NAPTA Learning Outcomes (aka Student Learning Outcomes)

NAPTA Course	NAPTA Learning Outcome
Introduction to Process Technology	1. Recognize various process industries.
	2. Identify process technician skills.
	3. Recognize basic process technician knowledge related to physics, chemistry, and process drawings.
	4. Recognize equipment used in process industries (such as: piping, valves, vessels, pumps, compressors, turbines, motors, heat exchangers, cooling towers, furnaces, boilers, and distillation towers.)
	5. Recognize process utilities, process auxiliaries, and instrumentation.
Process Technology Equipment	1. Identify process equipment and tools (such as: process drawings, tools, piping, gaskets, tubing, hoses, fittings, and valves).
	2. Identify movers and drivers (such as: pumps, compressors, turbines, motors, engines, power transmission, and lubrication).
	3. Identify heating and cooling equipment (such as: heat exchangers, cooling towers, furnaces, and boilers).
	4. Identify vessels (such as: tanks, pressure vessels, reactors, filters, and dryers.)
	5. Identify miscellaneous equipment (such as: solid handling equipment, environmental control equipment, and auxiliary equipment.)
Process Instrumentation	1. Identify process variables, elements and instrumentation used to measure pressure, temperature, level, flow and analytics.
	2. Identify symbology, hardware, and instrumentation signal transmission. instruments are used to sense, measure and transmit this information to the control system.
	3. Draw a control loop.
	4. Identify and troubleshoot instrumentation malfunctions. their interrelationships.
	5. Describe how a control loop works.
Process Systems	1. Recognize types of process systems such as: water systems, wastewater systems, gas systems, and electrical power distributions systems.
	2. Recognize types of process systems such as: storage and blending systems, steam systems, combustion systems, and refrigeration systems.
	3. Recognize types of process reactor systems such as: basic reactor systems fundamentals, batch reactor systems, and continuous reactor systems.
	4. Recognize types of process systems such as: furnace systems, filtration systems, and adsorption systems.
	5. Recognize types of process systems such as: distillation systems, extraction systems, and absorption and stripping systems. interaction among the various pieces of equipment within these systems.
	6. Recognize Safety, Health, and Environment concerns in Process Systems.

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Safety, Health, and Environment	1. Identify process industry types of hazards and their effects. 2. List various hazard controls for various hazards (such as: engineering controls, administrative controls, and PPE). discuss methods of applying these controls. 3. Identify monitoring equipment and its use. 4. Discuss emergency response for fire, for rescue, and emergency response equipment. 5. Identify various safety agencies promoting safety of plant personnel in process industry.
Process Operations	1. Describe process technician on the job training and duties.
	2. Draw and interpret process drawings.
	3. Describe or demonstrate a LOTO for a pump or valve.
	4. Write a standard operating procedure.
	5. Describe or demonstrate proper process technician communications (radio, relief, logbook).
	6. Demonstrate a process unit start up and/or shut down.
Process Quality	1. Identify process industry quality concepts.
	2. Identify process industry continuous improvement strategies.
	3. Identify process industry group problem solving strategies or methods.
	4. Identify variability, control charts, and process capability tools or methods.
	5. Interpret charts related to product quality in process technology (collect data for control charts). corrective and/or preventative action(s).
Process Troubleshooting	1. Identify a controller's mode: cascade, auto, manual, or by-passed.
	2. Identify the steps to troubleshoot.
	3. List the troubleshooting tools a board operator can use. effectively.
	4. Demonstrate troubleshooting on various scenarios where process equipment fails occur. Such as pump fails, valve failures, temperature issues, cooling tower issues, fin fan issues, distillation scenarios, furnace scenarios, and troubleshooting scenarios that occur during start-up or shutdown.