

NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician				SAQA ID: 91761	
Learning Area 16: Apply basic renewable energy technologies in electrical installations				Total Hours:	56
Learning Project 4: Solve basic problems in PV energy apparatus and stand-alone renewable energy systems				Total Hours:	16
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		<ul style="list-style-type: none"> • Phase 2 completed • LA 16 LP 1-3 			
Learning project description: Apprentices learn to maintain and repair stand-alone PV systems (basic problems).					
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-07 (KT01, 02, 04, 05,06) KM-08 (KT01)	WM-05 (WE01-03)		
Planning/Preparation	<p>Provide access to (Given): Photovoltaic system which includes panels, batteries, invertors, controller, DC and AC circuit breakers, cabling, specialized connectors, distribution board.</p> <p>Apprentices must be able to do/perform the following (hard and soft) skills:</p> <ul style="list-style-type: none"> • Wear correct PPE • Complete necessary documentation • Conduct risk assessment • Select the correct tools and equipment • Transport all materials and equipment safely to workstation 	<p>Knowledge of:</p> <ul style="list-style-type: none"> • Faults that can occur on a photovoltaic system • Maintenance that must be performed on a photovoltaic system • Correct isolation procedures 	<p>Under supervision: <i>If the workplace allows for this exposure:</i></p> <ul style="list-style-type: none"> • Clean photovoltaic panels • Checks photovoltaic system for hot spots (dead cell), shading, dirt and loose connections • Maintain batteries on PV systems according to manufacturer specifications • Maintain invertor according to manufacturer specifications • Maintain electrical connections on PV systems 	Lecture, presentations DVDs, audio-visual Group/Individual work, Internet	<p>Print materials, electronic files, software applications incl.:</p> <ul style="list-style-type: none"> • Training manuals for trainers and apprentices incl. multimedia software • Set of presentation aids (videos, slides) for overhead or LED/LCD projectors <p>Tools, equipment and materials incl.: Electrical toolbox</p> <p>Equipment</p> <ul style="list-style-type: none"> • Invertors • Batteries • Distribution board • Photovoltaic system which includes: <ul style="list-style-type: none"> ○ controller, ○ DC and AC circuit breakers, cabling
Implementation/Execution (5Hours)	<ul style="list-style-type: none"> • Clean photovoltaic panels • Checks photovoltaic system for hot spots (dead cell), shading, dirt and loose connections • Maintain batteries according to manufacturer specifications 				

NOCC-A21 Electrician: Competence Package

	<ul style="list-style-type: none"> Maintain inverter according to manufacturer specifications Maintain electrical connections 				<ul style="list-style-type: none"> Specialized connectors Batteries DB board Circuit breakers or fuses
Evaluation/ Documentation (2Hours)	<ul style="list-style-type: none"> Evaluate work to ensure that maintenance has been done to required standards Test the photovoltaic system for correct functionality Report work progress to appropriate personnel Inspect and clean tools Store and secure tools and materials Complete applicable work documentation Perform housekeeping 				<ul style="list-style-type: none"> Step ladder Safety harness Scaffolding High pressure hose <p>Tools</p> <ul style="list-style-type: none"> Radiation meter Multi-meter <p>PPE:</p> <ul style="list-style-type: none"> Safety overall Safety boots
Total	Hours: 16				
Specialisation additions					
Assessment guidance					
<ul style="list-style-type: none"> Self assessment Group assessment Theory test <p>Criteria for assessment:</p> <ul style="list-style-type: none"> Correct PPE is worn Risk assessment undertaken Necessary documentation completed Safety procedures are followed Photovoltaic system tested to ensure functionality Photovoltaic system is maintained according to manufacturer specifications Faults on the system are identified Task is completed as per job card Housekeeping undertaken 					