

**ADVANCED DIPLOMA OF PLANT ENGINEERING**

<p><b>MODULE DETAILS</b></p>	<p><b>Module 6: Mechanical Equipment and Technology</b></p> <p>Nominal duration: 6 weeks (48 hours total time commitment)</p> <p>This time commitment includes the preparation reading, attendance at each webinar (1 hour plus 15-30 minutes for discussion), and the time necessary to complete the assignments and further study.</p>
<p><b>MODULE PURPOSE</b></p>	<p>To equip the participants with the necessary knowledge to evaluate the selection, design, performance and load considerations of gears, couplings, bearings, belts, chains, clutches and brakes as well as the operating principles of agitators and mixers.</p>
<p><b>PRE-REQUISITE MODULE(S)</b></p>	<p>Module 5: Fundamentals of Professional Engineering</p>
<p><b>ASSESSMENT STRATEGY / CONDITIONS OF ASSESSMENT</b></p>	<p>To evaluate the achievement of the learning outcomes; written assignments, group projects and practical exercises are set. The Training and Assessment Matrix (TAM) documents the assessment criteria included in these assessments, based on the learning outcomes. The Training and Assessment Strategy (TAS) documents the overall training strategy for this Advanced Diploma course. The conditions of assessment are outlined in the Assessment Guidelines, TAM and TAS. Written assignments, group projects and practical exercises are required to meet assessment criteria outlined in the Assessment Guidelines, TAM and TAS.</p>
<p><b>SUMMARY OF LEARNING OUTCOMES</b></p>	<ol style="list-style-type: none"> <li>1. Examine and discuss the characteristics and application of gears, couplings and bearings</li> <li>2. Discuss shaft alignment and rotor balancing</li> <li>3. Examine the attributes and selection criteria for belt, and chain drives</li> <li>4. Outline the operation and performance criteria for brakes and clutches</li> <li>5. Describe the design and operation of agitators and mixers</li> </ol>

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	6. Examine and discuss the fundamentals and functions of materials handling systems	
	7. Describe commonly used materials handling equipment	
<b>Learning Outcome 1</b>	<b>Examine and discuss the characteristics and application of gears, couplings and bearings</b>	
<b>Assessment Criteria</b>	1.1	Examine the (a) attributes, (b) selection and (c) maintenance of the various types of gears
	1.2	Describe the characteristics of the various types of couplings
	1.3	Examine the (a) classification, (b) selection and (c) loading and (d) maintenance of the various types of bearings
<b>Learning Outcome 2</b>	<b>Discuss shaft alignment and rotor balancing</b>	
<b>Assessment Criteria</b>	2.1	Discuss shaft alignment principles and procedures
	2.2	Discuss rotor balancing concepts, methods and equipment
<b>Learning Outcome 3</b>	<b>Examine the attributes and selection criteria for belt and chain drives</b>	
<b>Assessment Criteria</b>	3.1	Examine the types, selection, materials and service factors of belt drives
	3.2	Examine the types, selection, maintenance and service factors of chain drives
<b>Learning Outcome 4</b>	<b>Outline the operation and performance criteria for brakes and clutches</b>	
<b>Assessment Criteria</b>	4.1	Outline the classification and types of clutches
	4.2	Outline brake attributes, performance and selection
<b>Learning Outcome 5</b>	<b>Describe the design and operation of agitators and mixers</b>	
<b>Assessment Criteria</b>	5.1	Describe the types of mixers and their principle of operation
	5.2	Describe agitator design and operation

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<b>Learning Outcome 6</b>	<b>Examine and discuss the fundamentals and functions of materials handling systems</b>	
<b>Assessment Criteria</b>	6.1	Discuss the fundamentals of materials handling
	6.2	Examine the materials handling functions viz. (a) receipt, (b) transport, (c) storage, and (d) distribution
<b>Learning Outcome 7</b>	<b>Describe commonly used materials handling equipment</b>	
<b>Assessment Criteria</b>	7.1	Describe the attributes of commonly used materials handling equipment viz. (a) conveyors, (b) elevators, (c) hoists, and (d) cranes

**Delivery mode**

A combination of asynchronous and synchronous e-learning delivery comprising a judicious mix of interactive online web conferencing, simulation (virtual labs) software, remote online labs, online videos, PowerPoint slides, notes, reading and study materials (in PDF, HTML and Word format) accessed through the Moodle Learning Management System (LMS).