

NOCC-A21 Electrician: Competence Package

<b>Relevant Occupation/trade title:</b> Electrician			<b>SAQA ID:</b> 91761		
<b>Learning Area 16: Understand and apply basic renewable energy technologies in electrical installations</b>			<b>Total Hours:</b>		<b>56</b>
<b>Learning Project 2: Provide basic instruction to clients in the use of PV systems</b>			<b>Total Hours:</b>		<b>16</b>
<b>Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):</b>		<ul style="list-style-type: none"> <li>• Phase 2 completed</li> <li>• LA 13 (LP1 – 3)</li> <li>• LA 16 (LP 1)</li> </ul>			
<b>Learning project description: Apprentices learn to provide advice regarding the most suitable PV system according to the needs of the client</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
<b>Reference to QCTO Curriculum</b>	PM-None	KM-07 (KT01 02, 03, 04, 05, 06) KM-08 (KT01) KM-09 (KT01)	WM-01 (WE1, 02, 03) WM-02 (WE01-03)		
<b>Planning/Preparation</b>	<p><b>Provide access to (Given):</b> All documents as listed in the last column; Customer scenarios for role plays;</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>• Perform risk assessment with respect to photo voltaic cells</li> <li>• Identify the needs of the customer</li> <li>• Conduct a site visit to determine the roof orientation, slope and shading</li> </ul>	<p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>• The function of a solar cell</li> <li>• The basic working principles of a solar cell/photo voltaic cell</li> <li>• The types of solar cells (mono-crystalline, polycrystalline, thin film, nana-structured cells)</li> <li>• The efficiency of the different types of solar cells</li> <li>• The advantages and disadvantages of the different types of solar cells (mono-crystalline and poly-crystalline)</li> <li>• Characteristics PV modules connection when connected in series and parallel.</li> <li>• The different types of PV systems (stand alone and grid connected) and purpose and the function of their components.</li> </ul>	<p><b>Under supervision:</b> <i>If the workplace allows for this exposure:</i></p> <ul style="list-style-type: none"> <li>• Provide the client with the necessary information so that the client can decide which system he wants to install</li> <li>• Explain if the location where PV system is to be installed is suitable with respect to roof orientation, slope and shading</li> <li>• Advise the client of the importance of ensuring that the manufacturers specifications and standards are followed for installation</li> <li>• Draw a line diagram of the PV system the client wants</li> </ul>	Lecture, presentations, You-Tube videos Practical demonstration and group work Role play Orals Presentations Written reports	<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>• Case study/customer scenarios</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>• Provide the client with the necessary information so that the client can decide which system he wants to install</li> <li>• Advise the client whether the location where the PV system</li> </ul>	<ul style="list-style-type: none"> <li>• Solar radiation</li> </ul>			

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	<p>is to be installed is suitable with respect to roof orientation, slope and shading</p> <ul style="list-style-type: none"> <li>Advise the client of the importance of ensuring that the manufacturers specifications and standards are followed for installation</li> <li>Draw a line diagram of the PV system the client wants installed</li> </ul>	<ul style="list-style-type: none"> <li>Solar irradiation</li> <li>Path of the sun</li> <li>Roof orientation and slope</li> <li>The location of the property</li> <li>Shading</li> <li>Maintenance on PV systems</li> <li>Safety precautions when working with PV Systems</li> <li>Factors affecting the performance of PV modules. Range: Location' s, temperature, irradiation, temperature, time of year (season),elevation angle, shading, dirty PV panels</li> </ul>	installed		
<b>Evaluation/ Documentation</b>	<ul style="list-style-type: none"> <li>Evaluate the correctness of the completed task as per instruction and that correct documentation is completed.</li> </ul>				
<b>Total</b>	Hours: 16				
<b>Specialisation additions</b>					
<b>Assessment guidance</b>					
<ul style="list-style-type: none"> <li><b>Role play</b></li> <li><b>Orals</b></li> <li><b>Written reports</b></li> </ul> <p><b>Criteria for assessment:</b></p> <ul style="list-style-type: none"> <li>Clearly and correctly advises on the different types of PV systems and which ones should be used in which situation</li> <li>Correctly explains the advantages and disadvantages of the different types of PV systems</li> </ul>					