MODULE DETAILS	**Module 4: Fundamentals of Process Plant Layout and Piping Design** Nominal duration: 3 weeks (36 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 fundamental principles and concepts used in process plant layout and piping design.	
PRE-REQUISITES MODULE, UNITS / **CO-REQUISITES**	Module 3	
ASSESSMENT STRATEGY	To evaluate the achievement of the learning outcomes; written assignments, group projects and practical exercises are set.	
SUMMARY OF LEARNING OUTCOMES	1. Interpret plant layout and associated documentation 2. Outline the equipment used in process plants 3. Interpret and create plant and piping drawings/documentation 4. Outline the basics of pipe and piping system components	
Learning Outcome 1	**Interpret plant layout and the associated documentation**	
Assessment Criteria	1.1	Explain the composition of chemical plants in terms of layout and workflow
	1.2	Interpret chemical processing methods in terms of their Process Flow Diagrams (PFDs)
	1.3	Interpret plant designs in terms of Process and Instrumentation Diagrams (P&IDs)

Learning Outcome 2	**Outline the equipment used in process plants**	
Assessment Criteria	2.1	Outline the equipment used in process plants, with specific reference to: (a) Process equipment (b) Mechanical equipment (c) Equipment drawings (d) Equipment foundations and supports
Learning Outcome 3	**Interpret and create plant and piping drawings/documentation**	
Assessment Criteria	3.1	Examine the following plant and piping design tools: (a) Drawings (b) Lists (c) Isometrics (d) Bills of Material (BoM) (e) 3D models (f) Specifications and codes
	3.2	Create a simple plot plan drawing
	3.3	Design a basic piping system drawing
Learning Outcome 4	**Outline the basics of pipe and piping system components**	
Assessment Criteria	4.1	Examine the fundamentals of pipes, with specific reference to: (a) Materials (b) Dimensions (c) Joining methods (d) Representation (e) Common abbreviations

	4.2	Examine the basics of individual piping system components, with specific reference to: (a) Fittings (b) Flanges (c) Valves and their associated components (d) Pipe support systems
	4.3	Examine the basics of pipe routing, with specific reference to: (a) Isometrics (b) Plans, sections and elevations (c) 3D representation
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).		