

NOCC-A21 Electrician: Competence Package

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

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

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

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