



City & Guilds Level 1 Diploma in Electric Installation (7202-01)

Version 1.5 (January 2025)

Qualification Handbook

Qualification at a glance

Subject area	5.2 Building and construction
City & Guilds number	7202
Age group approved	All ages
Entry requirements	None
Assessment	Practical Demonstration/Assignment, multiple choice examination
Grading	Pass/Fail
Approvals	Full approval required
Support materials	Assessor guide, Candidate Task Manual, Smartscreen
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	City & Guilds qualification number	Regulatory reference number	GLH	TQT
City & Guilds Level 1 Diploma in Electrical Installation	7202-01	600/9790/5	416	440

Version and date	Change detail	Section
1.1 July 2013	14-16 age group added	Qualification at a glance
1.2 May 2016	Age restrictions statement updated to match age group	Centre requirement
	City&Guilds Group statement updated	Useful contacts
	Phone numbers removed	
1.3 September 2017	Added TQT and GLH details Deleted QCF	Qualification at a Glance, Structure Appendix
1.4 March 2024	Update of Quality Assurance Statement	Centre Requirements
1.5 January 2025	Handbook transferred to latest version of the template. The section on Quality Assurance has been updated and sections on Inclusion and diversity, and Sustainability have been added.	All

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1 Introduction

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

Area	Description
Who is the qualification for?	This qualification is for those individuals wanting to learn the basic skills and knowledge involved in electrical installation.
What does the qualification cover?	This qualification cover a range of basic tasks and underpinning knowledge involved in electrical installation.
What opportunities for progression are there?	It allows learners to progress to the following City & Guilds qualification: <ul style="list-style-type: none">• Level 2 Diploma in Electrical Installations (Buildings and Structures) (2365-02)• Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment) (2357-13)• Level 3 NVQ Diploma in Electrotechnical Services (Electrical Maintenance) (2357-23)

Structure

To achieve the **City & Guilds Level 1 Diploma in Electrical Installation (7202-01)**, learners must achieve **44** credits from the mandatory units.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value	GLH
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Mandatory units:

Learners must achieve all **seven** mandatory units.

T/505/1711	Unit 101	Structure of the construction industry	4	37
A/505/1712	Unit 102	Fundamental safe working practices	5	48
F/505/1713	Unit 103	Environmental and sustainability measures in domestic dwellings	4	33
J/505/1714	Unit 104	Site preparation for working in the construction industry	7	61
L/505/1715	Unit 105	Electrical installation wiring and terminations	9	88
R/505/1716	Unit 106	Fabrication techniques for electrical installation	11	110
Y/505/1717	Unit 107	Electrical science and technology	4	39

Total Qualification Time (TQT)

Total Qualification Time (TQT) is the number of notional hours which represents an estimate of the total amount of time that could reasonably be expected for a learner to demonstrate the achievement of the level of attainment necessary for the award of a qualification.

TQT consists of the following two elements:

- 1) the number of hours that an awarding organisation has assigned to a qualification for guided learning
- 2) an estimate of the number of hours a learner will reasonably be likely to spend in preparation, study or any other form of participation in education or training, including assessment, which takes place as directed by – but, unlike guided learning, not under the immediate guidance or supervision of – a lecturer, supervisor, tutor or other appropriate provider of education or training.

Title and level	GLH	TQT
City & Guilds Level 1 Diploma in Electrical Installation	416	440

2 Centre requirements

Approval

Full approval

To offer this qualification, new centres will need to gain both centre and qualification approval. Please refer to the document **Centre Approval Process: Quality Assurance Standards** for further information.

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

Automatic approval

If your centre is approved to offer:

- Level 2 Diploma in Electrical Installations (Buildings and Structures) (2365-02)
- Level 3 Diploma in Electrical Installations (Buildings and Structures) (2365-03)
- Level 3 NVQ Diploma in Installing Electrotechnical Systems and Equipment (Buildings, Structures and the Environment) (2357-13)
- Level 3 NVQ Diploma in Electrotechnical Services (Electrical Maintenance) (2357-23)

you will be automatically approved to offer the new 7202-01. Please refer to the document **Centre Approval Process: Quality Assurance Standards** 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 these qualifications must be able to demonstrate that they meet the following occupational expertise requirements. They should:

- be occupationally competent or technically knowledgeable in the area(s) 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.

Assessors and Internal Quality Assurer

Assessor/Internal Quality Assurer TAQA qualifications are valued as qualifications for centre staff, but they are not currently a requirement for the qualification.

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 quality assurance, and that it takes account of any national or legislative developments.

Quality assurance

Approved centres must have effective quality assurance systems to ensure optimum delivery and assessment of qualifications. Quality assurance includes initial centre approval, qualification approval and the centre's own internal procedures for monitoring quality. Centres are responsible for internal quality assurance and City & Guilds is responsible for external quality assurance. All external quality assurance processes reflect the minimum requirements for verified and moderated assessments, as detailed in the Centre Assessment Standards Scrutiny (CASS), section H2 of Ofqual's General Conditions. For more information on both CASS and City & Guilds Quality Assurance processes visit: the [What is CASS?](#) and [Quality Assurance Standards](#) documents on the City & Guilds website.

Standards and rigorous quality assurance are maintained by the use of:

- Internal quality assurance
- City & Guilds external quality assurance.

In order to carry out the quality assurance role, Internal Quality Assurers must

- have appropriate teaching and vocational knowledge and expertise
- have experience in quality management/internal quality assurance
- hold or be working towards an appropriate teaching/training/assessing qualification
- be familiar with the occupation and technical content covered within the qualification.

External quality assurance for the qualification will be provided by City & Guilds EQA process. EQAs are appointed by City & Guilds to approve centres, and to monitor the assessment and internal quality assurance carried out by centres. External quality assurance is carried out to ensure that assessment is valid and reliable, and that there is good assessment practice in centres.

The role of the EQA is to:

- provide advice and support to centre staff
- ensure the quality and consistency of assessments and marking/grading within and between centres by the use of systematic sampling

- provide feedback to centres and to City & Guilds.

Learner entry requirements

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

Age restrictions

This qualification is approved for learners for all ages.

Access arrangements and reasonable adjustments

City & Guilds has considered the design of this qualification and its assessments in order to best support accessibility and inclusion for all learners. We understand however that individuals have diverse learning needs and may require reasonable adjustments to fully participate. Reasonable adjustments, such as additional time or alternative formats, may be provided to accommodate learners with disabilities and support fair access to assessment.

Access arrangements are adjustments that allow candidates with disabilities, special educational needs, and temporary injuries to access the assessment and demonstrate their skills and knowledge without changing the demands of the assessment. These arrangements must be made before assessment takes place.

The Equality Act 2010 requires City & Guilds to make reasonable adjustments where a disabled person would be at a substantial disadvantage in undertaking an assessment.

It is the responsibility of the centre to ensure at the start of a programme of learning that candidates will be able to access the requirements of the qualification.

Please refer to the JCQ access arrangements and reasonable adjustments and Access arrangements - when and how applications need to be made to City & Guilds for more information. Both are available on the **City & Guilds website**

3 Delivering the qualification

Initial assessment and induction

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

- if the learner 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 learner fully understands the requirements of the qualification, their responsibilities as a learner and the responsibilities of the centre. This information can be recorded on a learning contract.

Inclusion and diversity

City & Guilds is committed to improving inclusion and diversity within the way we work and how we deliver our purpose which is to help people and organisations develop the skills they need for growth.

More information and guidance to support centres in supporting inclusion and diversity through the delivery of City & Guilds qualifications can be found here:

[Inclusion and diversity | City & Guilds \(cityandguilds.com\)](#)

Sustainability

City & Guilds are committed to net zero. Our ambition is to reduce our carbon emissions by at least 50% before 2030 and develop environmentally responsible operations to achieve net zero by 2040 or sooner if we can. City & Guilds is committed to supporting qualifications that support our customers to consider sustainability and their environmental footprint.

More information and guidance to support centres in developing sustainable practices through the delivery of City & Guilds qualifications can be found here:

[Our Pathway to Net Zero | City & Guilds \(cityandguilds.com\)](#)

Centres should consider their own carbon footprint when delivering this qualification and consider reasonable and practical ways of delivering this qualification with sustainability in mind. This could include:

- reviewing purchasing and procurement processes (such as buying in bulk to reduce the amount of travel time and energy, considering and investing in the use of components that can be reused, instead of the use of disposable or single use consumables)

- reusing components wherever possible
- waste procedures (ensuring that waste is minimised, recycling of components is in place wherever possible)
- minimising water use and considering options for reuse/salvage as part of plumbing activities wherever possible.

Support materials

The following resources are available for this qualification:

Description	How to access
Candidate Practical Task Manual	www.cityandguilds.com
Assessor guidance	www.cityandguilds.com
SmartScreen	www.smartscreen.co.uk

4 Assessment

Assessment of the qualification

Candidates must:

- successfully complete 1 assignment for each mandatory unit

Assignments include multiple choice assessment for the knowledge areas in units.

Assessment types

Unit	Title	Assessment method	Where to obtain assessment materials
101	Structure of the construction industry	<p>Assignment 7202-101</p> <p>The assignment covers the knowledge in the unit.</p> <p>It is set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure it is properly carried out.</p>	www.cityandguilds.com
102	Fundamental safe working practices	<p>Assignment 7202-102</p> <p>The assignment covers the skills and knowledge in the unit.</p> <p>It is set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure it is properly carried out.</p>	www.cityandguilds.com
103	Environmental and sustainability measures in domestic dwellings	<p>Assignment 7202-103</p> <p>The assignment covers the knowledge in the unit.</p> <p>It is set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure it is properly carried out.</p>	www.cityandguilds.com

104	Site preparation for working in the construction industry	<p>Assignment 7202-104</p> <p>The assignment covers the skills and knowledge in the unit.</p> <p>It is set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure it is properly carried out.</p>	<p>www.cityandguilds.com</p>
105	Electrical installation wiring and terminations	<p>Assignment 7202-105</p> <p>The assignment covers the skills and knowledge in the unit.</p> <p>It is set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure it is properly carried out.</p>	<p>www.cityandguilds.com</p>
106	Fabrication techniques for electrical installation	<p>Assignment 7202-106</p> <p>The assignment covers the skills and knowledge in the unit.</p> <p>It is set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure it is properly carried out.</p>	<p>www.cityandguilds.com</p>
107	Electrical science and technology	<p>Assignment 7202-107</p> <p>The assignment covers the skills and knowledge in the unit.</p> <p>It is set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure it is properly carried out.</p>	<p>www.cityandguilds.com</p>

Assessment strategy

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

- live assignments that can be downloaded from the City & Guilds website

Time constraints

The following must be applied to the assessment of this qualification:

Qualification registration is valid for three years.

5 Units

Structure of the units

These units each have the following:

- City & Guilds reference number
- title
- level
- guided learning hours (GLH)
- credit value
- unit aim
- learning outcomes, which are comprised of a number of assessment criteria
- range statements
- supporting information

Guidance for delivery of the units

This qualification comprises a number of **units**. A unit describes what is expected of a competent person in particular aspects of their job.

Each **unit** is divided into **learning outcomes** which describe in further detail the skills and knowledge that a candidate should possess.

Each **learning outcome** has a set of **assessment criteria** (performance and knowledge and understanding) which specify the desired criteria that must be satisfied before an individual can be said to have performed to the agreed standard.

Range statements define the breadth or scope of a learning outcome and its assessment criteria by setting out the various circumstances in which they are to be applied.

Supporting information provides guidance of the evidence requirement for the unit and specific guidance on delivery and range statements. Centres are advised to review this information carefully before delivering the unit.

Unit 101

Structure of the construction industry

Level:	1
UAN:	T/505/1711
Credit value:	4
GLH:	37
Aim:	This unit is designed to provide learners with a broad understanding of the structure of the construction industry. They will know about different organisations, industry bodies and employment rights and responsibilities in the industry.

Learning outcome

The learner will:

LO1 know the roles of the different trades in the construction industry

Assessment criteria

The learner can:

- 1.1 know the roles of the different trades in the construction industry
- 1.2 identify the different **jobs** common to each trade
- 1.3 state common **hazards** associated with each trade

Range

Key trades

Electrician, plumber, carpenter, bricklayer, plasterer

Jobs

Electrician

Lighting wiring, power supply wiring, maintenance

Plumber

Hot and cold water supply, central heating, bathroom installation, sanitation and drainage

Carpenter

Hanging doors, installing windows, timber roof installation

Bricklayer

Brick laying, stone work, concrete block installation

Plasterer

Plastering, dry lining

Hazards

Electric shock, burns, cuts and abrasions, dust inhalation, working at height, lifting and carrying, solvents, vapours, asbestos, vibration, noise, extremes of temperature, slips trips and falls

Learning outcome

The learner will:

LO2 know different types of organisation and job roles in the construction industry

Assessment criteria

The learner can:

2.1 identify different **types of organisation** within the construction industry

2.2 identify specialist **plumbing** organisations

2.3 identify specialist **electrical** organisations

2.4 identify job **roles** within the construction industry

Range

Types of organisation

Small, medium, large, specialist firms and services, sole traders, sub-contractors

Plumbing

Domestic plumber, heating engineers, industrial plumbers, drainage specialist, maintenance engineer

Electrical

Domestic electricians, industrial commercial electricians, maintenance electricians, alarm engineer

Roles

Architect, structural engineer, clerk of works, estimator, buyer, site manager

Learning outcome

The learner will:

LO3 know the industry bodies within the plumbing and electrical industries

Assessment criteria

The learner can:

3.1 identify the relevant **industry bodies** within the plumbing and electrical industries

3.2 state the key **responsibilities** of industry **bodies**

- a) Joint Industry Board (JIB)
 - b) Water Authority (WA)
 - c) Institute of Engineering Technology (IET)
 - d) Electrical Contractors Association (ECA)
-

- e) Association of Plumbing and Heating Contractors (APHC)
 - f) Local Authority
-

Range

Industry bodies

Joint Industry Board (JIB), Water Authority (WA), Institute of Engineering Technology (IET), Electrical Contractors Association (ECA), Association of Plumbing and Heating Contractors (APHC)

Responsibilities

JIB

Grades, wages, allowances, benefits, employment advice, industrial agreements

Water Authority

Water resources and uses, quality of service, infrastructure, water supply and sanitation

IET

International standardisation of regulations, wiring regulations

ECA

Support services to contractors, build a sustainable industry, to enhance the profile of the industry

APHC

Support to contractors, encourage training, knowledge and professional advice

Local Authority

Building regulations

Learning outcome

The learner will:

LO4 know basic employment rights and responsibilities in the construction industry

Assessment criteria

The learner can:

4.1 identify the **employment rights** that exist within the construction industry

4.2 identify forms of **discrimination**

4.3 identify employment law **information sources** Range

Range

Employment rights

Contracts, paid leave entitlement, termination of employment, minimum wage, sick pay, maternity/ paternity leave, working hours

Discrimination

Gender, sexual orientation, age, race, disability, religion

Information sources

Direct gov. Advisory, Conciliation and Arbitration Service (ACAS)

Learning outcome

The learner will:

LO5 know career opportunities within the construction industry

Assessment criteria

The learner can:

5.1 identify the **key requirements** to become a qualified tradesperson

5.2 identify career **progression routes**

Range

Key requirements

Construction Safety Certificate Scheme (CSCS), relevant trade qualification, relevant trade on site experience

Progression routes

Apprentice, qualified trades person, supervisor, manager, director

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Supporting information

Candidates undertaking this unit are unlikely to have any prior experience of the Construction industry and may also have limited work experience, therefore, the delivery of this unit should be approached from a very basic level.

It is also important that there should be a focus on workplace skills in the construction industry.

Wherever possible centres should adopt a practical hands-on approach to learning and the unit could be delivered in an interactive format engaging the candidates in a full range of diverse learning opportunities

Whilst delivering and assessing the outcomes, it should be made clear to candidates that good workplace skills are essential to the financial success of a business and that being able to demonstrate such skills are imperative to the candidate's future employment prospects in the construction industry.

Unit 102

Fundamental safe working

Level:	1
UAN:	A/505/1712
Credit value:	5
GLH:	48
Aim:	This unit provides learning in the essential health and safety job knowledge required to prepare a learner to work safely in the Plumbing and Electrical installation industries. The knowledge covered relates to work carried out in a construction environment. The unit also provides learning in the practical application of a range of key health and safety requirements under simulated conditions.

Learning outcome

The learner will:

LO1 know health and safety legislation that applies to the plumbing and electrical installation industries

Assessment criteria

The learner can:

- 1.1 state the key **aims** of general health and safety legislation
- 1.2 list the responsibilities of **employers** and **employer representatives** under health and safety legislation
- 1.3 list the responsibilities of **employees** under health and safety legislation

Range

Aims

Health, safety and welfare of people at work, protect other people from harm.

Employers/employer representatives

Create safe working environment, provide PPE, training, safety and welfare of employees.

Employees

Take reasonable care, cooperate with employers, report hazards.

Learning outcome

The learner will:

LO2 know ways of controlling hazardous work areas

Assessment criteria

The learner can:

2.1 identify **common signs** used in the construction industry

2.2 identify possible **dangerous situations** occurring during work activities

2.3 identify **ways to prevent accidents** occurring during work activities

Range

Common signs

Signs, safety notices, mandatory signs, prohibition signs, hazard warning signs, information signs, hazardous substances

Dangerous situations

Open holes and trenches, wet surfaces, trip hazards, overhead working, confined space working at height

Ways to prevent accidents

Follow procedure, report hazards, stay alert, use correct PPE, read and follow safety signs, training, inductions

Learning outcome

The learner will:

LO3 know how to recognise and respond to the dangers presented by asbestos in the workplace

Assessment criteria

The learner can:

AC3.1 state the **dangers to health** posed by asbestos

AC3.2 identify **situations** where asbestos may be commonly found in the workplace

AC3.3 state what **action** to take if materials containing asbestos are identified in the workplace

Range

Dangers to health

Lung cancer, asbestosis, mesothelioma, can be fatal, can take 20 years for illnesses to develop after exposure

Situations

Insulating material within the building fabric, sheeting materials for roofs floors and walls, coating materials eg Artex, asbestos cement materials for gutters, flues, heat proofing materials, gaskets

Action

Stop work, inform supervisor

Learning outcome

The learner will:

LO4 know safe personal protection measures

Assessment criteria

The learner can:

4.1 identify key items of **Personal Protective Equipment (PPE)**

4.2 state the **purpose** of key items of PPE

Range

Personal Protective Equipment (PPE)

Protective clothing, high visibility wear, eye protection, gloves, safety helmet, safety footwear, hearing protection, dust mask/respirator

Purpose

Protective clothing

Protection from oils and grease

High visibility wear

Can be clearly seen around site

Eye protection

Protection from dust and dirt

Gloves

Protection from hot materials, sharp implements/tools

Safety helmet

Protection from falling objects and bumps

Safety footwear

Protection from dropping heavy objects, tools and nails on feet

Hearing protection

Protection from noise

Dust mask/respirator

Protection from inhaling dust and fumes

Learning outcome

The learner will:

LO5 be able to apply manual handling techniques

Assessment criteria

The learner can:

5.1 manually handle heavy and bulky items

a) individually

- b) as a team
- c) using mechanical lifting equipment

5.2 state the **procedures** for manually handling heavy and bulky items

Range

Procedures

Assessment of a safe load that a person can lift, application of safe kinetic lifting technique, use of simple mechanical lifting aids – sack trolley.

Learning outcome

The learner will:

LO6 know how to respond to accidents and emergencies

Assessment criteria

The learner can:

6.1 indicate the **actions** that should be taken when an accident or **emergency** is discovered

6.2 outline the **requirements** for first aid in the workplace

6.3 outline the **procedures** for dealing with common injuries such as cuts, minor burns, objects in the eye

6.4 state the **procedures** for reporting an accident at work

Range

Actions

Raise the alarm, follow concise instructions for contacting emergency services, emergency evacuation procedures

Emergency

Gas leak, fire, collapse of buildings, electrocution

Requirements

First aid box, first aider (appointed person).

Procedures

Cuts

Clean and protect

Minor burns

Run under cold water

Objects in the eye

Eyewash station

Procedures

Report to supervisor/site agent, complete details in accident book, witness statement

Learning outcome

The learner will:

LO7 be able to use access equipment safely.

Assessment criteria

The learner can:

7.1 list situations where it may be necessary to work at height

7.2 identify the following types of access equipment:

- a) step ladders
- b) ladders
- c) mobile elevated work platforms

7.3 list **safety checks** required on the following access equipment before it is used:

- a) step ladders
- b) ladders
- c) mobile elevated work platforms

7.4 carry out safety checks and use the following access equipment:

- a) step ladders
- b) ladders

Range

Safety checks

Step ladders

Hinges, ropes, fitted on level ground, adequate size and height, check stiles

Ladders

Stiles, rungs, cracks, clean, safety tags

Mobile elevated work platforms

Handrails, locking wheels, working platform boarded, components assembled, safety tags/permit, access steps, kick boards

Learning outcome

The learner will:

LO8 now how to deal with fires in the workplace

Assessment criteria

The learner can:

8.1 identify the elements of the fire triangle

8.2 identify different **categories** of fire

8.3 state how to **prevent fires occurring**

8.4 state the **method** for fighting small, localised fires that can occur in the workplace

Range

Categories

A solids, B flammable liquid, C flammable gases, D metals, E electrical apparatus

Prevent fires occurring

Good housekeeping, storage of flammables, removal of waste materials

Method

Know when to avoid tackling fires, types of extinguisher, selection of extinguisher by fire type, method of use

Unit 103

Environmental and sustainability measures in domestic dwellings

Level:	1
UAN:	F/505/1713
Credit value:	4
GLH:	33
Aim:	This unit covers a range of basic measures associated with protection of the environment. It covers types of energy, use of energy sources and good working practices within the domestic environment.

Learning outcome

The learner will:

- LO1 know the methods of conserving and reducing wastage of water and electricity within domestic dwellings

Assessment criteria

The learner can:

- 1.1 state the importance of water and electricity conservation in domestic dwellings
- 1.2 list the **methods** for reducing wastage of water
- 1.3 list the **methods** for reducing wastage of electricity

Range

Methods (1.2)

Flow reducing valves, spray taps, low volume wc flush, regular maintenance of terminal fittings and float valves, promoting user awareness.

Methods (1.3)

Energy efficient lighting, switching equipment from standby to off, energy efficient equipment, 'A' rated cookers/washing machines.

Learning outcome

The learner will:

LO2 know the applications of energy sources used in domestic dwellings

Assessment criteria

The learner can:

- 2.1 outline the **types of energy** used in domestic dwellings
 - 2.2 state the importance of reducing carbon emissions from buildings
 - 2.3 state **methods of reducing carbon emissions** from buildings
 - 2.4 outline the basic operating principles of **installations** using environmental sources
 - 2.5 list key **organisations** providing advice and guidance on energy saving and conservation techniques
-

Range

Types of energy

High carbon

Natural gas/LPG, fuel oils, solid fuels (coal/peat), electricity (from non-renewable sources)

Low carbon

Solar thermal, solid fuel (biomass), heat pumps, combined heat and power (CHP)

Zero carbon

Electricity-wind, electricity-tidal, hydroelectricity, solar photovoltaic

Methods of reducing carbon emissions

System controls (thermostatic), improved insulation, low energy lighting, double glazing, draught proofing, A rated appliances

Installations

Solar thermal, photovoltaic, biomass, heat pumps, wind turbines

Organisations

Energy Saving Trust, Carbon Trust

Learning outcome

The learner will:

LO3 know working practices that can conserve energy and reduce waste

Assessment criteria

The learner can:

- 3.1 outline **working practices** that can be employed to conserve energy and protect the environment
 - 3.2 state **methods** for reducing material wastage
-

Range

Working practices

Source materials locally, reduce transportation costs, use low energy appliances where possible, use of rainwater harvesting/grey water recycling, use renewable sources

Methods

Follow good housekeeping eg keep site tidy to reduce loss of materials and waste, measure, cut and set out pipe and cable/trunking runs accurately, reuse off cuts of pipe/cable

Learning outcome

The learner will:

LO4 know how to dispose of waste and materials safely and efficiently

Assessment criteria

The learner can:

AC4.1 identify how to **dispose of waste materials** safely

AC4.2 list **types of metals** that can be recycled

AC4.3 identify current regulations relating to waste disposal

AC4.4 identify **hazardous, non-hazardous** and **inert waste**

AC4.5 state the **appliances** that must be disposed of under the Waste Electrical and Electronic Equipment (WEEE) regulations

Range

Disposal of waste materials

Licensed waste disposal, waste carriers licence, recycling

Types of metals

Copper tube, brass, lead, low carbon steel, copper cable, conduit, galvanised steel trunking

Types of waste

Hazardous

Asbestos, lead, waste electrical equipment, solvents

Non-hazardous

Timber, paper/cardboard, water based glues/paints, scrap metal (excluding lead)

Inert

Bricks, glass, ceramics/tiles, sand and gravel

Appliances

Motors, control equipment, lamps, printed circuit boards, drills

Unit 104

Site preparation for working in the construction industry

Level:	1
UAN:	J/505/1714
Credit value:	1
GLH:	61
Aim:	This unit is designed to provide learners with a fundamental understanding of the Site preparation for new and existing dwellings. Learners will look at tools and fixings used in the installation process and understand the operational health and safety risks involved in working on new build and existing properties.

Learning outcome

The learner will:

LO1 know common hand tools used in site preparatio

Assessment criteria

The learner can:

- 1.1 identify key **hand tools** and their uses
- 1.2 identify common **faults** found with hand tools
- 1.3 state **maintenance requirements** for hand tools
- 1.4 identify appropriate **safety procedures** when using hand tools

Range

Hand tools

Lump hammer, claw hammer, spirit level, tape measure, chalk line, adjustable spanner, wood chisel, steel chisel, bolster chisel, flat head screwdrivers, cross head screwdrivers, pad saw, wood saw, junior hacksaw, hacksaw.

Faults

Mushroom head, loose heads, blunt ,damaged

Maintenance requirements

Sharped points, make tools safe/remove from use, replace blades

Safety procedures

Follow risk assessment, select appropriate PPE

Learning outcome

The learner will:

LO2 know power tools used in site preparation.

Assessment criteria

The learner can:

- 2.1 identify **power tools** and their uses
- 2.2 identify **faults** found with power tools
- 2.3 identify power tools for drilling and cutting
- 2.4 describe relevant **safe working practices** when using power tools
- 2.5 list basic maintenance **safety checks** required for power tools
- 2.6 list **common electrical dangers** when working with electrical tools

Range

Power tools

Jig saw, mains power drill, 110 volt, battery powered tools, circular saw, SDS chuck

Faults

Damaged plugs, damaged lead, missing safety parts, out of date P.A.T label

Safe working practices

Select appropriate tool for task, follow risk assessment, follow manufactures instructions, use appropriate PPE, carry out visual inspection

Safety checks

Current Portable Appliance Test (PAT), cable, plug, fuse, Residual Current Device (RCD), damaged casing

Common electrical dangers

Faulty electrical equipment, signs of damaged or worn electrical cables, power tools and property hard wiring system, trailing cables, damp/wet work area

Learning outcome

The learner will:

LO3 know fixings and components used in the installation process

Assessment criteria

The learner can:

- 3.1 identify types of **drill bits**
- 3.2 identify types of **screw heads**
- 3.3 identify types of **fixings**
- 3.4 state the **reasons** for using screws in different situations
- 3.5 describe which **fixings** to use on different **surfaces**

Range

Drill bits

Masonry, diamond tipped core drills, hole saws, wood boring bit, steel.

Screw heads

Slotted, phillips, pozidrive, roundhead, countersunk.

Fixings (AC3.3 & 3.5)

Brass wood screws, round head screws, self tapping screws, countersunk wood screws, mirror screws, plasterboard fixings, nails, plastic wall plugs.

Reasons

Corrosive properties, cost, different applications.

Surfaces

Solid/brick wall, wood, tiles, plasterboard.

Learning outcome

The learner will:

LO4 know site preparation techniques for installing systems

Assessment criteria

The learner can:

4.1 identify the purpose of **information** that is used for preparatory work

4.2 identify the **installation process** for a new build

4.3 identify the installation process when carrying out work in an existing dwelling/property

4.4 identify different **flooring materials**

4.5 describe processes for **lifting wood flooring** surfaces

4.6 identify **risks** faced when working in a dwelling

4.7 state **regulations** covering cutting holes and notching timber joists

Range

Information

Manufacturer's instructions, job specification, plans/drawings, work schedule

Installation process

1st fix requirements, 2nd fix tasks

Flooring materials

Wooden floor boards, chipboard, carpets, vinyl floor coverings, laminate flooring

Lifting wood flooring

Techniques used to lift floorboard/chipboard, fitting boards down, tools used

Risks

Drilling into existing pipes and cables, open floor, working in a loft space.

Regulations

Building regulation A, maximum depth of notch, maximum size of holes

Learning outcome

The learner will:

LO5 know how to communicate effectively with customers and other trades

Assessment criteria

The learner can:

5.1 describe how to maintain good **customer relationships**

5.2 describe how to maintain good working **relationships with other trades**

Range

Customer relationships

Protecting customer's property, checking for pre-installation damage, using appropriate language and behaviour, dress code, passing on information, timekeeping

Relationships with other trades

Methods of communication, using work programmes, site meetings, resolving disputes

Building regulation, A, maximum depth of notch, maximum size of holes

Learning outcome

The learner will:

LO6 be able to carry out techniques in cutting, drilling and fixing

Assessment criteria

The learner can:

AC6.1 operate **power tools** safely

AC6.2 **mark** fixings

AC6.3 **select** appropriate fixings

AC6.4 **secure fixings** to different surfaces

Range

Power tools

Drill, jig saw.

Mark

Level, measure.

Select

Screws, wall plugs, plaster board fixing.

Secure fixings

Brick/blocks, wooden surface, plaster board..

Unit 105

Electrical installation wiring and terminations

Level:	1
UAN:	L/505/1715
Credit value:	9
GLH:	88
Aim:	This unit provides learning in basic electrical tasks. The learner will have the skills and knowledge to terminate electrical wiring.

Learning outcome

The learner will:

LO1 be able to follow health and safety practices

Assessment criteria

The learner can:

- 1.1 use **Personal Protective Equipment (PPE)** for electrical practical applications
- 1.2 follow relevant health and safety practices
- 1.3 identify and report any potential workshop hazards

Range

Personal Protective Equipment

Hard hats, boots, overalls, goggles, gloves, ear defenders

Learning outcome

The learner will:

LO2 be able to use tools and equipment for wiring and terminations.

Assessment criteria

The learner can:

- 2.1 identify **tools and equipment** used for wiring and terminations
- 2.2 state **methods** of maintaining tools and equipment

2.3 safely use the following tools and equipment:

- a) pliers
- b) screwdrivers (crosshead, slot head and terminal)
- c) wire stripper
- d) low resistance Ohm meter
- e) insulation resistance meter
- f) tape measure
- g) spirit level
- h) hammer
- i) electrician's knife
- j) side cutters
- k) crimping tool

Range

Tools and equipment

Pliers, screwdrivers (crosshead, slot head, terminal, torque), wire stripper, low resistance Ohm meter, Insulation resistance meter, tape measure, spirit level, hammer, side cutters, electrician's knife, crimping tool

Methods

Calibration, sharpening of drills and tools, oiling, cleaning

Learning outcome

The learner will:

LO3 know types of electrical materials, components, fixings and termination methods

Assessment criteria

The learner can:

3.1 identify the following **materials and components**:

- a) cable and flex
- b) conductor identification (sleeving)
- c) socket outlets
- d) light switch plates
- e) consumer unit
- f) main switch
- g) main earthing terminal
- h) ceiling rose and lamp holders
- i) 13 amp 3 pin plug top
- j) earth clamps (BS951)

3.2 state the main difference between circuit breakers and fuses

3.3 identify **fixing methods**

3.4 identify different **termination methods**

Range

Materials and components

Cable and flex

PVC/PVC/CPC (flat twin and earth), single PVC insulated cables, 2 and 3 core flexes.

Socket outlets

Single, twin, switched/unswitched, surface, flush and dry lining boxes.

Light switch plates

One-way, two-way

Lamp holder

Bayonet, Edison screw

Fixing methods

Clips, wood screws, roofing screws, roundhead screws, plasterboard fixings, wall plugs, wall bolts

Termination methods

Screw terminal, soldered terminal, crimp terminal, insulation displacement terminal, push-fit terminal

Learning outcome

The learner will:

LO4 be able to carry out wiring and terminations

Assessment criteria

The learner can:

4.1 produce **circuit diagrams**

4.2 produce **wiring diagrams**

4.3 correctly install the following electrical wiring and accessories to a specification:

- a) 13 amp plug top
- b) one way lighting circuit
- c) 20A radial circuit

4.4 safely inspect and test completed wiring circuit for continuity and insulation resistance

4.5 leave work area in a **safe condition** after completion of work

Range

Circuit diagrams

One way, two way lighting circuits

Wiring diagrams

One way, two way lighting circuits, radial socket circuit (1363)

Safe condition

Area is left clean and tidy, return tools and equipment, return excess materials, dispose of any waste materials

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Supporting information

Guidance

Learning outcome 4 AC4.3

Prior to assessment centres could provide a range of training activities/ practice tasks for learners which could include the following:

- induction tasks
- pendant lamp holder
- ceiling rose
- small consumer unit
- bonding

Unit 106

Fabrication techniques for electrical installation

Level:	1
UAN:	R/505/1716
Credit value:	11
GLH:	110
Aim:	This unit covers a broad range of basic activities designed to prepare the learner for entry into the electrical Industry with the primary emphasis on Electrical Installation. The learner will be expected to plan, prepare for and carry out hand fitting activities. They will produce a work plan containing job instructions, materials, tools, equipment and components that may be required for the activities

Learning outcome

The learner will:

LO1 be able to plan and prepare for hand fitting activities

Assessment criteria

The learner can:

1.1 produce a **work plan** prior to carrying out work activities

1.2 prepare the work area to ensure that it is safe and free from hazards

Range

Work plan

Sequence of activities, health and safety requirements, materials, tools and equipment

Learning outcome

The learner will:

LO2 be able to use hand skills to manufacture and assemble components.

Assessment criteria

The learner can:

2.1 comply with health and safety legislation, regulations and other relevant guidelines

- 2.2 select correct tools and equipment for the task and check that they are in a safe and useable condition
 - 2.3 use **measuring equipment** during hand fitting and checking activities
 - 2.4 mark out the **components** for the required operations using appropriate **marking out equipment** and marking out methods and techniques
 - 2.5 use a range of **fabrication techniques**
 - 2.6 cut and shape **materials** to the required specification, using appropriate tools and techniques
 - 2.7 check work for **accuracy** and **good workmanship**
 - 2.8 leave the work area in a **safe and tidy condition** on completion of work activities
-

Range

Measuring equipment

Rules, tape measures

Components

Metal cable tray bracket, drill gauge, cable gauge

Marking out equipment

Scribers, punches, squares, pencils

Fabrication techniques

Filing, sanding, sawing, drilling, threading, reaming

Materials

Wood, plastic, steel

Checks for accuracy

Dimensions, tolerances, ensuring ends are square

Good workmanship

De-burring, no sharp edges, finish eg no indents, vice marks

Safe and tidy condition

Return tools, fixings and equipment, drawings and work instructions to the designated location

Learning outcome

The learner will:

LO3 be able to assemble electrical wiring support systems

Assessment criteria

The learner can:

- 3.1 comply with health and safety legislation, regulations and other relevant guidelines
 - 3.2 select the correct tools and equipment for cutting, forming and assembly operations
 - 3.3 check tools and equipment are in a safe and useable condition

 - 3.4 cut and form the electrical wiring support system **components** to the required size and shape, using appropriate tools and techniques
 - 3.5 assemble types of electrical wiring support system **components**
-

- 3.6 mount and secure the electrical wiring support system components safely and correctly to meet the specification requirements
- 3.7 **construct** electrical wiring support systems according to relevant industry standards
- 3.8 **check** that completed assembly is secure and meets the required specification
- 3.9 leave the work area in a **safe and tidy condition**.
-

Range

Components (AC3.4 & 3.5)

Metal conduit systems, non-metallic conduit systems, metal trunking system, tray work systems, electrical accessories: straight connectors/couplings, bends/elbows (solid and inspection type), tee pieces (such as solid or inspection type), boxes, reducers, adaptors, fixings, conduit accessories

Construct

Cutting materials to the correct lengths, removing burrs and sharp edges, producing external threads on conduit, producing bends in conduit, offsets

Checks

Positioning, level, secure, supports used where applicable

Safe and tidy condition

Return tools, fixings and equipment, drawings and work instructions to the designated location

Learning outcome

The learner will:

LO4 know electrical wiring support systems component accessories

Assessment criteria

The learner can:

- 4.1 identify types of plastic and metal **conduit accessories**
 - 4.2 identify types of **trunking accessories**
 - 4.3 identify types of cable **tray accessories**
 - 4.3 identify **specialist tools** for wiring support systems
-

Range

Conduit accessories

Lock ring, lock nut, expansion coupler, male and female bushes, nipples, conduit boxes, crampet, saddles, hospital distance, spacer bar, inspection and non inspection bends, male and female adaptors, lids and seals, brass M4 screws, coupler, reducer, conduit clip, male hook, hook plate

Trunking accessories

Couplers, stop ends, end caps, tees, internal and external 900, 450 bends, earth strap, sets, M6 nuts and bolts, reducers, internal pin racks, brackets, flared connector, crossover

Tray accessories

Brackets, M6 nuts and bolts, reducers, tees, bends, risers, couplers

Specialist tools

Bending machines, stocks and dies, reamer, pipe grips, bush spanner, pipe vice, bending spring, conduit cutter, ruler, tape measure, square, centre punch, hacksaw, taps and dies, files, drills, spanners, pliers, metal scribe, screwdrivers, hammers, levels, chalk line, emery cloth, adhesive, conduit draw tape, cutting compound, vice jaw protectors

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Supporting information

Guidance

In order to carry out the activities centres are advised that they may use manufactured fittings and accessories for both tray and trunking tasks.

Learning outcome 1

The learner will need to produce a work plan listing the sequence of activities required, health & safety and tools, equipment and materials required. They will be required to carry out all necessary preparations, within the scope of their responsibility. This will include preparing the work area and ensuring that it is in a safe condition to carry out the intended activities.

Learning outcome 2

When making electrical components the learner will be expected to use appropriate tools and equipment and to check that they are in a safe and usable condition prior to use. They will mark out the material for a range of features to be produced, and then to use hand tools, portable power tools, appropriate fitting techniques to the type of material and operations being performed. These activities will include hand sawing, filing, drilling, and threading.

Learning outcome 3 and 4

The assembly activities will include the forming and assembly of metallic and/or non-metallic systems, and will cover the selection of the appropriate materials, cutting and bending/forming the appropriate pieces that make up the support system. The learner will also need to assemble the prepared pieces, using a range of connection devices, and to position, align and secure them in the correct locations, using the specified/appropriate techniques.

Unit 107

Electrical science and technology

Level:	1
UAN:	Y/505/1717
Credit value:	4
GLH:	39
Aim:	The aim of this unit is to enable the candidate to understand the elementary values of electrical science. This knowledge provides the foundation for electrical studies which can be applied when calculating, constructing and testing simple electrical circuits.

Learning outcome

The learner will:

LO1 know the standard units of measurement used in the electrical installation industry

Assessment criteria

The learner can:

1.1 define internationally recognised (SI) **units of measurements**

1.2 specify **SI derived units** for various electrical quantities

Range

Units of measurement

Metre, kilogram, second, ampere

SI derived units

Volt, watt, ohm

Learning outcome

The learner will:

LO2 now how to use multiples and submultiples.

Assessment criteria

The learner can:

2.1 state the difference between standard form/scientific notation and engineering notation

2.2 list the **multiples** used in electrical theory

2.3 list the **submultiples** used in electrical theory

Range

Multiples

Kilo, mega, giga, tera

Submultiples

Milli, micro

Learning outcome

The learner will:

LO3 know the principles of electrical science.

Assessment criteria

The learner can:

3.1 state the basic principles of **electron flow** theory

3.2 use simple **units** of electrical measurement

3.3 list the **effects** of an electric current

3.4 perform simple electrical **calculations**

3.5 identify AC and DC supplies

3.6 identify how electrical **measuring instruments** are connected

Range

Electron flow

Measurement of electric flow, material conductivity and resistance

Units

Coulombs, current/ampere, voltage/potential, resistance, power

Effects

Chemical, magnetic, thermal

Calculations

Ohm's law, coulombs, series circuits, parallel circuits, power, energy & tariffs

Measuring instruments

Ammeters, voltmeters, ohm meters, wattmeter

Learning outcome

The learner will:

LO4 be able to use technical information

Assessment criteria

The learner can:

- 4.1 identify different **drawing types**
 - 4.2 identify common **electrical symbols** used in drawings
 - 4.3 perform simple calculations to convert scales from drawings to actual dimensions
-

Range

Drawing types

Circuit drawings, wiring diagrams, architectural (layout) drawings

Electrical symbols

Switching (one way, two way, intermediate, pull, switched socket outlets, unswitched socket outlets), lighting points (fluorescent, incandescent, wall), cooker control unit, consumer control unit, fuse, circuit breaker, energy meter

Learning outcome

The learner will:

LO5 know the properties of materials used in the electrical installation industry.

Assessment criteria

The learner can:

- 5.1 identify common **conductor materials** used in the electrical installation industry
 - 5.2 identify common **insulating materials**
-

Range

Conductor materials

Copper, aluminium, brass, steel, silver and gold (silver and gold used in control wiring /contacts)

Insulating materials

Thermoplastic (PVC), thermosetting, silicone rubber

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Supporting information

Guidance

Learning outcome 2 2.3

When teaching AC2.3 there are a number of other multiples and sub multiples that candidates should be introduced to

Learning outcome 3 3.4

Candidates should be introduced to the key principles of electrical generation through the use of magnetism. Michael Farady's laws on electromagnetic induction

Learning outcome 4 4.2

Using the symbols as illustrated in the onsite guide (BS7671)

Appendix 1 Relationship to other qualifications

Links to other qualifications

Centres are responsible for checking the different requirements of all qualifications they are delivering and ensuring that candidates meet requirements of all units/qualifications.

This qualification has connections to the:
Level 1 Diploma in Plumbing Studies

Literacy, language, numeracy and ICT skills development

This qualification can develop skills that can be used in the following qualifications:
Functional Skills (England) – see www.cityandguilds.com/functionalskills
Essential Skills (Northern Ireland) – see www.cityandguilds.com/essentialskillsni
Essential Skills Wales – see www.cityandguilds.com/esw

Appendix 2 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 **Centre document library** on **www.cityandguilds.com** or click on the links below:

Centre Handbook: Quality Assurance Standards

This document is for all approved centres and provides guidance to support their delivery of our qualifications. It includes information on:

- centre quality assurance criteria and monitoring activities
- administration and assessment systems
- centre-facing support teams at City & Guilds/ILM
- centre quality assurance roles and responsibilities.

The Centre Handbook should be used to ensure compliance with the terms and conditions of the centre contract.

Centre Assessment: Quality Assurance Standards

This document sets out the minimum common quality assurance requirements for our regulated and non-regulated qualifications that feature centre-assessed components. Specific guidance will also be included in relevant qualification handbooks and/or assessment documentation.

It incorporates our expectations for centre internal quality assurance and the external quality assurance methods we use to ensure that assessment standards are met and upheld. It also details the range of sanctions that may be put in place when centres do not comply with our requirements or actions that will be taken to align centre marking/assessment to required standards. Additionally, it provides detailed guidance on the secure and valid administration of centre assessments.

Access arrangements: When and how applications need to be made to City & Guilds 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 document library** also contains useful information on such things as:

- conducting examinations
- registering learners
- appeals and malpractice.

Useful contacts

Please visit the **Contact us** section of the City & Guilds website.

City & Guilds

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We partner with our customers to deliver work-based learning programmes that build competency to support better prospects for people, organisations and wider society. We create flexible learning pathways that support lifelong employability because we believe that people deserve the opportunity to (re)train and (re)learn again and again – gaining new skills at every stage of life, regardless of where they start.

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