

# NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician				SAQA ID: 91761	
Learning Area 13: <b>Install, maintain, troubleshoot and upgrade process control systems</b>				Total Hours:	56
Learning Project 1: <b>Gain an overview of Programmable Logic Controllers (PLCs) and carry out programming</b>				Total Hours:	40
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		• Phase 2 completed			
Learning project description: <b>Apprentices gain an overview of Programmable Logic Controllers (PLCs) and carry out programming.</b>					
Activity phase	Practical Skills Modules Content	Underpinning Knowledge Module Content	Work Experience Module Content	Didactical-methodological advice	Learning materials/Tools and Equipment
Reference to QCTO Curriculum	PM-None	KM07-KT05	WM-None		
Planning/ Preparation	<p><b><u>Provide access to (Given):</u></b> Scenario such as traffic light, motor control, materials and equipment as identified in last column;</p> <p><b><u>Apprentices must be able to do/performance the following (hard and soft) skills:</u></b></p> <ul style="list-style-type: none"><li>• Read and interpret the scenario given</li><li>• Design circuit to given scenario using programme language</li><li>• Perform a risk assessment on the task</li><li>• Plan wiring as per diagram</li></ul>	<p><b><u>Knowledge of:</u></b></p> <ul style="list-style-type: none"><li>• Theory and function of PLCs</li><li>• Input and output devices</li><li>• Programming languages in connection with PLCs</li><li>• Designing circuits using programming languages</li><li>• Specific safety procedures related to PLCs</li><li>• Statutory requirements as per work conducted</li></ul>	<p><b><u>Under supervision:</u></b> <i>If workplace allows for this exposure:</i></p> <ul style="list-style-type: none"><li>• Read and interpret programmes in PLCs (in a variety of contexts)</li><li>• Have structured discussion on programming of PLCs for specific scenarios</li></ul>	Lecture, presentations DVDs, audio-visual Demonstrations Practical applications	<p><b>Print materials, electronic files, software applications incl.:</b></p> <ul style="list-style-type: none"><li>• Training manuals for trainers and apprentices incl. multimedia software</li><li>• Set of presentation aids (videos, slides) for overhead or LED/LCD projectors</li><li>• Statutory requirements:</li><li>• SANS 10142-Part1</li><li>• Municipal by-laws</li></ul> <p><b>Tools, equipment and materials incl.:</b> Range of materials</p> <ul style="list-style-type: none"><li>•</li></ul> <p><b>Materials:</b></p>
Implementation/ Execution <u>Repair</u>	<ul style="list-style-type: none"><li>• Test programmed PLC in simulation</li><li>• Rectify programme if not functioning correctly</li><li>• Test programmed PLC again</li></ul>				

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<b>Evaluation/ Documentation/ Housekeeping</b>	<ul style="list-style-type: none"> <li>• Document test results</li> <li>• Check drawing and programme for correctness</li> <li>• Clean work area after completion of task in accordance with work site procedures and housekeeping standards</li> </ul>				<ul style="list-style-type: none"> <li>• PLC</li> <li>• Input and Output Devices</li> <li>• Computer or handheld programmer</li> </ul> <p><b>PPE:</b></p> <ul style="list-style-type: none"> <li>• Safety overall</li> <li>• Safety boots</li> </ul>
<b>Total</b>	Hours: 40				
<b>Specialisation additions</b>					
<b>Assessment guidance</b>					
<ul style="list-style-type: none"> <li>• Self assessment</li> <li>• Group assessment</li> <li>• Theory test</li> </ul> <p><b>Criteria for assessment:</b></p> <ul style="list-style-type: none"> <li>• Interpretation of scenario</li> <li>• Circuit design</li> <li>• Functionality of programme</li> <li>• Clean worksite after completion of task and equipment returned safely to store</li> </ul>					