

Level 2 NVQ Diploma in Installing and Servicing Signal Reception Systems in Single Dwelling Units (2363)

February 2018 Version 1.2



Qualification at a glance

Subject area	Installing and servicing signal reception systems in single dwelling units
City & Guilds number	2363
Age group approved	16+
Assessment	Portfolio, Assignment, Online multiple choice test.
Fast track	Available
Support materials	Centre handbook Candidate logbook
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	GLH	TQT	City & Guilds number	Accreditation number
Level 2 NVQ Diploma in Installing and servicing signal reception systems in single dwelling units	400	510	2363-02 2363-92 (unit route)	600/5222/ 3

Version and date	Change detail	Section
1.1 January 2018	Addition of unit route	Qualification at a glance
1.1 January 2018	Further detail on assessment methods for unit 301	Assessment and Unit 301
1.2 February 2018	Added TQT and GLH details Deleted QCF	Qualification at a Glance, Structure Appendix



Contents

1	Introduction	4
	Structure	5
2	Centre requirements	7
	Approval	7
	Resource requirements	7
	Candidate entry requirements	7
3	Delivering the qualification	8
	Initial assessment and induction	8
	Support materials	8
	Recording documents	8
4	Assessment	9
	Assessment of the qualification	9
	Assessment strategy	9
5	Units	11
Unit 201	Understand the procedures and practices for organising and co-ordinating the work environment: installing signal reception systems	12
Unit 211	Apply procedures for organising and coordinating the work environment- installing signal reception systems	18
Unit 202	Understand the principles, practices, procedures and legislation for installing and servicing signal reception systems	25
Unit 212	Install and service signal reception systems	30
Unit 203	Understand the principles, practices and legislation for carrying out preventative maintenance on signal reception systems	35
Unit 213	Carry out preventative maintenance procedures on signal reception systems	37
Unit 204	Understand the electrical and electronic principles associated with the installation and servicing of signal reception systems	40
Unit 301	Understanding health and safety legislation, practices and procedures (installing and maintaining electrotechnical systems and equipment)	44
Unit 311	Applying Health and Safety legislation and working practices (installing and maintaining electrotechnical systems and equipment)	49
Unit 302	Understanding environmental legislation, working practices and the principles of environmental technology systems	52
Unit 312	Applying environmental legislation, working practices and the principles of environmental technology systems	54
Appendix 1	Sources of general information	57



1 Introduction

This document tells you what you need to do to deliver the qualification:

Area	Description
Who is the qualification for?	<p>This qualification is intended for those who are employed in the digital aerial installation sector, installing digital aerial systems in single dwellings.</p> <p>This qualification is recognised by the Registered Digital Installer – Licensing Body as being valid for the purposes of registering as a licenced installer on their register.</p>
What does the qualification cover?	<p>This qualification covers the practical skills and underpinning knowledge involved with the installation of single dwelling digital aerial systems.</p>
Who did we develop the qualification with?	<p>The units that comprise this qualification were developed by Summit Skills.</p>
What opportunities for progression are there?	<p>There are a wide variety of qualifications which learners can progress onto, once they have successfully completed this qualification. For further information please visit the City and Guilds website at www.cityandguilds.com.</p>

Structure

To achieve the Level 2 NVQ Diploma in Installing and Servicing Signal Reception Systems in Single Dwelling Units, learners must achieve 51 credits from the mandatory units. Learners may achieve a further 7 credits from the elective units however these credits will not count towards the overall qualification.

Level 2 NVQ Diploma in installing and servicing signal reception systems in single dwelling units

Unit accreditation number	City & Guilds unit number	Unit title	Credit value
Mandatory			
M/503/5815	201	Understand the procedures and practices for organising and co-ordinating the work environment: installing signal reception systems	6
L/503/5840	211	Apply procedures for organising and coordinating the work environment- installing signal reception systems	3
L/503/5868	202	Understand the principles, practices, procedures and legislation for installing and servicing signal reception systems	16
L/503/5031	212	Install and service signal reception systems	3
J/503/5867	204	Understand the electrical and electronic principles associated with the installation and servicing of signal reception systems	7
H/602/2523	301	Understanding Health and Safety legislation, practices and procedures (Installing and maintaining electrotechnical systems and equipment)	6
R/602/2596	311	Applying health and safety legislation and working practices (installing and maintaining electrotechnical systems and equipment)	3
M/602/2525	302	Understanding environmental legislation, working practices and the principles of environmental technology systems	4
H/602/2599	312	Applying environmental legislation, working practices and the principles of environmental technology systems	3

Elective

L/503/5028	203	Understand the principles, practices and legislation for carrying out preventative maintenance on signal reception systems	5
R/503/5869	213	Carry out preventative maintenance procedures on signal reception systems	2

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 NVQ Diploma in Installing and servicing signal reception systems in single dwelling units	400	510



2 Centre requirements

Approval

If your Centre is approved to offer the qualification Level 2 Certificate in Digital Television Aerial Installation (2218) you will receive automatic approval to offer the Level 2 NVQ Diploma in Installing and Servicing Signal Reception Systems in Single Dwelling Units (2363).

To offer this qualification, new centres will need to gain both centre and qualification approval. Please refer to the *Centre Manual - Supporting Customer Excellence* for further information.

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

Resource requirements

Centre staffing

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

- be occupationally competent or technically knowledgeable in the area for which they are delivering training and/or have experience of providing training. This knowledge must be to the same level as the training being delivered
- have recent relevant experience in the specific area they will be assessing
- have credible experience of providing training.

Centre staff may undertake more than one role, eg tutor and assessor or internal verifier, but cannot internally verify their own assessments.

Assessors and internal verifiers

Centre staff should hold, or be working towards, the relevant Assessor/Verifier (A/V) units for their role in delivering, assessing and verifying this qualification, or meet the relevant experience requirements outlined above.

Continuing professional development (CPD)

Centres must support their staff to ensure that they have current knowledge of the occupational area, that delivery, mentoring, training, assessment and verification is in line with best practice, and that it takes account of any national or legislative developments.

Candidate entry requirements

City & Guilds does not set entry requirements for this qualification. However, centres must ensure that candidates have the potential and opportunity to gain the qualification successfully.

Age restrictions

There is no age restriction for this qualification unless this is a legal requirement of the process or the environment.



3 Delivering the qualification

Initial assessment and induction

An initial assessment of each candidate should be made before the start of their programme to identify:

- if the candidate has any specific training needs,
- support and guidance they may need when working towards their qualification.
- any units they have already completed, or credit they have accumulated which is relevant to the qualification.
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the candidate fully understands the requirements of the qualification, their responsibilities as a candidate, and the responsibilities of the centre. This information can be recorded on a learning contract.

Support materials

The following resources are available for this qualification:

Description	How to access
Assignments	www.cityandguilds.com
Candidate logbook	www.cityandguilds.com

Recording documents

Candidates and centres may decide to use a paper-based or electronic method of recording evidence.

City & Guilds endorses several ePortfolio systems, including our own, **Learning Assistant**, an easy-to-use and secure online tool to support and evidence learners' progress towards achieving qualifications. Further details are available at: www.cityandguilds.com/eportfolios.

City & Guilds has developed a set of recording forms specifically for this qualification; *Level 2 NVQ Diploma in Installing and Servicing Signal Reception Systems in Single Dwelling Units – Candidate Logbook*. It is available from the City & Guilds website or can be ordered from Publications.

Although new centres are expected to use these forms, centres may devise or customise alternative forms, which must be approved for use by the external verifier, before they are used by candidates and assessors at the centre.



4 Assessment

Assessment of the qualification

Candidates must:

- successfully complete the assessments as per the table below.

City & Guilds has written the following assessments to use with this qualification:

- online multiple choice tests, using e-volve
- assignments which can be found on the City & Guilds website

Assessment strategy

Simulation is not allowed for this qualification.

All evidence for performance units should be demonstrated in a realistic working environment. (RWE)

Level 2 NVQ Diploma in Installing and Servicing Signal Reception Systems in Single Dwellings

Unit Number	Unit Title	Assessment method
201	Understand the procedures and practices for organising and co-ordinating the work environment: Installing Signal Reception Systems (Level 3)	Assignment
211	Apply procedures for organising and coordinating the work environment- Installing Signal reception systems (Level 3)	Portfolio
202	Understand the principles, practices, procedures and legislation for installing and servicing signal reception systems (Level 2)	Assignment
212	Install and service signal reception systems (Level 2)	Portfolio
203	Understand the principles, practices and legislation for carrying out preventative maintenance on signal reception systems (Level 2)	Centre devised assignment
213	Carry out preventative maintenance procedures on Signal Reception Systems (Level 2)	Portfolio
204	Understand the electrical and electronic principles associated with the installation and servicing of signal reception systems (Level 2)	Online multiple choice test
301	Understanding Health and Safety legislation, practices and procedures -Installing and maintaining electrotechnical systems and equipment (Level 3)	Online multiple choice test (301) Assignment (399)
311	Applying Health and Safety legislation and working practices -Installing and Maintaining Electrotechnical Systems and Equipment (Level 3)	Portfolio
302	Understanding environmental legislation, working practices and the principles of environmental technology systems (Level 3)	Assignment
312	Applying environmental legislation, working practices and the principles of environmental technology systems (Level 3)	Portfolio



5 Units

Availability of units

The following units can also be obtained from The Register of Regulated Qualifications: <http://register.ofqual.gov.uk/Unit>

Structure of units

These units each have the following:

- City & Guilds reference number
- unit accreditation number
- title
- level
- credit value

- relationship to NOS, other qualifications and frameworks
- endorsement by a sector or other appropriate body
- information on assessment
- learning outcomes which are comprised of a number of assessment criteria

Unit 201

Understand the procedures and practices for organising and co-ordinating the work environment: installing signal reception systems

UAN:	M/503/5815
Level:	Level 3
Credit value:	6
GLH:	56
Relationship to NOS:	This unit is linked to EESK0.1.
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Understand the procedural requirements that apply when organising and coordinating the work environment
Assessment criteria
The learner can: 1.1 state the specific company signal reception system products and services that are offered and their exact costing structures, including: <ul style="list-style-type: none">• equipment price• component and accessory price• labour charges• VAT charges• supplements and discounts which may apply• other associated costs 1.2 identify appropriate procedures for presenting total costs to customers and specify at which point in the work process this should be agreed 1.3 summarise the: <ul style="list-style-type: none">• specific safety precautions that should be taken when transporting signal reception systems products and equipment• company policies and procedures which cover the safe transportation of workers, products and equipment 1.4 confirm the correct waste disposal procedures that should be followed after unpacking of signal reception system equipment and components

1.5	summarise the company documentation and paperwork procedures which should be followed when: <ul style="list-style-type: none"> transporting signal reception system products and equipment collecting/processing payments for the installation of signal reception systems providing technical and functional information relating to the installation of signal reception systems
1.6	state the extent of their authority in relation to the: <ul style="list-style-type: none"> transportation of signal reception system products and equipment collecting/processing payments for the installation of signal reception systems provision of technical and functional information relating to signal reception system installations identification of situations when it may be necessary to seek agreement or permission from others.

Learning outcome	
The learner will:	
2	Understand the procedures and techniques which reflect the principles of effective customer care
Assessment criteria	
The learner can:	
2.1	identify common types of disagreement that may occur over costs for signal reception system installations
2.2	state the principles of effective customer care and explain the methods for dealing with any disagreements that may occur over costs for signal reception system installations
2.3	state how principles of effective customer care should be applied to processes for the transportation and unpacking of signal reception system products and equipment.

Learning outcome	
The learner will:	
3	Understand how sales techniques and procedures can be used to promote organisation's products and services
Assessment criteria	
The learner can:	
3.1	summarise the sales techniques and procedures which it may be appropriate to use while promoting the organisation's products and services
3.2	identify situations when it may be advantageous to pursue the promotion of the organisation's products and services.

Learning outcome
The learner will: 4 Understand the safe and secure methods for collecting and processing payments for the installation of signal reception systems
Assessment criteria
The learner can: 4.1 summarise the different methods of payment that may be appropriate for signal reception system installation work, including: <ul style="list-style-type: none"> • cash transactions • credit card payments • debit card/chip and pin payments • BACS transfers • cheque payments 4.2 state the security methods that must be applied when processing the following transaction types: <ul style="list-style-type: none"> • cash transactions • credit card payments • debit card/chip and pin payments • BACS transfers • cheque payments 4.3 specify the security measures that should be taken in situations when it is necessary to handle and transport cash.

Learning outcome
The learner will: 5 Understand the safe methods for transporting signal reception system products and equipment
Assessment criteria
The learner can: 5.1 specify the types of packaging, protection and stowage techniques for specific signal reception system products and equipment, including: <ul style="list-style-type: none"> • antenna (aerials and satellite dishes) • amplifiers (including mast head amplifiers) • brackets • signal receiver equipment/boxes • splitters • outlets • filters • cables 5.2 identify appropriate methods for restricting the movement and ensuring the security of signal reception system products and equipment during transit 5.3 state the damage that could occur during transit if signal reception system products and equipment are packed too closely together without adequate protection.

Learning outcome
The learner will: 6 Understand the methods and techniques which should be used to ensure the safe loading and unloading of signal reception system products and equipment
Assessment criteria
The learner can: 6.1 state the main principles of safe manual handling as it applies to the loading and unloading of signal reception system products and equipment 6.2 identify and lifting and handling aids which it may be appropriate to use for the loading and unloading signal reception system products and equipment.

Learning outcome
The learner will: 7 Understand the types of technical and functional information that is available for signal reception system work activities
Assessment criteria
The learner can: 7.1 specify sources of technical and functional information which apply to signal reception systems, including: <ul style="list-style-type: none"> • manufacturer information • supplier information • information from their employing organisation • specifications, drawings and diagrams • compliance certificates and test schedules 7.2 identify technical and functional information that is provided to determine its implications for the operation of equipment and components 7.3 describe the work site requirements in terms of: <ul style="list-style-type: none"> • services provision • ventilation provision • waste disposal procedures 7.4 summarise signal reception system, product or equipment: <ul style="list-style-type: none"> • operation • controls • settings • adjustments 7.5 identify alternative systems or equipment that could be more appropriate to the relevant persons needs.

Learning outcome
The learner will: 8 Understand the procedures for supplying technical and functional information to relevant people
Assessment criteria
The learner can: 8.1 state the limits of their responsibility for supplying technical and functional information 8.2 specify organisational policies/procedures for the handover and demonstration of signal reception systems, products and equipment, including requirements for confirming and recording handover 8.3 identify situations which require the provision of written technical and functional information 8.4 explain the importance of ensuring that: <ul style="list-style-type: none"> • information provided is accurate and complete • information is provided clearly, courteously and professionally • copies of information provided are retained 8.5 state the methods for checking that relevant persons have an adequate understanding of the technical and non-technical information provided, including appropriate health and safety information.

Learning outcome
The learner will: 9 Understand the procedures for ensuring that effective working relationships are maintained during signal reception system work activities
Assessment criteria
The learner can: 9.1 state the appropriate legislation, regulations and guidelines/codes of practice which relate to working with others in terms of: <ul style="list-style-type: none"> • health and safety • data protection • equal opportunities • effective customer care 9.2 identify the principles, importance and ways of establishing good working relationships with relevant people, including measures to: <ul style="list-style-type: none"> • maintain productivity • maintain morale • present a positive company image (standards of appearance and behaviour) 9.3 identify methods for communicating with others in a clear, polite and confident way, particularly when: <ul style="list-style-type: none"> • considering and accepting the views and opinions of others • responding to those with: <ul style="list-style-type: none"> - physical disabilities - learning difficulties - language differences (including dialects/accents)

- 9.4 state the customer's rights as laid out in contractual agreements and specify how to deal with any problems relating to this that could have an adverse affect on relationships
- 9.5 specify the types of job information that may be required by others in the workplace and state the methods for confirming that communications have been understood, including:
- oral methods of communication
 - written methods of communication (notes, memos, emails).

Unit 211

Apply procedures for organising and coordinating the work environment- installing signal reception systems

UAN:	L/503/5840
Level:	Level 3
Credit value:	3
GLH:	10
Relationship to NOS:	This unit is linked to EESPO.1.
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Apply appropriate procedures when organising and coordinating the work environment
Assessment criteria
The learner can: 1.1 demonstrate procedures for performing calculations relating to the signal reception system products and services that are offered, including: <ul style="list-style-type: none">• equipment price• component and accessory price• labour charges• VAT charges• supplements and discounts which may apply• other associated costs 1.2 demonstrate procedures for presenting total costs to customers and specify at which point in the work process this should be agreed 1.3 demonstrate the specific safety precautions to be taken when transporting signal reception systems products and equipment in accordance with company policies and procedures 1.4 apply correct waste disposal procedures after unpacking of signal reception system equipment and components 1.5 apply appropriate paperwork and recording procedures when: <ul style="list-style-type: none">• transporting signal reception system products and equipment• collecting/processing payments for the installation of signal reception systems• providing technical and functional information relating to the installation of signal reception systems

1.6	perform actions in accordance with the extent of their authority in relation to the: <ul style="list-style-type: none"> • transportation of signal reception system products and equipment • collecting/processing payments for the installation of signal reception systems • provision of technical and functional information relating to signal reception system installations • identification of situations when it may be necessary to seek agreement or permission from others
-----	--

Learning outcome	
The learner will:	
2	Apply work practices and procedures which will ensure effective working with others
Assessment criteria	
The learner can:	
2.1	develop and maintain productive working relationships with relevant people, including: <ul style="list-style-type: none"> • co-workers • customers • supervisory staff • other tradespersons
2.2	identify and apply methods for dealing with any disagreements which occur in the workplace, in an amicable and constructive way
2.3	use appropriate communication methods to confirm the needs and expectations of: <ul style="list-style-type: none"> • co-workers • customers
2.4	project a positive attitude towards work and greet others in a way which makes them feel valued and respected
2.5	use appropriate communication methods to seek assistance from others in a polite and courteous way without causing undue disruption to work activities
2.6	apply effective team working methods and procedures when necessary, by: <ul style="list-style-type: none"> • co-operating with colleagues • using appropriate methods of communication

Learning outcome	
The learner will:	
3	Apply work practices and procedures which comply with company requirements for promoting effective working relationships
Assessment criteria	
The learner can:	
3.1	demonstrate how to meet the employing organisation's standards for appearance and behaviour in the workplace
3.2	identify any situations which could potentially cause problems in the workplace and promptly report/seek solutions from the appropriate responsible person.

Learning outcome
The learner will: 4 Apply work methods and procedures to ensure that relevant technical and functional information is provided and shared with relevant persons at appropriate times
Assessment criteria
The learner can: 4.1 identify relevant people (customers, co-workers, supervisors) who require technical and functional information, including: <ul style="list-style-type: none"> • safety information • isolation procedures for products and equipment in emergency situations • appropriate contact details for further advice or help 4.2 identify and obtain technical and functional information that is required by relevant persons 4.3 confirm that supplied signal reception products and equipment are correct in accordance with job specifications and customer expectations 4.4 demonstrate signal reception system handover procedures to include: <ul style="list-style-type: none"> • explanation and demonstration of system operation to the customer • confirmation that the customer can operate the system and is aware of any appropriate health and safety information • identification of any unusual system, equipment or component features • confirmation that the signal reception system and equipment is in a satisfactory condition 4.5 use suitable methods of communication, at appropriate times to keep others informed about work plans or activities 4.6 respond promptly and effectively to requests for job information from relevant people 4.7 use appropriate methods to refer requests for information to appropriate other persons when requests for assistance fall outside their area of responsibility.

Learning outcome
The learner will: 5 Demonstrate compliance with appropriate procedural requirements when promoting organisational products and services
Assessment criteria
The learner can: 5.1 work safely and courteously at all times when collecting and processing payments for signal reception systems 5.2 identify appropriate people whom it may be necessary to inform in case of difficulties relating to the collecting and processing of payments for signal reception systems.

Learning outcome

The learner will:

- 6 Apply techniques to discuss and explain the benefits of signal reception system related products and services

Assessment criteria

The learner can:

- 6.1 demonstrate the principles of effective customer care and explain the methods for dealing with any disagreements that may occur over costs for signal reception system installations
- 6.2 identify the exact nature of the service that is required by the customer, in relation to the installation of signal reception systems
- 6.3 use appropriate calculation methods to correctly establish the price of the services required by the customer, taking into account elements such as:
- equipment price
 - component and accessory price
 - labour charges
 - VAT charges
 - supplements and discounts which may apply
 - other associated costs
- 6.4 use communication and negotiation skills, appropriate to their level of responsibility, to agree the price for the services to be provided with the customer.

Learning outcome

The learner will:

- 7 Apply appropriate techniques and procedures to promote organisation's products and services

Assessment criteria

The learner can:

- 7.1 demonstrate appropriate techniques and procedures for promoting the organisation's products and services by:
- obtaining suitable technical information to satisfy the customer
 - ensuring that technical requirements are understood by the customer
 - accurately conveying to the customer the advantages of the product/service.

Learning outcome
The learner will: 8 Apply safe and secure methods for collecting and processing payments
Assessment criteria
The learner can: 8.1 demonstrate methods for processing the following types of transaction securely: <ul style="list-style-type: none"> • cash transactions • credit card payments • debit card/chip and pin payments • BACS transfers • cheque payments 8.2 apply procedures to securely obtain and process payments for signal reception systems through completion of: <ul style="list-style-type: none"> • cash transactions • credit card payments • debit card/chip and pin payments • BACS transfers • cheque payments 8.3 record payment details using appropriate company documentation procedures and ensure customer is provided with a true and accurate record of the transaction.

Learning outcome
The learner will: 9 Apply procedures to ensure signal reception system products and equipment are transported safely
Assessment criteria
The learner can: 9.1 work safely at all times, in accordance with health and safety and other appropriate regulations to complete secure transportation of signal reception system products and equipment 9.2 identify and apply appropriate security measures to protect products and equipment during transportation 9.3 identify and apply appropriate procedures to safely dispose of waste materials during the transportation and delivery of signal reception system products and equipment.

Learning outcome
The learner will: 10 Apply procedures to ensure signal reception system products and equipment is stowed for safe and secure transportation
Assessment criteria
The learner can: 10.1 confirm that signal reception system products and components to be transported are suitable for use as required 10.2 demonstrate procedures for safely lifting and handling signal reception system products and components which comply with appropriate company and industry standards 10.3 demonstrate procedures for ensuring that all products and/or equipment are loaded and protected correctly to facilitate safe transportation.

Learning outcome
The learner will: 11 Apply procedures to safely transport signal reception system products and equipment
Assessment criteria
The learner can: 11.1 demonstrate company and industry approved procedures for the safe transportation of signal reception system products and equipment 11.2 identify relevant persons whom it may be necessary to inform when signal reception system product and equipment deliveries/transportations may be delayed.

Learning outcome
The learner will: 12 Complete all appropriate documentation relating to the safe transportation of signal reception system products and equipment
Assessment criteria
The learner can: 12.1 demonstrate procedures for correctly completing documentation relating to the transportation of signal reception system products and components 12.2 identify relevant persons to whom documentation relating to the delivery/transportation of signal reception system products and equipment should be passed onto.

Unit 211 Apply procedures for organising and coordinating the work environment- installing signal reception systems

Supporting information

Evidence requirements

The learner must provide prior auditable evidence that they have the relevant knowledge and understanding from Unit 201 Understand the practices and procedures for organizing and coordinating the work environment.

Evidence requirements: LO1-12 - Auditable evidence sourced from a real working environment must be provided to illustrate that, the learner has demonstrated on two separate occasions they can implement practices and procedures for overseeing coordinating the installation of signal reception systems in accordance with the assessment criteria for each of the learning outcomes.

Unit 202

Understand the principles, practices, procedures and legislation for installing and servicing signal reception systems

UAN:	L/503/5868
Level:	Level 2
Credit value:	16
GLH:	156
Relationship to NOS:	This unit is linked to NOS EES9, EES10, EES25.
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Understand the preparatory work that is required prior to the installation and servicing of signal reception systems
Assessment criteria
The learner can: 1.1 specify the safety precautions that should be taken when working with signal reception systems 1.2 identify any unusual or notable site features or requirements which may affect the installation process 1.3 explain why it is important to check for any pre-existing damage to customer/client property, including: <ul style="list-style-type: none">• building wall/floor fabric• equipment and components• building décor and floor finishes• gardens and turfed areas 1.4 identify any appropriate planning permission and building control requirements which may apply for the proposed installation, and, if appropriate, confirm that planning permission is provided 1.5 identify the waste disposal procedures that are to be followed during the installation process 1.6 state the extent of their responsibility in relation to the signal reception system installation process and identify the people they should report to if there are problems they cannot resolve.

Learning outcome
The learner will: 2 Understand the procedures and techniques which reflect the principles of effective customer care
Assessment criteria
The learner can: 2.1 state the principles of effective customer care and explain how they should be applied to signal reception systems installation work.

Learning outcome
The learner will: 3 Understand the importance of selecting the correct material, equipment and methods for the installation of signal reception systems
Assessment criteria
The learner can: 3.1 describe the requirements for the safe use of power tools, including: <ul style="list-style-type: none"> • drills • saws • voltage requirements for outdoor working 3.2 state the appropriate hand and power tools for different installation tasks 3.3 identify appropriate mechanical fixing devices for different installation tasks 3.4 identify the factors which can influence the positioning of equipment, including: <ul style="list-style-type: none"> • customer requirements • technical requirements • aesthetic considerations 3.5 specify the operating procedures for job specific tools and equipment including: <ul style="list-style-type: none"> • spectrum analysers • signal level meters 3.6 state the appropriate procedures for ensuring the care and security of tools and equipment.

Learning outcome
The learner will: 4 Understand the different techniques for the installation of signal reception systems
Assessment criteria
The learner can: 4.1 specify the techniques and procedures for drilling masonry, including requirements for: <ul style="list-style-type: none"> • drilling internal walls • drilling external walls • drilling at high levels (aerial and antenna brackets) • drilling in awkward locations

4.2	describe how to terminate different cables associated with signal reception systems, including: <ul style="list-style-type: none"> • coaxial • metallic • optical • structured • underground • aerial amplifier power cables
4.3	identify and interpret appropriate guidance from manufacturer's installation instructions and specifications for the signal reception system equipment being installed
4.4	assess the installation requirements of the signal reception system to ensure the correct work methods and techniques are selected
4.5	state the procedures for aligning satellite and terrestrial antenna.

Learning outcome	
The learner will:	
5	Understand the company and regulatory requirements for working safely at heights with antennas
Assessment criteria	
The learner can:	
5.1	identify specific safety precautions that should be taken when carrying, handling or fixing antennas and brackets at height
5.2	state the main requirements of the Working at Height Regulations as they apply to ladder use and safety, including aspects which cover: <ul style="list-style-type: none"> • pre-use checks to ensure ladder is suitable for intended purpose • safe, approved securing methods (lashing kits, 'top end' and 'bottom end' stabilisation methods) • how to safely carry tools and equipment when climbing ladders • overloading and overreaching • safe methods of transferring to and from roof ladders
5.3	specify the company safety procedures for working safely at heights with antennas, to include an appreciation of: <ul style="list-style-type: none"> • documentation that is required • importance of adhering to company procedures
5.4	identify any appropriate planning permission and Building Control requirements which may apply for the proposed installation, and, confirm that: <ul style="list-style-type: none"> • appropriate planning permission is provided • planning permission is not required
5.5	state the extent of their responsibility in relation to the work operation and identify the people they should report to if there are problems they cannot resolve.

Learning outcome
The learner will: 6 Understand the procedures for identifying and minimising risks
Assessment criteria
The learner can: 6.1 identify appropriate items of PPE for working safely at heights with antennas 6.2 state the procedures for checking that PPE to be used is in a safe and usable condition 6.3 specify the procedures for assessing the work site for risks, prior to, and during completion of, installation and servicing work 6.4 specify the procedure that should be followed if it is not possible to secure a ladder through the use of an eyebolt 6.5 state the different items of fall protection equipment that is available and explain how such items should be correctly used, including: <ul style="list-style-type: none"> • harnesses • ropes.

Learning outcome
The learner will: 7 Understand how to work safely on roofs
Assessment criteria
The learner can: 7.1 state the correct procedures for securing safe access to: <ul style="list-style-type: none"> • pitched roofs • flat roofs 7.2 state the correct procedures for working safely on: <ul style="list-style-type: none"> • pitched roofs • flat roofs 7.3 specify appropriate industry approved procedures for safely running signal reception cables over roofs.

Learning outcome
The learner will: 8 Understand how to work safely in lofts
Assessment criteria
The learner can: 8.1 describe the correct procedures for working safely in lofts 8.2 specify the procedures that are to be followed when there is no safe access to a loft.

Learning outcome
The learner will: 9 Understand how to fix brackets and antennas to external walls and chimney stacks
Assessment criteria
The learner can: 9.1 state the procedures for checking that the structure and pointing of external walls and chimney stacks is sound 9.2 specify appropriate fixing devices for securing brackets and antennas to external walls and chimney stacks 9.3 state the appropriate tools and equipment that would be required for securing brackets and antennas to external walls and chimney stacks 9.4 describe the appropriate procedures for securing brackets and antennas to external walls and chimney stacks.

Learning outcome
The learner will: 10 Understand the operational and servicing principles of signal reception systems
Assessment criteria
The learner can: 10.1 explain how signal reception systems operate 10.2 state the signal levels that should be expected at each system outlet 10.3 state the common causes for signal loss in a signal reception system, including problems associated with: <ul style="list-style-type: none"> • cable length and type • diplexers • outlets 10.4 explain what is meant by the following terms: <ul style="list-style-type: none"> • ghosting • multi path reception 10.5 state the causes of ghosting and multi path reception and steps that can be taken to minimise such effects 10.6 specify the procedures for rectifying common problems associated with signal reception systems that may become evident during servicing, including: <ul style="list-style-type: none"> • ghosting • multi path reception and problems associated with: <ul style="list-style-type: none"> • cable length and type • diplexers • outlets.

Unit 212

Install and service signal reception systems

UAN:	L/503/5031
Level:	Level 2
Credit value:	3
GLH:	8
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Apply procedures to ensure a safe working environment for the installation of signal reception systems and networks
Assessment criteria
The learner can: 1.1 demonstrate work methods and procedures which comply with relevant health and safety regulations for signal reception system/network installation activities, including requirements for: <ul style="list-style-type: none">• safe working at height• handling and fitting of large brackets 1.2 identify and resolve any health and safety related problems in the work area and report those which are out of their direct area of responsibility.

Learning outcome
The learner will: 2 Confirm that all appropriate information and documentation required for the installation process is available
Assessment criteria
The learner can: 2.1 identify job information that is required for signal reception system and network installation work, including: <ul style="list-style-type: none">• manufacturer's instructions/specifications• company documentation• industry codes of practice• planning permission 2.2 demonstrate methods for confirming with the customer that: <ul style="list-style-type: none">• appropriate planning permission for the installation is required• appropriate planning permission for the installation is in place• planning permission is not required

- the building structure or ground is suitable for antenna mounting

Learning outcome

The learner will:

- 3 Apply work methods and procedures to verify installation details with customers

Assessment criteria

The learner can:

- 3.1 confirm the following installation details with the customer:
- the location of the receiver
 - all necessary supplies are available
 - there is a free path to the installation
 - the position of the antenna or dish
 - the cable runs
 - the position of the outlets
- 3.2 confirm that the products and equipment to be installed are of the correct type as specified by the customer's order and that they meet the customer's expectations.

Learning outcome

The learner will:

- 4 Apply work methods and procedures to install signal reception systems

Assessment criteria

The learner can:

- 4.1 select and use correct tools and equipment for the installation operations and check that they are in a safe and usable condition
- 4.2 demonstrate approved work methods and techniques to install, position and secure the antenna/dish and set top components for signal reception systems in accordance with manufacturer's specifications and to the customer's satisfaction
- 4.3 inspect completed installation to confirm that all necessary connections to the equipment and between the relevant set top products are complete and that the correct leads have been used
- 4.4 conduct checks to complete that the installation is complete and that all components are operating satisfactorily and are free from damage
- 4.5 demonstrate the correct handover procedure for signal reception systems and networks, including:
- demonstration that the signal reception system operates correctly
 - explanation of which components have been installed and where
 - familiarising the customer with the new equipment
 - clear explanation of where manufacturer's instructions/specifications have been left
 - ensuring customer has correct contact details in case of future system maintenance is required
- 4.6 identify and resolve problems relating to the installation process and report those which are out of their direct area of responsibility.

Learning outcome
The learner will: 5 Apply work methods and procedures to install signal reception networks
Assessment criteria
The learner can: 5.1 select and use correct tools and equipment for the installation operations and check that they are in a safe and usable condition 5.2 demonstrate approved work methods and techniques to install, position and secure all network components required for different premises, such as: <ul style="list-style-type: none"> • large domestic properties • hotels • multiple dwelling units (flats/apartments) 5.3 inspect completed installation to confirm that all necessary connections are correctly made and terminated, and that the correct signal levels are available at every stage and outlet.

Learning outcome
The learner will: 6 Apply regulatory and company safety policies and procedures for working safely at heights with antennas
Assessment criteria
The learner can: 6.1 identify appropriate health and safety regulations and guidelines which apply when working at heights with antennas 6.2 conduct a basic risk assessment, within the scope of their job responsibility, for work processes which require safe working at height with antennas 6.3 identify and comply with appropriate industry codes of practice for the safe use of ladders and safe working at height.

Learning outcome
The learner will: 7 Use appropriate protection equipment for working safely at height with antennas
Assessment criteria
The learner can: 7.1 select appropriate personal protective equipment and confirm that it is in safe and usable condition 7.2 demonstrate correct methods for wearing and using PPE to minimise risks when working safely at height with antennas 7.3 select appropriate fall protection equipment and confirm that it is in safe and usable condition 7.4 demonstrate correct methods for using fall protection equipment to minimise risks when working safely at height with antennas.

Learning outcome
The learner will: 8 Work safely on roofs
Assessment criteria
The learner can: 8.1 demonstrate the correct procedures for securing safe access to: <ul style="list-style-type: none"> • pitched roofs • flat roofs 8.2 demonstrate the correct procedures for working safely on: <ul style="list-style-type: none"> • pitched roofs • flat roofs 8.3 apply appropriate industry approved procedures for safely running signal reception cables over roofs.

Learning outcome
The learner will: 9 Work safely in lofts
Assessment criteria
The learner can: 9.1 demonstrate the correct procedures for working safely in lofts 9.2 apply safe procedures for handling large assemblies or components when working in loft spaces 9.3 apply appropriate procedures to secure safe access to lofts when no bespoke access is provided.

Learning outcome
The learner will: 10 Apply operational and servicing principles for signal reception systems and networks
Assessment criteria
The learner can: 10.1 confirm the correct location of the receiver and outlets with the customer and confirm that necessary supplies are available 10.2 identify and confirm that appropriate signal levels are evident at each system outlet 10.3 perform checks to confirm that all system and network connections are mechanically and electrically sound, and are functioning correctly 10.4 perform checks to confirm that all installation products and equipment work correctly and are free from damage.

Unit 212 Install and service signal reception systems

Supporting information

Evidence requirements

The learner must provide prior auditable evidence that they have the relevant knowledge and understanding from Unit 202 Understand the principles, practices and legislation for installing and signal reception systems.

Evidence requirements: LO1-12 Auditable evidence sourced from a real working environment must be provided to illustrate that, the learner has demonstrated on two separate occasions they can implement practices and procedures for overseeing coordinating the installation of signal reception systems in accordance with the assessment criteria for each of the learning outcomes

Unit 203

Understand the principles, practices and legislation for carrying out preventative maintenance on signal reception systems

UAN:	L/503/5028
Level:	Level 2
Credit value:	5
GLH:	45
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Understand the preparatory work that is required prior to the preventative maintenance of signal reception systems
Assessment criteria
The learner can: 1.1 identify specific safety precautions that should be taken when working with signal reception systems and equipment 1.2 confirm with the customer the waste disposal procedures that are to be adopted during the completion of preventative maintenance in accordance with the requirements of the WEEE Regulations 1.3 state the extent of their responsibility in relation to the signal reception system installation process and identify the people they should report to if there are problems they cannot resolve.

Learning outcome
The learner will: 2 Understand the procedures and techniques which reflect the principles of effective customer care
Assessment criteria
The learner can: 2.1 describe the principles of effective customer care and explain how they should be applied to preventative maintenance for signal reception systems.

Learning outcome
The learner will: 3 Understand the different sources of information which can inform preventative maintenance procedures
Assessment criteria
The learner can: 3.1 specify the company documentation and paperwork that is required for servicing and preventative maintenance of signal reception systems 3.2 identify appropriate workshop and manufacturer material which may contain useful information on maintenance procedures for different items of system reception equipment 3.3 interpret signal reception system product and system specifications to determine appropriate preventative maintenance schedules.

Learning outcome
The learner will: 4 Understand the different methods and techniques for the completion of preventative maintenance on signal reception systems
Assessment criteria
The learner can: 4.1 identify tools and equipment that are required for different preventative maintenance tasks on signal reception systems 4.2 describe the disassembly and reassembly procedures for signal reception systems equipment and components including: <ul style="list-style-type: none"> • antenna (aerials and satellite dishes) • amplifiers (including mast head amplifiers) • splitters • outlets • filters • cables 4.3 state the requirements for handling delicate or fragile components/modules such as static sensitive equipment 4.4 identify signal reception system faults that can be prevented by maintenance and those that can not 4.5 specify the correct installation and alignment methods for both satellite and terrestrial antenna 4.6 state the common causes for signal loss in a signal reception system, including problems associated with: <ul style="list-style-type: none"> • cable length and type • diplexers • outlets 4.7 state the appropriate care and maintenance procedures that should be adopted to ensure the continuing correct operation of testing tools and equipment, including: <ul style="list-style-type: none"> • spectrum analysers • signal level meters.

Unit 213

Carry out preventative maintenance procedures on signal reception systems

UAN:	R/503/5869
Level:	Level 2
Credit value:	2
GLH:	6
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Apply procedures to ensure a safe working environment for the completion of signal reception system maintenance activities
Assessment criteria
The learner can: 1.1 work safely at all times, in accordance with health and safety and other appropriate regulations to complete maintenance work on signal reception systems and equipment 1.2 liaise with the customer to confirm safe waste disposal procedures to be adopted during the completion of preventative maintenance work, in accordance with safe working practices and approved procedures.

Learning outcome
The learner will: 2 Apply industry recognised procedures to complete preventative maintenance of signal reception systems
Assessment criteria
The learner can: 2.1 identify appropriate documentation which may detail maintenance procedures for signal reception systems 2.2 demonstrate procedures for following appropriate maintenance schedules for signal reception systems 2.3 demonstrate procedures for completing maintenance work activities for signal reception systems in accordance with the limits of their personal responsibility 2.4 perform signal reception system maintenance activities in: <ul style="list-style-type: none">• accordance with safety requirements• the specified sequence• the agreed timescale.

Learning outcome
The learner will: 3 Apply industry recognised procedures to complete reporting of preventative maintenance work
Assessment criteria
The learner can: 3.1 demonstrate how to complete maintenance records correctly and hand over completed documentation to appropriate persons 3.2 identify instances where the maintenance activities cannot be fully met or where identified defects are outside of the scope covered by the maintenance schedule for the job, and report such instances to appropriate persons.

Unit 213 Carry out preventative maintenance procedures on signal reception systems

Supporting information

Evidence requirements

Prior to undertaking this unit a learner must provide auditable evidence that they have the relevant knowledge and understanding as detailed in Unit 203 Understand the principles and practices for carrying out preventative maintenance on signal reception systems.

Evidence requirements: LO1-3-Auditable evidence sourced from a real working environment must be provided to illustrate that, the learner has demonstrated on two separate occasions they can implement practices and procedures for carrying out preventative maintenance on signal reception systems in accordance with the assessment criteria for each of the learning outcomes.

Unit 204 Understand the electrical and electronic principles associated with the installation and servicing of signal reception systems

UAN:	J/503/5867
Level:	Level 2
Credit value:	7
GLH:	60
Relationship to NOS:	This unit is linked to SummitSkills NOS EES1.ESS2, ESS3, ESS4, ESS9, ESS10, ESS11, ESS16, ESS17, ESS22,ESS23, ESS24, ESS25, ESS27, ESS28, ESS29.
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Understand standard units of measurement used in the electrical and electronic services industry
Assessment criteria
The learner can: 1.1 identify and use internationally recognised (SI) units of measurement for general variables including: <ul style="list-style-type: none"> • length • area • volume • mass • density • time • temperature • velocity 1.2 identify and use basic SI units which apply specifically to electrical variables, including: <ul style="list-style-type: none"> • resistance • power • frequency • current • voltage

<ul style="list-style-type: none"> • energy • impedance <p>1.3 identify appropriate electrical instruments for the measurement of different electrical values including:</p> <ul style="list-style-type: none"> • resistance • power • frequency • current • voltage • energy • impedance.

Learning outcome
The learner will:
2 Understand mathematical principles which are appropriate to electrical and electronic services work operations
Assessment criteria
The learner can:
2.1 identify and apply appropriate mathematical principles which are relevant to electrical and electronic work tasks including:
<ul style="list-style-type: none"> • fractions and percentages • algebra • indices • powers of 10 • transposition • triangles and trigonometry • statistics.

Learning outcome
The learner will:
3 Understand basic mechanics and the relationship between force, work, energy and power
Assessment criteria
The learner can:
3.1 define what is meant by the following:
<ul style="list-style-type: none"> • mass • weight
3.2 explain the principles of basic mechanics as they apply to:
<ul style="list-style-type: none"> • levers • gears • pulleys
3.3 describe the main principles of the following and their inter-relationships:
<ul style="list-style-type: none"> • force • work • energy (kinetic and potential) • power • efficiency
3.4 define what is meant by the following:
<ul style="list-style-type: none"> • lead/lag circuits

- true power
- apparent power
- power factors.

Learning outcome

The learner will:

4 Understand the principles of electrical resistance and resistivity

Assessment criteria

The learner can:

- 4.1 describe the basic principles of electron theory and differentiate between materials which are good and poor conductors of electrical currents
- 4.2 describe what is meant by resistance and resistivity in relation to electrical circuits
- 4.3 explain the relationship between voltage, current and resistance
- 4.4 describe how to measure and obtain values for:
 - voltage
 - current
 - resistance
- 4.5 state what is meant by the term voltage drop in relation to electrical circuits
- 4.6 explain how the following electrical values are calculated:
 - energy
 - work
 - power
 - efficiency.

Learning outcome

The learner will:

5 Understand fundamental principles which underpin the generation and control of electrical currents

Assessment criteria

The learner can:

- 5.1 describe the chemical, magnetic and thermal effects of electrical currents
- 5.2 explain what is meant by each of the following:
 - electromotive force
 - electromagnetism
 - electron theory
- 5.3 state the characteristics of parallel and series circuits
- 5.4 state the main elements of alternating current theory and the characteristics of ac. and dc. electrical supplies
- 5.5 explain how the following relate to electrical currents:
 - sine waves
 - frequency
 - Root Mean Square (RMS) values.

Learning outcome	
The learner will:	
6	Understand the operating principles of signal reception systems and associated equipment
Assessment criteria	
The learner can:	
6.3	<p>explain how the following relate to the siting of signal reception system equipment:</p> <ul style="list-style-type: none"> • identification of local frequencies and signals • the effects of tv interference • how to identify local TV channels • classification of bands, channels and frequencies • location of transmitters • identification of obstructions to signal transmission, reception and signal interference sources
6.4	<p>state what is meant by the following and describe how they affect signal reception system operation:</p> <ul style="list-style-type: none"> • binary systems • network types - satellite IF/VHF/UHF • the decibel: <ul style="list-style-type: none"> - what it is/how it is measured/sound levels/gain loss - amplifiers/splitters/aerials/downleads - signal to noise ratio/signal strength/decibel conversion • noise: <ul style="list-style-type: none"> - sources of noise and interference - carrier to noise ratio/bit error rate - environmental effects/filters/lightning/static electricity • aerial/receiver theory: <ul style="list-style-type: none"> - power budgets - gain: dBd, dBi and the isotropic radiator - frequency and wavelength - bands (UHF, VHF, DAB, Satellite IF) - dipole/polarisation of the signal and orientation - circuits, balanced and unbalanced - aerial types (eg Yagi design, X types, Bow tie, Grid/panel) - return loss • connectors/cables
6.5	specify the design principles that should be adopted to ensure that a signal distribution system gives the correct signal level at each stage of the system
6.6	<p>explain the basic principles behind frequency conversion equipment:</p> <ul style="list-style-type: none"> • design • operation • calibration
6.7	<p>describe the factors that can cause signal loss in a distribution system, including those which involve:</p> <ul style="list-style-type: none"> • cable type and length • splitters • outlets.

Unit 301

Understanding health and safety legislation, practices and procedures (installing and maintaining electrotechnical systems and equipment)

UAN:	H/602/2523
Level:	Level 3
Credit value:	6 (3 credits for assessment 301) (3 credits for assessment 399)
GLH:	54
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Understand how relevant Health and Safety legislation applies in the workplace
Assessment criteria
The learner can: 1.1 specify their own roles and responsibilities and those of others with regard to current relevant legislation such as: <ul style="list-style-type: none">• the Health and Safety at Work Act• the Electricity at Work Regulations• the Management of Health and Safety at Work Regulations• Workplace (Health and Safety and Welfare) Regulations• Control of Substances Hazardous to Health (COSHH) Regulations• Working at Height Regulations• Personal Protective Equipment at Work Regulations• Manual Handling Operations Regulations• Provision and Use of Work Equipment Regulations• Display Screen Equipment at Work Regulations• Control of Asbestos at Work Regulations 1.2 specify particular health and safety risks which may be present and the requirements of current health and safety legislation for the range of electrotechnical work operations including: <ul style="list-style-type: none">• preparation and planning• installation• termination and connection• inspection, testing and commissioning• fault diagnosis and rectification

- maintenance.

Learning outcome
The learner will: 2 Understand the procedures for dealing with health and safety in the work environment
Assessment criteria
The learner can: 2.1 state the procedures that should be followed in the case of accidents which involve injury, including requirements for the treatment of electric shock/electrical burns 2.2 specify appropriate procedures which should be followed when emergency situations occur in the workplace, including: <ul style="list-style-type: none"> • procedures for summoning emergency services • information that emergency services require • alarm and evacuation procedures • designated escape routes • fire fighting procedures • application of first aid 2.3 state the limitations of their responsibilities in terms of health and safety in the workplace 2.4 state the actions to be taken in situations which exceed their level of responsibility for Health and Safety in the workplace 2.5 state the procedures that should be followed in accordance with the relevant health and safety regulations for reporting health, safety and / or welfare issues in the workplace 2.6 specify appropriate responsible persons to whom health and safety and welfare related matters should be reported, including: <ul style="list-style-type: none"> • employer • employees • customer/client • safety officers • H & S executive/inspectors • trades union representative • environmental health officers.

Learning outcome
The learner will: 3 Understand the procedures for establishing a safe working environment
Assessment criteria
The learner can: 3.1 state the procedure for producing risk assessments and method statements in accordance with their level of responsibility 3.2 describe the procedures for working in accordance with provided, pre determined: <ul style="list-style-type: none"> • risk assessments • method statements • safe systems of work 3.3 describe the procedures that should be taken to remove or

	minimise risks before deciding PPE is needed
3.4	state the purpose of PPE
3.5	specify the appropriate protective clothing and equipment that is required for identified work tasks
3.6	state the first aid facilities that must be available in the work area in accordance with health and safety regulations
3.7	explain why it is important: <ul style="list-style-type: none"> • not to misuse first aid equipment/supplies • to replace first aid supplies once used
3.8	describe safe practices and procedures using: <ul style="list-style-type: none"> • access equipment (PASMA requirements) • portable power tools (eg cartridge gun, drills, grinders) • signs and guarding • tools and materials storage facilities • dangerous substances eg cutting compounds and adhesives.

Learning outcome	
The learner will:	
4	Understand the requirements for identifying and dealing with hazards in the work environment
Assessment criteria	
The learner can:	
4.1	identify warning signs for the seven main groups of hazardous substance, as defined by The Chemical (Hazard Information and Packaging for Supply) Regulations (CHIP)
4.2	define what is meant by the term hazard in relation to Health and Safety legislation in the workplace
4.3	identify specific hazards associated with the installation and maintenance of electrotechnical systems and equipment, including: <ul style="list-style-type: none"> • electric shock (direct and indirect contact) • burns • fires • explosions
4.4	describe situations which can constitute a hazard in the workplace such as: <ul style="list-style-type: none"> • temporary electrical supplies • trailing leads/cables • slippery or uneven surfaces • presence of dust and fumes • handling and transporting equipment or materials • contaminants and irritants • fire • working at height • hazardous malfunctions of equipment • improper use and storage of tools and equipment
4.5	explain practices and procedures for addressing hazards in the work place such as; <ul style="list-style-type: none"> • temporary electrical supplies • trailing leads/cables

- slippery or uneven surfaces
 - presence of dust and fumes
 - handling and transporting equipment or materials
 - contaminants and irritants
 - fire
 - working at height
 - hazardous malfunctions of equipment
 - improper use and storage of tools and equipment
- 4.6 identify the correct type of fire extinguisher for a particular type of fire
- 4.7 explain situations where asbestos may be encountered, including:
- asbestos in decorative finishes (artex, plaster, floor tiles)
 - asbestos in accessories (flash guards and matting in fuse carriers and on distribution board covers)
 - asbestos in insulation storage compartments, vessels and pipework
- 4.8 specify the procedures for dealing with the suspected presence of asbestos in the workplace.

Unit 301 Understanding Health and Safety legislation, practices and procedures (installing and maintaining electrotechnical systems and equipment)

Supporting information

General information

Given the safety-critical nature of this topic it is a requirement that learners will have their knowledge consolidated by the use of “Practical Support Learning” activity in simulated conditions.

Unit 311

Applying Health and Safety legislation and working practices (installing and maintaining electrotechnical systems and equipment)

UAN:	R/602/2596
Level:	Level 3
Credit value:	3
GLH:	10
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Apply relevant Health and Safety legislation in the workplace
Assessment criteria
The learner can: 1.1 identify which workplace health and safety procedures are relevant to the working environment and comply with their duties and obligations as defined by current legislation and organisational procedures 1.2 produce a risk assessment and method statement in accordance with organisational procedures and the limits of their responsibility 1.3 work within the requirements of: <ul style="list-style-type: none">• risk assessments• method statements• safe systems of work.

Learning outcome
The learner will: 2 Assess the work environment for hazards and identify remedial actions in accordance with health and safety legislation
Assessment criteria
The learner can: 2.1 identify unsafe situations and conditions and take remedial actions 2.2 assess the work environment and revise work practices accordingly to take into account hazards which could cause harm,

	including the handling of potentially hazardous: <ul style="list-style-type: none"> • materials • tools • equipment
2.3	identify any hazards which may present a high risk and report their presence to relevant persons who have overall responsibility for health and safety in the workplace
2.4	apply measures to control health and safety hazards in accordance with the limits of their capabilities and job responsibility
2.5	select and use correct Personal Protective Equipment and protection measures to ensure the health and safety of themselves and others in the work environment.

Learning outcome	
The learner will:	
3	Apply methods and procedures to ensure work on site is in accordance with health and safety legislation
Assessment criteria	
The learner can:	
3.1	demonstrate personal conduct and behaviour around the workplace, to ensure that the health and safety of themselves and others is not endangered
3.2	apply procedures to ensure the safe use, maintenance and storage of tools, plant and equipment as stipulated in: <ul style="list-style-type: none"> • workplace policies (company and site) • supplier information • manufacturer's instructions
3.3	comply with hazard warning, mandatory instruction and prohibition notices
3.4	apply procedures to ensure the safety of the work location through the correct use of guards and notices
3.5	use access equipment correctly.

Learning outcome	
The learner will:	
4	Apply procedures to deal with and report health and safety in accordance with health and safety legislation
Assessment criteria	
The learner can:	
4.1	demonstrate the correct procedures to follow in the event of injury to themselves or others, including: <ul style="list-style-type: none"> • application of basic first aid procedures • notification of emergency services • reporting of incidents.

Unit 311 Applying Health and Safety legislation and working practices (installing and maintaining electrotechnical systems and equipment)

Supporting information

Evidence requirements

Prior to undertaking this unit a learner must provide auditable evidence that they have the relevant knowledge and understanding as detailed in the Unit 301 Understanding Health and Safety legislation, practices and procedures (Installing and maintaining electrotechnical systems and equipment). Evidence requirements LO1 to LO4.

Auditable evidence sourced from a real working environment must be provided to illustrate that, the learner has demonstrated on two separate occasions they can apply Health and Safety legislation and working practices when Installing and Maintaining Electrotechnical Systems and Equipment in accordance with approved industry practices, statutory and non-statutory regulations and the assessment criteria for each of the learning outcomes.

Unit 302

Understanding environmental legislation, working practices and the principles of environmental technology systems

UAN:	M/602/2525
Level:	Level 3
Credit value:	4
GLH:	36
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Understand the environmental legislation, working practices and principles which are relevant to work activities
Assessment criteria
The learner can: 1.1 specify the current, relevant legislation for processing waste, including: <ul style="list-style-type: none">• Environmental Protection Act• the Hazardous Waste Regulations• Pollution Prevention and Control Act• Control of Pollution Act• The Control of Noise at Work Regulations• Packaging (Essential Requirements) Regulations• Environment Act• the Waste Electrical and Electronic Equipment Regulations 1.2 describe what is meant by the term environment 1.3 describe the ways in which the environment may be affected by work activities: <ul style="list-style-type: none">• land contamination• air pollution• pollution of water courses 1.4 identify and interpret the requirements for electrical installations as outlined in relevant sections of the Building Regulations and the Code for Sustainable Homes 1.5 state materials and products that are classed as: <ul style="list-style-type: none">• hazardous to the environment

<ul style="list-style-type: none"> • recyclable <p>1.6 describe the organisational procedures for processing materials that are classed as:</p> <ul style="list-style-type: none"> • hazardous to the environment • recyclable.
--

Learning outcome
The learner will:
2 Understand how work methods and procedures can reduce material wastage and impact on the environment
Assessment criteria
The learner can:
2.1 state installation methods that can help to reduce material wastage
2.2 explain why it is important to report any hazards to the environment that arise from work procedures
2.3 specify environmentally friendly materials, products and procedures that can be used in the installation and maintenance of electrotechnical systems and equipment.

Learning outcome
The learner will:
3 Understand how and where environmental technology systems can be applied
Assessment criteria
The learner can:
3.1 describe the fundamental operating principles of the following environmental technology systems: <ul style="list-style-type: none"> • solar photovoltaic • Wind energy generation (micro and macro) • micro hydro generation • heat pumps • combined heat and power (CHP) including micro CHP • grey water recycling • rainwater harvesting • biomass heating • solar thermal hot water heating
3.2 state the applications and limitations of the following environmental technology systems: <ul style="list-style-type: none"> • solar photovoltaic • wind energy generation (micro and macro) • micro hydro generation • heat pumps • combined heat and power (CHP) including micro CHP • grey water recycling • rainwater harvesting • biomass heating • solar thermal hot water heating
3.3 state the Local authority Building Control requirements which apply to the installation of environmental technology systems.

Unit 312

Applying environmental legislation, working practices and the principles of environmental technology systems

UAN:	H/602/2599
Level:	Level 3
Credit value:	3
GLH:	10
Endorsement by a sector or regulatory body:	This unit is endorsed by SummitSkills, the Sector Skills Council for Building Services Engineering.

Learning outcome
The learner will: 1 Apply environmental legislation, working practices and principles for electrotechnical services
Assessment criteria
The learner can: 1.1 demonstrate workplace procedures for the safe handling, storage and disposal of hazardous materials and products, in accordance with any of the following the: <ul style="list-style-type: none">• Environmental Protection Act• Hazardous Waste Regulations• Pollution Prevention and Control Act• Control of Pollution Act• Control of Noise at Work Regulations• Packaging (Essential Requirements) Regulations• Environment Act• Waste Electrical and Electronic Equipment Regulations 1.2 demonstrate work practices and procedures which are in accordance with the requirements for electrical systems and equipment as specified in the relevant sections of the Building Regulations and the Guide for Sustainable Homes 1.3 demonstrate appropriate organisational procedures for reporting environmental hazards.

Learning outcome
The learner will: 2 Apply work methods and procedures to reduce material wastage and the impact of work activities on the work environment
Assessment criteria
The learner can: 2.1 demonstrate prefabrication and installation methods which can help to reduce material wastage 2.2 identify and use environmentally friendly materials, products and procedures for the installation and maintenance of electrotechnical systems and equipment.

Learning outcome
The learner will: 3 Supply information on environmental technology systems in the work location
Assessment criteria
The learner can: 3.1 provide information on the operational requirements and benefits of the following environmental technology systems: <ul style="list-style-type: none"> • solar photovoltaic • wind energy • micro hydro • heat pumps • combined heat and power (CHP) including micro CHP • grey water recycling • rainwater harvesting • biomass heating • solar thermal hot water heating.

Unit 312 Applying environmental legislation, working practices and the principles of environmental technology systems

Supporting information

Evidence requirements

Prior to undertaking this unit a learner must provide auditable evidence that they have the relevant knowledge and understanding as detailed in:

- Unit 302 Understanding environmental legislation, working practices and the principles of environmental technology systems (ELTK02)

Evidence requirements:

LO1 and 2 – Auditable evidence sourced from a real working environment must be provided to illustrate that the learner has demonstrated on two separate occasions they can apply environmental legislation, working practices appropriate to the installation of electrotechnical systems and equipment.



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 Manual - Supporting Customer Excellence 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, as well as updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document includes sections on:

- The centre and qualification approval process
- Assessment, internal quality assurance and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Management systems
- Maintaining records
- Assessment
- Internal quality assurance
- External quality assurance.

Our Quality Assurance Requirements encompasses all of the relevant requirements of key regulatory documents such as:

- Regulatory Arrangements for the Qualifications and Credit Framework (2008)
- SQA Awarding Body Criteria (2007)
- NVQ Code of Practice (2006)

and sets out the criteria that centres should adhere to pre and post centre and qualification approval.

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:** how to register and certificate candidates on line
- **Events:** dates and information on the latest Centre events
- **Online assessment:** how to register for GOLA/e-volve assessments.

Useful contacts

UK learners General qualification information	T: +44 (0)844 543 0033 E: learnersupport@cityandguilds.com
International learners General qualification information	T: +44 (0)844 543 0033 F: +44 (0)20 7294 2413 E: intcg@cityandguilds.com
Centres Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: centresupport@cityandguilds.com
Single subject qualifications Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: singlesubjects@cityandguilds.com
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: intops@cityandguilds.com
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: walledgarden@cityandguilds.com
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	T: +44 (0)121 503 8993 E: business@cityandguilds.com
Publications Logbooks, Centre documents, Forms, Free literature	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413

Every effort has been made to ensure that the information contained in this publication is true and correct at the time of going to press. However, City & Guilds' products and services are subject to continuous development and improvement and the right is reserved to change products and services from time to time. City & Guilds cannot accept liability for loss or damage arising from the use of information in this publication.

If you have a complaint, or any suggestions for improvement about any of the services that we provide, email:
feedbackandcomplaints@cityandguilds.com

About City & Guilds

As the UK's leading vocational education organisation, City & Guilds is leading the talent revolution by inspiring people to unlock their potential and develop their skills. We offer over 500 qualifications across 28 industries through 8500 centres worldwide and award around two million certificates every year. City & Guilds is recognised and respected by employers across the world as a sign of quality and exceptional training.

City & Guilds Group

The City & Guilds Group operates from three major hubs: London (servicing Europe, the Caribbean and Americas), Johannesburg (servicing Africa), and Singapore (servicing Asia, Australia and New Zealand). The Group also includes the Institute of Leadership & Management (management and leadership qualifications), City & Guilds Land Based Services (land-based qualifications), the Centre for Skills Development (CSD works to improve the policy and practice of vocational education and training worldwide) and Learning Assistant (an online e-portfolio).

Copyright

The content of this document is, unless otherwise indicated, © The City and Guilds of London Institute and may not be copied, reproduced or distributed without prior written consent. However, approved City & Guilds centres and candidates studying for City & Guilds qualifications may photocopy this document free of charge and/or include a PDF version of it on centre intranets on the following conditions:

- centre staff may copy the material only for the purpose of teaching candidates working towards a City & Guilds qualification, or for internal administration purposes
- candidates may copy the material only for their own use when working towards a City & Guilds qualification

The *Standard Copying Conditions* (see the City & Guilds website) also apply.

Please note: National Occupational Standards are not © The City and Guilds of London Institute. Please check the conditions upon which they may be copied with the relevant Sector Skills Council.

Published by City & Guilds, a registered charity established to promote education and training

City & Guilds
1 Giltspur Street
London EC1A 9DD
T +44 (0)844 543 0000
F +44 (0)20 7294 2413
www.cityandguilds.com
HB-01-2363