

# NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician			SAQA ID: 91761		
Learning Area 9: Design, install, wire, maintain and troubleshoot electrical motors and associated control systems - Advanced			Total Hours:		176
Learning Project 2: Install and wire direct current (DC) motors			Total Hours:		8
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		<ul style="list-style-type: none"><li>Completion of phase 1</li><li>LA8 – LP1</li></ul>			
Learning project description: Apprentices learn to install and wire direct current (DC) motors					
Activity phase	Practical Skills Modules Content	Underpinning Knowledge Module Content	Work Experience Module Content (Exposure to be given)	Didactical-methodological advice	Learning materials/Tools and Equipment
Reference to QCTO Curriculum	PM-01 (PS01,02,03,04) PM-02 (PS01,03) PM-03 (PS01,02,03) PM-04 (PS01,02,03) PM-05 (PS01 - 06) PM-06 (PS01,02) PM-07 (PS01,02,03)	KM-06-KT02 KM-07 (KT01,02,03,04,05) KM-08 (KT01)	WM-01(WE01,02,03) WM-02(WE01,02,03) WM-03(WE01,02,03) WM-04(WE01,02,03)		
Planning/Preparation	<p><b>Provide access to (Given):</b></p> <ul style="list-style-type: none"><li>direct current motors</li><li>Contactors</li><li>Rotary switch</li><li>Starter</li><li>Training panel</li></ul> <p><b>Apprentices must be able to do/perform the following (hard and soft) skills:</b></p> <ul style="list-style-type: none"><li>Select and wear PPE</li><li>Read and interpret task instructions</li><li>Conduct risk assessment</li><li>Select the correct tools and equipment</li><li>Transport tools and equipment</li></ul>	<p><b>Knowledge of:</b></p> <ul style="list-style-type: none"><li>The operating/working principles of DC motors. <b>Range:</b> includes but not limited to series motor, shunt motor and compound motor</li><li>Components of DC motor. <b>Range:</b> stator, rotor, brush gear, frame, fan, shaft key.</li><li>Wiring diagrams of DC motors</li><li>Changing the direction of rotation of a DC motor using a rotary switch and contactors</li><li>Motor test to be performed on DC motors. <b>Range:</b> continuity test, insulation resistance between components, insulation</li></ul>	<p><b>Under supervision:</b></p> <ul style="list-style-type: none"><li>Install and wire DC motor starter</li><li>Install cable from the supply to the DC motor starter</li><li>Perform DC motor test</li><li>Connect DC motor to the starter</li><li>Commission the DC system</li></ul>	Lecture, presentations DVDs, audio-visual Group/individual work Motor Trainer Internet	<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></ul> <p><b>Tools, equipment and materials incl.:</b></p> <p>Range of materials and tools to be covered (minimum):</p> <p><b>Electrician's toolbox</b></p> <p><b>Materials:</b></p>

## NOCC-A21 Electrician: Competence Package

	to workstation safely	resistance between conductors and mechanical examination.  • Advantages and disadvantages of DC motors  • Reading and interpreting circuit drawings			<ul style="list-style-type: none"><li>• Cable</li><li>• Cable Glands</li><li>• Cable tray</li><li>• Cable ties</li><li>• Wall plugs</li><li>• Lugs</li><li>• Ferrules</li></ul> <b>Tools</b> <ul style="list-style-type: none"><li>• Multi-meter</li><li>• Insulation resistance tester</li><li>• Drilling machine</li><li>• Drill bits</li><li>• Crimping tool</li><li>• Cable strapping tool</li></ul>
<b>Implementation/ Execution Repair</b>	<ul style="list-style-type: none"><li>• Wire DC starter</li><li>• Perform DC motor test</li><li>• Connects supply to DC motor</li><li>• Commissions the system</li></ul>				
<b>Evaluation/ Documentation</b>	<ul style="list-style-type: none"><li>• Evaluates the correctness of the completed task according to drawings and/or instructions</li><li>• Report work progress to appropriate personnel</li><li>• Inspect and clean tools</li><li>• Store and secure tools and materials</li><li>• Complete applicable work documentation</li><li>• Perform housekeeping</li></ul>				
<b>Total</b>	Hours: 8				
<b>Specialisation additions</b>	Equipment that requires authorisation				
<b>Assessment guidance</b> <ul style="list-style-type: none"><li>• Self assessment</li><li>• Group assessment</li><li>• Theory test</li></ul> <b>Criteria for assessment:</b> <ul style="list-style-type: none"><li>• Correct PPE is worn</li><li>• Task is completed as per job card</li><li>• Correct cable size used</li><li>• Overloads are at the correct setting</li><li>• Over-current devices selected are at the correct rating</li><li>• Safety procedures are followed</li><li>• Risk assessment undertaken</li><li>• Motor test report is completed</li><li>• Site is cleaned</li></ul>					