



LICQual

Level 3 Diploma in Electrical Quality Control and Quality Assurance QC / QA

Qualification Specification

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LICQual

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Qualification Specifications about

LICQual Level 3 Diploma in Electrical Quality Control and Quality Assurance QC / QA

About LICQual

LICQual is a globally recognized awarding body based in the United Kingdom. Renowned for its commitment to excellence in education, LICQual specializes in delivering high-quality qualifications designed to meet the evolving needs of international learners, professionals, and industries. LICQual is dedicated to fostering innovative and flexible learning pathways, providing learners with the tools and knowledge to excel in dynamic professional landscapes. The organization emphasizes adherence to international qualification frameworks and standards, ensuring global recognition and applicability of its certifications.

The vision of LICQual is to establish itself as a global benchmark in quality education and skills development. Its mission is to equip individuals and organizations with internationally recognized qualifications that enhance employability, professional productivity, and academic progression.

Underpinned by a team of experienced professionals, including examiners, moderators, and assessors, LICQual ensures the highest standards of quality assurance and continuous improvement. Its qualifications are designed to empower individuals with the expertise and competencies necessary to thrive in today's competitive and ever-changing global environment.

Course Overview

The LICQual Level 3 Diploma in Electrical Quality Control and Quality Assurance (QC/QA) is a specialized program designed to equip individuals with the essential knowledge and skills required to excel in quality management within the electrical engineering sector. This comprehensive course focuses on the principles and practices of quality control and assurance, emphasizing the importance of maintaining high standards in electrical installations, maintenance, and inspections.

Participants will gain in-depth understanding of quality management systems, learn to perform effective inspections and audits, and ensure compliance with industry standards and regulations. The curriculum combines theoretical knowledge with practical applications, preparing learners for roles such as Quality Control Inspectors, Electrical Technicians, or QA/QC Engineers.

By completing this diploma, individuals enhance their employability and are well-positioned to contribute significantly to the safety, reliability, and efficiency of electrical systems across various industries.

Certification Framework

Qualification title	LICQual Level 3 Diploma in Electrical Quality Control and Quality Assurance QC/ QA
Course ID	LICQ2200172
Qualification Credits	60 Credits
Course Duration	3 to 6 Months
Grading Type	Pass / Fail
Competency Evaluation	Coursework / Assignments / Verifiable Experience
Assessment	<p>The assessment and verification process for LICQual qualifications ensures that learners achieve the required standards and maintain consistency across all Approved Training Centres (ATCs). This process is divided into two key stages:</p> <p>Internal Assessment and Verification:</p> <ul style="list-style-type: none"> ✓ This stage is conducted by the staff at the ATC, ensuring that learners meet the qualification standards through ongoing assessments. ✓ Internal Quality Assurance (IQA) is performed by the centre's designated IQA staff to validate and maintain the integrity of the assessment processes. <p>External Quality Assurance:</p> <ul style="list-style-type: none"> ✓ This stage is overseen by LICQual AB verifiers, who periodically review the centre's assessment and IQA procedures. ✓ The external verification ensures that assessments adhere to the required standards and that consistent practices are maintained across all centres.

Entry Requirements

To enroll in the LICQual Level 3 Diploma in Electrical Quality Control and Quality Assurance QC / QA, candidates should meet the following criteria:

- ✓ A minimum of a Level 2 qualification in Electrical Engineering or a related field, or equivalent work experience..
- ✓ Basic knowledge of electrical systems and components.
- ✓ Proficiency in English, both written and spoken, to complete coursework and assessments effectively.

Qualification Structure

This qualification comprises 6 mandatory units, totaling 60 credits. Candidates must successfully complete all mandatory units to achieve the qualification.

Mandatory Units		
Unit Ref#	Unit Title	Credits
LICQ2200172 - 1	Introduction to Electrical Quality Control and Assurance Principles	10
LICQ2200172 - 2	Tools and Techniques for Electrical QC/QA Inspections	10
LICQ2200172 - 3	Understanding Electrical Standards, Regulations, and Compliance	10
LICQ2200172 - 4	Analyzing and Troubleshooting Electrical System Deficiencies	10
LICQ2200172 - 5	Risk Assessment and Safety Management in Electrical QA/QC	10
LICQ2200172 - 6	Documentation, Reporting, and Continuous Improvement in QC/QA	10

Centre Requirements

To ensure the quality and consistency of training, assessment, and learner support for the LICQual Level 3 Diploma in Electrical Quality Control and Quality Assurance QC / QA , centres must meet the following requirements:

1. Approval to Deliver the Qualification

- ✓ Centres must obtain formal approval from LICQual to deliver this specific qualification, regardless of prior registration.
- ✓ The approval process involves a review of resources, staff qualifications, and policies to confirm alignment with the program's standards.

2. Qualified Staff

- ✓ **Tutors:** Should hold qualifications relevant to electrical engineering, electrical installations, or related disciplines at Level 6 or higher, along with experience in teaching or industrial QC/QA practices.
- ✓ **Assessors:** Must possess recognized assessor qualifications (e.g., TAQA or equivalent) and demonstrate expertise in electrical quality assurance practices with hands-on experience in the field.
- ✓ **Internal Quality Assurers (IQAs):** Should hold IQA certifications with proven experience in overseeing assessment quality in electrical engineering or related sectors, ensuring compliance with high-quality standards.

3. Learning Facilities

Centres must provide appropriate learning environments to support both theoretical and practical components of the program:

- ✓ **Classrooms:** Modern, well-equipped classrooms with multimedia capabilities to facilitate interactive lectures and discussions on electrical quality control principles. Resources should include access to electrical codes and standards, such as IEC standards and QA/QC frameworks.
- ✓ **Practical Areas:** Hands-on learning environments such as electrical testing labs, inspection facilities, or simulated audit setups to perform quality control procedures. These should include tools for defect analysis, equipment testing, and report preparation.
- ✓ **Technology Access:** Centers should ensure access to advanced computers with electrical engineering software (e.g., AutoCAD, QA/QC tracking tools) and reliable internet connectivity. Resources should also include platforms for digital QA/QC management and tools for data analysis to support collaborative project work and research.

4. Health and Safety Compliance

- ✓ Centres must comply with relevant health and safety regulations, ensuring that learning environments are safe and accessible.
- ✓ Regular risk assessments must be conducted to uphold safety standards, particularly during practical training or fieldwork activities.

5. Resource Requirements

- ✓ **Learning Materials:** Approved manuals, textbooks, and supplementary resources aligned with the curriculum and learning outcomes.
- ✓ **Assessment Tools:** Templates, marking guides, and standardized forms for conducting and recording assessments.
- ✓ **E-Learning Systems:** If offering online or hybrid learning, centres must provide a robust Learning Management System (LMS) to deliver course content and facilitate assessments remotely.

6. Assessment and Quality Assurance

- ✓ Centres must follow LICQual's standards for assessments, ensuring they are fair, valid, and reliable.
- ✓ Internal Quality Assurance (IQA) processes must be implemented to monitor assessments and offer constructive feedback to assessors.
- ✓ External verification visits by LICQual will be conducted periodically to ensure compliance with awarding body standards.

7. Learner Support

Centres must provide learners with access to guidance and support throughout the program, including:

- ✓ Academic assistance for coursework and assessments.
- ✓ Career guidance to support professional progression.
- ✓ Additional support for learners with specific needs, such as disabilities or language barriers.

8. Policies and Procedures

Centres must maintain and implement the following policies, as required by LICQual:

- ✓ Equal Opportunities Policy.
- ✓ Health and Safety Policy.
- ✓ Safeguarding Policies and Procedures.
- ✓ Complaints and Appeals Procedures.
- ✓ Data Protection and Confidentiality Policy.

9. Regular Reporting to LICQual

- ✓ Centres must submit periodic updates to LICQual, including details on learner enrollment, progress, and completion rates.
- ✓ Comprehensive records of assessments and learner achievements must be maintained and made available for external auditing.

By meeting these rigorous requirements, centres can ensure the successful delivery of the LICQual Level 3 Diploma in Electrical Quality Control and Quality Assurance QC / QA, providing learners with the highest quality education and professional development opportunities.

Support for Candidates

Centres should ensure that materials developed to support candidates:

- ✓ Enable the tracking of learners' progress as they achieve the specified learning outcomes and assessment criteria.
- ✓ Provide clear guidance on accessing LICQual's policies and procedures.
- ✓ Establish robust mechanisms to allow Internal and External Quality Assurance personnel to verify and authenticate evidence efficiently.

This structured approach promotes transparency, enhances the learning experience for candidates, and ensures adherence to high-quality assurance standards.

Assessment

This qualification is competence-based, requiring candidates to demonstrate their skills, knowledge, and understanding as outlined in the qualification units. The assessment is designed to measure candidates' proficiency against established standards. Key aspects include:

1. Assessment Process:

- ✓ Assessments must be conducted by qualified and experienced assessors.
- ✓ Candidates are required to compile a portfolio of evidence demonstrating achievement of all learning outcomes and assessment criteria for each unit.

2. Types of Evidence:

- ✓ Observation reports by the assessor.
- ✓ Assignments, projects, or reports.
- ✓ Professional discussions.
- ✓ Witness testimonies.
- ✓ Candidate-produced work.
- ✓ Worksheets.
- ✓ Records of oral and written questioning.
- ✓ Recognition of Prior Learning (RPL).

3. Learning Outcomes and Assessment Criteria:

- ✓ **Learning Outcomes:** Define what candidates should know, understand, or accomplish upon completing the unit.
- ✓ **Assessment Criteria:** Detail the standards candidates must meet to demonstrate that the learning outcomes have been achieved.

This framework ensures rigorous and consistent evaluation of candidates' competence in line with the qualification's objectives.

Unit Descriptors

LICQ2200172 – 1: Introduction to Electrical Quality Control and Assurance Principles

The aim of this unit is to provide learners with a foundational understanding of the principles and practices of quality control and quality assurance in electrical systems. It focuses on the importance of QC/QA in ensuring the reliability and safety of electrical installations, introduces key objectives and principles, and helps learners distinguish between QC and QA processes within the context of electrical engineering.

Learning Outcome:	1. Understand the fundamental concepts of quality control (QC) and quality assurance (QA) in electrical systems.
Assessment Criteria:	<ol style="list-style-type: none"> 1.1. Define the fundamental concepts of quality control (QC) and quality assurance (QA) as applied to electrical systems. 1.2. Differentiate between the roles and objectives of QC and QA within the context of electrical engineering projects. 1.3. Explain the significance of QC/QA in maintaining safety, reliability, and performance standards in electrical installations. 1.4. Identify the key components of a quality management system relevant to electrical systems. 1.5. Analyze the relationship between QC/QA and compliance with industry standards and regulations. 1.6. Provide examples of practical applications of QC and QA in electrical engineering processes. 1.7. Evaluate the impact of effective QC/QA practices on project outcomes and operational efficiency. 1.8. Assess the challenges and limitations associated with implementing QC/QA in electrical systems. 1.9. Demonstrate understanding through case studies or scenarios illustrating the application of QC/QA principles.
Learning Outcome:	2. Explain the importance of QC/QA in ensuring reliability and safety in electrical installations.
Assessment Criteria:	<ol style="list-style-type: none"> 2.1 Define the key concepts of quality control (QC) and quality assurance (QA) in the context of electrical installations. 2.2 Analyze the relationship between QC/QA practices and the overall reliability of electrical systems. 2.3 Evaluate the role of QC/QA in preventing electrical hazards and ensuring operational safety. 2.4 Demonstrate an understanding of industry standards and their application in enhancing reliability and safety. 2.5 Explain the impact of QC/QA processes on minimizing defects and system failures. 2.6 Assess case studies that highlight the importance of QC/QA in successful electrical projects. 2.7 Identify the consequences of inadequate QC/QA practices on safety and system performance. 2.8 Justify the integration of QC/QA as a critical component of electrical installation

	<p>planning and execution.</p> <p>2.9 Illustrate how continuous quality improvement enhances safety and reliability in electrical systems.</p>
Learning Outcome:	3. Identify key principles and objectives of electrical QC/QA processes.
Assessment Criteria:	<p>3.1 Define the key principles of electrical quality control (QC) and quality assurance (QA) in electrical systems.</p> <p>3.2 Explain the importance of quality management systems in electrical installations and maintenance.</p> <p>3.3 Identify the primary objectives of QC/QA processes in ensuring electrical system reliability and safety.</p> <p>3.4 Describe the roles and responsibilities of personnel involved in electrical QC/QA processes.</p> <p>3.5 Outline the regulatory frameworks and standards that influence electrical QC/QA practices.</p> <p>3.6 Analyze the relationship between quality control and quality assurance in electrical engineering.</p> <p>3.7 Evaluate the impact of effective QC/QA processes on the overall performance of electrical systems.</p> <p>3.8 Demonstrate an understanding of the continuous improvement cycle within electrical QC/QA processes.</p> <p>3.9 Discuss the implications of poor QC/QA practices on electrical system performance and safety.</p>
Learning Outcome:	4. Differentiate between quality control and quality assurance in the context of electrical systems.
Assessment Criteria:	<p>4.1 Define quality control and quality assurance within the context of electrical systems, highlighting their distinct roles and purposes.</p> <p>4.2 Explain the key differences between quality control and quality assurance processes in electrical engineering.</p> <p>4.3 Identify the tools and techniques commonly used in quality control and quality assurance for electrical systems.</p> <p>4.4 Describe how quality control focuses on detecting defects, while quality assurance focuses on preventing defects in electrical systems.</p> <p>4.5 Evaluate the impact of quality control and quality assurance on the overall performance and safety of electrical installations.</p> <p>4.6 Analyze the roles and responsibilities of personnel involved in quality control and quality assurance in electrical projects.</p> <p>4.7 Apply appropriate quality control and assurance methods to specific scenarios in electrical system design, installation, and maintenance.</p> <p>4.8 Demonstrate an understanding of how both processes contribute to compliance with international electrical standards and regulations.</p> <p>4.9 Compare and contrast the benefits of quality control and quality assurance in improving the reliability and durability of electrical systems.</p>

LICQ2200172 – 2: Tools and Techniques for Electrical QC/QA Inspections

The aim of this unit is to equip learners with the knowledge and skills to effectively utilize tools and techniques for electrical QC/QA inspections. Learners will gain the ability to select appropriate inspection tools, apply standard testing methods, use electrical testing instruments correctly, and identify defects or irregularities to ensure compliance with quality standards in electrical systems.

Learning Outcome:	1. Recognize and select appropriate tools used in electrical QC/QA inspections.
Assessment Criteria:	<ol style="list-style-type: none"> 1.1. Identify key tools and instruments used in electrical QC/QA inspections, such as multimeters, insulation testers, and power analyzers. 1.2. Assess the suitability of different tools for specific electrical inspection tasks based on project requirements. 1.3. Demonstrate the proper use of electrical testing tools according to manufacturer guidelines and industry best practices. 1.4. Evaluate the accuracy and reliability of tools used in inspections to ensure consistent and precise results. 1.5. Understand the calibration requirements for electrical testing instruments and ensure they are properly maintained. 1.6. Select the correct tools based on the type of electrical component or system being inspected. 1.7. Apply safety protocols when using electrical tools during inspections to minimize risk to personnel and equipment. 1.8. Identify potential limitations or issues with tools and instruments and recommend corrective actions to ensure reliable performance. 1.9. Maintain and store tools appropriately to extend their lifespan and ensure readiness for future inspections.
Learning Outcome:	2. Apply standard techniques for testing and evaluating electrical components and systems.
Assessment Criteria:	<ol style="list-style-type: none"> 2.1 Identify and select appropriate testing techniques for evaluating electrical components and systems based on industry standards and project requirements. 2.2 Demonstrate proficiency in using standard electrical testing instruments, such as multimeters, insulation testers, and power analyzers, to assess system performance. 2.3 Conduct tests systematically, ensuring compliance with safety regulations and electrical standards during testing procedures. 2.4 Record accurate data during testing, including readings, measurements, and observed conditions. 2.5 Analyze test results to identify potential issues or irregularities in electrical systems. 2.6 Interpret testing outcomes in relation to electrical standards and specifications to assess system compliance. 2.7 Recommend corrective actions or improvements based on test findings to ensure optimal system performance and safety. 2.8 Ensure all testing and evaluation activities are documented clearly and comprehensively for reporting purposes.

	2.9 Review and update testing techniques and tools regularly to maintain alignment with evolving industry practices and standards.
Learning Outcome:	3. Demonstrate the proper use of electrical testing instruments (e.g., multimeters, insulation testers, power analyzers).
Assessment Criteria:	<p>3.1 Identify the key electrical testing instruments used in electrical inspections, such as multimeters, insulation testers, and power analyzers.</p> <p>3.2 Demonstrate proficiency in the correct operation and handling of each testing instrument.</p> <p>3.3 Apply appropriate safety protocols when using electrical testing equipment to prevent hazards.</p> <p>3.4 Perform accurate measurements of electrical parameters (e.g., voltage, resistance, insulation resistance, power) using the correct testing instruments.</p> <p>3.5 Interpret the results from electrical testing instruments to assess the condition of electrical components and systems.</p> <p>3.6 Conduct calibration and maintenance of testing instruments to ensure accurate readings and reliability.</p> <p>3.7 Troubleshoot common issues with electrical testing instruments to ensure proper functionality.</p> <p>3.8 Document the results of tests performed, ensuring clarity, accuracy, and compliance with industry standards.</p> <p>3.9 Evaluate and report on the effectiveness of testing instruments in diagnosing electrical system issues.</p>
Learning Outcome:	4. Identify common defects or irregularities during electrical inspections.
Assessment Criteria:	<p>4.1 Recognize common electrical defects and irregularities in wiring, connections, and components.</p> <p>4.2 Identify issues related to insulation resistance, grounding, and continuity during inspections.</p> <p>4.3 Detect signs of wear, corrosion, or overheating in electrical systems and components.</p> <p>4.4 Identify potential risks associated with improper installation or faulty electrical components.</p> <p>4.5 Observe deviations from standard electrical configurations or industry regulations.</p> <p>4.6 Evaluate the performance of electrical systems against established standards and specifications.</p> <p>4.7 Document irregularities and defects clearly and accurately for further analysis or reporting.</p> <p>4.8 Use appropriate testing equipment to confirm suspected defects or irregularities.</p> <p>4.9 Prioritize the severity of identified issues and recommend corrective actions based on their potential impact on system safety and performance.</p>

LICQ2200172 – 3 Understanding Electrical Standards, Regulations, and Compliance

The aim of this unit is to provide learners with a comprehensive understanding of electrical standards, regulations, and compliance processes. It emphasizes the significance of adhering to national and international standards for ensuring electrical safety and performance. Learners will develop the skills to identify key standards, explain compliance and certification processes, and analyze case studies to evaluate adherence to regulatory requirements in electrical QA/QC.

Learning Outcome:	1. Understand the role of standards and regulations in ensuring electrical safety and performance.
Assessment Criteria:	<ol style="list-style-type: none"> 1.1. Identify key standards and regulations that govern electrical safety and performance at both national and international levels. 1.2. Explain the purpose and scope of relevant electrical standards, such as IEC, IEEE, and NEC, in ensuring system reliability. 1.3. Describe the key safety requirements outlined in electrical standards and their implications for electrical system design and installation. 1.4. Analyze the impact of regulatory compliance on electrical system safety and performance. 1.5. Evaluate the consequences of non-compliance with electrical safety standards and regulations. 1.6. Examine the role of certification processes in verifying compliance with electrical standards. 1.7. Interpret the relationship between electrical regulations and industry best practices in achieving safety and performance goals. 1.8. Demonstrate understanding of how electrical standards and regulations influence QA/QC practices in electrical systems. 1.9. Apply knowledge of standards and regulations to assess the compliance of electrical systems in case study scenarios.
Learning Outcome:	2. Identify key national and international electrical standards (e.g., IEC, IEEE, NEC).
Assessment Criteria:	<ol style="list-style-type: none"> 2.1 Identify major national and international electrical standards relevant to electrical systems and installations. 2.2 Describe the scope and purpose of key electrical standards such as IEC, IEEE, and NEC. 2.3 Explain the role of these standards in ensuring electrical safety, reliability, and performance. 2.4 Differentiate between various national and international standards and their applicability to different electrical projects. 2.5 Analyze the relationship between electrical standards and regulatory compliance requirements. 2.6 Assess the impact of non-compliance with these standards on electrical system performance and safety. 2.7 Locate and interpret specific clauses within these standards to demonstrate their practical application in electrical engineering. 2.8 Evaluate how electrical standards influence the design, installation, and maintenance of electrical systems. 2.9 Demonstrate an understanding of updates and revisions to electrical standards

	and their implications for quality control and assurance processes.
Learning Outcome:	3. Explain the process of compliance and certification in electrical QA/QC.
Assessment Criteria:	<p>3.1 Define the key concepts of compliance and certification in electrical quality assurance and control.</p> <p>3.2 Identify the relevant national and international standards required for electrical system compliance.</p> <p>3.3 Explain the roles and responsibilities of stakeholders involved in the compliance and certification process.</p> <p>3.4 Describe the steps involved in obtaining certification for electrical systems, including testing, documentation, and inspections.</p> <p>3.5 Evaluate the importance of certification for ensuring safety, reliability, and performance in electrical installations.</p> <p>3.6 Compare different certification bodies and their requirements for electrical QA/QC.</p> <p>3.7 Identify common challenges and barriers in achieving electrical system compliance and certification.</p> <p>3.8 Analyze case studies to assess the effectiveness of compliance and certification processes in real-world electrical projects.</p> <p>3.9 Demonstrate an understanding of the ongoing monitoring and recertification requirements to maintain compliance in electrical systems.</p>
Learning Outcome:	4. Analyze case studies to evaluate adherence to electrical standards and regulations.
Assessment Criteria:	<p>4.1 Select relevant case studies that demonstrate the application of electrical standards and regulations in real-world scenarios.</p> <p>4.2 Identify the key electrical standards and regulations applicable to each case study.</p> <p>4.3 Evaluate the extent to which the case study adheres to national and international electrical standards (e.g., IEC, IEEE, NEC).</p> <p>4.4 Analyze the impact of non-compliance with electrical standards on safety, performance, and legal consequences.</p> <p>4.5 Assess the documentation and reporting processes used in the case studies to ensure compliance with electrical standards.</p> <p>4.6 Compare the case study findings with industry best practices and regulatory requirements.</p> <p>4.7 Identify potential gaps or areas of improvement in the application of electrical standards within the case study.</p> <p>4.8 Recommend corrective actions or improvements to ensure full compliance with electrical standards and regulations.</p> <p>4.9 Provide a critical review of the effectiveness of existing compliance strategies based on the case study analysis.</p>

LICQ2200172 – 4: Analyzing and Troubleshooting Electrical System Deficiencies

The aim of this unit is to enable learners to analyze and troubleshoot deficiencies in electrical systems effectively. Participants will develop the ability to identify common issues and their root causes, apply systematic diagnostic techniques, recommend practical solutions, and implement preventive measures to enhance the reliability and performance of electrical systems.

Learning Outcome:	1. Identify common deficiencies in electrical systems and their causes.
Assessment Criteria:	<ul style="list-style-type: none"> 1.1. Demonstrate an understanding of the types of deficiencies commonly found in electrical systems. 1.2. Identify the root causes of electrical system deficiencies based on systematic analysis and testing. 1.3. Utilize industry-standard tools and techniques to detect deficiencies in electrical components and systems. 1.4. Evaluate the impact of identified deficiencies on the overall performance and safety of electrical systems. 1.5. Analyze the effects of environmental factors, installation practices, and maintenance on electrical system deficiencies. 1.6. Apply relevant electrical standards and regulations to identify deficiencies and non-compliance. 1.7. Use case studies and real-world examples to identify common deficiencies in electrical systems. 1.8. Differentiate between minor and major deficiencies and prioritize corrective actions accordingly. 1.9. Document and report identified deficiencies, ensuring clarity and accuracy in communicating findings.
Learning Outcome:	2. Develop skills in diagnosing issues through systematic analysis and testing.
Assessment Criteria:	<ul style="list-style-type: none"> 2.1 Demonstrate the ability to identify common electrical system deficiencies and their potential causes. 2.2 Apply systematic analysis methods to assess electrical system performance and identify issues. 2.3 Utilize appropriate diagnostic tools and techniques to evaluate electrical components and systems. 2.4 Conduct tests and measurements accurately to gather relevant data for diagnosing issues. 2.5 Analyze test results to pinpoint faults or irregularities within the electrical system. 2.6 Interpret diagnostic data to propose practical solutions for identified deficiencies. 2.7 Evaluate the effectiveness of corrective actions and verify that the issue has been resolved. 2.8 Develop a structured approach to troubleshooting that ensures consistency and accuracy in diagnosis. 2.9 Document the diagnostic process, findings, and solutions in clear, professional reports.
Learning Outcome:	3. Recommend effective solutions to address identified deficiencies.
Assessment Criteria:	<ul style="list-style-type: none"> 3.1 Analyze the identified deficiencies in the electrical system and determine their

	<p>root causes.</p> <p>3.2 Evaluate the potential impact of the deficiencies on system performance, safety, and compliance.</p> <p>3.3 Research and assess industry-standard solutions for addressing similar deficiencies in electrical systems.</p> <p>3.4 Propose appropriate corrective actions based on technical feasibility, cost-effectiveness, and safety considerations.</p> <p>3.5 Prioritize solutions based on urgency, complexity, and potential risks associated with the deficiencies.</p> <p>3.6 Provide clear and detailed recommendations, including required resources, timelines, and personnel.</p> <p>3.7 Ensure the proposed solutions align with relevant national and international electrical standards and regulations.</p> <p>3.8 Collaborate with relevant stakeholders (e.g., engineers, technicians, safety officers) to validate proposed solutions.</p> <p>3.9 Develop a plan for implementing the recommended solutions, including monitoring and evaluation strategies to ensure effectiveness.</p>
Learning Outcome:	4. Implement preventive measures to minimize future deficiencies.
Assessment Criteria:	<p>4.1 Identify common deficiencies in electrical systems that may reoccur in future operations.</p> <p>4.2 Analyze the root causes of identified deficiencies to understand underlying issues.</p> <p>4.3 Develop preventive measures based on industry standards and best practices to address identified deficiencies.</p> <p>4.4 Evaluate the effectiveness of proposed preventive measures in reducing future risks and defects.</p> <p>4.5 Create an action plan to implement preventive measures in line with quality assurance protocols.</p> <p>4.6 Collaborate with relevant stakeholders to ensure preventive measures are incorporated into ongoing maintenance or installation processes.</p> <p>4.7 Monitor the implementation of preventive measures to ensure compliance with quality standards.</p> <p>4.8 Document the preventive measures and outcomes for future reference and continuous improvement.</p> <p>4.9 Review and update preventive strategies regularly to ensure their continued relevance and effectiveness.</p>

LICQ2200172– 5: Risk Assessment and Safety Management in Electrical QA/QC

The aim of this unit is to provide learners with the knowledge and skills to conduct effective risk assessments and implement safety management practices in electrical QA/QC. Learners will identify potential hazards, develop risk mitigation strategies, and promote a safety-focused culture to ensure compliance and minimize risks during inspections and testing processes.

Learning Outcome:	1. Understand the principles of risk assessment in the context of electrical systems.
Assessment Criteria:	<ul style="list-style-type: none"> 1.1. Define the key concepts and principles of risk assessment specific to electrical systems. 1.2. Identify various types of risks and hazards associated with electrical systems, including electrical shock, fire, and equipment failure. 1.3. Explain the importance of conducting risk assessments to ensure safety and compliance in electrical installations. 1.4. Describe the process of identifying and evaluating risks in electrical systems, including hazard identification and risk analysis techniques. 1.5. Apply risk assessment methodologies to assess the potential impact of electrical hazards on personnel, property, and the environment. 1.6. Demonstrate the use of standard risk assessment tools and frameworks in electrical engineering contexts. 1.7. Evaluate the effectiveness of existing risk control measures and suggest improvements based on risk assessment findings. 1.8. Discuss the role of regulatory compliance and safety standards (e.g., IEC, NEC) in risk assessment for electrical systems. 1.9. Ensure that risk assessments align with organizational safety protocols and industry best practices to minimize electrical hazards.
Learning Outcome:	2. Identify potential hazards associated with electrical QA/QC processes.
Assessment Criteria:	<ul style="list-style-type: none"> 2.1 Recognize common hazards in electrical QA/QC processes, including electrical shock, fire, and equipment malfunctions. 2.2 Evaluate the risks associated with electrical inspections, testing, and maintenance activities. 2.3 Identify potential hazards related to electrical equipment, tools, and materials used during QA/QC operations. 2.4 Assess the impact of inadequate safety measures on personnel, equipment, and project outcomes. 2.5 Understand environmental hazards, such as exposure to hazardous chemicals or unsafe work environments, in electrical QA/QC tasks. 2.6 Identify human factors, such as operator error or lack of training, which can contribute to electrical hazards. 2.7 Analyze safety data sheets (SDS) and safety regulations relevant to electrical QA/QC activities to recognize hazardous materials. 2.8 Recognize the importance of site-specific hazards, such as site layout or weather conditions, that may affect electrical QA/QC processes. 2.9 Review historical incident reports to identify recurring hazards and areas of concern in electrical QA/QC operations.

Learning Outcome:	3. Develop strategies to mitigate risks during inspections and testing.
Assessment Criteria:	<p>3.1 Identify potential risks associated with inspections and testing in electrical systems.</p> <p>3.2 Assess the severity and likelihood of identified risks to determine priority for mitigation.</p> <p>3.3 Develop specific strategies to address each identified risk, ensuring compliance with safety regulations.</p> <p>3.4 Ensure the use of appropriate tools, equipment, and safety measures to mitigate risks during inspections and testing.</p> <p>3.5 Implement control measures to prevent or reduce the occurrence of identified risks.</p> <p>3.6 Monitor the effectiveness of risk mitigation strategies during inspections and testing activities.</p> <p>3.7 Review and update risk mitigation strategies based on feedback, incident reports, and lessons learned.</p> <p>3.8 Communicate risk mitigation plans clearly to team members and stakeholders to ensure proper understanding and adherence.</p> <p>3.9 Document risk assessment and mitigation strategies in compliance with industry standards and organizational requirements.</p>
Learning Outcome:	4. Promote a culture of safety and compliance in electrical QA/QC operations.
Assessment Criteria:	<p>4.1 Identify key safety and compliance regulations relevant to electrical QA/QC operations.</p> <p>4.2 Demonstrate an understanding of the importance of safety culture in electrical systems and QA/QC processes.</p> <p>4.3 Promote the implementation of safety protocols during inspections, testing, and maintenance activities.</p> <p>4.4 Encourage team members to adhere to safety standards and practices during electrical QA/QC operations.</p> <p>4.5 Integrate safety and compliance considerations into the planning and execution of electrical quality assurance tasks.</p> <p>4.6 Monitor and assess the adherence to safety and compliance practices throughout the QA/QC processes.</p> <p>4.7 Provide guidance and training on safety protocols and compliance requirements to relevant personnel.</p> <p>4.8 Evaluate the effectiveness of safety and compliance initiatives through regular audits and feedback.</p> <p>4.9 Recommend improvements to safety and compliance procedures based on ongoing assessments and industry best practices.</p>

LICQ2200172 – 6: Documentation, Reporting, and Continuous Improvement in QC/QA

The aim of this unit is to equip learners with the skills to create accurate and detailed documentation for electrical inspections and tests, while developing clear and structured QA/QC reports. It emphasizes the importance of feedback loops in continuous quality improvement and encourages the implementation of best practices to maintain and enhance QC/QA processes for sustained operational excellence.

Learning Outcome:	1. Prepare accurate and detailed documentation for electrical inspections and tests.
Assessment Criteria:	<ol style="list-style-type: none"> 1.1. Accurately record inspection and test data, ensuring completeness and clarity. 1.2. Ensure all relevant electrical components and systems are documented in accordance with industry standards. 1.3. Utilize standardized templates and formats for consistency in documentation. 1.4. Verify the accuracy of measurements, readings, and observations before documenting results. 1.5. Maintain clear and organized records to facilitate easy retrieval and reference. 1.6. Include relevant technical specifications, drawings, and test criteria in the documentation. 1.7. Document any deviations from expected results or identified deficiencies, with clear descriptions. 1.8. Ensure documentation is compliant with regulatory and organizational requirements. 1.9. Review and update documentation regularly to reflect any changes or improvements in procedures.
Learning Outcome:	2. Develop structured and clear QA/QC reports to communicate findings effectively.
Assessment Criteria:	<ol style="list-style-type: none"> 2.1 Identify the key components required for a comprehensive QA/QC report, including inspection results, test findings, and compliance status. 2.2 Organize report content logically, ensuring clear and concise presentation of technical information. 2.3 Ensure all data included in the report is accurate, relevant, and properly sourced from inspection and testing procedures. 2.4 Use industry-standard terminology and formats to ensure the report is easily understood by all stakeholders. 2.5 Include appropriate visual aids (e.g., charts, diagrams, tables) to support findings and enhance report clarity. 2.6 Provide clear conclusions and actionable recommendations based on inspection and testing results. 2.7 Ensure the report complies with applicable regulatory and organizational documentation standards. 2.8 Review and edit the report to eliminate errors and ensure consistency in language, formatting, and technical accuracy. 2.9 Deliver the final report within the required time frame, ensuring it meets the expectations of the intended audience.
Learning Outcome:	3. Understand the importance of feedback loops in continuous quality improvement.
Assessment Criteria:	<ol style="list-style-type: none"> 3.1 Define the concept of feedback loops and their role in continuous quality improvement (CQI).

	<p>3.2 Explain the relationship between feedback loops and the overall quality management process in electrical systems.</p> <p>3.3 Identify key sources of feedback within electrical QA/QC processes, including inspections, testing, and stakeholder input.</p> <p>3.4 Evaluate the impact of feedback on the identification of quality issues and the development of improvement strategies.</p> <p>3.5 Analyze how feedback loops contribute to the refinement of quality control and assurance processes over time.</p> <p>3.6 Demonstrate the ability to incorporate feedback into the decision-making process for process improvement.</p> <p>3.7 Develop a structured approach for collecting, analyzing, and acting on feedback to drive continuous improvement.</p> <p>3.8 Assess the effectiveness of implemented changes based on feedback and recommend further actions if necessary.</p> <p>3.9 Ensure that feedback mechanisms are documented and integrated into the broader quality management system for accountability and future reference.</p>
Learning Outcome:	4. Implement best practices for maintaining and improving QC/QA processes.
Assessment Criteria:	<p>4.1 Identify industry-recognized best practices for maintaining and improving QC/QA processes in electrical systems.</p> <p>4.2 Evaluate current QC/QA processes to determine areas for improvement and ensure alignment with international standards.</p> <p>4.3 Develop strategies for integrating best practices into existing workflows, ensuring continuous quality enhancement.</p> <p>4.4 Implement changes to QC/QA processes based on feedback, audits, and performance evaluations.</p> <p>4.5 Monitor the effectiveness of improvements through regular reviews and key performance indicators (KPIs).</p> <p>4.6 Promote a culture of continuous improvement within the team by providing training and fostering collaborative feedback.</p> <p>4.7 Document and communicate improvements in QC/QA procedures to stakeholders, ensuring transparency and compliance.</p> <p>4.8 Ensure that the revised QC/QA practices comply with relevant national and international regulations and standards.</p> <p>4.9 Regularly assess and update QC/QA practices to incorporate emerging industry trends and technological advancements.</p>

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