REGULATED QUALIFICATION FRAMEWORK (RQF)

QUALIFICATION SPECIFICATION

LCL Awards Level 3 Certificate in Installing Testing and Ensuring Compliance of Electrical Installations in Dwellings

1.0 Qualification Objectives

The objectives of the qualification are to:

1. Prepare learners to progress to a qualification in the same subject area but at a higher level or requiring more specific knowledge, skills and understanding
2. Prepare learners to progress to a qualification in another subject area
3. Prepare learners for employment.

2.0 Prior qualifications, knowledge, skill or understanding which learners are required to have achieved before taking the qualification.

None**.**

An Initial Assessment conducted by the Approved Centre (AC) on application for the qualification will determine the learner's capability to complete the qualification.

3.0 Other requirements which a learner must have satisfied before the learner will be assessed or before the qualification will be awarded

None.

4.0 Qualification Framework

The qualification comprises of eight mandatory units which must be satisfactorily completed by learners.

Unit Title	Unit Reference Number	Type of Unit	Level	Credit Value
Understand and Apply Health and Safety legislation, practices and procedures in Electrical Installations	LCL-Q3001	Combination	3	4
Understand and apply environmental legislation, working practices and the principles of environmental technology systems associated with electrical installations	LCL-Q3002	Combination	3	4

Understand and apply the practices and procedures for overseeing and organising the work environment when installing electrical installations	LCL-Q3003	Combination	3	3
Electrotechnical occupational competence - approval of electrical installations	LCL-Q3004	Combination	3	1
Understanding and applying the principles, practices and procedures for the planning, preparation and selection of wiring systems and electrotechnical equipment	LCL-Q3005	Combination	3	3
Understand and apply the principles, practices and legislation for diagnosing and correcting electrical faults in electrical installations	LCL-Q3006	Combination	3	4
Understand and apply the practices and procedures for the installation and connection of wiring systems and electrotechnical equipment	LCL-Q3007	Combination	3	3
Understand and apply the principles, practices and legislation for the inspection, testing, commissioning, approving and certification of electrical installations	LCL-Q3008	Combination	3	5

4.1 Qualification Time and Credit Value:

- Total Qualification Time (TQT) is 270 hours
- The Guided Learning Hours (GLH) are 224
- The total credit value of the qualification is 27.

4.2 Qualification Level

The qualification has been assigned at level 3.

4.3 Grading Structure

The grading structure for the qualification is that learners are required to achieve a result of **Pass** to be awarded credit for each unit. This qualification will be achieved when learners have successfully completed the:

- LCL Awards set and marked multiple choice knowledge examinations
- LCL Awards set and AC marked performance assessments.

4.4 Assessment Method

The assessment methods within the qualification include on-screen multiple choice knowledge examinations and AC marked performance assessments.

The assessment methods have been designed to assess the knowledge, understanding and skills of learners.

The on-screen multiple choice examinations are set and marked by LCL Awards.

The performance assessment is set by LCL Awards and marked by an LCL Awards approved assessor at the AC.

5.0 The criteria against which learners' level of attainment will be measured

The Learning Outcomes and Assessment Criteria against which learners' level of attainment will be measured are detailed in the criteria below.

Unit Learning Outcomes and Assessment Criteria

LCL-Q3001: Understand and Apply Health and Safety legislation, practices and procedures in Electrical Installations

Learning Outcome 01: The learner will know how relevant Health and Safety legislation applies in the workplace.

The learner will demonstrate knowledge of:

1.1. Their own roles and responsibilities and those of others regarding current relevant legislation (The):

- Health and Safety at Work etc. Act
- Electricity at Work Regulations
- Management of Health and Safety at Work Regulations
- Workplace (Health and Safety and Welfare) Regulations
- Control of Substances Hazardous to Health (COSHH) Regulations
- Work at Height Regulations
- Personal Protective Equipment at Work Regulations
- Manual Handling Operations Regulations
- Provision and Use of Work Equipment Regulations
- Control of Asbestos at Work Regulations
- Environmental Protection Act
- Hazardous Waste Regulations
- Electrical and Electronic Equipment Waste Regulations.

1.2. Health and Safety risks and the requirements of health and safety legislation for the range of work operations when installing wiring systems and electrotechnical equipment in dwellings:
- Preparation and planning
- Installation
- Termination and connection
- Inspection, testing and commissioning
- Fault diagnosis and rectification
- Maintenance.

Learning Outcome 02: The learner will be able to apply relevant Health and Safety legislation in the workplace.

The learner will be able to:

2.1. Identify relevant workplace health and safety procedures for the work environment and comply with their duties and obligations as defined by current legislation and organisational procedures
2.2. Produce a risk assessment and method statement in accordance with organisational procedures and the scope of their responsibility
2.3. Work within the requirements of:
- Risk assessments
- Method statements
- Safe systems of work.

Learning Outcome 03: The learner will know the procedures for dealing with health and safety in the work environment.

The learner will demonstrate knowledge of:

3.1. Procedures that should be followed in the case of accidents which involve injury, including requirements for the treatment of electric shock and electrical burns
3.2. Procedures which should be followed when emergency situations occur in the workplace:
- Summoning emergency services
- Information that emergency services require
- Alarm and evacuation procedures
- Designated escape routes
- Firefighting procedures
- Application of first aid.

3.3. Their responsibilities in terms of health and safety in the workplace
3.4. Actions to be taken in situations which exceed their level of responsibility for Health and Safety in the workplace
3.5. Procedures to be followed in accordance with relevant health and safety regulations for reporting health and safety and/or welfare issues in the workplace

3.6. Appropriate responsible persons to whom health and safety and welfare related matters should be reported:
- Employer
- Employees
- Customer/Client
- Safety Officers
- H&S Executive/Inspectors
- Environmental Health Officers.

Learning Outcome 04: The learner will be able to assess the work environment for hazards and identify remedial actions in accordance with Health and Safety legislation.

The learner will be able to:

4.1. Identify unsafe situations and conditions and take remedial actions
4.2. Assess the work environment to consider potential hazards which could cause harm:
- Materials
- Tools
- Equipment.

4.3. Identify high risk hazards and report their presence to persons responsible for health and safety in the workplace
4.4. Apply measures to control health and safety hazards in accordance with their capabilities and responsibilities
4.5. Select and use correct Personal Protective Equipment (PPE) and protection measures to ensure the health and safety of themselves and others in the work environment.

Learning Outcome 05: The learner will know the procedures and practices for establishing a safe working environment.

The learner will demonstrate knowledge of:

5.1. The term “hazard” in relation to Health and Safety legislation in the workplace
5.2. Appropriate PPE required for identified work tasks
5.3. First aid facilities that must be available in the workplace
5.4. Safe practices and procedures when using:
- Access equipment
- Portable power tools
- Tools and materials storage facilities
- Dangerous substances.

5.5. Hazard pictograms, as defined by The European Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures – the CLP Regulation
5.6. Practices and procedures for addressing hazards in the workplace:
- 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
- Work at height
- Work in confined spaces
- Hazardous malfunctions of equipment
- Improper use and storage of tools and equipment.

5.7 Type of fire extinguisher to be used for a particular type of fire

5.8 Situations where asbestos may be encountered in:

- Decorative finishes
- Accessories and switchgear
- Insulation storage compartments, vessels and pipework.

5.9 Procedures for dealing with the suspected presence of asbestos in the workplace.

Learning Outcome 06: The learner will be able to apply methods and procedures to ensure work on site is in accordance with Health and Safety legislation.

The learner will be able to:

6.1 Demonstrate personal conduct and behaviour around the workplace, to ensure that the health and safety of themselves and others is not endangered

6.2 Apply procedures to ensure the safe use, maintenance and storage of tools, plant and equipment as stipulated in:

- Workplace policies
- Supplier and manufacturer information and instructions.

6.3 Comply with hazard warning, mandatory instruction and prohibition notices

6.4 Apply procedures to ensure the safety of the work location through the correct use of guards and notices

6.5 Use access equipment correctly

6.6 Demonstrate the correct procedures to follow in the event of injury to themselves or others, including:

- Application of basic first aid procedures
- Notification of emergency services
- Reporting of incidents.

LCL-Q3002: Understand and apply environmental legislation, working practices and the principles of environmental technology systems associated with Electrical Installations

Learning Outcome 01: The learner will know the environmental legislation, working practices and principles which are relevant to work activities.

The learner will demonstrate knowledge of:

1.1. Relevant legislation for processing waste (The):
- 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. What is meant by the term “environment”

1.3. The ways in which the environment may be affected by work activities:
- Land contamination
- Air pollution
- Pollution of water courses.

1.4. Requirements for electrical installations in dwellings as outlined in relevant sections of (The):
- Building Regulations
- Code for Sustainable Homes.

1.5. Materials and products that are classed as:
- Hazardous to the environment
- Recyclable.

1.6. Organisational procedures for processing materials that are classed as:
- Hazardous to the environment
- Recyclable.

Learning Outcome 02: The learner will be able to apply environmental legislation, working practices and principles for electrical installations.

The learner will be able to:

2.1. Demonstrate workplace procedures for the safe handling, storage and disposal of hazardous materials and products (The):
- 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.

2.2. Demonstrate work practices and procedures in accordance with the requirements for electrical installations in dwellings as outlined in relevant sections of (The):
- Building Regulations
- Code for Sustainable Homes.

2.3. Demonstrate appropriate organisational procedures for reporting environmental hazards.

Learning Outcome 03: The learner will know how work methods and procedures can reduce material wastage and impact on the environment.

The learner will demonstrate knowledge of:

3.1. Installation methods that can help to reduce material wastage
3.2. The importance to report any hazards to the environment that arise from work procedures
3.3. Environmentally friendly materials, products and procedures that can be used in the installation of wiring systems and electrotechnical equipment in dwellings.

Learning Outcome 04: The learner will be able to apply work methods and procedures to reduce material wastage and the impact of work activities on the work environment.

The learner will be able to:

4.1. Demonstrate prefabrication and installation methods which reduce material wastage
4.2. Identify and use environmentally friendly materials, products and procedures for the installation and maintenance of wiring systems and electrotechnical equipment in dwellings.

Learning Outcome 05: The learner will know how and where environmental technology systems can be applied in relation to electrical installations.

The learner will demonstrate knowledge of:

5.1. The fundamental operating principles of environmental technology systems:
- Solar photovoltaic
- Micro wind turbine
- Micro-hydro power
- Heat pumps
- Combined heat and power (CHP) including micro-CHP
- Solar thermal hot water heating
- Electrical energy storage systems.

5.2. The applications and limitations of environmental technology systems:
- Solar photovoltaic
- Micro wind turbine
- Micro-hydro power

- Heat pumps
- Combined heat and power (CHP) including micro-CHP
- Solar thermal hot water heating
- Electrical energy storage systems.

5.3. The Local Authority Building Control requirements which apply to the installation of environmental technology systems in relation to electrical installations in dwellings.

Learning Outcome 06: The learner will know the safety requirements of solar photovoltaic (SPV) installations.

The learner will demonstrate knowledge of:

6.1. The requirements for positioning, fixing and connecting equipment and components:
- AC isolator
- DC isolator
- Inverter
- DC cabling from SPV module to DC isolator
- DC cabling from DC isolator to inverter.

6.2. Safety considerations and risks associated with SPV modules:
- measures to ensure contact cannot be made with live connections
- generation of electricity at low light levels
- reduced use of overcurrent protective devices.

6.3. Methods of verifying and securing circuit isolation.

LCL-Q3003: Understand and apply the practices and procedures for overseeing and organising the work environment when installing electrical installations

Learning Outcome 01: The learner will be able to apply the types of technical and functional information that is available for the installation of electrotechnical systems and equipment.

The learner will be able to:

1.1. Specify sources of technical and functional information which apply to electrotechnical installations:
- Manufacturer information and data
- Supplier information and data
- Information from their employing organisation
- Installation design and specifications
- Specifications, drawings and diagrams.

1.2. Interpret technical and functional information and data from:
- Manufacturer information and data:
  - Materials
  - Components
  - Equipment
  - Measuring and test instruments.

- Supplier information and data:
  - Materials
  - Components
  - Equipment
  - Measuring and test instruments.
- Information from their employment organisation
- Installation specifications
- Client/customer specifications
- Specifications, drawings and diagrams
- Records and certificates for:
  - Inspection
  - Testing
  - Installation completion.

1.3. Interpret technical and functional information relating to electrotechnical products or equipment:
- Operation
- Controls
- Settings
- Adjustments.

1.4. Confirm the work site requirements and procedures in terms of:
- Services provision
- Ventilation provision
- Waste disposal procedures
- Equipment and material storage
- Health and Safety requirements
- Access by personnel.

1.5. Identify equipment and systems that are compatible with site operations and requirements.

Learning Outcome 02: The learner will know the procedures for supplying technical and functional information to relevant people.

The learner will demonstrate knowledge of:

2.1 Their responsibility for supplying technical and functional information to:
- Clients
- Customers
- Site Managers.

2.2 Organisational policies/procedures for the handover and demonstration of electrotechnical systems and equipment, including requirements for confirming and recording handover

2.3 Appropriateness of different customer relations methods and procedures

2.4 Methods of providing technical and functional information appropriate to the needs of:
- Clients
- Customers
- Site Managers.

2.5 The importance of ensuring that:
- Information provided is accurate and complete
- Information is provided clearly, courteously and professionally
- Copies of information provided are retained
- The completed installation is safe, complies with industry standards and functions in accordance with the specification.

2.6 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 03: The learner will be able to provide relevant people with technical and functional information for work on electrical systems and equipment.

The learner will be able to:

3.1. Identify the relevant people who need to be supplied with technical and functional information
3.2. Identify any additional information that may be required:
- Health and Safety information
- Isolation procedures for products/equipment in case of emergencies.

3.3. Liaise with relevant people to determine the information they require to ensure that systems, equipment or components can be operated safely and effectively
3.4. Identify appropriate technical and functional information that is required for the work activity.

Learning Outcome 04: The learner will know the requirements for overseeing Health and Safety in the work environment.

The learner will demonstrate knowledge of:

4.1. The applicable Health and Safety requirements regarding overseeing the work of others
4.2. The procedures for:
- Interpreting risk assessments
- Applying method statements
- Monitoring changing conditions in the workplace
- Complying with site organisational procedures
- Managing Health and Safety on site
- Organising the safe and secure storage of tools and materials.

Learning Outcome 05: The learner will be able to oversee Health and Safety during work on electrical installations.

The learner will be able to:

5.1 Produce risk assessments and method statements, to cover their own work and others working in the area in accordance with level of responsibility

5.2 Follow procedures to confirm that work is being completed in accordance with Health and Safety legislation and industry standards.

Learning Outcome 06: The learner will know the requirements for liaising with others when organising and overseeing work activities.

The learner will demonstrate knowledge of:

6.1. Techniques for the communication with others for the purpose of:
- Motivation
- Instruction
- Monitoring
- Cooperation.

6.2. Methods of determining the competence of operatives for whom they are responsible:
- Checking competency scheme registration cards
- Checking technical qualifications
- Written references from previous employers
- Informal monitoring of performance on-site.

6.3. Their role in terms of:
- Responsibility for other staff
- Liaison with their employer
- Communication with:
  - Customers
  - Clients
  - Site Managers
  - Sub-contractors
  - Other trades
  - Members of the public.

6.4. Appropriate methods for communicating with and responding to others:
- Customers
- Clients
- Site Managers
- Sub-contractors
- Other trades
- Members of the public.

6.5. Procedures for rescheduling work to coordinate with changing conditions in the workplace and coincide with other trades

6.6. Organisational procedures for completing the documentation that is required during work operations.

Learning Outcome 07: The learner will be able to co-ordinate liaison with other relevant persons during work activities.

The learner will be able to:

7.1 Comply with approved procedures to ensure effective coordination with other workers/contractors, including steps to resolve issues which are outside the scope of their job role

7.2 Apply communication techniques that are clear, accurate and appropriate to the situation.

Learning Outcome 08: The learner will know the requirements for organising and overseeing work programmes for the installation.

The learner will demonstrate knowledge of:

8.1 How to plan:
- Work allocations
- Duties of operatives for whom they are responsible
- Coordination with other services and personnel.

8.2 Procedures for carrying out work activities that will:
- Maintain the safety of the work environment
- Maintain cost effectiveness
- Ensure compliance with programmes of work.

8.3 Industry standards that are relevant to activities carried out during the installation of electrotechnical systems and equipment in dwellings (The):
- Management of Health and Safety Regulations
- Health & Safety at Work etc. Act
- Electricity at Work Regulations
- Building Regulations – Parts A, B, C, E, F, L, M, P, S
- BS 7671 Requirements for Electrical Installations (as amended) (BS 7671)
- BS EN 60617 Graphical symbols for diagrams.

8.4 Their responsibilities within the scope of the work programme

8.5 How to determine the estimated time required for the completion of work activities considering influential factors:
- Deployment and availability of suitable personnel
- Delivery and availability of equipment, components and material
- Weather conditions
- Work to be completed by other trades
- Specification variations.

8.6 Possible consequences of **not**:
- Completing work within the estimated time
- Meeting the requirements of the programme of work
- Using the specified materials
- Installing materials and equipment as specified.

8.7 Methods of producing and illustrating work programmes:

- Bar charts
- Spread sheets
- Critical path analysis.

Learning Outcome 09: The learner will know the requirements for organising the provision and storage of resources that are required for work activities.

The learner will demonstrate knowledge of:

9.1. The installation specification and work programme to identify resource requirements:
- Materials
- Components
- Equipment
- Labour
- Tools
- Measuring and test instruments.

9.2. The material schedule to confirm that available materials are:
- Correct type
- Fit for purpose
- Correct quantity.

9.3. Storage and transportation requirements for all materials required in the work location

9.4. Procedures to ensure the safe and effective storage of materials, tools and equipment in the work location.

Learning Outcome 10: The learner will be able to organise and oversee work activities and operations

The learner will be able to:

10.1 Organise operatives by allocating duties and responsibilities relevant to competence

10.2 Monitor the work of operatives to ensure it is in accordance with:
- Industry working practices
- Programme of work
- Health and Safety requirements.

10.3 Apply the correct procedures when a non-compliance is identified during the completion of work activities.

LCL-Q3004: Electrotechnical occupational competence - approval of electrical installations

Learning Outcome 01: The learner will be able to interpret specifications, drawings and diagrams.

The learner will be able to:

1.1. Interpret specifications and technical data for the inspection and functional testing of:
- Earthing systems
- Radial and ring final circuits
- Lighting circuits
- Three-phase motor circuits
- Intruder and fire alarm circuits.

Learning Outcome 02: The learner will be able to undertake risk assessments.

The learner will be able to:

2.1. Review safe working practices
2.2. Undertake a risk assessment
2.3. Complete risk assessment documentation.

Learning Outcome 03: The learner will be able to carry out the safe isolation of electrical circuits and a complete electrical installation.

The learner will be able to:

3.1. Locate the correct means of isolation
3.2. Follow correct procedures for the isolation of electrical circuit(s) and installations
3.3. Isolate circuit(s) in the correct sequence
3.4. Select correct test and measuring instruments
3.5. Correctly test for the presence or absence of an electrical supply.

Learning Outcome 04: The learner will be able to complete the visual inspection, initial verification and certification of an electrical installation.

The learner will be able to:

4.1. Comply with correct procedures
4.2. Record relevant findings on documentation:
- Electrical Installation Certificates
- Minor Electrical Installation Works Certificates
- Schedules of Inspections
- Schedules of Circuit Details and Test Results.

Learning Outcome 05: The learner will be able to complete the testing and certification of an electrical installation in accordance with industry requirements.

The learner will be able to:

5.1. Select and use the correct test instruments
5.2. Confirm test instruments function correctly and accurately
5.3. Measure the continuity of protective conductors
5.4. Measure the continuity of ring final circuit conductors
5.5. Measure the insulation resistance of the installation and circuits
5.6. Confirm the polarity of the installations supply, electrical outlets and components
5.7. Determine the installations earth fault loop impedance (EFLI)
5.8. Determine the installations prospective fault current (I_{pf})
5.9. Carry out functional tests on the installations equipment and components
5.10. Complete the correct documentation in accordance with statutory and non-statutory regulations:
- Electrical Installation Certificates
- Minor Electrical Installation Works Certificates
- Schedules of Inspections
- Schedules of Circuit Details and Test Results.

Learning Outcome 06: The learner will be able to diagnose, and recommend how to rectify, electrical faults in an electrical installation in accordance with industry requirements.

The learner will be able to:

6.1. Undertake an assessment of risk
6.2. Carry out safe isolation in the correct sequence appropriate to fault diagnosis procedures
6.3. Select and correctly use, fit for purpose tools, equipment and instruments
6.4. Carry out relevant checks and preparations
6.5. Locate faults from given information
6.6. Advise how the identified faults can be rectified.

LCL-Q3005: Understanding and applying the principles, practices and procedures for the planning, preparation and selection of wiring systems and electrotechnical equipment

Learning Outcome 01: The learner will know electrical supply and distribution systems for a consumer supply.

The learner will demonstrate knowledge of:

1.1. How electricity is generated and transmitted for consumption in dwellings
1.2. The features and characteristics of a generation and transmission system including:
- Power Stations – fossil fuel; hydro; oil; nuclear
- Supergrid and standard grid systems
- Transformers
- Transmission voltages
- Substations
- Above and below ground distribution.

1.3. The main characteristics of:
- Single-phase electrical supplies
- Three-phase electrical supplies
- Earth fault loop impedance paths.

1.4. The operating principles, applications and limitations of the following types of transformers:
- Core
- Double wound
- Auto.

1.5. The relationship between kVA, kVAr, and kW
1.6. The characteristics and applications of types of system earthing:
- TN-S
- TN-C-S
- TT
- IT

Learning Outcome 02: The learner will know the principles of protection for safety for electrical installations of buildings, structures and the environment.

The learner will demonstrate knowledge of:

2.1 Earthing and bonding
2.2 Protection of electrical systems:
- Automatic disconnection of supply
- Electric shock protection, overload and short-circuit.

2.3 The operating principles, applications, selectivity and limitations of protective devices:
- RCDs/RCBOs
- Fuses
- Circuit-breakers
- SPDs

- AFDDs.

2.4 What is meant by the terms:

- Earth fault loop impedance
- Protective multiple earthing (PME).

Learning Outcome 03: The learner will be able to confirm the electrical supply is in accordance with the installation specification.

The learner will be able to:

3.1. Verify the compatibility of the electrical supply to the requirements of the installation specification

3.2. Identify the earthing arrangement for the electrical installation.

Learning Outcome 04: The learner will know the principles for selecting cables, cable carriers, circuit protection devices, electrotechnical equipment and accessories for electrical installations.

The learner will demonstrate knowledge of:

4.1. How external influences can affect the choice of wiring systems and enclosures

4.2. Current ratings for different circuit protection devices

4.3. Procedures for selecting appropriate overcurrent protection devices

4.4. Diversity factors and how maximum demand is established

4.5. The procedure for selecting a suitable type and size of cable:

- Calculating the current demand of single-phase circuits
- The environment where the cable is to be installed
- Selecting a protective device
- Applying factors for:
  - Grouping
  - Thermal insulation
  - Ambient temperature
  - Installation condition or protective device type.
- The installation method
- Calculating and selecting a suitably sized cable
- Checking voltage drop
- Determining and checking earth fault loop impedance values
- Consideration of thermal constraints.

4.6. Cable capacities of conduit and trunking

4.7. The constructional features, applications, advantages and limitations of types of cable:

- Thermosetting insulated cables including flexes
- Single and multicore thermoplastic (PVC) and thermosetting insulated cables
- PVC/PVC flat profile cable
- SWA PVC cable
- Armoured/braided flexible cables and cords
- Fire resistant cable.

4.8. The constructional features, applications, advantages and limitations of cable and conductor containment systems:
- PVC and metallic conduit
- PVC and metallic trunking.

4.9. How environmental factors can affect the selection of wiring systems, enclosures, equipment and accessories:
- Ambient temperature
- Effect of moisture on insulation
- Corrosive substances
- UV rays
- Damage by animals
- Mechanical stress and vibration damage
- Aesthetic considerations
- Exposure to the elements.

4.10. The types of wiring systems, equipment and accessories used for:
- Lighting systems
- Power systems (final circuits)
- Distribution systems (sub mains)
- Environmental control/building management systems
- Security, fire alarm and emergency lighting systems.

Learning Outcome 05: The learner will be able to confirm that planned work is in accordance with the installation specification.

The learner will be able to:

5.1. Verify that cable types and sizes meet the requirements of the installation specification
5.2. Verify that protective devices meet the requirements of the installation specification
5.3. Verify that enclosures, equipment and accessories meet the requirements of the installation specification.

LCL-Q3006: Understand and apply the principles, practices and legislation for diagnosing and correcting electrical faults in electrical installations

Learning Outcome 01: The learner will know the relationship between different electrical properties and AC electrical circuits and equipment.

The learner will demonstrate knowledge of:

1.1 How to identify and determine the values of:
- Resistance
- Resistivity
- Power
- Frequency
- Current
- Voltage
- Energy
- Impedance
- Power Factor
- Actual Power
- Reactive Power
- Apparent Power.

1.2 The electrical test instruments used for the measurement of different electrical values:
- Resistance
- Power
- Frequency
- Current
- Voltage
- Energy
- Impedance.

Learning Outcome 02: The learner will know the principles, regulatory requirements and procedures for completing the safe isolation of electrical circuits and complete electrical installations.

The learner will demonstrate knowledge of:

2.1 The correct procedure for completing safe isolation:
- Carrying out safe working practices
- Identifying circuit(s) to be isolated
- Identifying suitable points of isolation
- Selecting test equipment and proving instruments in accordance relevant industry guidance and standards
- Applying testing methods
- Selecting locking devices for securing isolation
- Placing of warning notices
- Sequence for the safe isolation of electrical circuit(s) and installations.

2.2 The implications of carrying out safe isolation to:
- Other personnel
- Customers/clients
- Members of the public
- Building systems (loss of supply).

2.3 The implications of **not** carrying out safe isolation to:
- Self
- Other personnel
- Customers/clients
- Members of the public
- Building systems (presence of supply).

2.4 The Health and Safety requirements which apply when diagnosing and correcting electrical faults in electrotechnical systems and equipment in dwellings including those which cover:
- Working in accordance with risk assessments/permits to work/method statements
- Safe use of tools and equipment
- Safe and correct use of measuring instruments
- Provision and use of PPE
- Reporting of unsafe situations.

Learning Outcome 03: The learner will be able to confirm safety of the system and equipment prior to diagnosing and correcting electrical faults in accordance with statutory and non-statutory regulations.

The learner will be able to:

3.1. Carry out safe isolation procedures
3.2. Ensure the health and safety of themselves and others within the work location
3.3. Select and use appropriate warning notices and barriers
3.4. Check the safety of electrical systems prior to the commencement of diagnosing and correcting electrical faults.

Learning Outcome 04: The learner will know how to complete the reporting and recording of electrical fault diagnosis and correction work on electrical installations**.**

The learner will demonstrate knowledge of:

4.1. Procedures for reporting and recording information on electrical fault diagnosis and correction work
4.2. Procedures for informing relevant persons about information on electrical fault diagnosis, corrective work and the completion of relevant documentation
4.3. Providing relevant persons with information on fault diagnosis and corrective work clearly, courteously and accurately.

Learning Outcome 05: The learner will know how to complete the preparatory work prior to fault diagnosis and correction work on electrical installations.

The learner will demonstrate knowledge of:

5.1. Safe working procedures that should be adopted for completion of fault diagnosis and corrective work:
- Effective communication with others in the work area
- Use of barriers
- Positioning of notices
- Safe isolation.

5.2 The logical stages of fault diagnosis and corrective work:
- Identification of symptoms
- Collection and analysis of data
- Use of information, certificates and reports
- Maintenance records
- Experience of self and other persons
- Checking, inspecting and testing
- Interpreting results and information
- Fault correction
- Functional testing
- Reenergizing.

5.3 The common symptoms of electrical faults:
- Loss of supply
- Undervoltage
- Operation of overload or fault current devices
- Component or equipment malfunction/failure
- Arcing.

5.4 The causes of types of electrical faults:
- High resistance
- Transient voltages
- Insulation failure
- Excessive current
- Short-circuit
- Open circuit.

5.5 The types of faults and their likely locations in:
- Wiring systems
- Terminations and connections
- Equipment and accessories.

5.6 The special precautions that should be taken:
- Lone working
- Electro-static discharge
- Electronic devices (damage)
- IT equipment (damage/shutdown).

Learning Outcome 06: The learner will know the procedures and techniques for diagnosing electrical faults on electrical installations.

The learner will demonstrate knowledge of:

6.1 The dangers of electricity in relation to the nature of fault diagnosis work
6.2 How to identify supply voltages
6.3 How to select the correct test instruments for fault diagnosis work, in accordance with HSE guidance document GS38:
- Voltage indicators
- Low-resistance ohmmeters
- Insulation resistance testers
- EFLI testers
- RCD testers
- Tong tester/clamp ammeter.

6.4 How to confirm test instruments are fit for purpose, functioning correctly and are calibrated
6.5 The appropriate documentation that is required for fault diagnosis work and how and when it should be completed
6.6 Why carrying out fault diagnosis work can have implications for customers and clients
6.7 The procedures for testing and their relationship to fault diagnosis:
- Continuity of conductors
- Insulation resistance
- Polarity
- Earth fault loop impedance
- RCD operation
- Current and voltage measurement.

6.8 Whether test results are acceptable and the actions to take where unsatisfactory results are obtained.

Learning Outcome 07: The learner will be able to carry out procedures to identify faults on electrical installations.

The learner will be able to:

7.1. Use effective methods of communication to ascertain clear and detailed information about reported faults and any components which require replacing
7.2. Identify and use appropriate system specification documents which relate to the electrotechnical systems and equipment being worked upon
7.3. Report information about potential disruption that may be a consequence of fault diagnosis and correction work to relevant people, such as:
- Other workers/colleagues
- Customers/clients.

7.4. Assess the safe working practices which apply in the working environment to confirm that it is safe for fault identification work to take place
7.5. Perform suitable diagnostic tests on the installed electrotechnical systems to successfully identify faults:

- Loss of supply
- Overload
- Short-circuit and earth fault
- Transient voltage
- High resistance joints
- Component, accessory or equipment faults.

7.6. Use appropriate methods for locating faults on electrical systems and equipment:
- Procedures and sequences
- Safe working practices
- Interpretation of data.

7.7. Use appropriate tools and instruments correctly to complete fault diagnosis work:
- Voltage indicators
- Low-resistance ohmmeters
- Insulation resistance testers
- EFLI testers
- RCD testers
- Tong tester/clamp ammeter.

7.8. Confirm test instruments are fit for purpose, functioning correctly and calibrated.

Learning Outcome 08: The learner will know the procedures and techniques for correcting faults in electrical installations.

The learner will demonstrate knowledge of:

8.1. The factors which can affect fault correction, repair or replacement:
- Cost
- Availability of replacement parts
- Downtime
- Legal and personal responsibilities
- Accessibility of the installation
- Provision of emergency or standby supplies.

8.2. The procedures for functional testing and the tests that can verify fault correction:
- Continuity of conductors
- Insulation resistance
- Polarity
- Earth fault loop impedance
- RCD operation
- Values of current and voltage.

8.3. Appropriate documentation required for fault correction work and how and when it should be completed

8.4. How and why relevant people need to be kept informed during completion of fault correction work:
- Other workers/colleagues
- Customers/clients.

8.5. The methods for restoring the condition of building fabric:

- Brickwork
- Plastering
- Aesthetics.

8.6. The methods to ensure the safe disposal of any waste and that the work area is left in a safe and clean condition.

Learning Outcome 09: The learner will be able to correct faults on electrical installations.

The learner will be able to:

9.1. Confirm appropriate repairs, removals and replacements and their implications with relevant people:
- Other workers/colleagues
- Customers/clients.

9.2. Perform fault correction procedures correctly and safely using appropriate tools, equipment and material

9.3. Perform the removal and replacement of components and associated equipment from electrotechnical systems to ensure:
- Ease of access to enable future maintenance
- Accordance with:
  - Relevant regulations
  - Manufacturer's instructions
  - Organisational procedures.

9.4. Apply appropriate procedures to ensure electrotechnical systems, equipment and components are left safe, in accordance with industry regulations, if the fault cannot be corrected immediately

9.5. Perform appropriate inspection and testing procedures to confirm that systems, equipment and components are functioning correctly after completion of fault correction work

9.6. Record test results and other appropriate information regarding the fault correction work clearly and accurately and report to relevant people:
- Other workers/colleagues
- Customers/clients
- Representatives of other services.

LCL-Q3007: Understand and apply the practices and procedures for the installation and connection of wiring systems and electrotechnical equipment

Learning Outcome 01: The learner will know the procedures for checking the work location prior to the commencement of work activities.

The learner will demonstrate knowledge of:

1.1. The preparations that should be completed before electrical installation work starts:
- Interpretation of specifications to produce accurate material and equipment requisites
- Identification and selection of material, equipment and components compatible to installation specification
- Confirmation of site readiness for installation
- Confirmation that tools, equipment and instruments are fit for purpose
- Confirmation of provision for secure site storage of tools, equipment, materials and components
- Identification of suitable access equipment
- Identification of suitable installation, fixing and fitting methods
- Identification of points in the installation programme where co-ordination with other trades and personnel may be necessary.

1.2. How to check for any pre-existing damage to customer/client property:
- Dwelling wall/floor fabric
- Equipment and components
- Dwelling décor and floor finishes
- Importance of checking for damage prior to commencement of any work activity.

1.3. The actions that should be taken if pre-existing damage to customer/client property is identified

1.4. The methods for protecting the fabric and structure of the dwelling before and during installation work.

Learning Outcome 02: The learner will be able to prepare the working environment for the installation of wiring systems, enclosures and associated equipment.

The learner will be able to:

2.1. Ensure the Health and Safety of themselves and others within the work location

2.2. Identify and use suitable personal protective equipment throughout the completion of work activities

2.3. Complete preparatory work for the installation of electrical systems, enclosures and associated equipment:
- Interpretation of installation specifications to produce material and equipment requisites
- Identification and selection of material, equipment and components which are compatible with the installation specification
- Identification of suitable methods, procedures and practices
- Confirmation of site readiness for installation work to begin

- Confirmation of secure site storage facilities for tools, equipment, materials and components
- Confirmation that safe isolation has been conducted in accordance with regulatory requirements
- Completion of a risk assessment.

Learning Outcome 03: The learner will know the regulatory requirements which apply to the installation of wiring systems, associated equipment and enclosures.

The learner will demonstrate knowledge of:

3.1 The main requirements in accordance with BS 7671 and how they impact upon the installation of wiring systems, associated equipment and enclosures in dwellings:

- Selection and erection of wiring systems, associated equipment and enclosures
- Isolation and switching
- Protection against fire
- Protection against electric shock
- Special installations and locations
- Segregation.

3.2 The requirements of the Building Regulations for the installation of electrotechnical systems and equipment in dwellings:

- Part A
- Part B
- Part C
- Part E
- Part F
- Part L
- Part M
- Part P
- Part S.

Learning Outcome 04: The learner will be able to interpret appropriate information for the installation of wiring systems, enclosures and associated equipment.

The learner will be able to:

4.1. Use information and documentation that is current and relevant to the work required:

- Installation specifications
- Work schedules
- Work programmes
- Regulatory documents, BS 7671 and Guidance Notes
- Method statements
- Manufacturer's instructions.

4.2. Use documentation to confirm that materials and equipment is of the correct quantity and is free from damage:

- Materials schedules
- Operating instructions
- Tools and instruments.

4.3. Use appropriate procedures to record:
- Contract variations
- Site instructions

4.4. Demonstrate that authorisation has been obtained from the relevant person(s) prior to commencement of the work:
- Other workers
- Customers/clients

4.5. Produce a record of any pre-work damage or defects to existing equipment or building features, and report to the relevant person(s).

Learning Outcome 05: The learner will know the practices, procedures and regulatory requirements for completing the safe isolation of electrical circuits and complete electrical installations.

The learner will demonstrate knowledge of:

5.1. The procedure for completing safe isolation:
- Carrying out safe working practices
- Correctly identifying circuit(s) to be isolated
- Identifying suitable points of isolation
- Selecting correct test and proving instruments in accordance with relevant industry guidance and standards
- Applying correct testing methods
- Selecting locking devices for securing isolation
- Placing of warning notices
- Applying correct sequence for the safe isolation of an electrical circuit and complete electrical installation

5.2. The implications of carrying out safe isolation to:
- Other personnel
- Customers/clients
- Members of the public
- Building systems (loss of supply)

5.3. The implications of **not** carrying out safe isolation to:
- Self
- Other personnel
- Customers/clients
- Members of the public
- Building systems (presence of supply)

Learning Outcome 06: The learner will know the practices and procedures for installing wiring systems, associated equipment, enclosures and accessories.

The learner will demonstrate knowledge of:

6.1. The procedures for selecting and safely using appropriate hand tools, power tools and adhesives for electrical installation work.
6.2. The procedures for selecting and safely using equipment for measuring and marking out for wiring systems, equipment and enclosures
6.3 The criteria for selecting and safely using tools and equipment for fixing and installing wiring systems, associated equipment and enclosures
6.4 The criteria for selecting and safely using fixing devices for wiring systems, associated equipment and enclosures:
- Load bearing capacity
- Fabric of structure
- Environmental considerations
- Aesthetics.

6.5 The installation methods and procedures to ensure that:
- Wiring systems, enclosures, cables and accessories are securely fixed and installed
- The mechanical integrity of wiring systems is maintained in accordance with the installation specification and statutory and non-statutory regulations

6.6 The methods and techniques for restoring the building fabric.

Learning Outcome 07: The learner will be able to install wiring systems, enclosures, associated equipment and accessories safely, in accordance with the installation specification.

The learner will be able to:

7.1. Ensure that the planned locations for the wiring system(s) and its associated equipment are compatible with other site services requirements
7.2. Use different measuring and marking out techniques which are appropriate to the wiring system, wiring enclosure and/or associated equipment that is being installed
7.3. Ensure that the planned locations are visually acceptable and in accordance with the installation specification
7.4. Produce a planned programme of work for the fitting and fixing of wiring systems, wiring enclosures, associated equipment and accessories in accordance with:
- A safe system of work
- Co-ordination with other trades
- Relevant regulations
- Installation specifications
- Manufacturers' instructions.

7.5. Install in accordance with BS 7671, the installation specification, manufacturers' instructions and agreed planned programme of work:
- Thermosetting insulated cables including flexes
- Single and multicore thermoplastic (PVC) and thermosetting insulated cables

- PVC/PVC flat profile cable
- SWA/PVC cable
- Armoured/braided flexible cables and cords
- Fire resistant cable.

7.6. Install in accordance with BS 7671, the installation specification, manufacturers' instructions and agreed planned programme of work:
- PVC and metallic conduit
- PVC and metallic trunking.

7.7. Install in accordance with BS 7671, the installation specification, manufacturers' instructions and agreed planned programme of work:
- Isolators and switches
- Socket-outlets
- Consumer units
- Earth fault and overcurrent protective devices
- Luminaires
- Other equipment.

7.8. Dispose of unwanted material and equipment in accordance with site procedures and statutory requirements.

Learning Outcome 08: The learner will know the procedures and applications of different methods of terminating and connecting conductors, cables, and flexible cords in electrical wiring systems and equipment.

The learner will demonstrate knowledge of:

8.1 The advantages, limitations and applications of connection methods:
- Screw
- Crimped
- Compression.

8.2. The procedures for proving that terminations and connections are electrically and mechanically sound

8.3. The consequences of terminations not being electrically and mechanically sound:
- High resistance joints
- Corrosion and erosion.

Learning Outcome 09: The learner will know the procedures and applications of different methods of terminating and connecting conductors, cables, and flexible cords in electrical wiring systems and equipment.

The learner will demonstrate knowledge of:

9.1 The Health and Safety requirements appropriate to terminating and connecting conductors, cables and flexible cords in electrical wiring systems and equipment:
- Selection and use of tools
- PPE

- Risk assessment
- Reporting of unsafe situations
- Compliance with relevant statutory and non-statutory regulations.

9.2 The techniques and methods for the safe and effective termination and connection of:

- Thermosetting insulated cables including flexes
- Single and multicore thermoplastic (PVC) and thermosetting insulated cables
- PVC/PVC flat profile cable
- SWA/PVC cable
- Armoured/braided flexible cables and cords
- Fire resistant cable.

Learning Outcome 10: The learner will be able to confirm any variations to the installation specification or planned programme of work.

The learner will be able to:

10.1. Confirm variations to the installation specification and/or work programme have been identified and appropriate action applied after agreement of relevant persons

10.2. Verify that the completed system is installed in accordance with BS 7671, the installation specification and manufacturer instructions.

LCL-Q3008: Understand and apply the principles, practices and legislation for the inspection, testing, commissioning, approving and certification of electrical installations

Learning Outcome 01: The learner will know the procedures and regulatory requirements and for completing the safe isolation of an electrical circuit and complete electrical installations in preparation for inspection, testing and commissioning.

The learner will demonstrate knowledge of:

1.1. The requirements of The Electricity at Work Regulations for the safe inspection of electrical systems and equipment, in terms of those carrying out the work and those using the building during the inspection

1.2. The correct procedure for completing safe isolation regarding:

- Carrying out safe working practices
- Correctly identifying circuit(s) to be isolated
- Identifying suitable points of isolation
- Selecting correct test and proving instruments in accordance with relevant industry guidance and standards
- Applying correct testing methods
- Selecting locking devices for securing isolation
- Placing of warning notices
- Sequence for the safe isolation of an electrical circuit and complete installation.

1.3. The implications of carrying out safe isolations to:

- Other personnel

- Customers/clients
- Members of the public
- Building systems (loss of supply).

1.4. The implications of **not** carrying out safe isolations to:
- Self
- Other personnel
- Customers/clients
- Members of the public
- Building systems (Presence of supply).

1.5. The safety requirements which apply when inspecting, testing and commissioning electrical installations and circuits:
- Risk assessments / permits to work / method statements
- Safe use of tools and equipment
- Safe and correct use of test instruments
- Provision and use of PPE
- Reporting of unsafe situations.

Learning Outcome 02: The learner will be able to confirm safety of the system and equipment prior to completion of inspection, testing and commissioning in accordance with statutory and non-statutory regulations.

The learner will be able to:

2.1. Carry out safe isolation procedures in accordance with regulatory requirements for electrical installations

2.2. Ensure the health and safety of themselves and others within the work location during inspection, testing and commissioning

2.3. Check the safety of electrical systems prior to the commencement of inspection, testing and commissioning.

Learning Outcome 03: The learner will know the principles and regulatory requirements for inspecting, testing, commissioning and approving electrical installations.

The learner will demonstrate knowledge of

3.1. The purpose of and requirements for initial verification and periodic inspection of electrical installations

3.2. The requirements of the relevant documents associated with the inspection, testing and commissioning of an electrical installation:
- Electricity at Work Regulations
- BS 7671
- IET Guidance Note 3 (GN3)
- IET On-Site Guide
- Electricity Safety, Quality and Continuity Regulations
- Building Act

- Building Regulations.

3.3. The information that is required to correctly conduct the initial verification of an electrical installation in accordance with BS 7671 and GN3

3.4. The requirements for complying with the Building Regulations for the installation of electrotechnical systems and equipment in dwellings:
  - Part A
  - Part B
  - Part C
  - Part E
  - Part F
  - Part L
  - Part M
  - Part P
  - Part S.

3.5. The requirements of notification to "Local Authority Building Control"

3.6. The applications and limitations of electrical components:
- Contactors
- Relays
- Solenoids
- Overcurrent protective devices
- Fuses
- Circuit-breakers
- RCDs
- RCBOs.

3.7. The relationship between resistance, inductance, capacitance and impedance

3.8. The relationship between kW, kVAr, kVA and Power Factor.

Learning Outcome 04: The learner will know the regulatory requirements and procedures for completing the inspection of electrical installations.

The learner will demonstrate knowledge of:

4.1. Items to be checked during the inspection of electrotechnical systems and equipment, and their locations as required by BS 7671

4.2. Which human senses can be used during the inspection process

4.3. Items of an electrical installation that should be inspected in accordance with GN3

4.4. The requirements for the inspection of electrotechnical installations.

Learning Outcome 05: The learner will be able to inspect electrical installations.

The learner will be able to:

5.1. Assess whether the safe system of work is appropriate to the work activity

5.2. Carry out a visual inspection in accordance with the requirements of the installation specification, BS 7671 and GN3:
- Installation methods of wiring systems and equipment

- Selection of conductors, cables and cords
- Selection of protective and isolation devices
- Routing and identification/labelling of conductors, cables and flexible cords
- Presence of means of earthing
- Presence of protective conductors
- Isolation and switching
- Type and rating of overcurrent and fault current protective devices.

5.3. Complete a Schedule of Inspections in accordance with BS 7671 and GN3.

Learning Outcome 06: The learner will know the regulatory requirements and procedures for the safe testing and commissioning of electrical installations.

The learner will demonstrate knowledge of:

6.1. Tests to be carried out on an electrical installation in accordance with BS 7671 and GN3

6.2. Test instruments:
- Suitability and fit for purpose
- Scale and settings.

6.3. Safe and correct use of test instruments:
- Checks to prove test instruments, leads and probes are safe and functioning correctly
- To be regularly checked and calibrated.

6.4. Test results compliance with standard values and actions to take in the event of unsatisfactory results

6.5. Testing in the sequence required by BS 7671 and GN3

6.6. Verifying the continuity of circuit protective conductors, earthing conductors, bonding conductors and ring final circuit conductors

6.7. Methods for verifying the continuity of circuit protective conductors and ring final circuit conductors and interpreting the obtained results

6.8. Effects on insulation resistance values from:
- Cables connected in parallel
- Variations in cable length.

6.9. Procedures for completing insulation resistance testing:
- Precautions to be taken prior to testing
- Methods of testing
- Test voltages and minimum values for circuits operating at various voltages.

6.10. The importance of the verification of polarity

6.11. Methods for testing polarity

6.12. Methods for measuring earth electrode resistance and interpreting the results

6.13. The earth fault loop impedance paths for:
- TN-S
- TN-C-S
- TT
- IT

6.14. Methods for verifying protection by automatic disconnection of the supply:
- Measurement of earth fault loop impedance (Z_s) and external impedance (Z_e)

- Establishing Z_e by enquiry
- Calculating Z_s from given information
- Comparing Z_s against the maximum tabulated values in BS 7671.

6.15. Methods for determining prospective fault current (I_{pf})
6.16. Methods for testing the operation of RCDs
6.17. Phase sequence
6.18. Functional testing and equipment to be checked
6.19. Methods for verification of voltage drop
6.20. The cause of voltage drop in an electrical installation
6.21. The appropriate procedures for dealing with customers and clients during the commissioning and certification process:
- Ensuring the safety during the completion of work activities
- Keeping customers and clients informed during the process
- Labelling electrical circuits, systems and equipment that are yet to be commissioned
- Providing all appropriate documentation upon completion of the work.

Learning Outcome 07: The learner will know the procedures and requirements for the completion of electrical installation certificates and related documentation for electrical installations.

The learner will demonstrate knowledge of:

7.1. The purpose of and relationship between:
- Electrical Installation Certificates
- Minor Electrical Installation Works Certificates
- Schedules of Inspections
- Schedules of Circuit Details and Test Results.

7.2. The information that must be contained within:
- Electrical Installation Certificates
- Minor Electrical Installation Works Certificates
- Schedules of Inspections
- Schedules of Circuit Details and Test Results.

7.3. The certification process for a completed installation and identify the responsibilities of different relevant personnel in relation to the completion of the certification process
7.4. The procedures and requirements, in accordance with BS 7671, GN3 and where appropriate customer/client requirements for the recording and retention of completed:
- Electrical Installation Certificates
- Minor Electrical Installation Works Certificates
- Schedules of Inspections
- Schedules of Circuit Details and Test Results.

Learning Outcome 08: The learner will be able to test electrical installations.

The learner will be able to:

8.1. Select the test instruments and their accessories for the following tests:
- Continuity of conductors
- Insulation resistance
- Polarity
- Earth fault loop impedance
- Prospective fault current
- RCD operation
- Functional testing.

8.2. Carry out the following tests in accordance with the installation specification and BS 7671 and manufacturer's instructions:
- Continuity of conductors
- Insulation resistance
- Polarity
- Earth fault loop impedance
- Prospective fault current
- RCD operation
- Functional testing.

8.3. Verify test results and report all findings to relevant persons, as appropriate, including:
- Representatives of other services/colleagues
- Customers/clients.

8.4. Complete in accordance with BS 7671 and GN3:
- Electrical Installation Certificates
- Minor Electrical Installation Works Certificates
- Schedules of Inspections
- Schedules of Circuit Details and Test Results.

8.5. Conform in accordance with BS 7671 and GN3, and where appropriate customer/client requirements to the procedures and requirements for the recording and retention of completed:
- Electrical Installation Certificates
- Minor Electrical Installation Works Certificates
- Schedules of Inspections
- Schedules of Circuit Details and Test Results.

Learning Outcome 09: The learner will be able to commission and approve electrical installations in accordance with statutory and non-statutory regulations.

The learner will be able to:

9.1. Clarify the commissioning procedures with relevant persons on site, including:
- Representatives of other services/colleagues
- Customers/clients.

9.2. Carry out the commissioning of circuits, equipment and components to confirm functionality, fit for purpose and safety in accordance with:
- The installation specification
- BS 7671
- Manufacturer's instructions
- Maintenance schedules
- Health and Safety requirements.

9.3. Demonstrate to the customer/client that the operation of the circuits, equipment and components are in accordance with the installation specification and customer/client requirements

9.4. Complete the handover of electrotechnical systems and equipment to relevant persons including the provision of accurate and complete documentation regarding the completed inspection, testing, commissioning and customer satisfaction

9.5. Carry out the approval of electrical installations in dwellings in accordance with the procedures for notifying "Local Authority Building Control".

6.0 Other Information

Qualification Regulator Numbers:

- Ofqual QAN 601/7876/0
- Qualifications Wales C00/0752/8

Sector Skills Area: SSA: 5.2 Building and Construction.

Age suitability: 16+

Last Qualification Review Date: November 2024

Next Qualification Review Date: November 2027