

**SKILLS FRAMEWORK FOR MARINE AND OFFSHORE
SKILLS MAP - DESIGN ENGINEER**

Sector	Marine and Offshore												
Track	Design and Engineering												
Occupation	Marine Design Engineer												
Job Role	Design Engineer												
Job Role Description	<p>The Design Engineer is responsible for day-to-day designing and engineering activities. He/She develops models and conducts numerical simulations for prototypes and applies automation to concept designs.</p> <p>The Design Engineer should possess a meticulous nature to analyse various factors and calculations involved in ship and rig design. His duties may require working outdoors on the shop floor, within dry docks to support production work and alignment to design specifications. He must possess a level of physical fitness appropriate to the job requirements.</p>												
Critical Work Functions and Key Tasks	Critical Work Functions	Develop technical drawings and design plans	Key Tasks	Performance Expectations (For legislated / regulated occupations)									
					Execute system design calculations to ascertain equipment specifications								
					Validate design data collated by co-workers								
					Develop design plan sketches based on clients' requirements and engineering calculations								
					Create full scale technical drawings using 2D and 3D methods								
					Incorporate details of construction material to be used in production								
	Develop remote operation capabilities	Analyze designs for degree of autonomy or remote operation capability required	Design control systems for a variety of applications	Review programming inputs and guide improvements	Conduct feasibility studies for new programmable equipment								
						Employ advanced analytics and big data	Assist in establishing design-related hypotheses for testing through data analytics	Specify appropriate advanced analytical techniques to create information which supports decision-making	Evaluate analysis findings for technical and business reports				
										Drive innovation and research	Identify areas of energy savings in existing operational processes	Conduct research for green initiatives and other product innovations	Recommend innovation initiatives
	Skills & Competencies	Technical Skills and Competencies		Generic Skills and Competencies (Top 5)									
		Ballast System Design	Level 4	Digital Literacy	Intermediate								
		Big Data Analytics	Level 4	Problem Solving	Basic								
		Cargo System Design	Level 4	Computational Thinking	Intermediate								
		Communication and Navigation System Design	Level 4	Teamwork	Basic								
		Control System Programming	Level 3	Communication	Intermediate								
Cooling System Design		Level 4											
Electrical Drawing		Level 3											
Emergency Response Management		Level 2											
Equipment Drawing		Level 3											
Fuel and Lubrication System Design		Level 4											
Green Ship Design		Level 3											
Heat Transfer System Design	Level 3												
Heating, Ventilation and Air Conditioning System Design	Level 4												

	Innovation Management	Level 3	
	Instrumentation and Control System Design	Level 4	
	Interface Management	Level 4	
	Marine Design Customisation	Level 3	
	Marine Engineering Calculations	Level 3	
	Marine Equipment Material Selection	Level 3	
	Naval Architecture Calculations	Level 4	
	Pipeline Drawing	Level 3	
	Power Generation System Design	Level 4	
	Programme Management	Level 4	
	Project Quality Management	Level 3	
	Propulsion System Design	Level 4	
	Pump and Piping Design	Level 4	
	Quality System Management	Level 3	
	Safety System Design	Level 4	
	Stakeholder Management	Level 3	
	Structural and Arrangement Drawing	Level 3	
	System Architecture Design	Level 4	
	System Configuration Management	Level 4	
	Systems Integration	Level 4	
	WSH Culture Development	Level 2	
	WSH Performance Management	Level 2	
Programme Listing	For a list of Training Programmes available for the Marine and Offshore sector, please visit: www.skillsfuture.sg/skills-framework/marineandoffshore		

The information contained in this document serves as a guide.