



## ADVANCED DIPLOMA OF ELECTRICAL AND INSTRUMENTATION (E&I) ENGINEERING FOR OIL AND GAS FACILITIES

### MODULE DETAILS

### MODULE 17: Control Valve Sizing, Selection and Maintenance

Nominal duration: 3 weeks (24 hours total time commitment)

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.

### MODULE PURPOSE

This module covers the essentials of process control as well as tools to optimize the operation of plants and processes, including the ability to perform effective loop tuning. The module is aimed at engineers and technicians who wish to have a clear, practical understanding of the essentials of process control and loop tuning, as well as how to optimize the operation of their particular plant or process.

### PRE-REQUISITE MODULES/UNIT(S)

Module 15: Process Control

### ASSESSMENT STRATEGY

To evaluate the achievement of the learning outcomes; written assignments, group projects and practical exercises are set.

### SUMMARY OF LEARNING OUTCOMES

1. Outline the essentials and capabilities of control valves [17.1]
2. Describe the sizing, actuation, and essential accessories of control valves [17.2]
3. Discuss the material, standards, applications, maintenance and installation of control valves [17.3]



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<b>Learning Outcome 1</b>	<b>Outline the essentials and capabilities of control valves</b>	<b>[17.1]</b>
<b>Assessment Criteria</b>	1. Discuss the basic theory of control valves	[17.1.1]
	2. Distinguish between the different types of control valves	[17.1.2]
	3. Examine and discuss the characteristics of control valves	[17.1.3]
	4. Discuss issues related to high pressure drop applications of control valves	[17.1.4]
<b>Learning Outcome 2</b>	<b>Describe the sizing, actuation, and essential accessories of control valves</b>	<b>[17.2]</b>
<b>Assessment Criteria</b>	1. Use computer programs for valve sizing	[17.2.1]
	2. Discuss examples of high pressure drop applications	[17.2.2]
	3. Examine and discuss the construction and application of:	
	(a) Actuators	[17.2.3]
	(b) Positioners	[17.2.4]
	(c) Pneumatic circuits	[17.2.5]
<b>Learning Outcome 3</b>	<b>Discuss the material, standards, applications, maintenance and installation of control valves</b>	<b>[17.3]</b>
<b>Assessment Criteria</b>	1. Discuss the materials used for control valves	[17.3.1]
	2. Discuss quality standards applicable to control valves	[17.3.2]
	3. Discuss considerations for severe service applications of control valves	[17.3.3]
	4. Describe the operation of pressure relief valves	[17.3.4]
	5. Examine and discuss installation and maintenance issues related to control valves	[17.3.5]



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### **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, Power Points, notes, reading and study materials (in pdf, html and word format) accessed through the Moodle Learning Management System (LMS).