

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Occupation: Process Specialist/Shift, Group, Team Leader

Occupation Description:

The Process Specialist/Shift, Group, Team Leader applies principles, practices and procedures to produce precision parts and provide end-to-end solutioning for customers. He/She also diagnoses faults, maintains machines and oversees the housekeeping of machine tools and devices.

The Process Specialist/Shift, Group, Team Leader coordinates the day-to-day operations of a team and may adapt procedures, processes, tools, equipment and techniques to meet the more complex requirements of the production process.

The Process Specialist/Shift, Group, Team Leader supervises and guides a team of machinists/senior machinists to meet production and quality standards, while ensuring compliance with Workplace Health and Safety procedures. He/She also works with the team to assess the feasibility of improvements to enhance productivity and efficiency at the workplace.

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 Process Specialist/Shift, Group, Team Leader are summarised as below:

Skill Category	Skill Sub-Category	Skills	
Technical and Engineering Fundamentals	Conceptual knowledge	PRE-TEF-3014-1	Apply Engineering Mathematical Concepts
	Computer Technology	PRE-TEF-3015-1	Apply 3D Computer Modelling and Programming
		PRE-TEF-3016-1	Apply CNC Programme Optimisation
		PRE-TEF-3017-1	Apply Manufacturing Technology Process
Technical and Engineering Design	Machinery and Systems	PRE-TED-3004-1	Operate and Maintain Automation Process Control Systems
Precision Manufacturing Processes		PRE-PMP-3025-1	Apply Mechanics for Engineering Solutions
		PRE-PMP-3026-1	Implement Good Documentation Practices
		PRE-PMP-3027-1	Perform Cutting Processes
		PRE-PMP-3024-1	Perform In-process Inspection
Maintenance		PRE-MAI-3005-1	Apply Operational Maintenance of Machines and Equipment
		PRE-MAI-3006-1	Coordinate Maintenance
Quality		PRE-QUA-3009-1	Apply Failure Mode and Effect Analysis Techniques
		PRE-QUA-3005-1	Apply ISO 9001 Quality Management System to Audit Requirements
		PRE-QUA-3006-1	Apply Root Cause Analysis

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Skill Category	Skill Sub-Category	Skills	
		PRE-QUA-3007-1	Conduct Risk Assessment
		PRE-QUA-3008-1	Implement Quality Systems
		PRE-QUA-3010-1	Supervise Quality Procedures
Workplace Safety and Health		PRE-WSH-4006-1	Supervise Manufacturing Work for Workplace Safety and Health
Manufacturing Productivity and Innovation		PRE-MPI-2004-1	Apply Basic Lean Techniques in the Workplace
		PRE-MPI-2005-1	Apply Lean Thinking in the Workplace
		PRE-MPI-3006-1	Implement Continuous Improvement Processes
		PRE-MPI-3007-1	Supervise Work Improvement Processes
Service Excellence		SVCF-CS-101C-1	Provide Go-the-Extra-Mile Service
		SVCF-CS-103C-1	Respond to Service Challenges
		SVCF-CS-301C-1	Establish Relationships for Customer Confidence
Personal Management and Development		ES-PMD-303G-1	Apply Emotional Competence to Manage Self and Team at the Workplace
		ES-PMD-301G-1	Develop Personal Effectiveness at Supervisory Level
		ES-PMD-304G-1	Foster Team Adaptability
		ES-PMD-302G-1	Maintain Personal Image and Employability at Supervisory Level

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Skill Category	Skill Sub-Category	Skills	
Analytical, Conceptual and Evaluative		ES-ACE-302G-1	Solve Problems and Make Decisions at Supervisory Level
		ES-ACE-301G-1	Foster Initiative and Enterprise in Teams
Interpersonal		ES-IP-301G-1	Facilitate Effective Communication and Engagement at the Workplace

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Skill Code	PRE-TEF-3014-1	Skill Category	Technical and Engineering Fundamentals
		Skill Sub-Category <i>(where applicable)</i>	Conceptual Knowledge
Skill	Apply Engineering Mathematical Concepts		
Skill Description	This skill describes the ability to solve engineering-based problems using engineering mathematical concepts. It also includes the ability to understand and apply fundamentals of exponents, algebraic expressions, quadratic equations and trigonometry to solve real life engineering-based problems.		
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"> • Fundamentals of exponents • Algebraic expressions • Quadratic equations • Trigonometric equations 		
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"> • Interpret and extract relevant data and information suitable to perform the engineering calculation • Analyse data and information to formulate the engineering problem(s) • Select appropriate technique(s) which is capable of solving the engineering problem(s) • Apply appropriate techniques to facilitate engineering problem(s) calculation • Manipulate data and information using mathematical operations in the correct order • Perform accurate calculation using appropriate features of scientific calculator • Present working details and solutions which are complete, accurate and correct 		

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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"> • Select and apply appropriate techniques to formulate and solve complex real life engineering-based problem(s)
<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 • Participate in discussion with team members to clarify and verify computation results that are fit for intended purpose • Obtain advice when dealing with unknowns to achieve the desired outcome
<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 drafting/design skills and knowledge • Keep up-to-date on changes in data and information • Utilise appropriate opportunities to strive for betterment of own skills and knowledge • Reflect on selected technique(s) for appropriateness in solving the engineering problem(s)
<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>Exponents must include:</p> <ul style="list-style-type: none"> • Rules of exponents to determine solution • Multiplication of positive and negative exponents <p>Algebraic equations must include:</p> <ul style="list-style-type: none"> • Principle of "FOIL" method in algebraic multiplication • Long division of an algebraic expression

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	<p>Quadratic equations must include:</p> <ul style="list-style-type: none">• Factorisation• Completing the square to a quadratic equation• Principle of the quadratic formula <p>Trigonometry must include:</p> <ul style="list-style-type: none">• Simple determination of the dimensions of a right triangle• Techniques used to solve trigonometry equations• Use of trigonometric identities to solve trigonometry equations <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none">• Organisational procedures• Work instructions <p>Rules and regulations must include:</p> <ul style="list-style-type: none">• Workplace Safety and Health Act• Industry codes and guidelines• Organisational code of practice
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Skill Code	PRE-TEF-3015-1	Skill Category	Technical and Engineering Fundamentals
		Skill Sub-Category <i>(where applicable)</i>	Computer Technology
Skill	Apply 3D Computer Modelling and Programming		
Skill Description	This skill describes the ability to use a computer-aided modelling system to create 3D solid models, assembly drawings and detailed drawings of components for manufacturing.		
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"> • CAD system and configuration requirements • Technical drawing conventions • Components and functional limitations • Materials strength and characteristics • Techniques of solid modelling • Development of sectioned models • Use of cutting plane • Use of cross hatching • Use of pre-drawn library files and primitives to produce 3D models • Overview of software to produce 3D models • Application of basic rendering techniques to a 3D model 		
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"> • Access and interpret international drawing conventions and standards • Select suitable computer processing requirement • Identify computing equipment and software used in the organisation • Create wire mesh model, surface and 3D solid model in isometric view • Create assembly drawing from the 3D model • Create detail drawings for each part of the assembly • Apply basic rendering techniques to render solid model according to a specified set of criteria 		

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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 • Participate in discussion with team members to clarify and verify information and selection of process(es) that are fit for intended purpose • Obtain advice when dealing with unknowns to achieve the desired outcome
<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 • Reflect on 3D creation and development approach and consider possible ways to improve productivity by learning from others • Update on related new engineering and CAD software development • Join 3D development round table/discussion blogs • Communicate with fellow practitioner to exchange data and approach for issues 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>Tool and equipment must include:</p> <ul style="list-style-type: none"> • Computer system and compatible software • Personal protective equipment • Work information • Computer system <p>Procedures and supporting documents</p>

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	<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-3016-1	Skill Category	Technical and Engineering Fundamentals
		Skill Sub-Category <i>(where applicable)</i>	Computer Technology
Skill	Apply CNC Programme Optimisation		
Skill Description	This skill describes the ability to optimise CNC programs and select optimum machining parameters to achieve a competitive component cycle time based on speed and accuracy.		
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"> • Comprehension of technical drawing specification of the work piece • Relating to machine tool capability and limitations • Comprehension of alpha-numerical addresses and miscellaneous functional codes in CNC programmes • Identifying types of measuring tools and cutters required for the job • Relating to Workplace Safety and Health procedures for general machining • Knowledge of quick set-up concept and CNC machining parameters • Machining time and influencing factors • Relating to cutting tool profile and limitations • Computer specifications and processing requirements • Knowledge of CAD/CAM systems 		

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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 • Create work piece geometry using a Computer-aided Drafting/Computer-aided Manufacturing (CAD/CAM) software • Convert CAD data to create a tool path geometry for machining • Verify the tool paths for possible cutting or galling errors • Generate CNC part program from the tool path • Set up, position and secure the work piece accurately and quickly • Select suitable cutting tools, mount them and carry out tool setting • Optimise CNC program sequence to optimise the production time • Select appropriate machining/fine-tuning to optimise machining parameters • Operate the CNC turn/milling machine to perform dry run checks • Machine work piece to meet specifications • Fine-tune/adjust tool compensation • Use suitable measuring instruments and/or gauges to check the component for conformance with specifications • Keep workplace tools and equipment orderly • Store optimised programme and store the data for repeat orders
<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/adjust machining parameter one at a time to observe for operational improvement • Record the different machining parameters to select those that provide optimum result in productivity and cutting tool life • Perform cutting with different cutting tool materials to compare and contrast results • Compare and contrast production outcomes against standard time or previous output time to sustain productivity or seek means of possible improvement • Consider every opportunity for cutting operating costs, in order to offset the advantages of competitors elsewhere in the world • Create knowledge-based operation to control engineering know-how and carry out production in cheaper labour countries • Consider enterprise resource planning and control

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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 • Participate in discussion with team members to clarify and verify information and selection of process(es) that are fit for intended purpose • Obtain advice when dealing with unknowns to achieve the desired outcome
<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 against colleagues' data • Use relevant engineering tables and electronic searches for developments in machine tools or cutting materials • Communicate with fellow machinist to exchange data to resolve issues/challenges encountered • Develop controlled enterprise knowledge servers
<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>Tool and equipment must include:</p> <ul style="list-style-type: none"> • Personal protective equipment • Test equipment and tools to measure dimensional and geometric measurements • Work information • Cutting tools and accessories • Programming and verification <p>Procedures and supporting documents</p> <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health Act

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		Skill Sub-Category <i>(where applicable)</i>	Computer Technology
Skill	Apply CNC Programme Optimisation		
Skill Description	This skill describes the ability to optimise CNC programs and select optimum machining parameters to achieve a competitive component cycle time based on speed and accuracy.		
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"> • Comprehension of technical drawing specification of the work piece • Relating to machine tool capability and limitations • Comprehension of alpha-numerical addresses and miscellaneous functional codes in CNC programmes • Identifying types of measuring tools and cutters required for the job • Relating to Workplace Safety and Health procedures for general machining • Knowledge of quick set-up concept and CNC machining parameters • Machining time and influencing factors • Relating to cutting tool profile and limitations • Computer specifications and processing requirements • Knowledge of CAD/CAM systems 		

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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"> • Test out/adjust machining parameter one at a time to observe for operational improvement • Record the different machining parameters to select those that provide optimum result in productivity and cutting tool life • Perform cutting with different cutting tool materials to compare and contrast results • Compare and contrast production outcomes against standard time or previous output time to sustain productivity or seek means of possible improvement • Consider every opportunity for cutting operating costs, in order to offset the advantages of competitors elsewhere in the world • Create knowledge-based operation to control engineering know-how and carry out production in cheaper labour countries • Consider enterprise resource planning and control

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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 • Participate in discussion with team members to clarify and verify information and selection of process(es) that are fit for intended purpose • Obtain advice when dealing with unknowns to achieve the desired outcome
<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 against colleagues' data • Use relevant engineering tables and electronic searches for developments in machine tools or cutting materials • Communicate with fellow machinist to exchange data to resolve issues/challenges encountered • Develop controlled enterprise knowledge servers
<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>Tool and equipment must include:</p> <ul style="list-style-type: none"> • Personal protective equipment • Test equipment and tools to measure dimensional and geometric measurements • Work information • Cutting tools and accessories • Programming and verification <p>Procedures and supporting documents</p> <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-TED-3004-1	Skill Category	Technical and Engineering Design
		Skill Sub-Category <i>(where applicable)</i>	Machinery and Systems
Skill	Operate and Maintain Automation Process Control Systems		
Skill Description	This skill describes the ability to operate and maintain automation process control systems within a manufacturing environment. It also includes the ability to monitor and adjust process parameters, perform controller tuning, replace process elements, maintain and improve the production 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"> • Importance of process control • Basic control theory • Types and applications of control loop components • Types of process control loops • Types and applications of controllers • Purpose of controller tuning • Applications of piping and instrumentation diagrams 		
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"> • Select and use appropriate personal protective equipment according to job requirements • Interpret and extract relevant process parameters from given specifications • Monitor and adjust process parameters to maintain optimum operational condition • Apply corrective actions for automatic and manual shut-down during critical and emergency situations • Carry out regular maintenance of automation process control system to meet operational requirements • Replace process elements using appropriate techniques according to safe working practices and organisational procedures • Update log and report(s) according to approved format and is legible, accurate and complete 		

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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 • Participate in discussion with team members to clarify and verify selection of process parameters that are fit for intended purpose • Obtain advice when dealing with unknowns to achieve the desired outcome
<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 • Reflect on selected process parameters for appropriateness of intended purpose
<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</p> <p>Procedures and Supporting Documents</p> <p>Rules and Regulations:</p> <ul style="list-style-type: none"> • Workplace Safety and Health Act

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Skill Code	PRE-PMP-3025-1	Skill Category	Precision Manufacturing Process
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Mechanics for Engineering Solutions		
Skill Description	This skill describes the ability to solve engineering-based problems using engineering mechanics concepts. This includes the ability to understand and apply fundamentals of mechanics, static of rigid bodies, moment of inertia, friction, stress and strain to solve real life engineering-based problems related to behaviour of solid bodies when subjected to external forces.		
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"> • Fundamental principles of mechanics • Concurrent force system • Non-concurrent force system • Moment of inertia • Laws of friction and its applications • Stress and strain 		
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"> • Interpret and extract relevant data and information suitable to perform the engineering calculation • Analyse data and information to formulate the engineering problem(s) • Select appropriate technique(s) which are capable of solving the engineering problem(s) • Apply appropriate techniques to facilitate engineering problem(s) calculation • Manipulate data and information using mathematical operations in the correct order • Perform accurate calculation using appropriate features of scientific calculator • Present working details and solutions which are complete, accurate and correct 		

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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"> • Participate in discussion with team members to clarify and verify computation results that are fit for intended purpose • Obtain expert advice when dealing with unknowns to achieve the desired outcome

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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"> • Utilise appropriate opportunities to strive for betterment of own skills and knowledge
<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>Fundamentals of engineering mechanics must include:</p> <ul style="list-style-type: none"> • Rules of physical quantities to determine solution • Addition and subtraction of vectors and forces • Free body diagram <p>Concurrent forces system must include:</p> <ul style="list-style-type: none"> • Resultant forces in a system • Equilibrant forces <p>Non-concurrent force system must include:</p> <ul style="list-style-type: none"> • Moment and couple • Types of beams and their supports • Reactions occurring at each type of supports <p>Moment of inertia must include:</p> <ul style="list-style-type: none"> • First moment of area • Centroid for various cross-sections <p>Friction must include:</p> <ul style="list-style-type: none"> • Frictional force between two surfaces on horizontal plane

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	<ul style="list-style-type: none">• Friction as a problem <p>Stress and Strain must include:</p> <ul style="list-style-type: none">• Applications of stress and strain curve <p>Tools and equipment</p> <p>Procedures and supporting documents</p> <p>Rules and regulations must include:</p> <ul style="list-style-type: none">• Workplace Safety and Health procedures
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Skill Code	PRE-PMP-3026-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Implement Good Documentation Practices		
Skill Description	This skill describes the ability to ensure compliance with Good Manufacturing Practices (GMP) requirements by following good documentation practices and applying them to the workplace. It also includes detecting and reporting non-compliances according to organisational 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>	The ability to understand: <ul style="list-style-type: none"> • Organisational quality systems, procedures and policies • Good Manufacturing Practices (GMP) • Importance of GMP • Purpose of Standard Operating Procedures (SOPs) • Purpose of documentation • Good Documentation Practices (GDP) requirements • Consequences of failure to follow GDP • Types of documents/data/records • Procedures for detecting, reporting and resolving non-compliances • Procedures for maintaining documentation practices • “Dos” and “Don’ts” of documentation practices 		
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"> • Plan to implement good documentation practices in accordance with organisation procedures • Carry out daily work to meet good documentation requirements in accordance with organisation procedures • Detect and report non-compliances according to organisational procedures • Maintain and recommend improvements on good documentation practices in accordance with organisation procedures 		

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"> • Provide feedback to improve on good documentation practices 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"> • Participate in discussion with team members to clarify and verify computation results that are fit for intended purpose • Obtain expert advice when dealing with unknowns to achieve the desired outcome • Detect and report non-compliances according to organisational procedures and remain objective
<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"> • Utilise appropriate opportunities to strive for betterment of own skills and knowledge • Identify own duties and responsibilities according to organisational procedures
<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</p> <p>Procedures and supporting documents</p> <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health Act • Regulatory, legislative or industry framework

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Skill Code	PRE-PMP-3027-1	Skill Category	Precision Manufacturing Process
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Perform Cutting Processes		
Skill Description	This skill describes the ability to use cutting tools to carry out high speed machining processes for mass material removal to achieve high quality and high efficiency.		
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 high speed machining characteristics • Knowledge of various types of work materials, cutting tool materials, cutting tool design and cutting tool failure • Basic principles and knowledge of high speed machining strategy • Influence of different machining techniques on material removal • Basic knowledge of PCD and carbide tool manufacturing techniques • Knowledge on machining quality evaluation methods • Definitions of various measures of surface roughness • Machining parameters such as cutting speed and feed rate for high speed machining 		
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"> • Assess appropriate high speed machining techniques for a specific complex component design • Identify potential of using high speed machining techniques for 3D complex component fabrication • Determine suitable cutting tools for conducting high speed machining • Assess appropriate high speed machining conditions based on machine tool dynamics • Assess appropriate high speed machining strategy for a specific complex component • Determine appropriate diagnostic methods for machining quality evaluation • Assess appropriate surface integrity of high speed machined component 		

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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"> • Use proper fixtures 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 projected standard time • Organise and stow optimised programme for repeat orders in categorised file
<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 • Participate in discussion with team members to clarify and verify computation results that are fit for intended purpose • Obtain advice when dealing with unknowns to achieve the desired outcome
<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 • Ensure problems and solutions are well documented for reference • Share and exchange best practices with colleagues with similar job scope • Practise "one minute set-up" to enhance productivity
<p>Range of Application</p> <p><i>(where applicable)</i></p> <p><i>It refers to the critical circumstances and</i></p>	<p>Tool and equipment must include:</p> <ul style="list-style-type: none"> • Personal protective equipment • Test equipment and tools to measure dimensional and geometric measurement • HSM cutting tools and accessories

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<i>contexts that the skill may be demonstrated.</i>	<p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none">• Organisational procedures• Work information• Programming and verification <p>Rules and regulations must include:</p> <ul style="list-style-type: none">• Workplace Safety and Health Act• Industry codes and guidelines• Organisational code of practice
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SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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Skill Code	PRE-PMP-3024-1	Skill Category	Precision Manufacturing Processes
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Perform In-process Inspection		
Skill Description	This skill describes the ability to perform in-process inspection. It also includes the ability to observe safety precautions, identify in-process inspection requirements and use measuring instruments.		
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"> • Safety and health procedures • Organisational procedures • Types of measuring instruments and their functions and applications • Common errors in measurement and its remedies • Principle of metrology related to dimensional and geometrical measurements and surface roughness • Procedures to carry out in-process inspection • Recording in-process inspection results • Analysis of in-process inspection data • Documentation maintenance of in-process inspection data and results • Principles of ISO limits and fits • Housekeeping 		
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"> • Maintain safety and health practices in accordance with safety, health and organisational procedures • Select appropriate measuring instruments in accordance with job requirements • Perform in-process inspection in accordance with organisational procedures • Record and analyse measurement results for conformance to specifications • Upkeep measurement data and records correctly in accordance with organisational procedures • Perform housekeeping in accordance with safety, health and 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"> • Review and improve/simplify measuring methods to enhance productivity
<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"> • Participate in discussion with team members to clarify and verify selection of identified in-process inspection requirements • Obtain advice when in doubt of recording and analysing measurement results for conformance to specifications
<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 changes in measuring standards • Report incidences of measuring instruments abnormalities to be rectified • Identify in-process inspection 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>Tools and equipment</p> <p>Procedures and supporting documents</p> <p>Rules and Regulations:</p> <ul style="list-style-type: none"> • Workplace Safety and Health Act • Codes of practices on measurement standards • Internationally recognised procedures and standards for measurement

SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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Skill Code	PRE-MAI-3005-1	Skill Category	Maintenance
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Apply Operational Maintenance of Machines and Equipment		
Skill Description	This skill describes the ability to apply operational maintenance of machines and equipment and be able to apply them to the workplace. It also includes safe operating and maintenance practices of machines and 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"> • Usage of appropriate Workplace Safety and Health (WSH) and workplace procedures • Standard Operating Procedures (SOPs) and Safe Working Instructions (SWIs) • Use of Original Equipment Manufacturers (OEM) manuals • Interpretation of mechanical drawings • Operational maintenance's fundamentals and principles • Operational maintenance's types and applications • Machines and equipment components' functions and operations • Operational maintenance specifications and 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>	<p>The ability to:</p> <ul style="list-style-type: none"> • Determine operational maintenance and equipment requirements • Plan and schedule operational maintenance of machines and equipment • Obtain and confirm go-ahead for operational maintenance and task with relevant personnel • Perform examination of components for failure, defect, wear, etc • Perform minor repairs and maintenance tasks • Carry out operational maintenance in accordance with set objectives, specifications, relevant maintenance standards and in accordance with workplace procedures • Ensure that operational maintenance has been completed in accordance with set objectives, specifications, relevant maintenance standards and in accordance with workplace 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"> • Identify, interpret and gather functional specifications, standards, quality, materials, manufacturing processes, costs and technical information related to operational maintenance and its requirements • Prompt feedback are provided to all relevant personnel on all aspects of the operational maintenance process
<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"> • Attain clearances for any necessary costs for the maintenance • Examine production schedules and staff rosters to recognise time(s) when the maintenance process may be scheduled including optimum timing for (any) shut-down • Acquire authorisation from management staff for timing of maintenance to optimise the maintenance process and production • Access and communicate with relevant personnel involved in the work and safety procedures • Seek confirmation of operational maintenance specifications and requirements • Communicate and report faults to supervisors
<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 maintenance providers (internal/external) • Make proper modification to the work schedule plan based on experience and completed documentation • Perform research and obtain technical information on operational maintenance of machines and equipment

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<p>Range of Application <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</p> <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Appropriate work documents • Work instructions • Original Equipment Manufacturers (OEM) specifications <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health Act • Industry codes • Workplace code of practice
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Skill Code	PRE-MAI-3006-1	Skill Category	Maintenance
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Coordinate Maintenance		
Skill Description	This skill describes the ability to coordinate the conduct of maintenance working either independently or as part of a team. It also includes setting up maintenance work requirements and creating a work-plan for the maintenance 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"> • Planning and maintenance practices • The process and normal operating parameters • Enterprise's procedures and relevant regulatory requirements • Related WSH standards and regulations applying to the workplace 		
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"> • Set up maintenance activity requirements • Examine equipment/machine specifications, service requirements and workplace procedures for advice regarding maintenance intervals and processes • Develop work plan for the maintenance and work schedule • Manage maintenance activity • Gather maintenance requirements • Complete maintenance procedures • Finalise maintenance work schedule following the work plan • Construct appropriate readings, measurements and recordings and compare to equipment, product and other relevant specifications 		

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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 evaluate potential risks at the workplace • Recognise and compare historical data, future equipment use, production requirements and standard operating procedures so as to be job ready • Recognise workers with the required competencies and where necessary help them with appropriate training and assessment • Improve work plan to ensure the maintenance program will retain workplace output in terms of workplace policy
<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 the unsafe acts or conditions present and recommend corrective actions to management • Attain clearances for any necessary costs for the maintenance • Examine production schedules and staff rosters to recognise time(s) when the maintenance process may be scheduled including optimum timing for (any) shut-down • Acquire authorisation from management staff for timing of maintenance to optimise the maintenance process and production
<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 maintenance providers (internal/external) • Make proper modification to the work schedule plan based on experience and completed documentation
<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</p> <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Appropriate work documents • Work instructions • Organisation work procedures and specifications

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	<p>Rules and regulations must include:</p> <ul style="list-style-type: none">• Workplace Safety and Health Act• State or country legislative requirements and relevant regulations
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Skill Code	PRE-QUA-3009-1	Skill Category	Quality
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Failure Mode and Effect Analysis Techniques		
Skill Description	This skill describes the ability to apply the methods and tools used for identifying and assessing the actual and potential failures in product and process designs. It also includes developing a Design FMEA, gathering FMEA failure information and deciding the corrective actions for each identified failure.		
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"> • FMEA implementation: (a) cross functional cooperation, (b) proactive efforts • Failure mode, failure effect, cause and current control and prevention relating to the organisation product/design and process flow • Risk Priority Number (RPN) and Severity, Occurrence and Detection (SOD) numbers relating to the industries standard • Use of RPN and/or SOD and identifying major failure modes in accordance to organisation FMEA procedure rating • Difference between Design FMEA and Process FMEA and their respective roles • Steps to developing a Design FMEA: <ul style="list-style-type: none"> ○ Role of Design FMEA ○ The 14 steps process towards Design FMEA implementation ○ Setting up a team ○ Analysing the system and define the scope ○ Identifying the customers • FMEA purpose and goals: <ul style="list-style-type: none"> ○ Situations where FMEA can be applied ○ Common types of FMEA ○ Identifying and analysing failure modes ○ Assessing and prioritising the risks • Application of Software FMEA within the context of a Design FMEA • Assumptions in Process FMEA in relation to Design FMEA • Definition of terms for analysing the failure mode 		

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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"> • Prepare to apply the design and process of FMEA relating to the organisation FMEA procedure and related industries standard • Apply the relevant steps of implementing the Design and Process FMEA techniques related to the industries standard • Create relevant diagrams relating to the organisational product and process flow • Develop the FMEA failure risk measurement for the organisation product/design and process flow activities in accordance with related industries standards • Decide the corrective actions for each identified major failure mode and develop the execution plans based on group discussion and decision • Perform follow-up and continual maintenance of FMEA document as determined in the organisation FMEA procedure • Develop a control plan to manage the product and process risks as indicated in the industries standard
<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"> • Select and apply appropriate Design and Process FMEA techniques related to the industries standard
<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"> • Participate in discussion with team members to clarify and verify computation results that are fit for intended purpose • Obtain advice when dealing with unknowns to achieve the desired outcome • Record and report reviews according to organisational procedure

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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"> • Utilise appropriate opportunities to strive for betterment of own skills and knowledge
<p>Range of Application</p> <p>(where applicable)</p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Organisational management systems must include:</p> <ul style="list-style-type: none"> • Design FMEA for software <p>Tools and equipment</p> <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • FMEA worksheet <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health procedures

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Skill Code	PRE-QUA-3005-1	Skill Category	Quality
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply ISO 9001 Quality Management System to Audit Requirements		
Skill Description	This skill describes the ability to apply the knowledge and skills to determine auditing requirements of ISO 9001 Quality Management System (QMS). It also includes interpreting ISO 9001QMS standards requirement, establishing connections and audit trails between clauses and respective operating department/functional areas in the organisation.		
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"> • Quality and product/service terms • Concepts, intent and the application of the “process approach” • Product/service realisation cycle • Quality policy, objectives and target of the organisation • Eight Quality Management principles • Modern Quality Management System and the development of ISO 9001 QMS • Quality Management System 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 customers and other interested parties as well as their requirements, needs and expectations • Establish the organisation’s policies and objectives for the desired outcome • Identify all the processes needed to produce the intended outputs • Develop an audit scope in accordance to the organisation business activities • Identify evidence of relevant exclusion clauses in accordance to organisation processes • Develop an interaction chart between the ISO 9001 QMS requirements and the organisation processes • Develop and document work documents for the audit process 		

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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 constructive suggestions to improve on quality system and work processes according to organisational procedures • Review report on abnormalities and problems encountered and offer improvements at appropriate platforms • Contribute ideas to improve desired outcomes of products and services in accordance to organisational goals
<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 • Discuss performance measures with designated personnel to determine time, output and quality achievements

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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 reviewing work improvement activities • Participate in enhancing key performance indicators
<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>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Quality manuals • Quality procedures • Work instructions • Evidence documentation • Audit plan • Audit checklist guide • Audit forms • Audit summary • Audit findings • Meeting records <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health procedures • Quality Management System (QMS) requirements • Legal/industrial requirements • Customer requirements • Organisation requirements

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Skill Code	PRE-QUA-3006-1	Skill Category	Quality
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Root Cause Analysis		
Skill Description	This skill describes the ability to systematically identify problems, collect pertinent information to clarify the problems, analyse the root cause(s) and recommend action(s) to resolve the problems. It also includes checking the effectiveness of the action(s) taken and its integration to organisation's overall management system in preventing recurrence of the problems.		
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"> • Events or symptoms that indicate there is a problem in the workplace • Difference between addressing the symptoms of a problem and tackling its root causes • Root cause analysis method • Definitions of terms used: event, impact, direct causes, contributing causes, root causes, corrective action and preventive action • The principles underlying effective Root Cause Analysis implementation • Method for recognising and clarifying problems in the workplace • Method for analysing causal factors and determining root causes • Difference between Cause and Effect Diagram and Causal Chain Chart • Method for generating corrective actions and preventive actions • Difference between corrective action and preventive action • Criteria for evaluating corrective and preventive actions • Method for evaluating and deciding corrective and preventive actions • Method for reporting root causes and recommending actions to be taken • Method for monitoring the effectiveness of actions taken • Method for sustaining the actions taken • Procedure for implementing root cause analysis in the workplace 		

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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"> • Determine the root cause(s) at the workplace in accordance with root cause analysis method • Carry out root cause analysis and generate corrective and preventive actions using the appropriate tools • Evaluate and decide the corrective and/or preventive action(s) in accordance with root cause analysis method • Report root causes and recommend the corrective and/or preventive action(s) in accordance with organisational procedures • Monitor the effectiveness of actions taken in accordance with organisational procedures • Sustain the corrective and/or preventive action(s) implemented in accordance with organisational procedures • Implement root cause analysis in the workplace in accordance with root cause analysis method
<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"> • Recommend the corrective and/or preventive action(s) based on findings of factors leading to problems and its root causes in accordance with 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"> • Participate in discussion with team members to clarify and verify analyses of causal factors and determining root causes • Obtain advice when dealing with unknowns to achieve the desired outcome • Record and report reviews according to organisational procedures

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PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

<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 problems at the workplace in accordance with root cause analysis method • Collect pertinent information to clarify the problem using the appropriate tools
<p>Range of Application</p> <p>(where applicable)</p> <p><i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i></p>	<p>Organisational Management Systems</p> <p>Organisational problem-solving and quality improvement procedure</p> <p>Tools and equipment</p> <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Report and records review (e.g. Internal audit reports, non-conformity report, safety report, etc) • Compilation of operational data (e.g. Product measurement data, process data, etc) • Questionnaire (e.g. Customer satisfaction survey, face to face interview, etc) • Operations review meetings <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health procedures

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	PRE-QUA-3007-1	Skill Category	Quality
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Conduct Risk Assessment		
Skill Description	This skill describes the ability to conduct risk assessment. It also includes the ability to identify hazards, evaluate and control risks.		
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"> • Workplace Safety and Health Act • Organisational procedures • Types of safety and health hazards related to process, human and cultural factors and workplace or work-related factors • Types of risks and risk evaluation methods and matrices • Types of risk control • Hierarchy of control and its application • Procedures to carry out risk assessment • Record of risk assessment results • Analysis of risk assessment results • Documentation maintenance of risk assessment results 		
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"> • Maintain safety and health practices in accordance with Workplace Safety and Health Act • Perform hazards identification in accordance with organisational procedures • Perform risk evaluation in accordance with organisational procedures • Determine risk control measure in accordance with organisational procedures • Record risk assessment results in accordance with organisational procedures • Upkeep risk assessment results in accordance with organisational procedures 		

SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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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 constructive suggestions to improve in conducting risk assessment • Review report on abnormalities and problems encountered and offer improvements at appropriate platforms • Contribute ideas to improve desired outcomes of process, human and cultural factors and workplace or work-related factors in accordance to organisational goals
<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 process, human and cultural factors and workplace or work-related factors 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"> • Keep up-to-date on changes in the Workplace Safety and Health Act
<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</p> <p>Procedures and supporting documents</p> <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health procedures • Codes of practices on WSH • Internationally recognised procedures and standards for WSH

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	PRE-QUA-3008-1	Skill Category	Quality
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Implement Quality Systems		
Skill Description	This skill describes the ability to implement 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 and reviewing them.		
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"> • 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>	The ability to: <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 abnormality and problems encountered in planning, carrying out, maintaining and improving work quality 		

SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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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 constructive suggestions to improve on quality system and work processes according to organisational procedures • Review report on abnormalities and problems encountered and offer improvements at appropriate platforms
<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 • Discuss performance measures with designated personnel to determine time, output and quality achievements
<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

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

- Comparative equipment
- Quality control tools
 - Charts
 - Tables
 - Spreadsheets
 - QC 7 Tools
 - Acceptance Sampling Plan
- Statistical analysis equipment and processes

Quality records must include:

- Quality control records
- Non-conformity records
- Non-compliance records
- Customer satisfaction records

Rules and regulations must include:

- Relevant industry codes of practice
- International/National Quality Standards/Framework
 - ISO 9001
 - Singapore Quality Class (SQC)

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	PRE-QUA-3010-1	Skill Category	Quality
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Supervise Quality Procedures		
Skill Description	This skill describes the ability to apply, maintain and supervise internal quality systems, external suppliers and quality control record systems and apply them to the workplace. It also includes reviewing procedures to provide solutions to quality improvement, identifying and selecting quality suppliers and developing and maintaining quality control record 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"> • Relevant quality standards, regulations and customer requirements • Assessing sources of quality assurance information and advice • Application of quality concepts to problem-solving and quality data collection and analysis • Organisation's products and processes to improvement of the quality system • Practical quality procedures or processes • System in the workplace in applying quality outcomes • Processes required for quality and continuous improvement • Quality requirements of the precision engineering field • Recording and reporting quality non-conformities and issues • Interpreting customer specifications for quality conditions and indications • Need and means for selection of suppliers • Advice on quality goals and specifications to suppliers • Documentation requirements of quality systems including the requirements for effective quality record-keeping systems 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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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"> • Monitor quality of materials and equipment received from suppliers closely to ensure organisational quality standards are met • Apply quality standards so as to ensure conformance to specifications and customer expectations • Monitor product quality to ensure conformance to specifications and customer expectations • Evaluate materials of identified suppliers according to specifications • Evaluate and select quality systems of identified suppliers • Identify, classify and store records required for reference and quality audits according to organisational guidelines • Collect and add relevant documents systematically to records, including product specifications, supplier traceability documentation, production run and defects statistics • Maintain records for the required period and archive according to organisational procedures and legislative requirements • Audit records against predetermined criteria in accordance with organisational procedures and quality program
<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"> • Record and analyse statistical data on production runs (if applicable) • Record and analyse statistical data on defects • Recognise and compare historical data, future equipment use, production requirements and standard operating procedures so as to be job ready
<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"> • Document and communicate quality of materials to selected suppliers • Discuss and document complaints procedures • Note any discrepancies found and report in accordance with organisational procedures

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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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"> • Review quality procedures systematically, to identify opportunity for 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>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Measuring equipment • Comparative equipment • Quality control tools • Statistical analysis equipment and processes <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Charts, tables, spreadsheets and statistical process controls • Workplace-based quality documentation • Organisational policy • Job description • Standard operation procedures • Appropriate codes of conduct • Quality work Instructions <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health Act • Industry codes of practice • International Quality Standards

SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER

Skill Code	PRE-WSH-4006-1	Skill Category	Workplace Safety and Health
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill Title	Supervise Manufacturing Work for Workplace Safety and Health		
Skill Description	<p>This skill describes the ability to identify common safety and health hazards and take appropriate control measures while working in the metal working or other manufacturing industry. It also includes the ability to identify WSH hazards, evaluate and control risks, carry out WSH inspections, implement WSH training and promotional programmes, conduct accident investigations and prepare reports.</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"> • Importance of Workplace Safety and Health (WSH) • Consequences of unsafe work practices and workplace conditions • Salient WSH legal and other requirements relevant to manufacturing industry • Overview of WSH management system • WSH duties and responsibilities of supervisor in the manufacturing industry • Risk management process • Typical hazards in manufacturing industry • Methods for hazard identification • WSH control measures • 5S housekeeping • Types of organisational WSH inspections • WSH training and promotional programmes • Incident investigation and reporting • Permit-To-Work (PTW) 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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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 WSH hazards, evaluate and control risks in manufacturing industry in accordance with risk management process • Carry out WSH inspections in accordance with organisational inspection procedures • Implement WSH training and promotional programmes in accordance with legal and other organisational requirements • Conduct incident investigation and prepare report in accordance with legal and other organisational 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"> • Provide constructive suggestions to evaluate WSH hazards at the workplace • Contribute ideas to improve desired outcomes of process, human and cultural factors and workplace or work-related factors in accordance to legal and organisational requirements
<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 the unsafe acts or conditions present and recommend corrective actions to management
<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 possible errors in evaluating risks • Keep up-to-date on changes in the Workplace Safety and Health Act

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<p>Range of Application <i>(where applicable)</i> <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"> • Workplace Safety and Health signage • Personal protective equipment <p>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Appropriate work documents • Work instructions • Organisation work procedures and specifications <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Workplace Safety and Health Act • Approved codes of practice
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SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER

Skill Code	PRE-MPI-2004-1	Skill Category	Manufacturing Productivity and Innovation
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Basic Lean Techniques in the Workplace		
Skill Description	This skill describes the ability to apply the methods and tools used for identifying and assessing the actual and potential failures in product and process designs in 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"> • Cycle-time in the workplace • Importance and types of layout design in the workplace • Concept of Poka-Yoke in the workplace • Steps of creating value stream mapping in the workplace • Benefits of Process Mapping in the workplace • Strategy to implement the Business Improvement Project 		
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"> • Apply cycle time measurement techniques according to simulation guide • Simulate types of Layout Design for activities improvement • Apply Poka-Yoke technique in the workplace according to simulation guide • Apply Value Stream Mapping in the workplace according to simulation guide • Apply Process Mapping for understanding activities flow • Identify and implement Business Improvement Project 		

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"> • Contribute ideas for business improvement project
<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 encountered in cycle time measurement • Report any problems encountered during simulation of layout design • Report any difficulties encountered in process mapping • Check with designated personnel on business improvement project
<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"> • Able to recommend continuous improvement in the workplace • Reflect on problems encountered during simulation of layout design and seek ways to improve • Reflect on difficulties encountered in process mapping and seek ways to improve
<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>Cycle time measurement must include:</p> <ul style="list-style-type: none"> • Cycle time • Capacity calculation <p>Layout design must include:</p> <ul style="list-style-type: none"> • Types of layout • Batch versus continuous flow

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Business improvement project must include:

- Project charter
- Project tracking
- Performance measurement
- Project presentation

Tool and equipment must include:

- Lego
- Jigsaw
- Video
- Flip chart
- Digital camera

Procedures and supporting documents must include:

- Organisational procedures
- Specifications
- Work instructions
- Technical manual
- Simulation guide for cycle time
- Simulation guide for Poka-Yoke
- Simulation guide for Value Stream Mapping

Rules and regulations must include:

- Workplace Safety and Health Act

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	PRE-MPI-2005-1	Skill Category	Manufacturing Productivity and Innovation
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Lean Thinking in the Workplace		
Skill Description	This skill describes the ability to apply LEAN thinking in the workplace. It also includes the ability to interpret LEAN thinking, apply the principles of LEAN, identify types of wastes in the workplace, carry out Standardised Work in the workplace and apply thinking and problem-solving 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"> • LEAN history from Toyota Production System (TPS) • Importance of practicing 3M's in the workplace • Link between LEAN Thinking with Productivity • LEAN Metric to measure performance • Culture of continuous improvement in the organisation • Role and responsibility of member in a LEAN project 		
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"> • Interpret LEAN thinking to eliminate wastes and increase value-added activities according to simulation guide • Apply the 5 principles of LEAN as a framework for improvement activities • Identify 8 Types of Wastes in the workplace according to simulation guide • Carry out Standardised Work in the workplace according to simulation guide • Carry out waste elimination activities in the workplace • Apply A3 Thinking for problem-solving skills 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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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"> • Carry out improvement activities based on the 5 Principles of LEAN • Apply LEAN quality tools in 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"> • Contribute ideas for work improvement activities • Check with designated personnel on work improvement activities • Report any problems encountered during waste elimination activities • Report any difficulties encountered applying the 5 principles of LEAN in the workplace
<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 problems encountered during waste elimination activities • Reflect on difficulties encountered applying the 5 principles of LEAN in the 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>LEAN thinking overview must include:</p> <ul style="list-style-type: none"> • LEAN definition • Benefits & results of LEAN • LEAN history – from Toyota Production System (TPS) • Developing a LEAN House/System • LEAN metric • Introduction to LEAN tools and techniques • LEAN 5 key principles & tools • LEAN versus productivity versus innovation • Importance of 3M's

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

LEAN culture in the organisation must include:

- The need for a cultural of continuous improvement in the organisation
- Business improvement is a journey
- Mindset change
- Build LEAN culture
- The role and responsibility of member in a LEAN project

8 Types of Waste must include:

- Work cycle with Type 1 & 2 wastes
- Zero waste
- Definition of each waste & examples
- “Learning to see waste” group exercise
- Understand Standardisation in the workplace

A3 thinking must include:

- Definition of A3
- Definition of problem
- Step-by-step of using A3
- 7 quality tools
- 5 why method
- A3 worksheet
- Standard work

Tool and equipment must include:

- Lego
- Jigsaw
- Video
- Flip chart
- Digital camera

Procedures and supporting documents must include:

- Organisational procedures
- Specifications
- Work instructions
- Technical manual
- Simulation guide for 8-Wastes
- Simulation guide for standard work

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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	<ul style="list-style-type: none">• A3 worksheet <p>Rules and regulations must include:</p> <ul style="list-style-type: none">• Workplace Safety and Health Act
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	PRE-MPI-3006-1	Skill Category	Manufacturing Productivity and Innovation
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Implement Continuous Improvement Processes		
Skill Description	<p>This skill describes the ability to implement and facilitate an organisation's systems and processes relating to continuous improvement and apply them to the workplace. It also includes implementing continuous improvement, promoting team support and coaching team members toward continuous improvement, gathering, accessing and recording production information, analysing and interpreting information, applying improvement tools and strategies, monitoring and evaluating improvement processes.</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"> • Organisational continuous improvement goals • Organisational goals and targets • Organisation's continuous improvement systems, tools, techniques, systems and processes • Operator feedback and suggestions for improvement opportunities • Relevant legislation and regulations, especially those relating to Workplace Safety and Health • Organisational structure, functions, resources, policies, procedures and culture • Internal and external benchmarking and best practice principles and practices • Quality assurance/control approaches • CI target • CI goals for the target • Documenting the changes required to incorporate the CI • Communication of the CI processes up and down 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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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"> • Execute plan for improvement in consultation with senior management and supervisors of the target areas • Coach teams/individuals to effectively participate in improvement processes • Form teams and facilitate toward a greater understanding of the continuous improvement goals for the organisation • Develop recommendations and plans for improvements and seek approval for deployment with relevant personnel and improvement teams • Implement savings, productivity and service improvements • implement continuous improvement strategy as planned and monitor the result • Deploy the change in processes or procedures as a result of the continuous improvement • Monitor continuous improvement strategy against the identified bench mark and measures • Use organisation's systems for monitoring continuous improvement processes and activities • Review the performance improvement before and after the implementation to identify further improvement opportunities • Compare productivity to the previous bench mark for improvement gains and comparisons
<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"> • Use technology tools to monitor and disseminate continuous improvement goals and review organisation's planning and operations against those goals • Identify and prioritise opportunities for improvements in order to select the best possible targets for application of improvement effort, in accordance with organisational procedures

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

<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 and facilitate systems for active participation of teams/individuals in continuous improvement processes • Communicate organisation’s continuous improvement processes to relevant teams/individuals • Seek and obtain approval for the CI 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"> • 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>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Work Improvement activities • Key Performance Indicators (KPIs) • Continuous process improvement techniques • Data collection and analysis techniques • Control mechanisms <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Relevant industry codes of practice • Workplace Safety and Health procedures

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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Skill Code	PRE-MPI-3006-1	Skill Category	Manufacturing Productivity and Innovation
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Implement Continuous Improvement Processes		
Skill Description	<p>This skill describes the ability to implement and facilitate an organisation's systems and processes relating to continuous improvement and apply them to the workplace. It also includes implementing continuous improvement, promoting team support and coaching team members toward continuous improvement, gathering, accessing and recording production information, analysing and interpreting information, applying improvement tools and strategies, monitoring and evaluating improvement processes.</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"> • Organisational continuous improvement goals • Organisational goals and targets • Organisation's continuous improvement systems, tools, techniques, systems and processes • Operator feedback and suggestions for improvement opportunities • Relevant legislation and regulations, especially those relating to Workplace Safety and Health • Organisational structure, functions, resources, policies, procedures and culture • Internal and external benchmarking and best practice principles and practices • Quality assurance/control approaches • CI target • CI goals for the target • Documenting the changes required to incorporate the CI • Communication of the CI processes up and down 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

<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"> • Execute plan for improvement in consultation with senior management and supervisors of the target areas • Coach teams/individuals to effectively participate in improvement processes • Form teams and facilitate toward a greater understanding of the continuous improvement goals for the organisation • Develop recommendations and plans for improvements and seek approval for deployment with relevant personnel and improvement teams • Implement savings, productivity and service improvements • implement continuous improvement strategy as planned and monitor the result • Deploy the change in processes or procedures as a result of the continuous improvement • Monitor continuous improvement strategy against the identified bench mark and measures • Use organisation's systems for monitoring continuous improvement processes and activities • Review the performance improvement before and after the implementation to identify further improvement opportunities • Compare productivity to the previous bench mark for improvement gains and comparisons
<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"> • Use technology tools to monitor and disseminate continuous improvement goals and review organisation's planning and operations against those goals • Identify and prioritise opportunities for improvements in order to select the best possible targets for application of improvement effort, 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"> • Establish and facilitate systems for active participation of teams/individuals in continuous improvement processes • Communicate organisation's continuous improvement processes to relevant teams/individuals • Seek and obtain approval for the CI 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"> • 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>Procedures and supporting documents must include:</p> <ul style="list-style-type: none"> • Work Improvement activities • Key Performance Indicators (KPIs) • Continuous process improvement techniques • Data collection and analysis techniques • Control mechanisms <p>Rules and regulations must include:</p> <ul style="list-style-type: none"> • Relevant industry codes of practice • Workplace Safety and Health procedures

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

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 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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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

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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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

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

	<ul style="list-style-type: none">• Cross-selling products or services by offering the customer additional options to complement their purchase
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

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 performance and/or enhance business</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 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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<p><i>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 • Poor response to information requested • Un-informed staff • Lack of communication

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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- 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

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	SVCF-CS-301C-1	Skill Category	Customer Experience
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Establish Relationships for Customer Confidence		
Skill Description	This skill describes the ability to build customer confidence in the organisation and develop customer relationships that build customer loyalty. It also includes handling service opportunities and escalated 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"> • Methods to develop knowledge of organisation’s product or service offerings • Methods to establish customer rapport • Types of follow up from customer interactions • Types of service opportunities • Types of escalated service challenges • Methods to respond to service opportunities • Methods to respond to escalated service challenges 		
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 knowledge of organisation’s product or service offerings and customer profile • Respond to service opportunities to build customers’ confidence in the organisation • Follow up on customer interactions in accordance with the organisation’s guidelines 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
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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"> • Build customer rapport with customers to increase customer loyalty and confidence in the organisation • Propose mutually acceptable solutions to escalated service challenges in accordance with the organisation's service recovery 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>N/A</p>
<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"> • Stay abreast of the organisation's product or service offerings through product launches or brochures to ensure the latest information is provided to customers

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

<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>Customer rapport refers to the gaining of trust and confidence of customers in the organisation’s product or service. Organisations may wish to build rapport with customers to increase customer confidence in their product or service.</p> <p>Customer confidence refers to the trust which customers have in an organisation’s product or service.</p> <p>Escalated service challenges are unresolved service challenges escalated by service professionals.</p>
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	ES-PMD-303G-1	Skill Category	Personal Management and Development
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Apply Emotional Competence to Manage Self and Team at the Workplace		
Skill Description	This skill describes the ability to apply self-awareness techniques and model emotional intelligence principles to facilitate an understanding and management of oneself and others in a team. It also includes cultivating a positive emotional culture in 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"> • Differences between cognitive intelligence and emotional intelligence • Aspects of emotional intelligence • Importance of emotional intelligence • Benefits of applying emotional intelligence at work • Different platforms to facilitate expression of thoughts and feelings by team members • Importance of developing emotional intelligence to build positive relationships • Domains of emotional intelligence and their applications • Methods for development of emotional intelligence and its 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"> • Assess emotional states of team members and respond appropriately to emotional cues, taking into consideration the different cultures and background of team members 		
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"> • Promote a positive emotional climate at the workplace 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

<i>performance and/or enhance business values that are aligned to organisational goals.</i>	
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>The ability to:</p> <ul style="list-style-type: none"> • Model behaviours that demonstrate application of emotional intelligence • Demonstrate flexibility and adaptability in dealing with team members and making decisions, taking their emotions into account • Provide opportunities for team members to express their thoughts and feelings and assist them in understanding the effects of their behaviour and emotions on others at the workplace • Encourage team members to develop their own emotional intelligence to build positive relationships among one another to achieve team goals
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>The ability to:</p> <ul style="list-style-type: none"> • Recognise own emotional states, the causes of those emotional states and its effects on own and team's performance and interpersonal relationships at the workplace • Conduct self-reflection and gather feedback from team members to identify personal strengths and weaknesses for development of own emotional intelligence
Range of Application <i>(where applicable)</i> <i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i>	<p>Definition of cognitive intelligence must include:</p> <ul style="list-style-type: none"> • Intellectual abilities such as logic, reason, reading, writing, analysing and prioritising <p>Definition of emotional intelligence must include:</p> <ul style="list-style-type: none"> • Awareness of own emotions and ability to regulate them • Awareness of the emotions of others and the ability to use the knowledge to manage interactions with others <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

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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Domains of emotional intelligence must include:

- Knowing one's emotions
- Managing one's emotions
- Motivating oneself
- Recognising and understanding others' emotion
- Managing relationship through use of emotional intelligence

Behaviours that demonstrate application of emotional intelligence must include:

- Paying attention to other's body language, tone of voice and facial cues
- Taking interest in team members and their work
- Acknowledging and showing appreciation for team members' contributions
- Demonstrating common feelings with team members (e.g. excitement, disappointment, et cetera)
- Responding to team members taking into account their profile and cultural differences and in ways that suit their individual styles (e.g. responding in a clear and strict manner, responding with a soft approach, etc.)
- Applying empathy to others at the workplace
- Recognising impact of personal emotions on others
- Seeing setbacks as situational and circumstantial rather than a pervasive personal flaw

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	ES-PMD-301G-1	Skill Category	Personal Management and Development
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Develop Personal Effectiveness at Supervisory Level		
Skill Description	This skill describes the ability to apply knowledge and life skills, relate them to roles and responsibilities in the workplace and contribute to their effectiveness as a team leader or supervisor. It also includes using time management techniques, maintaining a work-life balance, managing stress and 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 • Factors that may affect the achievement of departmental goals • Benefits of organising and prioritising work activities according to goals set • Practices that promote personal well-being and aspects of personal management • Issues and problems related to personal and family responsibilities and their impact on work • Common sources of assistance available to support personal management • Various budgeting techniques and their features to manage personal expenses • Factors to consider when using and maintaining credit to ensure one's financial stability 		
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"> • Analyse personal goals and align them to departmental goals • Examine personal role and responsibilities and their contribution to departmental success • Plan, organise and execute personal work activities to achieve departmental goals • Support the implementation of work-life balance programmes to achieve organisational effectiveness 		

SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER

<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"> • Identify causes of stress that affect self and team and apply stress management techniques to deal with them
<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"> • Apply emotional intelligence and people-management techniques to get assistance from appropriate people such as managers, peers and subordinates
<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"> • Examine personal strengths and weaknesses, apply strategies to overcome weaknesses and use personal strengths to contribute towards the achievement of departmental goals • Establish own existing financial position using appropriate tools and explain 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>

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	ES-PMD-304G-1	Skill Category	Personal Management and Development
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Foster Team Adaptability		
Skill Description	This skill describes the ability to analyse employability issues in the global context. It also includes using strategies to adapt team members to the changing conditions and diversity at the workplace for greater productivity and effectiveness.		
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 learning opportunities and uses of learning resources and references for development • Common challenges and difficulties in selecting the appropriate resources for development • Ways to recommend and facilitate the use of the various resources for development • Methods to identify learning styles of self and team • Types of learning theories, learning motivation theories and motivational factors to learn • Transferable skills and knowledge and their features • Factors that hinder and encourage learning • Types of diversity in the team • Importance of team cooperation and synergy • Impact of changes at the workplace 		
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"> • Analyse information gathered from the news media to determine relevant trends and issues that would affect work team at the workplace • Analyse the implications of global competitiveness on one's job and team at the workplace • Analyse the impact of diversity on a team and facilitate team members to work within a diverse team based on strategies set • Identify the competencies required in current job for self and team at the workplace 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

<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"> • Implement ways to provide a conducive work environment to facilitate the transfer of learning among team members and peers
<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 and implement strategies to motivate and assist team members to adapt to change in job requirements at the workplace
<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 competencies, determine training and development needs and select resources and suitable learning opportunities that match the learning styles of self and team • Promote opportunities for learning and coaching within a team
<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>N/A</p>

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	ES-PMD-302G-1	Skill Category	Personal Management and Development
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Maintain Personal Image and Employability at Supervisory Level		
Skill Description	This skill describes the ability to develop plans to achieve one's personal career goals. This involves the ability to source for compatible jobs and preparing for job 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>	<p>The ability to understand:</p> <ul style="list-style-type: none"> • Rationale for conducting self-assessment of personal competencies • Factors to consider when setting personal career goals • Importance of setting personal career goals • Steps to map out personal career goals • Advantages and disadvantages of the various methods to source for jobs • Purpose of a letter of application and resume for job application • Factors to be considered in the preparation of resume • Guidelines to writing a good resume and letter of application • 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>	<p>The ability to:</p> <ul style="list-style-type: none"> • Review requirements to achieve personal career goals and develop plan to achieve career goals • Source for jobs which are compatible with personal competencies and career goals • Apply advanced skills to prepare for and attend job interview • Maintain standards for personal image and hygiene when attending job interview 		
Innovation and Value Creation <i>It refers to the ability to generate purposive ideas to improve work performance and/or</i>	<p>The ability to:</p> <ul style="list-style-type: none"> • Select jobs that best match personal competencies and career goals, establish job requirements and apply for jobs 		

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

<i>enhance business values that are aligned to organisational</i>	
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>	The ability to: <ul style="list-style-type: none"> • Demonstrate social etiquette skills to build relations with interviewers
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>	The ability to: <ul style="list-style-type: none"> • Conduct self-assessment of personal competencies acquired through learning and experience • Set personal career goals taking into account industry demand and personal competencies
Range of Application (where applicable) <i>It refers to the critical circumstances and contexts that the skill may be demonstrated.</i>	N/A

**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
SKILLS STANDARDS FOR
PROCESS SPECIALIST/SHIFT, GROUP, TEAM LEADER**

Skill Code	ES-ACE-302G-1	Skill Category	Analytical, Conceptual and Evaluative
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Solve Problems and Make Decisions at Supervisory Level		
Skill Description	This skill describes the ability to acquire the skills to work with a team of subordinates in practising problem-solving and decision-making. It also includes anticipating and identifying potential problems, facilitating team's effort to resolve the problems, making appropriate decisions and seeing implementation plans through.		
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 information to be gathered and analysed to identify and confirm a problem • Characteristics of appropriate problem-solving tools and techniques • Idea generation techniques and their characteristics • Types of value and impact to be evaluated for selection of ideas • Techniques to manage team conflict in decision-making process • Factors affecting the effectiveness of an implementation plan • Advantages and disadvantages of the various methods for gathering feedback from relevant sources • Methods used to identify deficiency in the implemented solution and implementation plan and their characteristics 		

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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 symptoms that could lead to potential problems at the workplace using appropriate tools and techniques • Apply logical deduction to anticipate and detect problems at the workplace based on symptoms and relevant information gathered • Analyse relevant information surrounding the perceived problems and identify the exact problem using elimination process, objective reasoning or process questioning • Analyse the root causes of the problems at the workplace using appropriate problem-solving tools and techniques • Develop an implementation plan that addresses the root causes of the problems and consider the impact to self and team at the workplace • Evaluate the effectiveness of the implemented solution and implementation plan by analysing feedback gathered from relevant sources
<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"> • Select a solution among the shortlisted ones collectively with team members using appropriate evaluative techniques and criteria • Formulate and execute modifications to restore and/or enhance effectiveness of implemented solution and implementation plan
<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"> • Facilitate generation of solutions to solve problems by encouraging creativity among team members

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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"> • Review the effectiveness of modifications made and analyse learning points and best practices that can be used for future reference
<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-301G-1	Skill Category	Analytical, Conceptual and Evaluative
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Foster Initiative and Enterprise in Teams		
Skill Description	This skill describes the ability to identify areas for continuous improvement and apply strategies to facilitate, motivate and sustain initiative and innovation in the team. It also includes identifying, evaluating and measuring risks associated with innovation and taking initiative at a team level.		
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"> • Motivation concepts and techniques to lead and motivate teams to increase initiative and innovation and their characteristics • Sources of innovative opportunities and types of innovation and their characteristics • Basic principles to unleash untapped innovation and creativity at the workplace • Tools and techniques to increase team’s ability to develop creative ideas for innovation and their features • Methods for building and sustaining a culture of innovation, initiative and enterprise among team members • Modes of communication for effective sharing of lessons and their features • Skills required for self-directed team to be effective and ways to help them acquire these skills • Types of risks and their implications on team performance and success • Methods to reduce the impact of risk on team performance and success • Process of formulating communication plan to monitor, manage and reduce risks 		

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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"> • Assist team members to unleash their untapped innovation and creativity and increase their ability to develop creative ideas for innovation at the workplace • Facilitate team to be self-directed and sustain effort for continuous improvement at the workplace • Evaluate the effectiveness of implemented strategies in achieving planned outcome in accordance to criteria and goals set
<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"> • Identify possible areas for continuous improvement and challenges in getting team to initiate actions for continuous improvement at the workplace • Conduct risk assessment of new initiatives on team performance and success and recommend possible risk management strategies • Implement appropriate risk management strategies to support innovation and enterprise
<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"> • Lead and motivate team to initiate actions, ideas and suggestions to improve workplace or business performance
<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"> • Enhance own creative skills and behaviour by identifying key opportunities for continuous improvement

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<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>N/A</p>
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**SKILLS FRAMEWORK FOR PRECISION ENGINEERING
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Skill Code	ES-IP-301G-1	Skill Category	People and Relationship Management
		Skill Sub-Category <i>(where applicable)</i>	N/A
Skill	Facilitate Effective Communication and Engagement at the Workplace		
Skill Description	This skill describes the ability to promote the use of effective communication within a team. It also includes using conflict resolution and negotiation strategies as well as building rapport with colleagues, stakeholders and customers.		
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"> • Barriers to effective communication • Methods to coach staff in using effective communication techniques • Organisational and professional standards relating to communication • Ways that various types of diversity issues affect one's communication and negotiation with others in the workplace • Ways to validate information and history of conflict • Possible causes, sources and benefits of conflict • Sources of additional information, expert advice and mediation to assist in conflict issues and assessment of a conflict situation • Conflict resolution approaches and their characteristics • Appropriate communication techniques for conflict resolution and negotiation and their characteristics • Negotiation styles and their characteristics • Ways to confirm resolution of conflict and types of agreed follow-up action 		
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"> • Maintain channels of communication to update staff on latest and relevant work-related information according to organisational communication policies and procedures • Promote effective communication among staff taking into account diversity issues • Assess conflict situation and develop appropriate conflict resolution strategies to negotiate issues towards a mutually acceptable outcome 		

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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"> • Seek opportunities for growth and innovation and new ways of thinking as well as additional management options
<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 organisational communication policies and procedures to staff and monitor their compliance • Use appropriate communication techniques and tools to suit different communication styles of people in formal and informal settings
<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"> • Resolve conflict using appropriate conflict resolution strategies, approaches and techniques
<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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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.