

SKILLS FRAMEWORK FOR PRECISION ENGINEERING SKILLS MAP - ENGINEER									
Sector	Precision Engineering								
Track	Technical and Engineering								
Occupation	Engineer								
Job Role	Engineer								
Job Role Description	<p>The Engineer adapts and applies engineering principles and techniques to design and develop machinery and components, generate prototypes and implement system modifications. He/She leverages on technical and engineering skills to resolve technical and engineering issues and manage simple engineering projects. He also implements plans for improvements in production efficiency and effectiveness, while ensuring compliance with workplace safety and health procedures and other regulatory requirements.</p> <p>His duties require him to work on the shop floor, and may be required to work on rotating shifts. He is required to have strong communication skills to lead a team, and is expected to guide and mentor subordinates under his charge.</p>								
Critical Work Functions and Key Tasks	Critical Work Functions	Key Tasks	Performance Expectations (For legislated / regulated occupations)						
	<p>Manufacture components and end products</p> <p>Conform to management system requirements</p> <p>Manage manufacturing process workflow</p> <p>Contribute to continuous improvement</p> <p>Influence organisational development and strategies</p>	<p>Provide design solutions to satisfy product requirements</p> <p>Evaluate material suitability for manufacturing and processes for improving characteristics</p> <p>Analyse cumulative effects of tolerances to determine appropriate engineering interventions</p> <p>Develop process plans for manufacturing operations</p> <p>Produce and post-process the tool path data into machine specific codes for multi-axis computer numerical control (CNC) machining</p> <p>Develop cleaning and finishing processes for manufactured products</p> <p>Evaluate product finishing for fulfilment of preservation requirements</p>	<p>Develop control plans for shop floor tracking</p> <p>Track quality performance of products and/or services</p> <p>Conduct quantitative evaluation of quality performance measures</p> <p>Establish safety and good manufacturing practices and processes in production areas</p> <p>Conduct technical presentations</p>						
<p>Design manufacturing processes and tools to fulfil product specification requirements</p> <p>Review performance of manufacturing processes and technologies for enhancement and optimisation</p> <p>Develop lean manufacturing plans for the organisation</p> <p>Evaluate new technology for feasibility of adoption in manufacturing processes</p> <p>Design modules and controls for automation of manufacturing operations</p> <p>Set up sensors and interface systems to automate manufacturing processes</p>					<p>Evaluate and recommend process changes for improvements to help improve yield, quality and cycle times</p> <p>Lead continuous improvement projects</p> <p>Lead working level community to explore opportunities for improvement projects</p>				
						<p>Negotiate with customers to reconcile product requirements with manufacturing parameters and business needs</p> <p>Contribute to business analytics to facilitate data gathering and decision-making</p> <p>Provide technical guidance to peers and subordinates</p> <p>Develop training programmes for staff</p>			
								<p>Technical Skills and Competencies</p>	
Additive Manufacturing					Level 4			Teamwork	Intermediate
Augmented Reality Application					Level 3			Communication	Intermediate

	Automated Operation Monitoring	Level 4	Problem Solving	Intermediate
	Automated System Design	Level 5	Transdisciplinary Thinking	Intermediate
	Automation Process Control	Level 5	Interpersonal Skills	Intermediate
	Automation System Maintenance	Level 4		
	Change Management	Level 4		
	Cleanliness and Contamination Control	Level 4		
	Computer-aided Design	Level 4		
	Computer-aided Manufacturing	Level 4		
	Continuous Process Improvement	Level 4		
	Cutting	Level 4		
	Data Analytics System Design	Level 4		
	Data Synthesis	Level 4		
	Embedded System Integration	Level 4		
	Emergency Response Management	Level 4		
	Engineering Product Design	Level 4		
	Equipment Maintenance	Level 5		
	Failure Analysis	Level 4		
	Geometric Dimensioning and Tolerancing	Level 4		
	Heat Treatment Processing	Level 4		
	Hydraulic Systems Management	Level 3		
	Internet of Things Management	Level 4		
	Jigs and Fixture Design	Level 4		
	Laser and Optics Application	Level 4		
	Lean Manufacturing	Level 4		
	Learning and Development	Level 4		
	Machining	Level 4		
	Manufacturing Process Design	Level 4		
	Manufacturing Process Management	Level 5		
	Manufacturing Technology	Level 4		
	Material Joining	Level 3		
	Metal Forming	Level 4		
	Metal-based Additive Manufacturing	Level 4		
	Metallic Material Characterisation	Level 4		
	Metrology Management	Level 4		
	Networking	Level 5		
	New Product Introduction	Level 3		
	Organisational Analysis	Level 5		
	Plastic Injection Moulding	Level 5		
	Pneumatic Systems Management	Level 3		
	Polymeric Additive Manufacturing	Level 4		
	Polymeric Material Characterisation	Level 4		
	Precision Measurement	Level 4		
	Production Line Set-Up	Level 4		
	Project Management	Level 4		
	Quality Process Control	Level 4		
	Quality System Management	Level 4		
	Surface Preparation and Protection	Level 3		
	User Experience Design	Level 3		
	User Interface Design	Level 3		
	Value Analysis	Level 4		
	Virtual Reality Application	Level 4		
	Vision Leadership	Level 4		
	Welding	Level 4		
	Workplace Safety and Health System Management	Level 5		
Programme Listing	For a list of Training Programmes available for the Precision Engineering sector, please visit: www.skillsfuture.sg/skills-framework/pe			