

<b>SKILLS FRAMEWORK FOR ENGINEERING SERVICES</b> <b>SKILLS MAP – SENIOR ENGINEER (ENGINEERING DESIGN)</b>						
<b>Sector</b>	Engineering Services					
<b>Track</b>	Engineering Design					
<b>Occupation</b>	Engineering Professional					
<b>Job Role</b>	<b>Senior Engineer (Engineering Design)</b>					
<b>Job Role Description</b>	<p>The Senior Engineer (Engineering Design) oversees the development of conceptual, basic and detailed engineering designs based on project requirements. He/She provides discipline engineering expertise in feasibility and constructability reviews. He validates engineering calculations, design specifications and other design submittals. He optimises engineering designs from a feasibility and practicability perspective. He leverages advanced data analytics to make key design decisions. He also enhances technical designs for sustainable engineering and compliance with Design for Safety (DfS) regulations. He manages a team of engineers and ensures efficient business operations.</p> <p>He possesses analytical, problem-solving and stakeholder management skills. He is able to multi-task in a fast-paced work environment, and may be required to work on-site to ensure alignment of construction works to engineering designs.</p>					
<b>Critical Work Functions and Key Tasks / Performance Expectations</b>	<b>Critical Work Functions</b>	<b>Key Tasks</b>	<b>Performance Expectations* (For legislated / regulated occupations)</b>			
				Develop technical drawings and engineering designs	Review conceptual designs and Front-end Engineering and Design (FEED) packages based on project requirements	In accordance with: • Workplace Safety and Health (WSH) Act; • Building Control Act; • Fire Safety Act
					Review system design calculations and specifications	
					Validate detailed designs including schematics, technical specifications, test plans, and material requisition	
					Validate design drawings and 3D models based on feasibility, practicability, and completion timeframe	
					Advise stakeholders on design and engineering gaps	
	Drive adoption of industry standards and international conventions in drawings					
	Employ advanced analytics and big data	Establish design-related hypotheses for testing through data analytics				
Specify appropriate advanced analytical techniques to create information which supports decision-making						

		Evaluate data analysis findings for technical and business reports			
		Utilise data analytics to make key business decisions			
	Implement sustainable design initiatives	Optimise design solutions to mitigate adverse social, environmental and economic impact			
		Evaluate environmental impact assessment and lifecycle cost and benefits analyses for products and services			
		Validate environmentally and economically preferable designs and solutions			
		Advise on methods to enhance engineering designs to optimise resource usage			
		Validate effectiveness of sustainable design initiatives			
	Adhere to Design for Safety (DfS) regulations	Validate design plans to ensure mitigation of design risks			
		Conduct DfS review meetings with stakeholders			
		Ensure compliance with DfS regulations			
	Manage people and organisational function	Acquire and allocate resources to support business operations			
		Drive team performance to achieve department goals			
		Identify recruitment needs and areas for technical and business management training and development			
		Analyse financial implications of business strategies to daily operations			
		Develop risk management plans and risk controls in alignment with organisation's risk management framework			
		Analyse viability of proposed continuous improvement initiatives and drive change management			
				*Performance Expectations are non-exhaustive and subject to prevailing regulations	
	<b>Skills &amp; Competencies</b>	<b>Technical Skills &amp; Competencies</b>		<b>Generic Skills &amp; Competencies (Top 5)</b>	
		3D Modelling	Level 4	Computational Thinking	Advanced
		Artificial Intelligence Application	Level 4	Decision Making	Intermediate

	Budgeting	Level 3	Digital Literacy	Advanced
	Building Information Modelling Application	Level 4	Problem Solving	Advanced
	Business Performance Management	Level 3	Transdisciplinary Thinking	Advanced
	Business Presentation Delivery	Level 4		
	Change Management	Level 4		
	Civil and Structural Engineering Management	Level 4		
	Continuous Improvement Management	Level 4		
	Cost Management	Level 4		
	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 4		
	Engineering Safety Standards Interpretation	Level 4		
	Environmental Management System Framework Development and Implementation	Level 4		
	Front-End Engineering and Design	Level 3		
	Geotechnical Engineering Management	Level 4		
	Hazards and Risk Identification and Management	Level 4		
	Instrumentation and Control Design Engineering Management	Level 3		
	Learning and Development	Level 3		
	Manpower Planning	Level 4		
	Market Research	Level 3		
	Mechanical Engineering Management	Level 3		
	Organisational Resource Management	Level 4		

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

The information contained in this document serves as a guide.