

NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician			SAQA ID: 91761		
Learning Area 16: Understand and apply basic renewable energy technologies in electrical installations			Total Hours:		56
Learning Project 2: Provide basic instruction to clients in the use of PV 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 completedLA 13 (LP1 – 3)LA 16 (LP 1)			
Learning project description: Apprentices learn to provide advice regarding the most suitable PV system according to the needs of the client					
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, 03, 04, 05, 06) KM-08 (KT01) KM-09 (KT01)	WM-01 (WE1, 02, 03) WM-02 (WE01-03)		
Planning/Preparation	<p><u>Provide access to (Given):</u> All documents as listed in the last column; Customer scenarios for role plays;</p> <p><u>Apprentices must be able to do/perform the following (hard and soft) skills:</u></p> <ul style="list-style-type: none">Perform risk assessment with respect to photo voltaic cellsIdentify the needs of the customerConduct a site visit to determine the roof orientation, slope and shading	<p><u>Knowledge of:</u></p> <ul style="list-style-type: none">The function of a solar cellThe basic working principles of a solar cell/photo voltaic cellThe types of solar cells (mono-crystalline, polycrystalline, thin film, nana-structured cells)The efficiency of the different types of solar cellsThe advantages and disadvantages of the different types of solar cells (mono-crystalline and poly-crystalline)Characteristics PV modules connection when connected in series and parallel.The different types of PV systems (stand alone and grid connected) and purpose and the function of their components.	<p><u>Under supervision:</u> <i>If the workplace allows for this exposure:</i></p> <ul style="list-style-type: none">Provide the client with the necessary information so that the client can decide which system he wants to installExplain if the location where PV system is to be installed is suitable with respect to roof orientation, slope and shadingAdvise the client of the importance of ensuring that the manufacturers specifications and standards are followed for installationDraw a line diagram of the PV system the client wants	Lecture, presentations, You-Tube videos Practical demonstration and group work Role play Orals Presentations Written reports	<p>Print materials, electronic files, software applications incl.:</p> <ul style="list-style-type: none">Training manuals for trainers and apprentices incl. multimedia softwareSet of presentation aids (videos, slides) for overhead or LED/LCD projectorsCase study/customer scenarios
Implementation/Execution	<ul style="list-style-type: none">Provide the client with the necessary information so that the client can decide which system he wants to installAdvise the client whether the location where the PV system	<ul style="list-style-type: none">Solar radiation			<p>PPE:</p> <ul style="list-style-type: none">Safety overallSafety boots

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