

NOCC-A21 Electrician: Competence Package

<b>Relevant Occupation/trade title:</b> Electrician			<b>SAQA ID:</b> 91761		
<b>Learning Area 6: Install wiring systems and accessories for low voltage in industrial &amp; commercial buildings and premises (incl. earthing and bonding)</b>			<b>Total Hours:</b>	<b>168</b>	
<b>Learning Project 5: Install single and three phase internal and external industrial socket outlets</b>			<b>Total Hours:</b>	<b>24</b>	
<b>Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):</b>		<ul style="list-style-type: none"> <li>• LA 1 (LP 2, 3, 5, 7, 9, 10)</li> <li>• LA 2 (LP 1-7)</li> <li>• LA4 (LP 1-3)</li> <li>• LA5 (LP 1-2)</li> <li>• LA6 (LP 1)</li> </ul>			
<b>Learning project description: Install single and three phase internal and external industrial socket outlets</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-05-PS06 PM-06-PS01-02 PM-07-PS01-03 PM-08-PS01-05	KM-05-KT01 KM-05-KT02 KM-05-KT03	WM-01-WE01-03 WM-02-WE01-03 WM03-WE01-03		
<b>Planning/Preparation</b>	<p><b>Provide access to (Given):</b> Work tasks/job cards, installation cubicles and materials and equipment as listed in last column;</p> <p><b>Apprentices must be able to do/perform the following (hard and soft) skills:</b></p> <p><b>Prepare for the installation of single and three phase circuits for industrial socket outlets</b></p> <ul style="list-style-type: none"> <li>• Identify, obtain and</li> </ul>	<p><b>Knowledge of:</b></p> <ul style="list-style-type: none"> <li>• Occupational health and safety requirements (OHS Act)</li> <li>• Accident prevention &amp; first aid</li> <li>• Installation standards (SANS 10142 -1)</li> <li>• Schematic drawings and manufacturers specifications</li> <li>• The purpose of industrial socket outlet installations</li> <li>• Types of single and three phase industrial socket</li> </ul>	<p><b>Under supervision:</b></p> <ul style="list-style-type: none"> <li>• Consult with clients and participate in briefings with appropriate personnel to determine system specifications</li> <li>• Perform preparatory works to install single and three phase industrial socket outlets</li> <li>• Perform risk assessment before planning install industrial socket outlets</li> <li>• Inspect tools and</li> </ul>	<ul style="list-style-type: none"> <li>• Research /Desk study</li> <li>• Case studies /scenarios</li> <li>• Technical discussions</li> <li>• Lecture/ instructions</li> <li>• Textbook work</li> <li>• Practical simulation work</li> </ul>	<p><b>Print materials, electronic files, software applications incl.:</b></p> <ul style="list-style-type: none"> <li>• OHS Act</li> <li>• SANS 10142-1</li> <li>• Job cards/ work requests/ maintenance schedules and work permit examples</li> <li>• Manufacturer's specifications</li> <li>• Text books</li> <li>• Manuals for trainers and apprentices incl. multimedia software</li> </ul>

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	<p>understand statutory requirements for a given work area</p> <ul style="list-style-type: none"> <li>Identify and establish risk control measures and procedures in preparation for the work</li> <li>Prepare installation in consultation with others affected by the work and sequenced appropriately</li> <li>Determine the scope and location of the work to be undertaken from documentation or appropriate personnel</li> <li>Obtain and check material needed for the installation work against job requirements</li> <li>Obtain and check tools, equipment and measuring devices needed for the installation work for correct operation and safety</li> </ul>	<p>outlets and IP ratings</p> <ul style="list-style-type: none"> <li>Requirements concerning the polarity of switched socket outlets</li> <li>Correct cable size and installation to supply industrial socket outlets for given installation conditions</li> <li>Installation methods for single phase socket outlet circuits</li> <li>Installation methods for three phase socket outlet circuits</li> <li>Correct operation of the installed circuits including testing (dead testing only) for correct compliance with SANS 10142-1 standards</li> <li>Earth Leakage requirements for three phase socket outlets as per SANS10142 -1</li> <li>Hot Joints</li> <li>Termination of conductors</li> <li>Current carrying capacity of conductors</li> </ul>	<p>equipment and check manufacturers specifications</p> <ul style="list-style-type: none"> <li>Access schematic drawings and documentations to analyse simple and gradually more complex industrial socket outlet systems</li> <li>Develop work plans for industrial socket outlet installations starting from simple to more complex work assignments</li> <li>Practice general safety rules and safe work procedures</li> <li>Obtain access to building sites for installation works</li> <li>Perform industrial socket outlet installations in ceilings/walls/floors under direct and constant supervision until competent</li> </ul>		<ul style="list-style-type: none"> <li>Set of presentation aids (videos, slides) for overhead or LED/LCD projectors</li> </ul> <p><b>Stationary machinery, mobile plants, transport, access and lifting equipment incl.:</b></p> <p><b>Hand- &amp; power tools and PPE incl.:</b></p> <ul style="list-style-type: none"> <li>Electrical drilling machine</li> <li>Standard electrician's toolbox</li> </ul> <p><b>Measuring and testing instruments incl.:</b></p> <ul style="list-style-type: none"> <li>Measuring tape (tool box)</li> <li>Steel ruler (tool box)</li> <li>Steel square (tool box)</li> <li>LED Voltage/ Continuity tester (tool box)</li> <li>Plug/socket/ polarity tester</li> </ul>
<p><b>Implementation/ Execution/ Processing</b></p>	<p><b>Install internal and external single and three phase socket outlets</b></p> <ul style="list-style-type: none"> <li>Follow risk control measures and procedures for carrying out the work</li> <li>Ensure that the circuit /installation is isolated and locked out</li> <li>Install socket outlets and accessories according to given installation</li> </ul>	<ul style="list-style-type: none"> <li>Conditions for wiring a three Phase 4 Wire Socket outlet</li> <li>Conditions for wiring a three phase 5 wire socket outlet</li> <li>Differences between a standard socket outlet and a non-standard socket outlet</li> <li>Work procedures and work documents related to the installation of industrial socket outlets</li> </ul>	<ul style="list-style-type: none"> <li>Install industrial socket outlets without assistance but regular supervision</li> <li>Test and repair socket outlets under close supervision until work can be done on a more autonomous basis</li> <li>Initially perform preparatory works under direct and constant</li> </ul>		<p><b>Training workshop and laboratory equipment incl.:</b></p> <ul style="list-style-type: none"> <li>Heavy workbench with stool, power supply and assembly vice</li> <li>Bench mountable interchangeable training panel frame</li> <li>Mountable punched hole frame and front panel frame</li> </ul>

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	<p>conditions at the required positions</p> <ul style="list-style-type: none"> <li>• Install socket outlets straight and square in the required locations and within acceptable tolerances</li> <li>• Terminate/connect wiring at socket outlets in accordance with socket specifications</li> <li>• Undertake regular compliance and safety inspections/testing of the installed socket outlets</li> <li>• Rectify defects revealed through on-going compliance and safety inspection</li> <li>• Carry out installation efficiently without unnecessary waste of materials or damage to circuits, appliances, machines and the surrounding environment</li> <li>• Deal with unexpected situations safely and with the approval of an authorised personnel</li> <li>•</li> </ul>		<p>supervision of a qualified Electrician</p> <ul style="list-style-type: none"> <li>• Conduct regular OHS instructions and talks as required by law</li> <li>• Source needed installation materials, personal protective devices, tools, measuring instruments and equipment</li> <li>• Engage in regular housekeeping activities, tool and equipment maintenance</li> <li>• Provide work documentation, verbal and written reports as required by the company</li> </ul>		<ul style="list-style-type: none"> <li>• Basic panel systems for practicing installation technology exercises</li> <li>• Training package for wiring components (incl. sockets) above and embedded in plaster</li> <li>• Installation cabins/cubicles with solid brick walls or interchangeable plaster-/chip board walls or punched hole grid panels (potentially covering wall, ceiling and under floor installations)</li> <li>• Set of various approved industrial type (single, double, switched etc.) re-usable single phase, flush and surface mount sockets for wall/floor indoor/outdoor, socket types current and IP ratings</li> <li>• Set of various industrial type reusable three-phase 4 and 5 wire socket outlets for diverse IP ratings</li> </ul>
<p><b>Evaluation/ Documentation/ Housekeeping</b></p>	<p><b>Complete installation work and conduct housekeeping activities</b></p> <ul style="list-style-type: none"> <li>• Complete work and notify appropriate personnel</li> <li>• Conduct housekeeping activities</li> </ul>				

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	<ul style="list-style-type: none"> <li>Maintain and store tools and equipment in accordance with site/ company procedures</li> <li>Finalise work completion documentation</li> </ul>				
<b>Total</b>	Hours: 24				
<b>Specialisation additions</b>					
<b>Assessment guidance</b>					
<p><b>Criteria for assessment:</b></p> <ul style="list-style-type: none"> <li>Interpreting job instructions and determining sequence of operation</li> <li>Selecting and interpreting applicable electrical drawings correctly to meet job requirements.</li> <li>Selecting, inspecting and checking equipment and PPE for functionality and safety prior to commencement.</li> <li>Obtaining and following safety procedures related to job requirements and work site procedures</li> <li>Identifying and sourcing of appropriate tools to meet the requirements of the task according to statutory requirements</li> <li>Installing and connecting single and three phase industrial socket outlets</li> <li>Inspecting connections to be correct, tight, mechanically sound and with required slack as per job requirements in accordance with SANS 10142-1</li> <li>Inspecting and testing of single and three phase socket outlets ( polarity, continuity)</li> <li>Documenting of completed work process.</li> <li>Caring and storing of tools and equipment.</li> </ul>					