



**COMPETENCY BASED CURRICULUM**  
**FOR**  
**ELECTRICAL ENGINEERING (POWER OPTION)**

**KNQF LEVEL: 6**

**ISCED PROGRAMME CODE: 0713 554B**



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## **ELECTRICAL EQUIPMENTS AND SYSTEM MAINTENANCE**

**UNIT CODE:** ENG/CU/PO/CR/08/6/B

### **Relationship to Occupational Standards**

This unit addresses the unit of competency: Maintain Electrical Equipment and systems

**Duration of Unit:** 130 hours

### **Unit Description**

This unit covers the competencies required to carry out maintenance in electrical equipment and systems. This includes preparing maintenance schedule, inspecting and testing electrical equipment and systems, preparing list of maintenance tools and equipment, performing maintenance activities, system testing and documenting maintenance records.

### **Summary of Learning Outcomes**

1. Prepare maintenance schedule
2. Inspect and test electrical equipment and systems
3. Prepare list a list of maintenance tools
4. Perform maintenance activities
5. Conduct system tests
6. Document maintenance records

### **Learning Outcomes, Content and Suggested Assessment Methods**

<b>Learning Outcome</b>	<b>Content</b>	<b>Suggested Assessment Methods</b>
1. Prepare maintenance schedule	<ul style="list-style-type: none"><li>• Maintenance<ul style="list-style-type: none"><li>• Meaning of terms</li><li>• Maintenance checklist</li><li>• Maintenance work plan and tools</li><li>• Identification of maintenance personnel</li><li>• Types of maintenance and procedures<ul style="list-style-type: none"><li>• Periodic service</li><li>• Preventive</li><li>• Breakdown</li><li>• Corrective</li></ul></li></ul></li><li>• Scheduling maintenance based on service manuals</li></ul>	<ul style="list-style-type: none"><li>• Written tests</li><li>• Oral questioning</li></ul>

	<ul style="list-style-type: none"> <li>• Safety precautions to be observed during maintenance</li> </ul>	
2. Inspect and test electrical equipment and systems	<ul style="list-style-type: none"> <li>• Meaning of terms</li> <li>• Types of faults</li> <li>• Identification of faulty components</li> <li>• System isolation points e.g. <ul style="list-style-type: none"> <li>• Circuit breakers</li> <li>• Fuses</li> <li>• Isolators</li> </ul> </li> <li>• Identification of maintenance activities</li> <li>• Types of tests</li> <li>• Inspection procedures</li> <li>• Recording of inspection findings</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Oral questioning</li> <li>• Written tests</li> </ul>
3. Prepare a list of maintenance tools	<ul style="list-style-type: none"> <li>• Identification and documentation of maintenance tools</li> <li>• Specifications of identified maintenance tools</li> </ul> <p>Classification of maintenance tools e.g.</p> <ul style="list-style-type: none"> <li>• Cutting tools</li> <li>• Fastening tools</li> <li>• Measuring</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Oral questioning</li> <li>• Practical tests</li> <li>• Written tests</li> </ul>
3. Perform maintenance activities	<ul style="list-style-type: none"> <li>• Identification faulty components on an Electrical system</li> <li>• Repair/Replacement of faulty components</li> <li>• Maintenance activities e.g. <ul style="list-style-type: none"> <li>• Disassembling</li> <li>• Cleaning</li> <li>• Tightening</li> <li>• Oiling</li> <li>• Motor Rewinding</li> <li>• Assembling</li> </ul> </li> <li>• Fill in maintenance checklist</li> <li>• Disposal of waste materials e.g. <ul style="list-style-type: none"> <li>• Old batteries</li> <li>• Oils</li> <li>• Lugs and screws</li> <li>• Tapes</li> <li>• Cable sheaths</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Oral questioning</li> <li>• Practical tests</li> <li>• Written tests</li> </ul>

	<ul style="list-style-type: none"> <li>• Off cuts</li> </ul>	
4. Conduct system test	<ul style="list-style-type: none"> <li>• Types of tests</li> <li>• Identification of test points and parameters</li> <li>• Safe test procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Oral questioning</li> <li>• Practical tests</li> <li>• Written tests</li> </ul>
5. Document maintenance records	<ul style="list-style-type: none"> <li>• Maintenance report writing <ul style="list-style-type: none"> <li>• Procedure of writing maintenance report</li> <li>• Components of maintenance report</li> </ul> </li> <li>• Test results documentation</li> </ul>	<ul style="list-style-type: none"> <li>• Observation</li> <li>• Oral questioning</li> <li>• Practical tests</li> <li>• Written tests</li> </ul>

### **Suggested Methods of Instruction**

- Demonstration by trainer
- Practice by the trainee
- Field trips
- On-job-training
- Discussions

### **Recommended Resources**

#### **Tools**

- Set of screw drivers
- Set of spanners and wrenches
- Power tools
- Cutting tools
- Pliers
- Lifting and tensioning tools
- Tool box
- Phase tester

#### **Materials and supplies**

- Stationery
- Cables
- Lubricants
- Service parts

#### **Equipment**

- PPE –hand gloves, dust coat, dust masks
- Multimeter

- Clamp meter
- Earth electrode resistance meter
- Phase sequence meter

**Reference materials**

- Service manuals
- IEE regulations
- Organization procedures manual