

SKILLS FRAMEWORK FOR PRECISION ENGINEERING

SKILLS STANDARDS FOR MACHINIST/TECHNICIAN

Occupation: Machinist /Technician

Occupation Description:

The Machinist/Technician works under close supervision to carry out structured work while adhering closely to standard work instructions and procedures. He/She sets up and operates special purpose equipment/machines to fabricate components and parts. In the process, he/she is required to read and interpret sketches, drawings, manuals and specifications to determine the dimensions and tolerances of finished work pieces, sequence of operations and set-up requirements.

He/She also observes the machines, detects malfunctions and makes the necessary adjustments to ensure smooth operations. He/She must also be able to select, align and secure holding fixtures, cutting tools, attachments, accessories and materials.

The Machinist/Technician works in a team to achieve production and quality targets, while complying with and reporting deviances in Workplace Safety and Health requirements.

Important Points to Note about this Document

This document is intended purely to provide general information to enable individuals, employers and training providers to be informed about the skills for career, training and education purposes. SkillsFuture Singapore Agency provides no warranty whatsoever about the contents of this document, and does not warrant that the courses of action mentioned in this document will secure employment, promotion, or monetary benefits. WDA will not be liable for any loss, damage or expense that individuals may incur as a result of reliance on the contents of this document.

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The skills expected of the Machinist /Technician are summarised as below:

Skill Category	Skill Sub-Category	Skills
<p style="text-align: center;">Technical and Engineering Fundamentals</p>		<p>PRE-TEF-1001-1 Handle Common Measurement Instruments</p>
		<p>PRE-TEF-1002-1 Interpret Technical Drawings and Blue Prints</p>
		<p>PRE-TEF-1003-1 Operate Basic Measurement Devices</p>
		<p>PRE-TEF-1004-1 Operate Pneumatic Systems</p>
		<p>PRE-TEF-1005-1 Perform Dimensional and Geometric Measurement</p>
		<p>PRE-TEF-1006-1 Use Hand Tools</p>
		<p>PRE-TEF-1007-1 Use Precision Measuring Equipment</p>
<p style="text-align: center;">Precision Manufacturing Processes</p>		<p>PRE-PMP-1009-1 Apply Basic Workshop Practices</p>
		<p>PRE-PMP-1010-1 Apply Biomedical Products Assembly Skills</p>
		<p>PRE-PMP-1011-1 Install Electrical Sensors</p>
		<p>PRE-PMP-1001-1 Operate Hydraulic Systems</p>
		<p>PRE-PMP-1002-1 Operate Programmable Logic Controller</p>
		<p>PRE-PMP-1003-1 Perform Cleanroom Practices</p>
		<p>PRE-PMP-1004-1 Perform CNC Milling and Programming</p>
		<p>PRE-PMP-1005-1 Perform CNC Turning and Programming</p>
		<p>PRE-PMP-1006-1 Perform EDM-CNC Wire Cut Machine Operations</p>
		<p>PRE-PMP-1007-1 Perform General Assembly</p>
		<p>PRE-PMP-1008-1 Perform General Machining</p>

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Skill Category	Skill Sub-Category	Skills
Quality		PRE-QUA-1001-1 Apply Quality Systems
Workplace Safety and Health		PRE-WSH-2003-1 Apply Workplace Safety and Health Policies
		PRE-WSH-1001-1 Apply Workplace Safety and Health in Metal Work
		PRE-WSH-1002-1 Identify Hazards and Maintain Risk Control Measures
Manufacturing Productivity and Innovation		PRE-MPI-1001-1 Apply 5S Techniques in Manufacturing
		PRE-MPI-1002-1 Apply Continuous Process Improvement Techniques
		PRE-MPI-1003-1 Perform Basic Productivity Practices
Service Excellence		SVCF-CS-101C-1 Provide Go-the-Extra-Mile Service
		SVCF-CS-103C-1 Respond to Service Challenges
Personal Management and Development		ES-PMD-104G-1 Adapt to Change
		ES-PMD-103G-1 Apply Emotional Competence to Manage Self at the Workplace
		ES-PMD-101G-1 Develop Personal Effectiveness at Operations Level
		ES-PMD-102G-1 Maintain Personal Presentation and Employability at Operations Level
Analytical, Conceptual and Evaluative		ES-ACE-101G-1 Demonstrate Initiative and Enterprising Behaviour
		ES-ACE-102G-1 Solve Problems and Make Decisions at Operator Level
Interpersonal		ES-IP-101G-1 Communicate and Relate Effectively at the Workplace
		ES-IP-102G-1 Work in a Team

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Skill Code	PRE-TEF-1001-1	Skill Category	Technical and Engineering Fundamentals
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Handle Common Measurement Instruments		
Skill Description	This skill describes the ability to prepare and handle measuring instruments. It also includes performing multi-points levelling operation, checking and setting up machine for operation, rectifying alignment errors and performing spacer dismantling/installation.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Types of measurement error • Causes of measurement error • Reference temperature for high accuracy measurement • Procedure for levelling • Precautions when using dial indicators • Procedure of granite square levelling • Procedure of using precision square • Method of reading spirit level • Handling spirit level gauges • Methods of maintaining measuring instruments 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Prepare and handle measuring instruments • Perform multi points levelling operation • Check and set up machine for operation • Rectify alignment errors and perform spacer dismantling/installation • Stow measuring devices according to level of measuring accuracies and functional use 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Generate ideas to improve accuracy of measurement
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Report dysfunctional equipment to the attention of superiors to repair or replace where appropriate • Share best practices with peers
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on measurement errors and the remedies • Prepare remedial actions to prevent recurrence of mistakes • Learn and share on measuring approaches or use of aids that may enhance/ease the job and minimise errors
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Safety glasses • Safety gloves • Safety attires • Testing equipment • Measuring tools <p>Regulations must include:</p> <ul style="list-style-type: none"> • Workplace safety procedures • Current WSH policies • Local legislation and regulations on weights and measures • Internationally recognised procedures and standards on dimensional and geometric measurements

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	<p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none">• Standard workplace/organisational operating procedures• Relevant work piece safety procedures
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Skill Code	PRE-TEF-1002-1	Skill Category	Technical and Engineering Fundamentals
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Interpret Technical Drawings and Blue Prints		
Skill Description	This skill describes the ability to interpret engineering features from drawings and blue prints and apply engineering techniques. It also includes understanding the various types of symbols and notations used on drawings and blueprints, determining important dimensions and the associated tolerances.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Types of drawings such as detail and assembly • Orthographic projections including first and third angle projections and views (i.e. top, front and side) and their selection for viewing purposes • Sectioning methods including section views and cutting plane, hatching, removed and aligned sections • Use of object libraries including the representation of components and repetitive features of components • Relevant fits and tolerances including hole basis and shaft basis systems • Relevant geometrical tolerances including tolerance frame method and datum feature, as well as interpretation of geometrical tolerancing including flatness, straightness, perpendicularity, position, concentricity, symmetry, cylindricity, profiles, angularity, parallelism, circularity and runout • Relevant symbols including dimensioning, tolerancing, machining, surface texture and welding • Use of reference drawings as legal documents in disputes 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Interpret types of drawings such as assembly and detail drawings • Interpret drawings and blueprints presented in first or third angle projections • Interpret drawings presented in sectional views (shown by hatching) from cutting planes • Interpret type of fits and tolerances based on hole basis and shaft basis systems • Interpret technical specifications of the component from the drawings and blueprints such as the material, hardness, critical dimensions, etc • Interpret engineering features from drawings and blue prints such as geometrical tolerances, symbols and notations • Determine dimensions with critical tolerances to take special care for fabrication
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Establish company drafting/design standards and templates to reduce storage of standard items and raw materials
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Clarify details of work activities to be carried out based on given work instructions • Communicate/consult all dimensional amendments with designers for drawings to be kept updated
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Keep up-to-date on changes in drawing standards • Improve/simplify procedures in making changes to drawings

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<i>work.</i>	
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Drafting board or Computer-Aided Drafting system <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Standard workplace/organisational operating procedures • Relevant workplace safety procedures <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health Act • Internationally recognised procedures and standards on dimensional and geometric measurements

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Skill Code	PRE-TEF-1003-1	Skill Category	Technical and Engineering Fundamentals
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Operate Basic Measurement Devices		
Skill Description	This skill describes the ability to use precision measuring equipment to determine and check for dimensional and geometric conformance of components, equipment and machines against desired standards.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	The ability to understand: <ul style="list-style-type: none"> • Technical and engineering drawings • Functional role and accuracy of various measuring equipment • Basic measurement systems • Causes of measuring errors • Basic tolerance in relation to measurement • Reference temperature for high accuracy measurement • Correct use of measuring equipment • Types of measuring instruments/equipment • Reading of results from measuring instruments/equipment 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	The ability to: <ul style="list-style-type: none"> • Interpret drawing and component specifications • Prepare and handle measuring instruments/equipment • Select appropriate instruments/equipment to carry out the checks accurately • Calibrate instruments/equipment • Read and record measurements • Compare results against component requirements • Implement comparator/gauges for high volume checking • Schedule and calibrate all instruments/equipment periodically and keep calibration records • Stow measuring devices according to level of measuring accuracies and functional use • Keep reference/control charts within easy reach 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Generate ideas to improve accuracy of measurement
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Clarify details of work activities to be carried out based on given work instructions • Report dysfunctional equipment to the attention of superiors to repair or replace where appropriate • Share best practices with peers
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on measurement errors and the remedies • Prepare remedial actions to prevent recurrence of mistakes • Learn and share on approaches to setting up and testing of pneumatic system
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Safety glasses • Safety gloves • Safety attires • Testing equipment • Measuring tools <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace safety procedures • Current WSH policies • Local legislation and regulations on weights and measures • Internationally recognised procedures and standards on dimensional

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	<p>and geometric measurements</p> <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none">• Standard workplace/organisational operating procedures• Relevant work piece safety procedures
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Skill Code	PRE-TEF-1004-1	Skill Category	Technical and Engineering Fundamentals
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Operate Pneumatic Systems		
Skill Description	This skill describes the ability to operate pneumatic systems. It also includes setting up and testing the pneumatics systems.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Established organisational procedures related to the preparation of work activities • Industrial health and safety procedures • Interpretation of circuit diagrams • Types of components • Supply of compressed air • Operation of pneumatic components • Types and operation of electrical devices • Methods of connecting pneumatic systems • Measurements of pressure 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Identify and select pneumatic components required for the work activity based on the circuit diagrams • Connect compressed air supply to the pneumatic systems in accordance with industrial health and safety procedures • Check the pneumatic systems for abnormalities • Connect pneumatic systems to the compressed air supply and the main power circuit • Set required air pressure in accordance with established organisational and industrial health and safety procedures • Check connection to pneumatic systems so as to ensure that all industrial health and safety procedures are adhered to • Operate and test pneumatic systems • Activate pneumatic devices to operate the pneumatic systems in accordance with established organisational and industrial health and safety procedures • Activate electrical devices and operate the electro-pneumatic systems in accordance with established organisational and industrial health and safety procedures • Test pneumatic systems for proper operation and its sequence is verified • Shut down the pneumatic systems on completion of work in accordance with established organisational and industrial health and safety procedures
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Generate ideas to improve setting up and testing of pneumatic systems

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<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Clarify details of work activities to be carried out based on given work instructions • Report any abnormalities and faults in the pneumatic systems to the appropriate person in accordance with the established organisational procedures • Share best practices with peers
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on measurement errors and the remedies • Prepare remedial actions to prevent recurrence of mistakes • Learn and share on approaches to setting up and testing of pneumatic systems
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace safety procedures • Current OHS policies • Local legislation and regulations on weights and measures • Organisational and industrial health and safety procedures <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Standard workplace/organisational operating procedures • Relevant work piece safety procedures

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Skill Code	PRE-TEF-1005-1	Skill Category	Technical and Engineering Fundamentals
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Perform Dimensional and Geometric Measurement		
Skill Description	This skill describes the ability to carry out dimensional and geometric measurement of machined parts and components using a range of measuring tools and equipment. It also includes applying the appropriate techniques to measure the various dimensions of the component and geometrical tolerances, as specified in the drawings/blueprints and knowledge on the applications of various measuring instruments/equipment.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Component reference datum • Application of various types of measuring tools, gauges and equipment • Types of measuring errors • Organisational procedures for preparation of work activity • Operation and function of measuring and testing equipment • Cleaning of measuring instruments and the component to be measured • Verification of conformance to work specifications using correct testing equipment and techniques • Applying organisational safety guidelines and occupational health and safety regulations relating to conducting dimensional and geometric measurements • Sorting specified limits of permissible error when making measurements with calibrated instrument • Addressing allowable and outside allowable tolerances, adjusting deviation in tolerance and handling within allowable tolerance • Reading and recording results of measurements and transcribing inspection documentation • Applying the organisational procedures and hygiene standards on reinstating work area • Applying the organisational guidelines to achieve a safe working environment • Reports and documentations 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Interpret geometrical tolerances, symbols, notations and surface finish reference charts • Set up/locate and secure components to be measured • Select appropriate measuring tools and equipment for the component to be measured • Determine the appropriate technique to measure the component • Ensure reference drawings are of correct version • Carry out linear and geometric measurements • Calibrate measuring instruments and equipment • Record and document the results and findings accurately • Make decision to accept or reject the component • Upkeep and maintain measuring tools and equipment
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Propose/develop quick set-up fixture to reduce set-up time, set up and measure errors • Perform periodic calibration of measuring tools and equipment to prevent downtime • Organise all measuring tools and equipment orderly in a cabinet for quick access
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Seek clarification on doubts and challenges with peers and/or superior
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on tolerances of interconnected functional components • Keep abreast in changes to engineering tables and charts • Work towards fool-proofing of possible measuring errors

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<i>work.</i>	
<p>Range of Application <i>(where applicable)</i> <i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Personal protective equipment • Goggles and safety aids • Test equipment and tools to measure test pieces and components <p>Procedures and supporting documents</p> <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace safety procedures • Current WSH policies • Local legislation and regulations on weights and measures • Internationally recognised procedures and standards on dimensional and geometrical measurements

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Skill Code	PRE-TEF-1006-1	Skill Category	Technical and Engineering Fundamentals
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Use Hand Tools		
Skill Description	This skill describes the ability to use hand tools at the workplace based on work requirements. It also includes selecting the appropriate hand tools, observing safe practices, maintaining and storing them in accordance with standard operating procedures.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Types and specifications of hand tools • Correct technique/usage of hand tools • Common faults and defects in hand tools • Safe practices in using hand tools • Simple maintenance and proper storage of hand tools • Standard operating procedures for marking of faulty/unsafe hand tools and the reporting structure 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Plan work activities and requirements in accordance with organisational procedures • Select and use the appropriate hand tools to produce the product to meet specifications • Apply safe work practices while using the hand tools • Identify and tag faulty/unsafe hand tools • Maintain good housekeeping in accordance with Workplace Safety and Health practices 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Anticipate possible failure of equipment and measures to take • Generate ideas to prolong the life span of hand tools
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Report dysfunctional equipment to the attention of superiors to repair or replace where appropriate • Share best practices with co-workers in Workplace Safety and Health requirements
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Prepare remedial actions to prevent recurrence of mistakes • Learn and share on approaches to use hand tools that may enhance/ease the job and minimise errors • Keep up-to-date on latest knowledge and innovations in hand tools
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Personal protective equipment • Measuring tools • Setting tools and devices • Hand tools • Material movement equipment <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Job instructions • Work/job specifications • Workshop drawings

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	<ul style="list-style-type: none">• Engineering drawings• Report sheets <p>Rules and regulations must include:</p> <ul style="list-style-type: none">• Workplace Safety and Health Act
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Skill Code	PRE-TEF-1007-1	Skill Category	Technical and Engineering Fundamentals
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Use Precision Measuring Equipment		
Skill Description	<p>This skill describes the ability to use precision measuring equipment at the workplace based on work requirements. It also includes the ability to select, clean and check the appropriate measuring equipment, handle it in correct procedures, observe safe practices, calculate measurements using suitable techniques, calibrate measuring equipment, record and keep documents in order, maintain and store them in accordance with standard operating procedures.</p>		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Checking the functionality of measuring equipment • Calculation techniques for measurements • Types and specifications of precision measuring equipment • Limits and tolerances of precision measuring equipment • Correct technique/usage of precision measuring equipment • Common faults and defects in precision measuring equipment • Safe practices in using precision measuring equipment • Simple maintenance and proper storage of precision measuring equipment • Standard operating procedures for marking of faulty/unsafe precision measuring equipment and the reporting structure • Waste material disposal procedures 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Plan work activities and requirements in accordance with organisational procedures • Select and setup the appropriate precision measuring equipment to measure the product according to work specifications • Calibrate the measuring equipment and record in reports in accordance with organisational procedures • Apply safe work practices while using the measuring equipment • Maintain good housekeeping including disposal of waste materials in accordance with Workplace Safety and Health practices
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Anticipate possible failure of measuring equipment and measures to take • Generate ideas to prolong the life span of measuring equipment
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Report dysfunctional equipment to the attention of superiors to repair or replace where appropriate • Share best practices with co-workers in Workplace Safety and Health requirements • Work within a team on reporting of work outcomes
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Prepare remedial actions to prevent recurrence of mistakes • Learn and share on measuring approaches or use of aids that may enhance/ease the job and minimise errors • Keep up-to-date on latest knowledge and innovations in precision measuring equipment and methods of measurement techniques

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none">• Safety glasses• Safety gloves• Safety attires• Testing equipment• Measuring tools <p>Regulations must include:</p> <ul style="list-style-type: none">• Workplace safety procedures• Current WSH policies• Local legislation and regulations on weights and measures• Internationally recognised procedures and standards on dimensional and geometric measurements <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none">• Standard workplace/organisational operating procedures relevant to work piece safety procedures
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
MACHINIST/TECHNICIAN**

Skill Code	PRE-PMP-1009-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Basic Workshop Practices		
Skill Description	This skill describes the ability to apply basic knowledge and skills in workshop practices and to use basic workshop tools and equipment correctly in a workshop. It also includes filing, drilling, tapping and fitting operations.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	The ability to understand: <ul style="list-style-type: none"> • Principles behind usage of L-shaped plates • Purpose of chamfering and chamfer sizes • Sizes of tap drills for tapping, depth of drilling and tapping • Purpose of stoning, lapping and filing • Types of stone used for planning finish surface • Minimum screw engagement length • Method of eye protection when using air gun for cleaning • Purpose of hand reaming and methods of reaming • Specifications of taper pin, size and depth of stamped/pressed tapered hole and corresponding pin size and protrusion • Ratio of contact for good pinning practices • Method of white sealing tape application • Purpose of "I" mark • Methods of using torque wrench • Reasons for machine rust 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	The ability to: <ul style="list-style-type: none"> • Perform filing operation • Perform drilling and tapping operations • Apply loctite and silicon • Perform fitting operation 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Improvise techniques to simplify processes/operations leading to shorter duration to complete the work
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Clarify details of work activities to be carried out based on given work instructions • Share best practices with co-workers in Workplace Safety and Health requirements • Work within a team on reporting work outcomes
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Keep up-to-date on latest innovation in hand tools and workshop practices
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Sensor tester • Multimeter • Crimping tool • Wire cutter • Wire stripper • Electrical pliers • Test pen • Screwdrivers (+) and (-) • Hexagon key set • Adjustable spanner

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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	<p>Rules and regulations must include:</p> <ul style="list-style-type: none">• Workplace safety procedures• Current WSH policies <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none">• Standard workplace/organisational operating procedures• Relevant safety procedures
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
MACHINIST/TECHNICIAN**

Skill Code	PRE-PMP-1010-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Apply Biomedical Products Assembly Skills		
Skill Description	This skill describes the ability to assemble biomedical products. It also includes the ability to use appropriate hand tools, measuring instruments and optical instruments to assemble the biomedical product and carry out housekeeping of the work areas.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Importance of work instructions • Types of assembly tasks • Types of assembly methods • Types of visual and function checks • Types of tools, instruments and materials • Use of tools, instruments and materials • Handling of materials • Handling of faulty or unsafe tools and instruments procedures • Cleaning methods and cleaning agents • Importance of cleaning tools and instruments • Importance of returning tools, instruments and materials • Handling of worn out tools and instrument procedures • Importance of clearing the waste 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Don appropriate cleanroom garment according to organisational procedures • Prepare tools, instruments and materials, and set up work areas in accordance with types of tasks to be performed • Check tools and instruments for safe and useable condition prior to carrying out the assembly task • Handle faulty or unsafe tools and instruments in accordance with organisational procedures • Perform biomedical product assembly using appropriate tools and instruments, and techniques according to safe working practices • Conduct visual and function check of assembled products for compliance with required specifications • Clean tools and instruments using appropriate cleaning agent and method prior to returning them to their designated locations • Inspect tools and instruments for worn out or damaged after use • Handle worn out tools and instruments in accordance with organisational procedures • Perform housekeeping to maintain work areas in a safe and healthy condition • Carry out waste disposal in accordance with safe working practices and approved procedures
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on own work and procedures that value add in speed and accuracy to enhance output • Set personal targets to minimise rejects
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Report incidences of equipment abnormalities to designated person according to organisational procedures

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<i>ethics.</i>	
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Participate in information sharing with colleagues to improve own skills and knowledge
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances that the skill may be demonstrated.</i></p>	<p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace safety procedures • Current WSH policies <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Standard workplace/organisational operating procedures • Relevant safety procedures

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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Skill Code	PRE-PMP-1011-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Install Electrical Sensors		
Skill Description	This skill describes the ability to install electrical sensors at the workplace. It also includes the ability to select the appropriate electrical sensors, assemble electrical circuit including electrical sensors, test electrical sensors, operate and test electrical circuit and rectify any defects in electrical control systems.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Knowledge of industrial health and safety • Interpretation of circuit diagrams • Types and uses of electrical sensors, electrical devices and components • Knowledge and understanding of connection of electrical devices and components of control circuit • Operational procedures related to switching on and off of power supply to equipment • Knowledge to assess power supply voltages • Knowledge on verifying the connection of electrical sensors • Knowledge of electrical sensors wiring system • Types of general purpose tools, test instruments and materials 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Select suitable personal protective equipment according to its intended use • Select appropriate tools and equipment and check for safe and useable condition prior to carry out installation work to minimise safety risk • Conduct pre-operational check of electrical sensors, devices and components using appropriate test equipment • Isolate main power supply to electrical control system and switch off power supply unit in system in accordance with operational procedures • Mount electrical sensors and connect wiring system in accordance with given circuit diagrams • Connect main power supply to electrical control system and switch on power supply in accordance with the operational procedures • Activate electrical sensors, electrical devices and components to operate control circuit in accordance with given circuit diagrams and work instructions • Check and verify control circuit functionality for compliance with job requirements • Shut down electrical control system in accordance with operational and Workplace Safety and Health procedures • Perform housekeeping to maintain a clean, tidy and dry work area
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on own work and procedures that value add in speed and accuracy to enhance output
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Report incidences of equipment abnormalities to designated person according to organisational procedures

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<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Participate in information sharing with colleagues to improve own skills and knowledge
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Sensor tester • Multi-meter • Crimping tool • Wire cutter • Wire stripper • Electrical pliers • Test pen • Screwdrivers (+) and (-) • Hexagonal key set • Adjustable spanner <p>Materials must include:</p> <ul style="list-style-type: none"> • Electrical wires • Fork lead terminals • Ring lead terminals • Plug lead terminals • Ferule lead terminals <p>Regulations must include:</p> <ul style="list-style-type: none"> • Workplace safety procedures • Current WSH policies <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Operational • Industrial health and safety (Code of Practice for Electrical Installation) • Manufacturer's specifications on electrical sensor installation

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Skill Code	PRE-PMP-1001-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Operate Hydraulic Systems		
Skill Description	This skill describes the ability to operate hydraulic systems at the workplace safely based on workplace requirements. It also includes the ability to interpret hydraulic system circuit diagrams, identify and select appropriate hydraulic components, check and test hydraulic equipment and systems, diagnose and amend hydraulic circuits and shut down and disconnect hydraulic systems.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Interpretation of control requirements, hydraulic symbols, circuit diagram symbols and displacement diagram • Types of hydraulic components and electrical devices • Knowledge on checking, verifying and amending completed circuit • Knowledge on testing hydraulic equipment and systems • Safe practices in operating hydraulic systems • Standard operating procedures for organisational reporting structure • Simple maintenance and proper storage of components • Knowledge on shut-down of hydraulic equipment and systems 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Plan work activities and requirements in accordance with organisational procedures • Select appropriate hydraulic components, hydraulic equipment and electrical devices in accordance with control requirements • Assemble hydraulic components and connect electrical devices and wiring in accordance with circuit diagram • Check functionality of hardware and software of hydraulic equipment • Test and modify hydraulic equipment and systems in accordance with organisational procedures to ensure design meets control requirements • Apply safe work practices while operating and testing the hydraulic system • Identify and tag faulty/unsafe components • Maintain good housekeeping in accordance with Workplace Safety and Health practices
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Store good and spoilt components/parts for proper recycling • Select and replace spoilt components with good conditioned-used recycled components
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Share best practices with co-workers in Workplace Safety and Health requirements • Work within a team on reporting work outcomes

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<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Create a checklist to ensure all connections are wired properly and correctly
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Maintenance management software • Inventory management system software • Hydraulic test equipment • Hand tools and power tools • WSH signage and PPE <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Job instructions • Work/job specifications • Workshop drawings • Engineering drawings • Report sheets <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health • Quality procedures and applicable procedures • Relevant occupational health and safety legislation • Risk management procedures

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Skill Code	PRE-PMP-1002-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Operate Programmable Logic Controller		
Skill Description	This skill describes the ability to operate programmable logic control at the workplace safely based on workplace requirements. It also includes the ability to select appropriate components, test electrical sensors, assemble control system, operate and test control system, and rectify defects in the control system.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Interpretation of control requirements • Types, characteristics and operating principles of input and output devices • Types of connections • Types and characteristics of PLC and programming input devices • Selection of types of general-purpose equipment, tools and materials • Interpretation of electrical symbols and schematic diagrams • Analysis of power supply voltage • Rating of protective devices • Safe practices in assembling and operating PLC control systems • Method of disposal of debris 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Plan work activities and requirements in accordance with organisational procedures • Select appropriate input, output devices and related items in accordance with control requirements • Set up programmable logic controllers • Assemble control system in accordance with design requirements • Test set-up of programmable logic controllers • Conclude testing of programmable logic controllers • Apply safe work practices while operating and testing the control system 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Store good and spoilt components/parts for proper recycling • Select and replace spoilt components with good conditioned-used recycled components
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Clarify details of work activities to be carried out based on given work instructions • Share best practices with co-workers in workplace safety and health requirements • Work within a team on reporting work outcomes
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Prepare remedial actions to prevent recurrence of mistakes • Create a checklist to ensure all connections are wired properly and correctly
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Sensor tester • Multimeter • Crimping tool • Wire cutter • Wire stripper • Electrical pliers • Test pen • Screwdrivers (+) and (-) • Hexagon key set • Adjustable spanner

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
MACHINIST/TECHNICIAN**

	<p>Rules and regulations must include:</p> <ul style="list-style-type: none">• Workplace safety procedures• Current WSH policies <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none">• Standard workplace/organisational operating procedures• Industrial health and safety CP 5:1998
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
MACHINIST/TECHNICIAN**

Skill Code	PRE-PMP-1003-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Perform Cleanroom Practices		
Skill Description	This skill describes the ability to perform good cleanroom practices when carrying out daily tasks in the cleanroom. It also includes contamination control procedures, aseptic monitoring and checks for personnel hygiene.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	The ability to understand: <ul style="list-style-type: none"> • Types of cleanroom and zoning classification • Types of cleanroom clothing, machinery, equipment and materials • Importance of cleanroom gowning procedures • Principles of cleanroom testing • Types of contamination and cleanroom contamination control procedures • Types of aseptic monitoring in cleanroom • Requirements for personnel hygiene 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	The ability to: <ul style="list-style-type: none"> • Identify the types of cleanroom clothing, machinery, equipment and materials • Perform gowning procedures • Perform cleanroom contamination control procedures • Perform aseptic monitoring in cleanroom • Perform checks for personnel hygiene 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Improvise techniques to simplify processes/operations leading to shorter duration to complete the work • Contribute ideas to improve workflow in cleanroom operations
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Report any abnormalities in aseptic monitoring • Check with designated personnel on contamination control measures
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Participate in reviewing contamination control measures for clean room operations in accordance to organisation procedures • Keep up-to-date on latest innovation in control measures for clean room operations
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Types of cleanroom must include:</p> <ul style="list-style-type: none"> • Class 1 • Class 10 • Class 100 • Class 1000 • Class 10,000 • Class 100,000 <p>Cleanroom zone must include:</p> <ul style="list-style-type: none"> • Pre-change • Changing • Cleanroom entrance

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Cleanroom clothing, machinery, equipment and materials must include:

- Overall, hood, facemask, knee-length boots and gloves
- Process equipment and machinery
- Pharmaceuticals manufacturing: containers and ingredients
- Microelectronics industry: silicon wafers and process chemicals
- Writing materials, wipers, mops, labels and swaps

Cleanroom gowning procedures must include:

- Entrance
- Exit

Cleanroom tests must include:

- Room air supply and extract
- Air movement between areas
- Filter installation leak
- Containment leak
- Air movement in room
- Particle count
- Temperature
- Relative humidity
- Heating and cooling capabilities of the room
- Sound levels
- Lighting levels
- Vibration levels

Sources of contamination must include:

- Industrial processes
- Airborne contaminants
- Surface

Contamination control must include:

- ESD behaviour of operating materials
- Magnetic influences
- Properties of materials
- Outgassing

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Skill Code	PRE-PMP-1004-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Perform CNC Milling and Programming		
Skill Description	This skill describes the ability to apply skills and knowledge in CNC milling and programming at the workplace. It also includes the ability to determine the job requirements, set up the work piece, select appropriate cutting tools and set-up, operate the CNC milling machine to machine the work piece, carry out measurements and observe safe work practices.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Knowledge of technical drawing specification of the work piece • Machine tool limitations • Alpha-numerical addresses and miscellaneous functional codes in CNC programs • Application of canned cycles and sub-routines for relevant jobs • Types of measuring tools appropriate for the job • Workplace Safety and Health procedures for general machining • Appropriate cutting tools necessary for the job • Consideration of ease of securing and removing the work piece • Types of work holding fixtures • Machining parameters such as cutting speed, feed rate, work piece or cutter revolution required • Industrial health and safety regulations • Verification of CNC part program • Types of defects in tools and equipment 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Access and interpret international drawing conventions and standards • Determine job requirements from the blue prints • Check and ensure correct work material is used • Write and verify a CNC part programme • Secure work piece safely, quickly and accurately • Select appropriate tooling • Set up tooling, register and record tool off-set • Select the appropriate cutting tool to be mounted to the tool magazine • Perform tool setting and compensation • Set the desired machining parameters • Carry out an operational dry run • Operate the CNC milling machine to carry out the machining process • Check work piece for conformance with specifications • Observe safety procedures and adhering to personal safety requirements
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Test out machining parameters with different cutting tool materials to optimise outcome • Compare and contrast production outcomes against standard time
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Clarify job requirements • Seek clarification on doubts and challenges with peers and/or superior • Store optimised programme for repeat orders

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<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on machining approach and possible ways to improve productivity • Compare and contrast machining data of different types of cutting tool materials for productivity and cost evaluation
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Personal protective equipment • CNC milling machine with accessories • Measuring tools and equipment • Work-holding fixtures and tools • Testing equipment and tools • Milling tools and accessories <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Work information • Job sheets • Technical drawings • Cutting parameters <p>Programming and verification must include:</p> <ul style="list-style-type: none"> • CAD/CAM software • Verification CAM software <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace safety procedures • Current WSH policies • Local legislation and regulations

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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Skill Code	PRE-PMP-1005-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Perform CNC Turning and Programming		
Skill Description	This skill describes the ability to apply skills and knowledge in CNC turning and programming at the workplace. It also includes the ability to determine the job requirements, set up the work piece, select appropriate cutting tools and set-up, operate the CNC lathe to machine the work piece, carry out measurements and observe safe work practices.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Knowledge of technical drawing specification of the work piece • Machine tool limitations • Alpha-numerical addresses and miscellaneous functional codes in CNC programs • Application of canned cycles and sub-routines for relevant jobs • Types of measuring tools required for the job • Workplace Safety and Health procedures for general machining • Appropriate cutting tools necessary for the job • Consideration of ease of securing and removing the work piece • Types of work holding fixtures • Possible machining parameters such as cutting speed, feed rate and work piece revolution required • Possible pitfalls and optimisation of operational sequence • Industrial health and safety regulations • Verification of CNC part program • Types of defects in tools and equipment 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Access and interpret international drawing conventions and standards • Determine job requirements from the blue prints • Check and ensure correct work material is used • Write and verify a CNC part programme • Secure work piece safely, quickly and accurately • Select appropriate tooling • Set up tooling, register and record tool off-set • Select the appropriate cutting tool to be mounted to the tool magazine • Perform tool setting and compensation • Set the desired machining parameters • Carry out an operational dry run • Operate the CNC lathe to carry out the machining process • Check work piece for conformance with specifications • Observe safety procedures and adhering to personal safety requirements
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Test out machining parameters with different cutting tool materials to optimise outcome • Compare and contrast production outcomes against standard time
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Clarify job requirements • Seek clarification on doubts and challenges with peers and/or superior • Store optimised programme for repeat orders
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on machining approach and possible ways to improve productivity

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<p><i>one's self within and outside of one's area of work.</i></p>	<ul style="list-style-type: none"> • Compare and contrast machining data of different types of cutting tool materials for productivity and cost evaluation • Use relevant engineering tables and catalogues with electronic searches and databases
<p>Range of Application <i>(where applicable)</i> <i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tool and equipment must include:</p> <ul style="list-style-type: none"> • Personal protective equipment • CNC lathe with accessories • Measuring tools and equipment • Work-holding fixtures and tools • Testing equipment and tools <p>Lathe tools and accessories must include:</p> <ul style="list-style-type: none"> • Types of CNC lathe cutters • Faceplate and indexing chucks • Quick fixtures • Tungsten carbide, coated carbides, cubic boron nitride and cermets cutting inserts <p>Procedures and documents must include:</p> <ul style="list-style-type: none"> • Work information • Job sheets • Technical drawings • Cutting parameters <p>Programming and verification must include:</p> <ul style="list-style-type: none"> • CAD/CAM software • Verification CAM software <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace safety procedures • Current WSH policies • Local legislation and regulations

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Skill Code	PRE-PMP-1006-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Perform EDM-CNC Wire Cut Machine Operations		
Skill Description	<p>This skill describes the ability to apply skills and knowledge in electro-discharge machining (EDM) and CNC wire cut machining at the workplace. It also includes the ability to determine the job requirements, set up the work piece, electrodes and wires, plan sequence of operations, test run the CNC part program, operate the EDM and CNC wire cut machines to machine the work piece, optimise the machining parameters, carry out measurements and observe safe work practices.</p>		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Interpretation of technical drawing specification of the work piece • Machine limitations • Alpha-numerical codes and addresses in CNC part programs • CNC part program, canned cycles and sub-routines for relevant machines • Types of electrodes and wires and their applications • Types of measuring tools required to check the job • Ways to locate work piece accurately for repeatability • Machining parameters such as wire speed, feed rate, amperage requirement, spark gap, electrode wear and rate of metal removal • Possible pitfalls and optimisation of operational sequence • Machine and quick set-up maintenances • Workplace Safety and Health procedures for general machining 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Interpret international drawing conventions and standards • Check and ensure correct work material is used • Write and verify a CNC part program • Secure work piece safely, quickly and accurately • Select the appropriate copper electrodes and wires to be mounted to the machine • Perform electrode and wire reference setting • Set the desired machining parameters • Test run the EDM/wire cut part program • Carry out the machining operations • Carry out in-process quality checks
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Consider the need of using proper quick fix to reduce set-up time and maintain positioning accuracy • Test out machining parameters with different cutting tool materials to optimise outcome • Compare and contrast production outcomes against standard time
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Adhere to work safety • Clarify job requirements • Store optimised programme for repeat orders
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on machining approach and possible ways to improve productivity • Compare and contrast machining data of different types of cutting tool materials for productivity and cost evaluation • Use relevant engineering tables and catalogues with electronic searches and databases

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<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Personal protective equipment • Test equipment and tools required for carrying out dimensional and geometric measurement • EDM electrodes and wire-cut accessories <p>Procedures and documents must include:</p> <ul style="list-style-type: none"> • Work information • Job sheets • Technical drawings • Machining parameters <p>Programming and verification must include:</p> <ul style="list-style-type: none"> • CAD/CAM software • Verification CAM software <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace safety procedures • Current WSH policies • Local legislation and regulations
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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Skill Code	PRE-PMP-1007-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Perform General Assembly		
Skill Description	This skill describes the ability to assemble a mechanical device using hand tools and workshop machines, ensuring that the components are properly aligned and manually tested for smooth functionality. It also includes troubleshooting and making necessary modifications to ensure functional continuity.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • De-burring and chamfering methods • Joining processes and applying methods such as welding, riveting, crimping, gluing, bolt and nuts, soldering and brazing • General workshop processes such as drilling, tapping, die threading, reaming and doweling • Functional purpose of machine and standard elements • Purpose of stoning, lapping and filing • Referencing to guidelines for the size and length of standard components • Selection of appropriate hand tools • General maintenance of general workshop tools and equipment 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Use appropriate hand tools for assembly work • Perform filing operation • Perform drilling, reaming, tapping and die threading operations • Apply various bonding and joining process • Maintain and lubricate assembled components/equipment • Perform modification fitting operation • Align and check accuracy of functional dynamic components • Apply safety measures for dynamic components • Test assembled device for functionality 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Compare and contrast assembly approaches for speed and accuracy • Compare and contrast assembled equipment for speed and accuracy for production output against known standards • Improve set-up time and through-put time for production runs/reduction of rejects
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Seek clarification on doubts and challenges with peers and/or superior • Reflect on errors in assembly and possible remedies and seek consensus • Keep workplace tools and equipment orderly
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Keep up-to-date on trends in assembly techniques • Compare output speed of similar or comparable assembly/production equipment • Search for solutions for problems encountered
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Accessories for assembly work • General workshop machines • Workshop tools <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Job instructions • Work/job specifications • Workshop drawings • Engineering drawings • Report sheets

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	<p>Rules and Regulations must include:</p> <ul style="list-style-type: none">• Workplace safety procedures
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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Skill Code	PRE-PMP-1008-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Perform General Machining		
Skill Description	This skill describes the ability to carry out common machining operations and apply them in the workplace. It also includes identifying work requirements, operational sequence and basic machine maintenance.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Interpret drawings and blueprints including material selection and datums • Work holding devices and methods • Types and application of cutting tools, tool geometry, etc • Machining parameters such as cutting speed, feed rate, work piece or cutter revolution required • Limits, fits, and tolerances • Use of hand tools • Basic preventive maintenance 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Establish job requirements and suitable sequence of operations • Ensure the correct work material is used • Set up and secure the work piece safely • Select, position and mount appropriate cutting tools • Determine and set the appropriate machining parameters for the job • Perform common machining operations • Use suitable measuring instruments and/or gauges to check the component for conformance with specifications • Perform basic/periodical maintenance and adjustment of the machine tools 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Propose/develop quick set-up fixture to reduce set-up time and set up of work piece • Organise all measuring tools and equipment orderly in a cabinet for quick access • Test out machining parameters to optimise outcome • Compare and contrast outcomes
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Seek clarification on doubts and challenges with peers and/or superior • Keep workplace tools and equipment orderly
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on machining approach and possible ways to improve productivity • Compare and contrast types of cutting tools and advancement in cutting tool materials • Search for solutions for problems encountered • Use relevant engineering tables and catalogues including electronic searches and databases
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Personal protective equipment • Goggles and safety aids • Test equipment and tools to measure test pieces and components <p>Procedures and supporting documents must include:</p> <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace safety procedures

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SKILLS STANDARDS FOR
MACHINIST/TECHNICIAN**

	<ul style="list-style-type: none">• Current WSH policies• Local legislation and regulations on weights and measures• Internationally recognised procedures and standards on dimensional and geometrical measurements
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
MACHINIST/TECHNICIAN**

Skill Code	PRE-QUA-1001-1	Skill Category	Quality
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Quality Systems		
Skill Description	This skill describes the ability to apply skills and knowledge related to quality improvement in the workplace. It also includes planning and carrying out daily work to meet organisational quality system requirements as well as maintaining and improving work quality.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Organisational quality systems, procedures and policies • Interpretation of work instructions • Applicable product, process and quality specifications • Types and usage of quality system tools and equipment • Types and interpretation of quality records • Legislative and industrial framework for quality • Organisational procedures for detecting and reporting non-conformities • Organisational procedures for detecting, reporting and resolving non-compliances • Organisational procedures for providing feedback for quality improvement 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Plan work activities to meet quality systems requirements • Carry out work activities according to work instructions and organisational quality procedures • Monitor quality outcomes against established job and quality objectives to achieve consistency and quality • Take appropriate corrective action(s) to rectify non-conformities promptly • Monitor resolution of non-compliances via quality records • Assess effectiveness of the corrective action(s) to rectify non-conformities • Report any abnormalities and problems encountered in encountered in planning, carrying out, maintaining and improving work quality 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Improvise techniques to simplify processes/operations leading to shorter duration to complete the work • Provide constructive suggestions to improve on quality system and work processes according to organisational procedures
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Establish networks and working relationships with others to enhance team effectiveness • Seek appropriate advice for own work improvement from relevant personnel • Carry out improvement of own work and quality performance according to feedback received
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Undertake appropriate opportunities to learn and develop required work competencies and quality skills for continuous improvement
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Organisational quality systems, procedures and policies must include:</p> <ul style="list-style-type: none"> • Quality Management System (QMS) • Quality objectives • Quality policies • Quality procedures <p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Measuring equipment • Comparative equipment • Statistical analysis equipment and processes • Quality control tools <ul style="list-style-type: none"> ○ Charts

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	<ul style="list-style-type: none">○ Tables○ Spreadsheets○ QC 7 Tools○ Acceptance Sampling Plan <p>Quality records must include:</p> <ul style="list-style-type: none">● Quality control records● Non-conformity records● Non-compliance records● Customer satisfaction records <p>Legislative and industrial framework for quality must include:</p> <ul style="list-style-type: none">● Relevant industry codes of practice● International/National Quality Standards/Framework<ul style="list-style-type: none">○ ISO 9001○ Singapore Quality Class (SQC)
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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Skill Code	PRE-WSH-2003-1	Skill Category	Workplace Safety and Health
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Workplace Safety and Health Policies		
Skill Description	This skill describes the ability to apply Workplace Safety and Health (WSH) policies to maintain health and safety in the workplace. It also includes the ability to apply basic knowledge and application skills of WSH policies, schedule daily work, identify hazards in accordance to WSH requirements and implement risk controls.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	The ability to understand: <ul style="list-style-type: none"> • Types and interpretation of relevant WSH legislations and relevant industry codes of practice (CP) • Types and usage of Personal Protective Equipment (PPE), safety devices and equipment • Types and interpretation of safety signage • Organisational WSH procedures and Risk Assessment (RA) • Common manufacturing hazards and risk controls • Types of hazards on work area, safety signage, safety devices and equipment • Types of risk control measures • Organisational WSH procedures and WSH legislative requirements 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	The ability to: <ul style="list-style-type: none"> • Establish job and WSH objectives according to work instructions, organisational WSH procedures and policies • Plan work activities to meet WSH requirements • Schedule daily work activities in accordance to organisational WSH procedures • Identify and monitor hazards by conducting WSH checks on work area, safety signage, safety devices and equipment • Carry out risk controls • Follow organisational emergency and evacuation procedures in the event of emergencies or drills • Report any abnormalities and problems encountered in complying with WSH requirements 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Contribute ideas to enhance WSH programs • Provide constructive suggestions to apply WSH practices
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Check with designated personnel on risk control measures • Seek appropriate advice for monitoring hazard checks • Cooperate with peers to implement WSH policies
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Undertake appropriate opportunities to learn and develop required work competencies and skills for implementing WSH in workplace • Keep up-to-date on changes to WSH policies
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Legislative and industrial framework for WSH</p> <p>WSH checks must include:</p> <ul style="list-style-type: none"> • Workplace • Safety tools and equipment • Safety signage • Personal Protective Equipment (PPE) <p>Type of hazards must include:</p> <ul style="list-style-type: none"> • Physical hazards • Chemical hazards

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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	<ul style="list-style-type: none">• Ergonomics hazards <p>Risk control must include:</p> <ul style="list-style-type: none">• Elimination• Substitution• Engineering controls• Administrative controls• Use of PPE
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
MACHINIST/TECHNICIAN**

Skill Code	PRE-WSH-1001-1	Skill Category	Workplace Safety and Health
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Workplace Safety and Health in Metal Work		
Skill Description	The ability to apply Workplace Safety and Health practices to ensure the safety of oneself and others at work in metal work. It also includes identifying own roles and responsibilities in a metal work job by following safe work procedures and adopting relevant risk control measures when conducting metal works and responding to fire emergencies.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Workplace Safety and Health legal obligations and other organisational requirements • Rights and responsibilities of a worker stipulated by the Workplace Safety and Health (WSH) Act • Rights and responsibilities of a worker stipulated by the Employment Act and Work Injury Compensation Act • Common safety signs in a factory • Common workplace hazards in a factory • Types of risk control measures • Components of “Permit-to-Work” (PTW) • Types of Personal Protective Equipment (PPE) • Proper usage and maintenance of PPE 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Identify own roles and responsibilities in metal working considering legal obligations in Workplace Safety and Health (WSH) and its legal requirements, the Employment Act and Work Injury Compensation Act • Follow safe work procedures in metal working noting: <ul style="list-style-type: none"> ○ Safety signs in a factory ○ Common workplace hazards in a factory • Identify relevant risk control measures to be implemented according to safe work procedures • Follow “Permit-to-Work” (PTW) procedures according to safe work procedures • Wear appropriate Personal Protective Equipment (PPE) according to safe work procedures • Respond to fire emergencies following: <ul style="list-style-type: none"> ○ Fire evacuation procedures based on incident at site in accordance with organisational firefighting procedures ○ Using correct types of fire extinguishers in the event of a fire ○ Applying the correct techniques to extinguish a fire according to established organisational firefighting procedures
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Contribute ideas to enhance WSH programs • Provide constructive suggestions to apply WSH practices
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Report unsafe working conditions, work practices and any irregularities in firefighting or related activities to relevant stakeholders in accordance with organisational procedures • Cooperate with peers to implement WSH policies

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<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Practise and take part in drills to be ready for emergencies. • Stay abreast of developments in equipment and personal protective gears • Stay updated on latest legislative requirements • Familiarising with safety practices at workplace relating to health and safety at workplace
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health (WSH) Act and subsidiary legislations <ul style="list-style-type: none"> ○ WSH (General Provisions) Regulations • Employment Act • Work Injury Compensation Act • Penalties for non-compliance • WAH Regulation • WSH (Risk Management) Regulations • Code of Practice on WSH Risk Management • Statutory Medical Examinations as required under the WSH (Medical Examinations) Regulations <p>Organisational and other requirements must include:</p> <ul style="list-style-type: none"> • Company in-house rules and regulations • Equipment manufacturer's guidelines (instructions, specifications, operators manual or checklists) • Safety signs on site • Workplace hazards • Risk control measures <p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Personal Protective Equipment (PPE) • Fire extinguishers

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SKILLS STANDARDS FOR
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Skill Code	PRE-WSH-1002-1	Skill Category	Workplace Safety and Health
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Identify Hazards and Maintain Risk Control Measures		
Skill Description	The skill describes the ability to identify hazards and maintain risk control measures at workplace.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	The ability to understand: <ul style="list-style-type: none"> • Types of hazards associated with the use of tools and operation of equipment and machine at workplace • Types of hazards associated with materials and chemicals used at workplace • Principles and methodology of risk assessment • Importance and types of risk control measures at workplace • Organisational WSH procedures and WSH legislative requirements 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	The ability to: <ul style="list-style-type: none"> • Identify hazards by conducting WSH checks on work area, safety signage, safety devices, equipment, machine, materials and chemicals used at workplace • Carry out risk controls in accordance to WSH organisational procedures and legislative requirements 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Contribute ideas to improve control of WSH risks in accordance to the hierarchy of control • Identify inadequacies in the existing control measures in accordance with organisational procedures • Provide constructive suggestions to carry out risk controls measures
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Report any abnormalities and problems encountered in identifying and monitoring hazards • Check with designated personnel on risk control
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Provide input to risk assessment team at workplace in accordance to WSH organisational procedures and legislative requirements
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Legislative and industrial framework for WSH</p> <p>Hazards associated with tools, equipment and machines must include:</p> <ul style="list-style-type: none"> • Electrical • Mechanical • Fire and explosion • Radiation • Noise <p>Hazards associated with materials and chemicals must include:</p>

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- Fire and explosion
- Burn and scald
- Sudden release of pressure
- Corrosion
- Irritation
- Asphyxiation
- Toxicity
- Carcinogens
- Acute effects
- Chronic effects
- Chemical products

Hazards associated with environment must include:

- Poor housekeeping
- Unstable stacking of materials
- Storage of incompatible materials
- Incompatible works
- Unguarded machines
- Hazardous atmosphere
- Conditions that expose a person to hazards:
 - Struck by or struck against objects
 - Trip and fall on same level
 - Falling from height
 - Drowning
 - Scalds and burns
 - Lightning strikes

At-risk behaviours must include:

- Violating procedures
- Taking short-cuts
- By-passing safety procedures
- Disabling machine safety features
- Not using or misuse of Personal Protective Equipment (PPE)
- Unauthorised use of equipment
- Misuse of equipment
- Reckless acts
- Horseplay

Health hazards must include:

- Noise

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- Chemical
- Haze
- Ergonomic
- Poor posture
- Duration
- Frequency
- Area layout
- Manual handling

Hierarchy of risk control must include:

- Elimination
- Substitution
- Engineering controls
- Administrative controls
- Personal Protective Equipment (PPE)

Common risk assessment approaches must include:

- Activity-Based
- Trade-Based

Simple risk assessment methods must include:

- Review Material Safety Data Sheets
- Job Safety Analysis (Task Analysis)
- Workplace Audits and Inspections
- Risk Analysis Form
- Matrix method

Risk quantification must include:

- Severity of hazard
- Likelihood of the occurrence
- Risk Level = Severity x Likelihood

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Skill Code	PRE-MPI-1001-1	Skill Category	Manufacturing Productivity and Innovation
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply 5S Techniques in Manufacturing		
Skill Description	This skill describes the ability to apply 5S procedures (a structured approach to housekeeping) to the job and the work areas. It also includes SEIRI (clearing unnecessary items from work areas), SEITON (organising work areas in an orderly manner), SEISO (cleaning work areas), SEIKESTU (maintaining work areas cleanliness) and SHITSUKE (maintaining self-discipline in work areas).		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Basic principles of effective workplace organisation • Elements, purpose and benefits of 5S program (SEIRI, SEITON, SEISO, SEIKESTU and SHITSUKE) • Meaning and significance of 5S techniques to own job and workplace • Application of 5S techniques to own job and workplace to achieve objectives • Organisational pre-determined schedule for conducting 5S techniques • Methods and organisational criteria for identifying, categorising, labelling and segregating necessary and unnecessary items • Methods, organisational guidelines and procedures to labelling, segregating and disposing unnecessary items • Organisational guidelines and procedures relating to placing, storing and arranging necessary items • Organisational health and safety guidelines relating to performing 5S techniques 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Conduct 5S techniques in accordance with organisational pre-determined schedule and safety and health guidelines • Identify, label and segregate unnecessary items in work areas in accordance with organisational procedures • Clear all unnecessary items from work areas and place them at designated location or holding area • Dispose unnecessary items at designated location or holding area in accordance with organisational guidelines and procedures • Identify and allocate appropriate place for each necessary item in accordance with work requirements and organisational guidelines • Arrange and where appropriate, store each necessary item properly and safely in its right place in accordance with its usage requirements • Return each necessary item immediately to its assigned location after use • Check and identify work areas and items that require cleaning before and after work activities • Clean identified work areas and items using appropriate cleaning tools, equipment, materials and methods in accordance with manufacturer's instructions and organisational procedures • Identify and report any defects and hazards discovered in work areas or items that are cleaned in accordance with organisational procedures • Carry out visual checks on 3S (SEIRI, SEITON and SEISO) conditions of work areas according to organisational 5S check list to identify any non-conformance in organisational standards • Take corrective actions against any deterioration of 3S (SEIRI, SEITON and SEISO) conditions in work areas • Evaluate 5S conditions of work areas for non-conformance based on organisational 5S audit list • Take corrective actions where practices of 5S deviate from established procedures or are not in conformance with specified standards
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Provide ideas and constructive suggestions for continuous process improvement • Propose 5S improvement ideas in work areas in accordance with organisational procedures

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<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Engage regular constructive feedback with colleagues to maintain high productivity • Communicate with team members on the performance indicators expected from the improvement activities • Share best practices in improving productivity with peers
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Undertake appropriate opportunities to learn and develop required work competencies and quality skills for continuous improvement • Keep up-to-date on good practices at workplace
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health Act <p>Procedures, guidelines and supporting documents must include:</p> <ul style="list-style-type: none"> • Standard operating procedures relating to work scope • Organisational procedures relating to labelling and segregating unnecessary items • Organisational guidelines and procedures to dispose unnecessary items • Organisational health and safety guidelines relating to performing SEIRI • Relevant industry standards, manuals and reference materials

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Skill Code	PRE-MPI-1002-1	Skill Category	Manufacturing Productivity and Innovation
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Continuous Process Improvement Techniques		
Skill Description	This skill describes the ability to apply continuous process improvement techniques and be able to put them into practice at the workplace. It also includes the ability to identify improvement opportunities, carry out continuous improvement activities as well as follow-through the improvement activities.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Purpose of continuous improvement • Types of continuous process improvement techniques • Procedures for making action plan • Concepts and methods of continuous process improvement • Types of performance indicators • Procedures for carrying out continuous improvement activities • Methods to track and measure progress of improvement activities • Procedures to follow-through the improvement activities • Procedures for reporting and recording improvement activities outcomes 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Identify improvement goals to be achieved • Carry out the improvement activities in accordance with the action plan • Collect, collate and compile data for continuous process improvement • Apply appropriate continuous process improvement techniques to collect data related to improvement goals • Take corrective action against issues which arose during implementation of improvement activities in accordance with organisational procedures • Follow-through the progress of improvement activities and take appropriate corrective actions on any non-conformances • Report and record the outcomes of improvement activities in accordance with organisational procedures 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Provide ideas and constructive suggestions for continuous process improvement
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Communicate with team members on the performance indicators expected from the improvement activities • Determine the timeframes, tasks, responsibilities and resources required to achieve the improvement goals identified and discuss with appropriate personnel
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Undertake appropriate opportunities to learn and develop required work competencies and quality skills for continuous improvement • Address the gaps or shortfalls in action plan proposal, if any
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Work place improvement goals must include:</p> <ul style="list-style-type: none"> • Productivity improvement • Cost reduction or saving • Product quality improvement • Customer service improvement • Process or line improvement • Production machine efficiency • Machine maintenance efficiency • Defect reduction • Safety, health and environment improvement <p>Continuous process improvement techniques must include:</p>

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	<ul style="list-style-type: none"> • Improvement models such as: <ul style="list-style-type: none"> ○ Plan-Do-Check-Act (PDCA) cycle ○ Quality Circles (QC) ○ Problem-solving cycle • Tools for data collection and analysis such as: <ul style="list-style-type: none"> ○ Brainstorming ○ Pareto diagram ○ Cause-and-effect diagram ○ Check sheet ○ Data stratification ○ Flowchart ○ Run charts ○ Workflow/Process analysis <p>Performance indicators must include:</p> <ul style="list-style-type: none"> • Management indicators such as: <ul style="list-style-type: none"> ○ Operating profit ○ Productivity of labour, machine or energy ○ Cost reduction or saving ○ Value of warranty claims ○ Number of customer complaints ○ Customer satisfaction index • Quality indicators such as: <ul style="list-style-type: none"> ○ Process defect ratio ○ Cost of process defects ○ Number of defects missed ○ Number of warranty claims ○ Overall process yield • Safety, health and environment indicators such as: <ul style="list-style-type: none"> ○ Accident frequency ○ Accident severity ratio ○ Number of near-misses detected ○ Number of danger points detected ○ Number of improvements made to dangerous work • Process or line improvement <ul style="list-style-type: none"> ○ Overall equipment effectiveness ○ Availability ratio ○ Performance ratio ○ Quality ratio • Machine maintenance efficiency <ul style="list-style-type: none"> ○ Mean time between failure (MTBF) ○ Mean time to repair (MTTR) ○ Mean time to failure (MTTF)
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	<p>Methods of tracking the progress of improvement activities must include:</p> <ul style="list-style-type: none">• Milestone charts• Project control charts• Gantt charts <p>Procedures for continuous process improvements must include:</p> <ul style="list-style-type: none">• Measure the result of improvement against the performance indicators• Take corrective action against any unmet goal• Report and record the outcomes of improvement activities
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Skill Code	PRE-MPI-1003-1	Skill Category	Manufacturing Productivity and Innovation
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Perform Basic Productivity Practices		
Skill Description	This skill describes the ability to apply basic productivity practices and be able to put them into practice at their workplaces. It also includes the ability to use appropriate methods to improve productivity, preventing poor productivity practices, applying productivity techniques and linking them to the financial big picture.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Productivity objectives, underlying purpose and goals of productivity and how to determine and achieve productivity growth • Ways to measure productivity growth • Factors involved such as cheaper, better and faster improvement that contribute to increase in productivity • Impact on productivity outcome due to various types of employee behaviours at the workplace • Differences in performance mindset that can impact the outcome of productivity • Strategies to achieve better productivity performance • Productivity applications and their relation to the financial big picture • Costing of managing business to an organisation and types of costs to be used to aid in productivity • Minimising wastage to raise productivity • .8 Types of WASTE. as a useful framework to raise productivity 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Interpret productivity purpose, goals, objectives and productivity measures • Select appropriate methods to increase productivity and workplace performance • Determine different employee behaviours that can impact the outcome of productivity • Select appropriate methods to raise productivity growth at the workplace • Interpret productivity improvement and link it to the financial big picture • Detect and prepare a list of activities that contribute to internal wastage • Categorise the various forms of waste in accordance with the 8 Types of Waste framework • Determine ways to reduce total operational cost in order to maximise profit margin
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Provide ideas and constructive suggestions for continuous process improvement • Apply appropriate productivity techniques and take measurements on the kind of improvement (cheaper, better, faster) made
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Engage regular constructive feedback with colleagues to maintain high productivity • Share best practices in improving productivity with peers
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Undertake appropriate opportunities to learn and develop required work competencies and quality skills for continuous improvement • Keep up-to-date on latest productivity practices

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<i>work.</i>	
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Standards or codes of practice relating to the product and services of the organisation <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Organisation mission, values and goals • Organisational training objectives such as focus on acquiring specific competencies or qualifications, productivity improvement and customer satisfaction • Achievement of effective and efficient operations • Organisational culture that affect the performance of productivity

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Skill Code	SVCF-CS-101C-1	Skill Category	Customer Experience
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Provide Go-the-Extra-Mile Service		
Skill Description	This skill describes the ability to provide go-the-extra-mile service to exceed customer expectations and create a positive customer experience. It also includes demonstrating the qualities and characteristics of a service professional and escalating feedback on areas of improvement to enhance the customer experience.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Types of customers • Customer needs and expectations • Qualities and characteristics of a service professional • Importance of go-the-extra-mile for service to oneself and the organisation • Methods to exceed customer expectations • Principles of effective communication • Methods to escalate areas of improvement to enhance customer experience 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Recognise the diverse range of customers and their needs and expectations • Demonstrate the qualities and characteristics of a service professional when delivering go-the-extra-mile service to exceed customer expectations • Create a positive customer experience by offering customized and personalized service in accordance with organisation guidelines 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Escalate feedback through appropriate channels on areas of improvement to enhance the customer experience
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Empathise with customers' needs to exceed customers' expectations to create a positive customer experience • Demonstrate customer-friendly communication principles in go-the-extra-mile interactions with customers
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Seek customer's feedback on service delivery to improve own performance in providing go-the-extra-mile service
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Customer expectations may be defined as the perceived value customers seek from the purchase of a good or service and must include:</p> <ul style="list-style-type: none"> • Reliability • Quality of product/service • Safety of product/service • Performance of product/service • Aesthetic appearance of product/service • Comfort of product/service • Durability of product/service <p>Qualities and characteristics of a service professional must include:</p> <ul style="list-style-type: none"> • Ability to work with diverse team members

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- Good communication skills
- Integrity Positive attitude
- Flexible and ability to adapt to provide service to a diverse range of customers
- Proactive in seeking out unmet needs of customer
- Consistent service
- Initiative
- Customer-first mindset

Go-the-extra-mile service is defined as service that exceeds both internal and external customer expectations and must include:

- Being aware of the different customer's needs before approaching customers
- Offering alternate solutions to customers
- Providing value-add services to customers (e.g. calling another store in the area to see if that product is available)
- Suggesting alternate choices to customers when preferred choices are not available
- Establishing rapport with customers to build relationships with customers who frequent the establishment
- Following up with customers on unanswered questions

Customer experience is the sum of all experiences a customer has with an organisation and its product or service. A positive customer experience makes the customer feel happy, satisfied, justified, valued, served and cared for throughout their relationship with the organisation. The ability to deliver a positive customer experience enhances customer loyalty and retention.

Methods to offer customised and personalised service must include:

- Balancing time spent with one customer against the needs of other customers
- Treating customers as individuals
- Varying personal approaches in response to customer attributes such as being patient with older customers and being sensitive when handling customers from different cultural backgrounds
- Acceding to customer's special requests according to organisational guidelines such as extending warranty period
- Up-selling products or services by offering the customer the opportunity to purchase additional item
- Cross-selling products or services by offering the customer additional

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	options to complement their purchase
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Skill Code	SVCF-CS-103C-1	Skill Category	Customer Experience
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Respond to Service Challenges		
Skill Description	This skill describes the ability to respond to challenging service situations through the use of appropriate verbal and non-verbal communication techniques. It also includes recognising triggers which may lead to service challenges, use of service recovery procedures to respond to the challenges and escalating unresolved service challenges.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Types of triggers in the service environment • Types of service challenges • Importance of responding to service challenges • Principles of effective communication • Method to escalate service challenges • Service escalation channels • Resilience and methods to demonstrate resilience 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Use service recovery procedures to respond to service challenges in accordance with organisation guidelines • Escalate unresolved service challenges using appropriate channels in accordance with the organisation's guidelines • Demonstrate resilience in the handling of service challenges 		
Innovation and Value Creation <i>It refers to the ability to generate purposive ideas to improve work</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Strive for win-win outcomes when handling service challenges • Identify and suggest areas of improvement that may arise out of service challenges 		

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<p><i>performance and/or enhance business values that are aligned to organisational goals.</i></p>	
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Empathise with customers while facing service challenges to prevent situation from escalating
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Undertake • Keep abreast of latest products and services and service delivery procedures to avoid creating service challenges • Reflect on own handling of service challenges to improve performance in future situations • Monitor own service delivery to avoid creating situations that may give rise to service challenges
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Triggers may be defined as causes of an event or situation that may lead to service challenges.</p> <p>The service environment may be defined as the workplace where products or services are sold or delivered. It includes the shop-front, back-room operations or store.</p> <p>Triggers in the service environment must include:</p> <ul style="list-style-type: none"> • Un-trained service staff • Poor attitude of staff • Lack of urgency to resolve complaints and feedback • Long waiting times and queues • Unresolved issues or problems

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- Poor response to information requested
- Un-informed staff
- Lack of communication
- Lack of availability of product
- Poor product or service quality

Service challenges must include:

- Customer complaints on products or services
- Negative feedback from customers on service delivery

Service recovery is a procedure for dealing with customers' service challenges. It must include:

- Listening to the customer to identify the cause of the service challenge
- Using verbal and non-verbal communication to address service challenge
- Apologising to the customer immediately
- Taking immediate action to resolve the situation
- Showing empathy
- Conducting follow-up with customer
- Resilience may be defined as the process and experience of being disrupted by change, opportunities, stressors and adversity, and, after introspection, accessing strengths to grow stronger through disruption

Methods to demonstrate resilience must include:

- Developing coping skills to deal with stress of change, opportunity, stress or adversity
- Building on actions and focusing on outcomes
- Practicing realistic optimism and remaining hopeful under pressure
- Developing strong support systems in or outside the workplace

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Skill Code	ES-PMD-104G-1	Skill Category	Personal Management and Development
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Adapt to Change		
Skill Description	This skill describes the ability to identify local and/or global trends and changes impacting the workplace with a view to enhancing productivity and effectiveness in a diverse workplace. It also includes adapting to changes for sustained employability in the new knowledge economy and sharing knowledge and skills.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Ways in which various types of local and global trends impact one's employability and job role • Ways to cope with adjustments and expectations required in current and new job situation in a local and global context • Causes of gaps in own competencies • Types of learning opportunities and their characteristics • Types of other resources and opportunities for development • Ways to overcome barriers to the transfer of learning • Process and strategies of coaching to motivate and help others • Factors that hinder and encourage learning • Types of diversity at the workplace • Sources and stages of change and resistance to change • Components of self-esteem and positive attitude 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Access available sources of information to identify local and global trends and interpret information that impact one’s employability and job role • Identify the types of expectations and adjustments required in current and new job situation to stay employable and competitive in the local and global context • Identify the types of competencies required in current and new job requirements • Identify the implications of diversity at the workplace and participate in relevant approaches to work within a diverse workforce
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Transfer skills and knowledge acquired from training and development to the workplace and measure performance improvement as a result of training and development
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Demonstrate the ability to learn from and coach others a given set of skills from one job situation to another
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one’s self within and outside of one’s area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Identify gaps in own competencies, determine training and development needs and select suitable learning opportunities that match personal learning styles • Identify the impact of change on oneself and own job and adopt appropriate techniques to respond to change

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Range of Application <i>(where applicable)</i> <i>It refers to the critical circumstances and contexts that the skill may be demonstrated</i>	N/A
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Skill Code	ES-PMD-103G-1	Skill Category	Personal Management and Development
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Emotional Competence to Manage Self at the Workplace		
Skill Description	This skill describes the ability to understand and apply self-awareness techniques. It also includes applying emotional intelligence principles to manage oneself at the workplace.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Definitions of emotional intelligence • Aspects of emotional intelligence • Domains of emotional intelligence and their application • Importance of emotional intelligence at work • Importance of considering cultural differences in the application of emotional intelligence • Factors in recognising the emotional needs of others at the workplace • Traits of low personal confidence • Characteristics of individuals with high emotional intelligence • Importance of demonstrating initiative and optimism at the workplace • Methods to develop emotional intelligence and their features 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Demonstrate conscientiousness and trustworthiness to complete given tasks according to organisational standards 		
Innovation and Value Creation	The ability to:		

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<p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<ul style="list-style-type: none"> • Present self with confidence and show flexibility in responding to changes at the workplace
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Manage own emotions and impulses to work effectively with others, taking into consideration the different cultures and background of individuals at the workplace • Recognise the emotional needs of others, empathise and respond appropriately to their needs
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Recognise own emotional states, the causes of those emotional states and its effects on performance and interpersonal relationships at the workplace • Identify personal strengths and weaknesses and make improvements needed to develop emotional intelligence • Demonstrate initiative and optimism in pursuing goals beyond what is required and expected of self
<p>Range of Application <i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated</i></p>	<p>Definitions of emotional intelligence must include:</p> <ul style="list-style-type: none"> • The innate potential to feel, use, communicate, recognise, remember, describe, identify, learn from, manage, understand and explain emotions • The ability, capacity, skill or, in the case of the trait EI model, a self-perceived ability to identify, assess, and control the emotions of oneself, of others, and of groups • The capacity to reason about emotions, and of emotions to enhance thinking. It includes the abilities to accurately perceive emotions, to access and generate emotions so as to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions so as to promote emotional and intellectual growth

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	<p>Aspects of emotional intelligence must include:</p> <ul style="list-style-type: none">• Understanding oneself, personal goals, intentions, responses, behaviour and all• Understanding others and their feelings <p>Domains of emotional intelligence must include:</p> <ul style="list-style-type: none">• Knowing one's emotions• Managing one's emotions• Motivating oneself• Recognising and understanding others' emotions• Managing relationship through use of emotional intelligence
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Skill Code	ES-PMD-101G-1	Skill Category	Personal Management and Development
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Develop Personal Effectiveness at Operations Level		
Skill Description	This skill describes the ability to apply knowledge and life skills and relate them to personal and team goals. It also includes managing time effectively, maintaining work-life balance, managing stress as well as personal finances.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Types of motivational factors affecting personal goal setting and achievement • Strategies to link one's roles and responsibilities to individual and team success • Factors that may affect the achievement of team goals • Strategies to achieving goals • Benefits of prioritising tasks according to team goals • Various types of paraphernalia, technology and methods to manage time and work priorities and their features • Various barriers to effective time management and their characteristics • Various ways to access resources to overcome barriers to effective time management and their characteristics • Practices that promote personal well-being and aspects of personal management • Issues related to personal and family responsibilities and their impact on work • Common sources of assistance available to support personal management 		

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<p>Application and Adaptation</p> <p><i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Set up personal goals and align them to team goals based on objectives set • Plan and complete personal tasks to meet team goals according to timelines set • Identify work-life balance programmes to maintain personal work-life balance for the achievement of team goals
<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Recognise symptoms of and deal with stress to maintain work effectiveness
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Seek guidance when setting and achieving personal goals

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<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Identify own roles and responsibilities and their contribution towards the achievement of team goals • Identify personal strengths and weaknesses, list the strategies to overcome weaknesses and describe how personal strengths can contribute towards the achievement of team goals • Identify own existing financial position using appropriate tools and describe how to manage such a position
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>N/A</p>

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Skill Code	ES-PMD-102G-1	Skill Category	Personal Management and Development
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Maintain Personal Presentation and Employability at Operations Level		
Skill Description	This skill describes the ability to identify personal career goals and take steps to realise career goals. It also includes determining one's competences and preparing for interviews.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	The ability to understand: <ul style="list-style-type: none"> • Meaning of competencies • Necessity of setting personal career goals • Guidelines for setting personal career goals • Ways to develop career plan to achieve personal career goals • Components of resume and/or application form • Purpose of a resume and/or application form for job application • Factors to consider in preparing a resume or filling in an application form • Different types of job interview and their features • Necessity to prepare for job interview • Importance of basic social etiquette skills • Ways to develop basic social etiquette skills 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	The ability to: <ul style="list-style-type: none"> • Determine personal career goals taking into account personal competences based on guidelines set • List personal competencies acquired through learning and experience to meet qualifications and expectations for the job • State sources of and interpret information on potential employment opportunities • Select jobs that best match personal competencies and career goals and apply for jobs • Prepare for and attend job interview by applying basic social etiquette skills 		
Innovation and Value Creation	The ability to: <ul style="list-style-type: none"> • Elaborate on personal strength, abilities and aptitudes that may add 		

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<p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational</i></p>	<p>value to the organisation</p>
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Demonstrate basis social etiquette skills and personal hygiene during job interview
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on performance and feedback during job interview to address areas of improvement for future interviews
<p>Range of Application (where applicable)</p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>N/A</p>

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Skill Code	ES-ACE-101G-1	Skill Category	Analytical, Conceptual and Evaluative
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Demonstrate Initiative and Enterprising Behaviours		
Skill Description	This skill describes the ability to demonstrate innovation and initiative to initiate and sustain continuous improvement at the workplace. It also includes identifying, evaluating and managing risks associated with innovating and taking initiative.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Initiative attributes that one should possess and display and their characteristics • Thinking skills and process for generating innovative outcomes and identifying related risks and their features • Potential obstacles to creativity and innovation and how they can be managed • Ethics relating to innovation • Types of risks associated with new initiatives and periodic initiatives • Ways to identify possible risks for innovation • Ways to assign and determine probability of risks identified • Corrective actions to deal with risks • Factors to consider for selection of the most appropriate mode of communication • Skills required for an effective self-directed individual and team 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Develop an action plan to implement the selected risk strategy in consultation with stakeholders using the most suitable mode of communication • Monitor the risks identified at individual level to implement action plan and update risk response plan using appropriate measurements 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Show initiative in identifying opportunities and goals for continuous improvement in workplace performance • Review new initiatives for possible risks and recommend corrective actions and an appropriate strategy to deal with identified risks
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Identify stakeholders' interests and concerns and discuss with stakeholders to garner concurrence on potential areas and/or practices for innovation at the workplace • Demonstrate innovative and enterprising behaviours to improve business performance in accordance with regulatory requirements and ethics
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Translate ideas into action with self-direction and sustain efforts for goal attainment in accordance with context requirements, best practices and future needs
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>N/A</p>

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Skill Code	ES-ACE-102G-1	Skill Category	Analytical, Conceptual and Evaluative
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Solve Problems and Make Decisions at Operations Level		
Skill Description	This skill describes the ability to acquire problem-solving and decision-making techniques. It also includes proactively identifying the root causes to a problem and taking responsibility for the decisions within own circle of influence.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Procedure for evaluating selected ideas for problem-solving • Factors to consider in selecting suitable modes of communication • Methods to determine the strengths and limitations and constraints of each selected idea • Areas of impact from implementation of an action plan • Types of evaluation methods to determine effectiveness of implemented solutions and action plan • Techniques to identify sources of failure in the implemented solution and action plan • Potential areas requiring corrective action • Types of corrective actions • Reflective mechanisms for the entire problem-solving process 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Recognise symptoms that could lead to potential problems at the workplace using appropriate tools and techniques • Identify deviations from organisational norm and SOPs based on symptoms identified • Identify the possible root causes of the problems using appropriate tools and techniques • Implement action plan at the workplace based on organisational SOP • Identify preventive measures to avoid recurrence of similar problems in the future based on appropriate tools and techniques 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Generate and select ideas to solve the problem using creative and logical thinking • Evaluate selected ideas using pertinent criteria and choose the most desirable ones as solutions to the problems • Evaluate the effectiveness of the implemented solutions and action plan and initiate corrective actions where necessary
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Identify relevant parties' priorities and concerns and use suitable communication mechanisms and modes to garner agreement from relevant parties on chosen solution and action plan
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Identify impact of the problems on own job responsibilities and other parties involved and make adjustments of own work processes and working methods
<p>Range of Application (where applicable)</p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>N/A</p>

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Skill Code	ES-IP-101G-1	Skill Category	People and Relationship Management
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Communicate and Relate Effectively at the Workplace		
Skill Description	This skill describes the ability to use effective communication techniques at the workplace, while taking into consideration social and cultural differences. It also includes interpreting, clarifying, analysing and responding to information received, as well as using effective negotiation skills to resolve conflicts for a win-win outcome.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Sources of information within and outside the organisation • Types of information to be received, clarified and responded to and their features • Different modes of communication and communication tools and their characteristics • Principles of effective communication and interpersonal techniques • Internal and external barriers to effective communication • Strategies for communicating in a courteous and respectful manner that considers social and cultural differences • Ways to distinguish between objective facts and subjective interpretation in a conflict • Definition of conflict and common types of conflict at the workplace • Definition of negotiation and types of negotiation styles and their characteristics • Types of reference documents to use during negotiations • Types of conflict resolution strategies to achieve outcomes in negotiation 		

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<p>Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Interpret and analyse information received according to workplace procedures • Plan response to information received taking into account the social and cultural background of the recipient of the information • Identify signs, stages and causes of conflict with individuals or groups of people based on objective facts and interpretation • Define the conflict and highlight points of differences and contention objectively, taking into consideration social and cultural differences of parties involved
<p>Innovation and Value Creation <i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Work towards achieving a win-win outcome in assessing mutually acceptable solutions
<p>Social Intelligence and Ethics <i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Use appropriate communication techniques that consider social and cultural differences to clarify and respond to information received • Negotiate for mutually acceptable solutions by all parties using effective communication and negotiation skill • Communicate outcome of negotiation and propose relevant recommendations with justifications to supervisor to seek concurrence and endorsement

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<p>Learning to Learn <i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Reflect on communication techniques to learn from weaknesses
<p>Range of Application <i>(where applicable)</i> <i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Principles of effective communication and interpersonal techniques must include:</p> <ul style="list-style-type: none"> • Feedback – to ensure that the receiver was listening, understood the information or message and agrees to the required action. Suggestions and criticisms to be provided when necessary at this stage • Clarity – message or information must be clear and concise and should not be ambiguous • Objectivity – the purpose of the message or information to be communicated must be clear, so as to decide the best mode of communication and medium for the message and to trigger the emotional and cognitive responses to ensure receivers are engaged e.g.: To gain information, to provide information, initiate action, praise, criticize, inspire, change a person's attitude, etc. • Listen and understand – use active listening skills to probe into a situation, repeat what was said to ensure that the information received is accurate. It is important to interpret the information correctly. Understanding include being aware of the receiver's state of mind and being upon receiving the information, emotions, social climate and customs • Connectivity – to connect with the receiver(s) and address their needs • Consistency – message or information must be consistent to the current plans, policies and procedures, programmes and goals of the organisation • Completeness – message or information must be completed and adequate to avoid any misunderstanding and any delay of action if required • Time – information should be communicated at the right time • Respect – to respect various cultural backgrounds, histories, and experiences, accepting their rights and paying attention to their needs

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Skill Code	ES-IP-102G-1	Skill Category	People and Relationship Management
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Work in a Team		
Skill Description	This skill describes the ability to apply effective communication techniques to achieve individual and team goals. It also includes providing support to team members while taking into consideration diversity issues.		
Knowledge and Analysis <i>It refers to gathering, cognitive processing, integration and inspection of facts and information required to perform the work tasks and activities.</i>	The ability to understand: <ul style="list-style-type: none"> • Definition of organisational vision, mission and goals • Different roles played by team members • Interdependence of roles within a team • Importance of maintaining open communication within a team • Effects of trust, respect and support within a team • Diversity issues and their impact on communication • Relevant parties from whom one can seek feedback, advice and assistance • Effects of organisational, industry and legislative requirements and work performance standards and/or targets on attainment of individual, team and organisational goals • Organisational policies, limits of autonomy and span of control 		
Application and Adaptation <i>It refers to the ability to perform the work tasks and activities required of the occupation, and the ability to react to and manage the changes at work.</i>	The ability to: <ul style="list-style-type: none"> • Define and align team goals with departmental and organisational goals • Demonstrate responsibility and commitment for work done and to the achievement of individual and team goals • Identify potential areas of conflict with team members and methods to overcome them, taking into consideration diversity issues 		

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<p>Innovation and Value Creation</p> <p><i>It refers to the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to organisational goals.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Listen to and contribute ideas and skills using appropriate communication techniques to achieve team goals • Recommend improvements to established policies and procedures in a proactive manner
<p>Social Intelligence and Ethics</p> <p><i>It refers to the ability to use affective factors in leadership, relationship and diversity management guided by professional codes of ethics.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Maintain open communication with team members by sharing information and discussing work-related issues to achieve individual and team goals to meet organisational requirements • Demonstrate trust, respect and support towards team members in daily activities to achieve team goals • Identify and resolve issues and concerns through collaborative activities with supervisor
<p>Learning to Learn</p> <p><i>It refers to the ability to develop and improve one's self within and outside of one's area of work.</i></p>	<p>The ability to:</p> <ul style="list-style-type: none"> • Define own and individual roles within the team and work within the team and organisation dynamics • Accept and provide feedback, advice and assistance in a considerate and constructive manner to accomplish task assigned
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>N/A</p>

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Version Control

Version	Date	Changes Made	Edited by
1.0	12 October 2016	Initial Version	SSG and EDB

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Definitions of the Five (5) Domains

Domain	Definition
Knowledge and Analysis	Knowledge includes the gathering of facts and information through traditional and digital forms. Analysis involves the cognitive processing, integration and inspection of single or multiple sources of facts and information required to perform work tasks and activities and takes into consideration, the work contexts in which the tasks and activities are carried out. The result of knowledge and analysis produce judgements on work tasks/activities/issues/areas, and the conceptualisation of solutions to solve problems at work.
Application and Adaptation	Application involves the ability to perform work tasks and activities defined by the requirements of the occupation. Adaptation involves the ability to react to and manage the changes in the work contexts. The result of application and adaptation leads to the production of psycho-motor actions and behavioural reactions to the work tasks/activities/issues/areas, and the execution of the planned solutions to solve problems at work.
Innovation and Value Creation	Innovation includes the ability to generate purposive ideas to improve work performance and/or enhance business values that are aligned to the organisational goals. As a result of innovation, the organisation is able to reap the values from individual or team contributors to achieve organisational growth.
Social Intelligence and Ethics	Social intelligence includes the ability to appreciate and use affective factors in leadership, relationship and diversity management guided by professional codes of ethics as effective individuals or team contributors.
Learning to Learn	Learning-to-learn includes the ability to improve on self-development within and outside of one's area of work. It involves the continual inspection of one's knowledge, analytical, application, adaptive, innovative and social skills that are needed to perform the work optimally and/or solve problems effectively.