DCSBFE613: Use Basic Fluids in Engineering

UNIT CODE		**DCSBFE613**	
UNIT TITLE		**Use basic fluids in engineering**	
APPLICATION		This unit describes the performance outcomes, skills and knowledge required to solve problems relating to fluids involving hydrostatics, conservation of energy and conservation of momentum. The unit of competency is applied by technicians in a structural and civil engineering environment to apply fluid principles to construction projects. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.	
ELEMENTS		**PERFORMANCE CRITERIA**	
Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Relate fundamental properties to fluid characteristics.	1.1	Define fundamental properties of a fluid.
		1.2	Compare at least 3 types of fluid according to their properties.
2	Solve manometer problems.	2.1	Calculate fluid pressure using the appropriate formula.
		2.2	Explain the principle of the hydraulic jack.
		2.3	Calculate the load that can be lifted by a hydraulic jack.
		2.4	Solve U tube manometer problems.
		2.5	Compare advantages and disadvantages of various pressure measuring devices.
3	Apply the energy approach to solving flow measurement problems.	3.1	Classify and explain typical types of fluid motion.
		3.2	Utilise the continuity equation to solve fluid mechanics problems.
		3.3	Use Bernoulli's equation to solve fluid flow problems.
		3.4	Use Bernoulli's equation to determine the theoretical discharge through a flow measuring device.
4	Solve problems involving impact of jets.	4.1	Outline Newton's second law.
		4.2	Use the momentum equation to calculate the forces on flat plates of various inclinations and relative velocities.
		4.3	Determine the forces on vertical and horizontal bends in a pipeline.
FOUNDATION SKILLS Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.			
UNIT MAPPING INFORMATION No equivalent units.			

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TITLE	Assessment requirements for DCSBFE613 Use basic fluids in engineering
PERFORMANCE EVIDENCE	To achieve competency in this unit, a person must satisfy the requirements of the elements and performance criteria, foundation skills and range of conditions included in the unit. The person must also: • carry out computations using fluid principles • solve engineering problems using fluid principles • prepare relevant documentation Note: If a specific volume or frequency is not stated, then evidence must be provided at least once for each criterion.
KNOWLEDGE EVIDENCE	To achieve competency in this unit, a person must demonstrate knowledge of: • basic properties of fluid • Bernoulli Equation for ideal fluids • conservation of mass leading to the Continuity Equation for fluid flow • manometer calculations

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ASSESSMENT CONDITIONS	**Assessment Conditions:** All assessment must be completed in accordance with work health and safety standards. When assessments are conducted remotely, invigilation software must be used to ensure authenticity of work completed. Model answers or marking guides must be provided for all assessments to ensure reliability of assessment judgements when marking is undertaken by different assessors. Assessors must gather a range of evidence that is valid, sufficient, authentic, and current. Questioning techniques must not require language, literacy and numeracy skills beyond those required in this module. The candidate must have access to all tools, equipment, materials and documentation required. **Assessor Requirements:** Assessment must be conducted only by persons who: • hold vocational competencies at least to the level being delivered and assessed • maintain current industry skills directly relevant to the training and assessment being provided • hold a tertiary qualification in engineering or a related field • meet the assessor requirements specified in the current Standards for Registered Training Organisations (RTOs) • undertake ongoing professional development in vocational training, learning, and assessment, including competency-based training and assessment, as required by their RTO. The RTO must also ensure that trainers and assessors keep their industry knowledge up to date through ongoing professional development. The RTO must take appropriate steps, as an ongoing procedure, to verify information about trainer and assessor's qualifications.