

SKILLS FRAMEWORK FOR ENGINEERING SERVICES SKILLS MAP – ENGINEER (ENGINEERING DESIGN)			
Sector	Engineering Services		
Track	Engineering Design		
Occupation	Engineering Professional		
Job Role	Engineer (Engineering Design)		
Job Role Description	<p>The Engineer (Engineering Design) develops conceptual, basic and detailed engineering designs based on project requirements. He/She develops front-end engineering design packages and participates in feasibility reviews. He executes engineering calculations to develop technical design specifications. He reviews technical drawings, plans, schematics and material requisition specifications. He also ensures that engineering designs are sustainable and compliant with Design for Safety (DfS) and other regulations. He manages a team of engineering designers and contributes to the improvement of business operations.</p> <p>He is meticulous and detail-orientated. He possesses excellent mathematical, analytical and problem-solving skills. His duties may require him to work on-site to ensure alignment of construction works to engineering designs.</p>		
Critical Work Functions and Key Tasks / Performance Expectations	Critical Work Functions	Key Tasks	Performance Expectations* (For legislated / regulated occupations)
	Develop technical drawings and engineering designs	Develop conceptual designs and Front-end Engineering and Design (FEED) packages based on project requirements	In accordance with: <ul style="list-style-type: none"> • Workplace Safety and Health (WSH) Act; • Building Control Act; • Fire Safety Act
		Execute system design calculations to ascertain equipment specifications	
		Develop detailed design including schematics, technical specifications, test plans, and material requisition	
		Review design drawings and 3D models for feasibility, practicability, and completion timeframe	
		Resolve design and engineering gaps with stakeholders	
		Evaluate applicability of industry standards and international conventions in drawings	
	Employ advanced analytics and big data	Assist in establishing design-related hypotheses for testing through data analysis	
Specify appropriate advanced analytical techniques to create			

		information which supports decision-making				
		Evaluate data analysis findings for technical and business reports				
		Present data analysis results, and technical and business reports to relevant stakeholders				
	Implement sustainable design initiatives	Review design solutions taking into consideration their social, environmental and economic impact				
		Conduct environmental impact assessment and lifecycle cost and benefits analyses for products and systems				
		Recommend environmentally and economically preferable designs and solutions				
		Recommend enhancements to engineering designs to reduce waste and increase efficient use of resources				
		Recommend sustainable design initiatives				
	Adhere to Design for Safety (DfS) regulations	Identify and eliminate foreseeable risks during design and planning phases				
		Ensure relevant safety information for design, construction and maintenance are available to stakeholders				
		Review DfS records in accordance with DfS regulations				
	Manage people and organisational function	Monitor resource availability to support business operations				
		Monitor employee performance by utilising performance management systems				
		Provide inputs on team's recruitment, training and development needs				
		Ensure adherence to planned budgets and financial forecasts				
		Implement risk management plans and risk controls within the team				
		Propose improvements to business processes and operations to drive continuous improvement				
					*Performance Expectations are non-exhaustive and subject to prevailing regulations	
	Skills & Competencies	Technical Skills & Competencies		Generic Skills & Competencies (Top 5)		
		3D Modelling		Level 4	Problem Solving	Intermediate

	Artificial Intelligence Application	Level 3	Creative Thinking	Intermediate
	Building Information Modelling Application	Level 3	Digital Literacy	Intermediate
	Business Presentation Delivery	Level 3	Sense Making	Intermediate
	Change Management	Level 3	Teamwork	Advanced
	Civil and Structural Engineering Management	Level 4		
	Continuous Improvement Management	Level 3		
	Cost Management	Level 3		
	Data and Statistical Analytics	Level 3		
	Design for Safety	Level 4		
	Electrical Engineering Management	Level 3		
	Engineering Drawing and Design Specification	Level 4		
	Engineering Drawing Interpretation and Management	Level 3		
	Engineering Safety Standards Interpretation	Level 3		
	Environmental Management System Framework Development and Implementation	Level 3		
	Front-End Engineering and Design	Level 3		
	Geotechnical Engineering Management	Level 4		
	Hazards and Risk Identification and Management	Level 3		
	Instrumentation and Control Design Engineering Management	Level 3		
	Learning and Development	Level 2		
	Manpower Planning	Level 3		
	Market Research	Level 3		
	Mechanical Engineering Management	Level 3		
	Organisational Resource Management	Level 4		
	Organisational Risk Management	Level 3		

	Programme Management	Level 3	
	Project Risk Management	Level 3	
	Quality System Management	Level 3	
	Reliability Engineering Management	Level 4	
	Staff Management	Level 3	
	Stakeholder Management	Level 3	
	Sustainable Engineering	Level 4	
	Technical Inspection	Level 2	
	Technical Writing	Level 3	
	Technology Application	Level 3	
	Test Planning	Level 4	
	Workplace Safety and Health Framework Development and Implementation	Level 3	
Programme Listing	For a list of Training Programmes available for the Engineering Services sector, please visit: www.skillsfuture.sg/skills-framework/engineeringservices		

The information contained in this document serves as a guide.