

SKILLS FRAMEWORK FOR AEROSPACE			
SKILLS MAP - Senior Manufacturing Engineer/Senior Production Engineer (Manufacturing)			
Sector	Aerospace		
Track	Manufacturing		
Occupation	Industrial and Production Engineer		
Job Role	Senior Manufacturing Engineer/Senior Production Engineer (Manufacturing)		
Job Role Description	<p>The Senior Manufacturing Engineer/Senior Production Engineer (Manufacturing) establishes manufacturing process sequence and production plans. He/She implements shop floor monitoring and process control plans, and organise manpower, materials and resources to meet production targets. He develops machining and special process plans, and formulates technical solutions for operational issues.</p> <p>His responsibilities also include executing productivity improvement and cost savings programmes, reviewing equipment, materials and processes for manufacturing, and leading negotiations with customers to reconcile product requirements with manufacturing parameters and business needs.</p> <p>He reviews compliance with airworthiness and legislative requirements, while proposing enhancements to the organisation's standard operating procedures (SOPs), and safety, health and quality systems. He proactively contributes to the development of lean and sustainability practices, and conducts research and innovation in targeted areas for continuous process improvements. He appraises staff performance and conducts coaching and mentoring for technical personnel.</p>		
Critical Work Functions and Key Tasks / Performance Expectations	Critical Work Functions	Key Tasks	Performance Expectations (For legislated / regulated occupations)*
	Manage manufacturing and production planning	Establish manufacturing process sequence and production plans	In accordance with: <ul style="list-style-type: none"> <li>International Civil Aviation Organisation (ICAO) legislation</li> <li>Air Navigation Order (ANO)</li> <li>Singapore Airworthiness Requirements (SAR)</li> <li>Relevant foreign aviation legislations</li> <li>Workplace Safety and Health (WSH) Act</li> <li>Environmental standards</li> <li>Aerospace quality management system standards</li> <li>ISO, AN, MS, NAS and MIL standards</li> <li>Air Transport Association of America (ATA) standards</li> <li>Special process standards</li> </ul> *Performance Expectations are non-exhaustive and subject to prevailing regulations
		Organise manpower, materials and resources to meet production targets	
		Evaluate production process enhancements to improve cost efficiency, yield, quality and cycle times	
		Optimise use of computer integrated manufacturing (CIM) technologies	
		Implement shop floor monitoring and process control plans	
		Lead negotiations with customers to reconcile product requirements with manufacturing parameters and business needs	
	Manufacture components and end products	Review tooling, jigs and fixtures designs for manufacturing	
		Review selection of advanced materials, hardware and processes to optimise manufacturing processes	
		Develop machining and special process plans to determine appropriate processes for manufacturing	
		Ensure maintenance of manufacturing equipment and machinery in accordance with plans and procedures	
		Review documentation for compliance with regulatory and organisational requirements	
	Conform to management system requirements	Propose enhancements to standard operating procedures (SOPs) for manufacturing operations	
		Review compliance with legislative requirements and airworthiness standards	
		Recommend improvements to environment, safety and health systems, policies and procedures	
		Contribute to the development of organisational quality and risk management systems	
		Contribute to the development of sustainability practices for manufacturing	
	Contribute to continuous improvement	Evaluate opportunities for continuous improvement projects	
		Contribute to the development of lean practices for manufacturing	
		Conduct research on market trends and technology applications to drive innovation	
Leverage data analytics to enhance operational and business decision-making			
Manage people and organisational development	Liaise with other teams and customers to ensure smooth operations		
	Appraise staff performance by utilising organisational performance management systems		
	Conduct coaching and mentoring for junior team members		
Technical Skills and Competencies		Generic Skills and Competencies	
Additive Manufacturing	Level 3	Decision Making	Intermediate
Aerodynamics Principles Application	Level 4	Sense-Making	Advanced
Aerospace Heat Treatment Process	Level 4	Service Orientation	Intermediate
Aerospace Materials and Hardware Selection	Level 4	Communication	Intermediate
Artificial Intelligence Application	Level 3	Interpersonal Skills	Intermediate
Augmented Reality Application	Level 3		
Automated System Design	Level 4		
Automation Process Control	Level 4		
Aviation Legislation Compliance	Level 3		
Big Data Analytics	Level 3		

<b>Skills &amp; Competencies</b>	Business Continuity Planning	Level 3		
	Business Negotiation	Level 4		
	Business Opportunities Development	Level 3		
	Business Performance Management	Level 3		
	Carbon Footprint Management	Level 4		
	Change Management	Level 3		
	Chemical Processing	Level 3		
	Coating	Level 3		
	Computer-aided Manufacturing	Level 4		
	Condition-based Assets Monitoring Management	Level 4		
	Continuous Process Improvement	Level 3		
	Cutting	Level 4		
	Digital Techniques Application	Level 4		
	Elastomer Seals Application	Level 3		
	Electrical Fundamentals Application	Level 4		
	Electronic Fundamentals Application	Level 4		
	Engineering Drawing Interpretation and Management	Level 4		
	Engineering Problem Solving	Level 4		
	Gas Turbine Engine Principles Application	Level 4		
	Green Manufacturing Design and Implementation	Level 3		
	Helicopter Aerodynamics, Structures and Systems Principles Application	Level 4		
	Human Factors Application and Error Management	Level 3		
	Innovation Management	Level 3		
	Internet of Things Implementation	Level 3		
	Jigs and Fixtures Design	Level 4		
	Knowledge Management	Level 3		
	Laser and Optics Application	Level 5		
	Lean Manufacturing	Level 3		
	Machining	Level 4		
	Manufacturing Process Management	Level 4		
	Material Joining	Level 4		
	Mathematical Concepts Application	Level 3		
	Metallic Material Characterisation	Level 4		
	Non-metallic Materials Manufacturing	Level 4		
	Physics Concepts Application	Level 3		
	Piston Aeroplane Aerodynamics, Structures and Systems Principles Application	Level 4		
	Piston Engine Principles Application	Level 4		
	Product Lifecycle Management	Level 3		
	Production Line Set-up	Level 4		
	Project Management	Level 3		
Propeller Principles Application	Level 4			
Propulsion Principles Application	Level 4			

	Quality System Management	Level 3		
	Robotics and Automation Application	Level 3		
	Sealants Process	Level 3		
	Stakeholder Management	Level 3		
	Surface Enhancement	Level 3		
	Surface Preparation and Protection for Aerospace Manufacturing	Level 3		
	Turbine Aeroplane Aerodynamics, Structures and Systems Principles Application	Level 4		
	Welding Process	Level 3		
	Workplace Safety and Health Framework Development and Implementation	Level 3		
<b>Programme Listing</b>	For a list of training programmes available for the Aerospace sector, please visit < <a href="https://www.skillsfuture.sg/skills-framework/aero">https://www.skillsfuture.sg/skills-framework/aero</a> >			

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