DPEPA2606: Pumps and Seals

MODULE DETAILS		**Pumps and Seals DPEPA2606** Nominal duration in hours: 36 This time commitment includes the structured activities, preparation reading, and attendance at each webinar, completing exercises, practical assessments, and proctored assessments. It is also expected that students spend additional time on readings, personal study, independent research, and learning, practicing on remote labs and required software and working on any projects and assignments. This module covers the fundamentals of pump principles and operation, their types and selection based upon performance curve analysis and data. Pump packing and sealing is also covered, including the components and types of seals, and selection according to application.	
MODULE PURPOSE		This module aims for the participants to develop understanding of operating principles and application of pumps, the selection of pumps based upon data from performance curves of pumps, as well as applicable packing and sealing principles.	
MODIFICATION HISTORY		Rev 4.0	
PREREQUISITE AND/OR CO-REQUISITE MODULES		N/A	
SUMMARY OF LEARNING OUTCOMES		1. Outline operating principles and applications for pumps. 2. Interpret performance curves of pumps to assist selection. 3. Outline packing and sealing principles for pumps.	
LEARNING OUTCOMES		**ASSESSMENT CRITERIA**	
Learning outcomes specify what students will be able to do as a result of the learning.		Assessment criteria provide the criteria by which achievement of the learning outcomes will be judged.	
1	Outline operating principles and applications of pumps.	1.1	Classify pump types in general terms
		1.2	Describe operating principles of centrifugal pumps
		1.3	Classify centrifugal pump types
		1.4	Describe the components of centrifugal pumps
		1.5	Identify the operation of pumps in series and parallel
		1.6	Describe the operation of variable speed drive pumps
2	Interpret performance curves of pumps to assist selection	2.1	Explain the criteria applied to analysis of centrifugal pump performance curves
		2.2	Explain the concepts of static and friction head
		2.3	Interpret pump system curves
		2.4	Interpret data from efficiency calculations
		2.5	Justify pump selection based upon performance curve data

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3	Outline packing and sealing principles for pumps	3.1	Outline the purpose and applications of pump seals
		3.2	Describe seal components
		3.3	Compare gland packing with mechanical seals
		3.4	Justify seal selection for pumping applications
DELIVERY MODE		Online and/or face-to-face	
SPECIALISED RESOURCES		N/A	
ASSESSMENT STRATEGY		**METHODS OF ASSESSMENT** Assessors must gather a range of evidence that is valid, sufficient, current, and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, structured assessments, samples, and questioning. This will include short answer questions on the knowledge content, the use of remote and virtual labs, and writing tasks to apply the learning to academic tasks. **CONDITIONS OF ASSESSMENT** **Assessor Requirements:** Assessors must satisfy the assessor requirements in the standards for registered training organisations (RTOs) current at the time of assessment. Assessors must also hold a tertiary qualification in engineering or related field. The RTO must also ensure that assessors are able to demonstrate how they 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 each assessor's qualifications, vocational competencies, and current industry skills. **Assessment Conditions:** Questioning techniques should 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. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals, and reference materials.	

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	Assessments may be open book assessment and may be completed off campus. Invigilation software will be used for some assessments to ensure authenticity of work completed. Model answers and marking guide must be provided for all knowledge-based assessments to ensure reliability of assessment judgements when marking is undertaken by different assessors.