

NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician			SAQA ID: 91761		
Learning Area 1: <b>Prepare for work</b>			Total Hours:	264	
Learning Project 8: <b>Apply fundamentals of electricity and basic electrical and mechanical engineering principles in trade related tasks</b>			Total Hours:	40	
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		LA 1 - LP: 1, 7			
Learning project description: <b>Apply fundamentals of electricity and basic electrical and mechanical engineering principles in trade related tasks</b>					
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: None	KM-03-KT01	WM: None		
<b>Planning/ Preparation</b>	<p><b>Provide access to (Given):</b> Different scenarios and drawings;</p> <p><b>Apprentices must be able to do/perform the following (hard and soft) skills:</b></p> <ul style="list-style-type: none"> <li>Determine the different forms of energy</li> <li>Explain the difference between alternating and direct current and the underlying principles</li> <li>Explain the basic transformer principle</li> <li>Explain the concepts of magnetism, resistance, current and voltage</li> </ul>	<p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>Principles and fundamental concepts of electricity</li> <li>Concepts and production of electricity                             <ul style="list-style-type: none"> <li>Magnetism</li> <li>Basic transformer principle</li> <li>Understanding resistance, current and voltage</li> </ul> </li> <li>Conductors and insulators</li> <li>Ohms law (Resistive circuits only)</li> <li>Kirchhoff's laws</li> <li>Alternating current theory (incl. generation of electricity)</li> <li>Direct current theory</li> </ul>	<p><b>Under supervision</b></p> <p>None</p>	Lecture, presentations, You-Tube videos Practical demonstration, Practical group work, Individual practice sessions under supervision	<p><b>Print materials, electronic files, software applications incl.:</b></p> <ul style="list-style-type: none"> <li>Textbooks (electro technology, physics, mathematics etc.)</li> <li>Teaching and learning manuals incl. multimedia applications</li> </ul> <p><b>PPE:</b></p> <ul style="list-style-type: none"> <li>Safety overall</li> <li>Safety boots</li> </ul>
<b>Implementation/ Execution</b>	<ul style="list-style-type: none"> <li>Perform fundamental numerical calculations to solve routine electro-</li> </ul>	<ul style="list-style-type: none"> <li>Definitions, types, properties and</li> </ul>			

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	<p>technological (incl. Ohm's law and Kirchhoff's law) and electro-mechanical problems</p> <ul style="list-style-type: none"> <li>• Calculate missing values from a given electro technical drawing</li> <li>• Identify appropriate conductors and insulators and the relevant properties of relate materials</li> <li>• Explain basic electrical principles</li> </ul>	<p>applications of conductors, insulators and semi-conductors</p> <ul style="list-style-type: none"> <li>• Concepts, theories and principles of Electrical Circuits</li> <li>• Basic trade calculations incl.:                             <ul style="list-style-type: none"> <li>○ Mathematical calculations, linear measurement, areas, volumes, ratios</li> </ul> </li> <li>• Basic engineering principles incl.:                             <ul style="list-style-type: none"> <li>○ Basic physical quantities, concepts, principles, S.I. units, mass, velocity, acceleration, force, weight, density, angles, energy/work/power, moments/torque, centre of gravity, mechanical advantage, levers, etc.</li> </ul> </li> </ul>			
<b>Evaluation/ Documentation</b>	<ul style="list-style-type: none"> <li>• Evaluate and results against model answers</li> <li>• Perform basic housekeeping of work station</li> </ul>				
<b>Total</b>	Hours: 40				
<b>Specialisation additions</b>					
<b>Assessment guidance</b>					
<p><b>Criteria for assessment:</b></p> <ul style="list-style-type: none"> <li>○ Correct explanation of relevant principles</li> <li>○ Correct calculations</li> </ul>					