

Classes begin in January 2022

See below for program details and schedule.

Introduction to Process Technology - Short Certificate

This short certificate consists of five courses providing an introduction to Process Technology. The Introduction to Process Technology Short Certificate additionally provides a continuing educational pathway to Bishop State's Associate in Applied Science (AAS) degree in Process Technology Operation.

The Process Technology Short Certificate prepares individuals to monitor and operate equipment used in the processing of raw material into marketable chemical/petrochemical and other processed related products. This includes instruction in materials handling, extraction, distillation, evaporation, drying, absorption, heat transfer, instrumentation and reaction processes. The program emphasizes safe and efficient work practices, basic occupational skills and employability skills.



Course #	Course Name	Credits
INT 129	Industrial Safety and Maintenance Techniques	3

This course provides instruction in basic maintenance techniques and safety. Topics include drawing, sketching, basic hand tools, portable power tools, stationary power tools, measurement, screw threads, mechanical fasteners, machinery and equipment installation, rigging, and their proper safe operations. This course utilizes the North America Process Technology Alliance (NAPTA) Process Safety, Health & Environment curriculum resulting in the following outcomes.

1. Recognize and identify the various types of Safety, Health and Environmental hazards in a plant environment and discuss the consequences of these hazards.
2. Demonstrate knowledge of the various types of hazard controls (administrative, engineering, personal protective equipment) and discuss methods of applying these controls.
3. Identify the fourteen elements of PSM (Process Safety Management) and discuss how they work together for the safety of plant personnel.
4. Discuss how to respond to various types of emergencies (fires, spills, vapor releases, natural disasters, etc.).
5. Discuss the vulnerabilities, risks and threats associated with the process industries (terroristic, cyber security, workplace violence, suspicious activities, etc.).

Course #	Course Name	Credits
IST 167	Industrial Measurements	3
<p>Methods of measuring flow, level, temperature, pressure and moisture, as well as pH and other analyzers are covered. Subjects include correct and safe operation of test equipment, test equipment set-up, calibration, operation of electronics measuring devices, loop simulation, equipment used in the measurement of basic process variables, P&ID diagrams, and loop sheets. Upon completion, students will demonstrate the ability to calibrate and operate basic pressure, level, temperature, low, and analytical devices and will also have a basic understanding of P&ID diagrams. This course utilizes the North America Process Technology Alliance (NAPTA) Process Quality curriculum resulting in the following outcomes.</p> <ol style="list-style-type: none"> 1. Describe the effects of the quality movement in the United States and how it has impacted economics and customer expectations. 2. Explain the importance of everyone understanding and following procedures, policies and documentation (checklists, log books, etc.) to ensure operating consistency, reduce process variability and waste, and to prevent environmental and safety incidents. 3. Describe continuous improvement and explain how it is used to optimize processes and/or resolve operational issues. 4. Prepare, analyze, and interpret information using process data, control charts and Quality Tools (QT). 5. Given a process scenario, use the team concept to prepare control charts, analyze data and interpret information to determine corrective and/or preventative action(s). 		

Course #	Course Name	Credits
PCT 122	Introduction to Process Technology	3
<p>This course provides a basic orientation for operators in the chemical process industries and introduces many of the terms and ideas which will be encountered in the workplace. Topics include operator roles, responsibilities, expectations, terminology, liabilities, chemistry, physics, basic plant equipment, general product handling, flow diagrams, utility systems, plant organization, and the basics of process control. Upon completion, students should have a general knowledge of the tasks, responsibilities, skills and attitude necessary to be a chemical operator in a process industry. This course utilizes the North America Process Technology Alliance (NAPTA) Introduction to Process Technology curriculum resulting in the following outcomes.</p> <ol style="list-style-type: none"> 1. Students will identify and describe the various process industries and the roles, responsibilities, and expectations for the process technician. 2. Students will be able to identify and describe basic equipment used in process industries. 3. Students will be able to describe the importance of quality, safety, health and environment to the process industry. 4. Students will be able to read and interpret basic process industry drawings. 5. Students will demonstrate the ability to apply basic concepts of Chemistry and Physics within process industries. 		

Course #	Course Name	Credits
PCT 220	Process Technology II - Systems	3
<p>This course is a study of the interrelations of process equipment and process systems. Students will be able to arrange process equipment into systems; describe the purpose and function of specific process systems, explain how factors affecting process systems are controlled under normal conditions, and recognize abnormal process conditions. Students are also introduced to the concept of system process control manufacturing plant process economics. This course utilizes the North America Process Technology Alliance (NAPTA) Process Systems curriculum resulting in the following outcomes.</p> <ol style="list-style-type: none"> 1. Describe and utilize process drawings, process controls, and energy/material balances associated with process systems. 		

2. Identify and explain the combinations of equipment into typical unit operations (reaction and separation systems) and the relationships among the different pieces of the equipment.
3. Identify and explain the combinations of equipment into common utility systems (cooling, heating, gas, etc.) and how they support the various unit operations within a plant.
4. Discuss the specific safety, health, and environmental concerns (examples: relief and flare systems, emergency shutdowns, etc.) associated with process systems.
5. Demonstrate an understanding of the operator's responsibilities for the safe and efficient operation of systems, including the interaction among the various pieces of equipment within these systems.

Course #	Course Name	Credits
PCT 115	Instrumentation I	3
<p>This course covers process variables and various instruments used to sense, measure, transmit and control these variables. It introduces the student to control loops and the elements that are found in different types of loops such as controllers, regulators and final control elements. It concludes with a study of instrumentation drawings and diagrams, and a unit on troubleshooting instrumentation. This course utilizes the North America Process Technology Alliance (NAPTA) Process Instrumentation curriculum resulting in the following outcomes.</p> <ol style="list-style-type: none"> 1. Using knowledge of symbols, process diagrams and instrumentation, sketch a simple process diagram, including control loops. 2. Describe the various process variables (flow, level, pressure, temperature, analytical, etc.) found in a plant and explain how instruments are used to sense, measure and transmit this information to the control system. 3. Identify the types of control loops (simple and complex) and explain their operation. 4. Identify the components of a closed control loop (primary element, transmitter, controller, transducer, final element) and explain their interrelationships. 5. Demonstrate an understanding of the operator's responsibilities for the safe and efficient operation of systems, including the interaction among the various pieces of equipment within these systems. 		

Contact

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See upcoming schedule (nights) below.