and up to date details of systems and sites are required

4.8 List the information required to produce a site survey prior to the survey visit, the details needed for preparing system designs and specifications, and where the details would be obtained

4.9 List the activities required on a site visit to produce a specification for the system

Unit 007/106   Integrated electronic security systems – Personnel alarm systems

Outcome 5   Understand the requirements of installing stand-alone personnel alarm systems

Assessment criteria

The leaner can:

5.1 Describe how to relate physical locations for system cabling arrangements to technical documents (installation specifications, cable and wiring diagrams, architectural and similar drawings, configuration charts)

5.2 Explain the importance of pre-planning of cabling support and containment systems and anticipating potential problems

5.3 Explain the limits of installer's authority and responsibility, and how to get help when needed

5.4 Explain how Health & Safety & electrical safe working regulations relate to correct operation of hand and power tools, PP equipment, and access equipment, and the checks for safe operation and actions necessary to meet safety requirements

5.5 Describe the capabilities and limitation of the hand and power tools and equipment in use, and why it is important to use the correct tools and equipment

5.6 Explain the purpose of, drawings, specifications, method statements, risk assessment documents, commissioning forms, and on site records.

5.7 Describe how to relate physical locations for cabling, cable containment, and equipment arrangements to drawings, specifications and method statements explaining current regulations and codes of practice relating to installing cable practice

5.8 Explain how to measure typical cable and cable containments, allowing for bends and jointing, and minimising waste

5.9 Describe the purpose of the following cable containment systems: trunking, conduit, cable trays, cable baskets, cable ladders and how to select and use them

5.10 Describe how to fix equipment and cable containments to plaster and plaster board, brickwork, concrete, steel girders, service ducts, false ceilings and wood

5.11 Explain how to safely handle, cut, drill, join, assemble, de-burr and fix containments listed in 5.9

5.12 Explain the current regulations, standards and codes of practice relevant to installing, terminating and labelling cables, interface units and wires

5.13 Explain why it is important to comply with cable segregation requirements (for power and signalling)

5.14 Describe how to measure cable, and cable containments, allowing for bends and terminations, and minimising waste

5.15 Explain how to use multi meters, insulation testers, and RF meters to test cabling, detection

devices and equipment against their required operating performance and what to do if these requirements are not met

5.16 Explain why it is important to close all cable containment openings, and how to do this

5.17 Explain the importance of removing all unwanted items from sites after the installation is complete

5.18 Describe the house-keeping requirements at customer sites when installing equipment

5.19 Describe the current WEE regulations, Health & Safety and codes of practice relevant to handling waste or debris material

5.20 Explain why it is important to dispose of waste, debris and surplus material safely

5.21 Describe the methods of repairing typical building surfaces and the standard of finish required by customers or specifications

Unit 007/106 Integrated electronic security systems – Personnel alarm systems

Outcome 6 Understand how to commission and handover stand-alone personnel alarm systems

Assessment criteria

The leaner can:

6.1 Describe the information needed to complete, as fitted specification notes ,handover forms, customer acceptance forms, on site record cards and office records systems, in order to commission and handover a system

6.2 Explain and identify how the specification relates to the installation

6.3 Describe how to confirm from the drawings and specification, that systems and their performance meet the required operational specification

6.4 Describe the processes and procedures required to bring systems into operation, and why they must be applied, including completing commissioning documents

6.5 State what actions can be taken to minimise disruption to customers and third parties

6.6 Describe the action to be taken to deal with problems that arise during commissioning operations

6.7 Describe the operation and features of the commissioned systems to users (using the user's manual) particularly in respect of users' authority

6.8 Describe how to demonstrate the operation of systems to users in ways that encourage their confidence

6.9 Describe how to make sure users are competent to use systems, encourage them to seek clarification and give instructions and demonstrations in a logical and methodical manner

6.10 Explain how to discuss and negotiate work arrangements with customers to achieve mutual satisfaction

6.11 Explain any relevant legislation as applicable to a site and customer

6.12 Explain the customers responsibility in using, testing and maintaining the system

6.13 Explain how the customer and the appropriate personnel including security should react to system activation

Unit 007/106 Integrated electronic security systems – Personnel alarm systems

Outcome 7 Understand how to maintain the performance of stand-alone personnel alarm systems

Assessment criteria

The leaner can:

7.1 Explain the tests and preventative maintenance procedures relevant to the system being maintained, using on site records, log sheets, service visit forms, and what resistance, voltage and current readings are required to maintain system integrity

7.2 Describe the equipment being tested, including the expected results of tests, and how the test results are recorded in, on site record forms and service visit forms

7.3 Explain where an I.T. interface to customer is used, and the network infrastructure of the customers I.T Systems

7.4 Explain why it is important to calibrate test equipment

7.5 Explain the purpose of multi test meters, earth continuity testers an RF meters and how to interpret the results obtained

7.6 Explain the importance of British Standards regulations and codes of practice relevant to the operation, testing and corrective or preventative maintenance of systems

7.7 Explain why it is important to record accurate details of test results and maintenance visits, and make the results available to the relevant person/s, stating typical relevant persons

7.8 Describe how to discuss and agree work activities that are mutually acceptable between the customer and the maintenance engineer

7.9 Explain why, when carrying out adjustments and replacements to systems it is done with the minimum inconvenience to customers

7.10 Describe the adjustments and replacements a maintenance engineer is authorised to make, and how to carry them out

7.11 Explain why it is important to dispose of waste debris and surplus material safely and in line with the IEE/ WEE regulations and Health and Safety at Work Act

7.12 Explain how to communicate with customers effectively and maintain their goodwill

7.13 Describe your organisation's policy and procedures for working on a customer's premises

7.14 Explain how system performance can be affected by operational changes or deterioration in system components

7.15 Explain the information that must be given to customers or users about completed service activities

7.16 Explain the customer's responsibility for using, testing and maintaining the system

Unit 007/106 Integrated electronic security systems – Personnel alarm systems

Outcome 8 Understand the basic principles of auditing any stand-alone personnel alarm system

Assessment criteria

The leaner can:

8.1 Explain the purpose of ISO 9000 and British Standards as they relate to a stand-alone personnel alarm system

8.2 Explain the use of a specification, service records and on site records to conduct a technical audit

8.3 Explain the purpose of a technical audit

8.4 Explain how documents in 8.2 should be used to record any audit activity

8.5 Explain the procedure if a system fails an audit

8.6 Explain how to relate technical audits to systems' specifications and their operational requirements

8.7 Explain the types of corrective action to be taken to deal with non-compliances and how they are reported

8.8 state to whom audit findings should be reported, both verbally and in writing

Unit 008/105   Electronic article surveillance systems

Level: 2
UAN: Y/600/1197
Credit value: 17

Unit aims

To provide a broad knowledge and understanding for surveyors and designers, Installation technicians, commissioning technicians and maintenance technicians for Electronic Article Surveillance systems.

Learning outcomes

There are **six** learning outcomes to this unit. The learner will:

1. Be able to describe the electronic security industry and the role of Electronic Article Surveillance Systems (EAS) within it
2. Be able to describe the basic configuration of an Electronic Article Surveillance (EAS) system
3. Understand the basic principles and features of Electronic Article Surveillance (EAS) systems
4. Understand the basic principles of survey and design of Electronic Article Surveillance Systems (EAS)
5. Understand the requirements of installing any Electronic Article Surveillance (EAS) system
6. Understand how to commission and handover an Electronic Article Surveillance (EAS) system
7. Be able to maintain the performance of an Electronic Article Surveillance (EAS) system
8. Understand the basic principles of auditing an Electronic Article Surveillance (EAS) system

Guided learning hours

It is recommended that **139** hours should be allocated for this unit. This may be on a full-time or part-time basis.

Endorsement of the unit by a sector or other appropriate body

This unit is endorsed by Skills for Security (SSC).

Assessment

This unit will be assessed by:
* a GOLA online multiple choice examination
* a City & Guilds set, centre marked assignment

Unit 008/105   Electronic article surveillance systems

Outcome 1   Be able to describe the electronic security industry and the role of electronic article surveillance systems (EAS) within it

Assessment criteria

The leaner can:

8.1 Explain the purpose of ISO 9000 and British Standards as they relate to a stand-alone personnel alarm system

1.1 Describe how the electronic security systems industry protect life, property and premises

1.2 Explain the role of the following organisations

a National Inspection Board (NSI)
b Security Systems & Alarms Inspection Board (SSAIB)
c Security Industry Association (SIA)
d Home office
e Association of Chief Police Officers (ACPO)
f Retail Industry Consortium

1.3 Explain how EAS systems are used for anti – theft alarms and retail shrinkage

1.4 Explain how an EAS system can be integrated with the following to enhance a customer's security

a Intruder alarm systems
b Access control
c CCTV
d Integrated systems – Stand alone personnel alarm
systems

1.5 Describe how EAS systems can be used in the following locations

a Mental health and secure medical accommodation
b Research establishments
c Military sites
d Immigration centres
e Libraries
f IT centres
g Childcare nurseries
h Museums
i Maternity suites
j Retail outlets

1.6 Explain how PD 6662, BS.EN. 50131 pt1, Health & safety at Work Act, BS 7671 IEE Wiring Regulations
17th edition, BSIA Guidance sheets, and any codes of practice including your employers and customers impacts upon EAS installations

Unit 008/105 Electronic article surveillance systems

Outcome 2 Be able to describe the basic configuration of Electronic Article Surveillance (EAS) system

Assessment criteria

The leaner can:

2.1 Explain the following components in an EAS system

a Tags
b Transmitter Arial
c Power supply
d Detach devices
e Scan-out reader

2.2 Explain the operating principle of a soft and hard tag

2.3 Explain the purpose of an Ariel or antenna

2.4 Explain why it is important to use shielded cables from control equipment to door exit aerials

2.5 Describe the different sounders and warning devices which follow a tag activation

2.6 Describe the different methods a remote signal can be used to alert the appropriate personnel of an activation

2.7 Describe how the components interconnect

2.8 List the types of tag which are currently available in the UK

2.9 Explain how tags are used for different purposes and products

2.10 Explain why different tags are used

2.11 Explain how physical de-activators work

2.12 Explain how electronic de-activators work

Unit 008/105 Electronic article surveillance systems

Outcome 3 Understand the basic principles and features of Electronic Article Surveillance (EAS) systems

Assessment criteria

The leaner can:

3.1 Describe the prime technology application of a Radio Frequency EAS system

3.2 Describe the prime technology application of an Electromagnetic EAS system

3.3 Describe the limitations or operating parameters of a hard tag, and soft tag system

3.4 Explain why the customer may specify soft tags or hard tags

3.5 Describe briefly how an EAS Antenna detects a tag which passes within its operating range

3.6 Describe briefly the technology behind how a Radio Frequency tag works

3.7 Explain the operating frequency of RF tags

3.8 Describe briefly the prime technology of Electromagnetic tag detection

3.9 Explain the operating frequency of E/M tags

3.10 Describe the limitations of a tag system through shielding the tag and how these can be overcome

3.11 Describe how powerful radio signals can interfere with an EAS system and how these can be attenuated

3.12 Explain how the different tag removers work, deactivators, tag removal – detacher, Detacher (Physical) counter top, golf ball, lock, lanyard, clutch, electronic reader

Unit 008/105   Electronic article surveillance systems

Outcome 4   Understand the basic principles of survey and design of electronic article surveillance systems (EAS)

Assessment criteria

The leaner can:

4.1 Explain where to obtain accurate and up to date information needed for producing system designs and specifications

4.2 Describe the details required for producing system designs and specifications, and where to get them

4.3 Explain when it is necessary to liaise with other people to review drawings

4.4 Explain how to read and interpret architectural and similar drawings and take appropriate measurements and record relevant details of review

4.5 Explain how to recognise factors that could affect system installation or operation, and how to record the
details fully and accurately

4.6 List the activities required on a site visit to produce a specification for the system

Unit 008/105 Electronic article surveillance systems

Outcome 5   Understand the requirements of installing any Electronic Article Surveillance (EAS) system

Assessment criteria

The leaner can:

5.1 Describe how to relate physical locations for system cabling arrangements: trunking, conduit, cable trays, cable baskets and cable ladders, to technical documents (installation specifications, cable and wiring diagrams, architectural and similar drawings, configuration charts)

5.2 Explain why it is important to pre-plan the installation of cabling support and containment systems, anticipating potential problems

5.3 Explain the limits of an installer's authority and responsibility, and how to get obtain help when needed

5.4 Explain why it is important to check the safe and correct operation of tools, power tools and equipment,
how to do this and how to deal with any that do not meet the required standard of safety

5.5 Describe the capabilities and limitation of the tools, power tools, and equipment that you use, and why it is
important to use the correct tools and equipment

5.6 Explain the purpose of drawings, specifications, manufacturer's booklets, method statements, risk
assessments, needed to install systems

5.7 Describe how to relate physical locations for equipment, and cable containment arrangements to technical documents eg PD 6662, BS EN 50131, BS 7671 IEE wiring regs 17th edition and current regulations and codes of practice relevant to installing cable containments

5.8 Explain how to measure typical cable containments routes, allowing for bends and jointing, and minimising
waste

5.9 Describe the different types of cable containment fixing devices and how to select and use them

5.10 Describe the properties of typical building materials and how to fix containments to them safely and securely

5.11 Explain how to safely handle, cut, drill, join, assemble, de-burr and fix containments

5.12 Explain how to relate physical locations for cables, wiring and termination points to technical documents
(installation specifications, cable and wiring diagrams, architectural and similar drawings, configuration
charts)

5.13 Explain the current regulations and codes of practice relevant to installing, terminating and labelling cables and wires

5.14 Explain why it is important to comply with segregation requirements (for power and signalling)

5.15 Describe how to measure cable and wires, allowing for bends and terminating, and minimising waste

5.16 Describe the properties, handling requirements, and methods of securing the different types of cables and wires used in systems

5.17 Explain how to test cables and wires against their required operating performance and what to do when
these requirements are not met

5.18 Explain why it is important to close all cable containment openings, and how to do this

5.19 State why it is important to remove all unwanted items from sites after installation of cabling is complete

5.20 Describe the house-keeping requirements at the sites where cabling is installed

5.21 Describe the current regulations and codes of practice relevant to handling waste or debris material

5.22 Explain why it is important to dispose of waste, debris and surplus material safely and in line with the
relevant regulations and codes of practice

5.23 Describe the methods of repairing typical building surfaces and the standard of finish required (by
customers or specifications)

Unit 008/105   Electronic article surveillance systems

Outcome 6   Understand how to commission and handover an Electronic Article Surveillance (EAS) system

Assessment criteria

The leaner can:

6.1 Describe what information is needed to confirm systems are ready to be commissioned, and from where
this information is obtained

6.2 Explain and identify how a specification relates to the installation

6.3 Describe how to confirm that systems and their performance meet the required operational specification for the operation of the systems being commissioned

6.4 Describe the processes and procedures used to bring systems into operation, and why they must be applied, including completing commissioning documents

6.5 State the actions that can be taken to minimise disruption to customers and third parties

6.6 Describe the action that can be taken to deal with problems that arise during commissioning operations

6.7 Describe the operation and features of the systems that you commission, and how to explain them to users, particularly in respect of users' authority

6.8 Describe how to demonstrate the operation of systems to users in ways that encourage their confidence

6.9 Describe how to make sure users are competent to use systems, how to encourage users to clarify
anything and how to give instructions and demonstrations in a logical and methodical manner

6.10 Explain how to discuss and negotiate work arrangements with customers to achieve mutual satisfaction

6.11 Explain any relevant legislation as applicable to a site and customer

6.12 Explain the customers responsibly in using, testing and maintaining the system

6.13 Explain how the customer and the appropriate personnel including security should react to system
activation

Unit 008/105   Electronic article surveillance systems
Outcome 7   Be able to maintain the performance of an Electronic Article Surveillance (EAS) system

Assessment criteria

The leaner can:

7.1 Explain the tests and maintenance procedures relevant to the systems and equipment to be maintained

7.2 Describe the equipment being tested, including the expected results of the tests being carried out

7.3 Explain where an I.T. interface to customer is used, and the network infrastructure of the customers I.T
Systems

7.4 Explain why it is important to calibrate test equipment

7.5 Explain the purpose of relevant test equipment and how it is used to interpret the results

7.6 State the current regulations and codes of practice relevant to the operation, testing and maintenance of systems

7.7 Explain why it is important to record accurate details of test results and maintenance visits, and make them available to the relevant person/s

7.8 Describe how to discuss and agree work activities that are mutually acceptable between the customer and
the maintenance engineer

7.9 Explain why, when carrying out adjustments and replacements to systems it is done with the minimum
inconvenience to customers

7.10 Describe what adjustments and replacements a maintenance engineer is authorised to make, and how to carry them out

7.11 Explain why it is important to dispose of waste debris and surplus material safely and in line with the
relevant regulations and codes of practice

7.12 Explain how to communicate with customers effectively and maintain their goodwill

7.13 Describe your organisation's policy and procedures relevant to working at customer's premises

7.14 Explain how system performance can be affected by operational changes or deterioration in system components

7.15 Explain what information you must give customers or users about service activities that have been carried out

7.16 Explain the customer's responsibility for using, testing and maintaining the system

Unit 008/105   Electronic article surveillance systems

Outcome 8   Understand the basic principles of auditing an Electronic Article Surveillance (EAS) system

Assessment criteria

The leaner can:

8.1 Explain what information is required in order to conduct a technical audit

8.2 Explain the purpose of a technical audit

8.3 Explain where to find the criteria to judge whether a system complies

8.4 Explain what documentation is needed, what information should be recorded and why the information should be accurate

8.5 Explain the procedure if a systems fails an audit

8.6 Explain how to relate technical audits to systems' specifications and their operational requirements

8.7 Explain what documentation and procedures are necessary when reporting a technical audit

8.8 Explain what types of corrective action can be taken to deal with non-compliances and how these should be reported

8.9 Explain to whom to report the audit findings, both verbally and in writing

4 Assessment

4.1 Summary of assessment methods

For this qualification, candidates will be required to complete the following assessments:

An online multiple choice examination for the following units

| 001 | Electrical and electrical principles of electro technology |
| 002 | Working effectively and safely in electro-technical environments |

and an additional multiple choice examination for the learners chosen pathway

003	Access control systems
004	Intruder alarm systems
005	Closed Circuit Television (CCTV) System
006	Fire detection and alarm systems
007/106	Integrated electronic security systems – Personnel alarm systems
008/105	Electronic article surveillance systems

and a City & Guilds set, centre marked assignments for the learners chosen pathway

003	Access control systems
004	Intruder alarm systems
005	Closed Circuit Television (CCTV) System
006	Fire detection and alarm systems
007/106	Integrated electronic security systems – Personnel alarm systems
008/105	Electronic article surveillance systems

4.2 Assignments

The assignments for Units 003 to 008/105 are available in a separate assignment handbook

5   Course design and delivery
5.1   Initial assessment and induction

Centres will need to make an initial assessment of each candidate prior to the start of their programme to ensure they are entered for an appropriate type and level of qualification.

The initial assessment should identify:

- any specific training needs the candidate has, and the support and guidance they may require when working towards their qualification. This is sometimes referred to as diagnostic testing.
- any units the candidate has already completed, or credit they have accumulated which is relevant to the qualification they are about to begin.

City & Guilds recommends that centres provide an induction programme to ensure the candidate fully understands the requirements of the qualification they will work towards, their responsibilities as a candidate, and the responsibilities of the centre. It may be helpful to record the information on a learning contract.

Further guidance about initial assessment and induction, as well as a learning contract that centres may use, are available on the City & Guilds website at **www.cityandguilds.com**

5   Course design and delivery

5.2 Recommended delivery strategies

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Centres may design course programmes of study in any way which:
* best meets the needs and capabilities of their candidates
* satisfies the requirements of the qualification

In particular, staff should consider the skills and knowledge related to the national occupational standards.

City & Guilds recommends that centres address the wider curriculum, where appropriate, when designing and delivering the course. Centres should also consider links to the National Occupational Standards, Key/Core Skills and other related qualifications.

Centres may wish to include topics as part of the course programme which will not be assessed through the qualification.

Appendix 1 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on **www.cityandguilds.com**.

Centre Guide – Delivering International Qualifications contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification. Specifically, the document includes sections on:

- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Providing City & Guilds qualifications – a guide to centre and qualification approval contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification. Specifically, the document includes sections on:
- The centre and qualification approval process and forms
- Assessment, verification and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Frequently asked questions.

Ensuring quality contains updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document contains information on:
- Management systems
- Maintaining records
- Assessment
- Internal verification and quality assurance
- External verification.

Access to Assessment & Qualifications provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **centre homepage** section of the City & Guilds website also contains useful information such on such things as:

- ***Walled Garden***
  Find out how to register and certificate candidates on line
- ***Events***
  Contains dates and information on the latest Centre events
- ***Online assessment***
  Contains information on how to register for GOLA assessments.

- ***Walled Garden***
  Find out how to register and certificate candidates on line

- ***Events***
  Contains dates and information on the latest Centre events

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Useful contacts

Type	Contact	Query
UK learners	T: +44 (0)20 7294 2800 E: learnersupport@cityandguilds.com	• General qualification information
International learners	T: +44 (0)20 7294 2885 F: +44 (0)20 7294 2413 E: intcg@cityandguilds.com	• General qualification information
Centres	T: +44 (0)20 7294 2787 F: +44 (0)20 7294 2413 E: centresupport@cityandguilds.com	• Exam entries • Registrations/enrolment • Certificates • Invoices • Missing or late exam materials • Nominal roll reports • Results
Single subject qualifications	T: +44 (0)20 7294 8080 F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: singlesubjects@cityandguilds.com	• Exam entries • Results • Certification • Missing or late exam materials • Incorrect exam papers • Forms request (BB, results entry) • Exam date and time change
International awards	T: +44 (0)20 7294 2885 F: +44 (0)20 7294 2413 E: intops@cityandguilds.com	• Results • Entries • Enrolments • Invoices • Missing or late exam materials • Nominal roll reports
Walled Garden	T: +44 (0)20 7294 2840 F: +44 (0)20 7294 2405 E: walledgarden@cityandguilds.com	• Re-issue of password or username • Technical problems • Entries • Results • GOLA • Navigation • User/menu option problems
Employer	T: +44 (0)121 503 8993 E: business_unit@cityandguilds.com	• Employer solutions • Mapping • Accreditation • Development Skills • Consultancy
Publications	T: +44 (0)20 7294 2850 F: +44 (0)20 7294 3387	• Logbooks • Centre documents • Forms • Free literature

If you have a complaint, or any suggestions for improvement about any of the services that City & Guilds provides, email: **feedbackandcomplaints@cityandguilds.com**