



## **SYLLABUS**

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**CATALOG DESCRIPTION:** THIS COURSE INTRODUCES THE STUDENT ON THE USAGE OF COMMON PROCESS EQUIPMENT. APPROPRIATE TERMINOLOGY AND IDENTIFYING PROCESS EQUIPMENT COMPONENTS SUCH AS PIPING AND TUBING, VALVES, PUMPS, COMPRESSORS, TURBINES, MOTORS AND ENGINES, HEAT EXCHANGERS, COOLING TOWERS, HEATERS AND FURNACES, BOILERS, FILTERS AND DRYERS AND VESSELS. INCLUDED ARE BASIC FUNCTIONS, SCIENTIFIC PRINCIPLES AND SYMBOLS. STUDENTS WILL IDENTIFY COMPONENTS ON TYPICAL PROCESS FLOW DIAGRAMS, PIPING AND INSTRUMENT DIAGRAMS.

Prerequisites:

None

Semester Offered: All

### **Common Student Learning Outcomes**

*Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in...*

#### **BROAD AND SPECIALIZED LEARNING**

Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

#### **CRITICAL THINKING**

Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

#### **CULTURAL AND CIVIC ENGAGEMENT**

Students will act purposefully, reflectively, and ethically in diverse and complex environments.

#### **EFFECTIVE COMMUNICATION**

Students will exchange ideas and information with clarity in multiple contexts.

#### **INTEGRATING TECHNOLOGIES**

Students will demonstrate fluency in the application and use of technologies, information, or resources in multiple contexts.

*Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Assessment website ([www.sanjuancollege.edu/assessment](http://www.sanjuancollege.edu/assessment)).*

## **Course Learning Outcomes**

Upon successful completion of the course, the student will be able to...

1. Identify the various types of valves used in the Process Industry. Provide examples of the types of applications the various valves are used in.
2. Identify various types of pumps. Student will have the ability to describe the function of the different components of a pump. Describe how to monitor pump operation.
3. Describe the procedures that need to take place before putting a pump into service.

4. Describe how different types of compressors function. Be able to list the different components of a compressor.
5. Identify various types of heat exchangers. Describe the flows into and out of a typical heat exchanger and the heat exchange principles taking place.
6. Identify the different types of cooling towers, locate the individual components and describe the function of the component.
7. Explain the function of a boiler and a furnace. Locate the different parts of each and describe their function.
8. Explain the functions of filters and dryers. Describe how they work and what duties an operator has in monitoring their operation.
9. Recognize different types of vessels used in the Process Industry and be able to give a general description of what their function is
10. Be able to read a Process Flow Diagram, recognize the major pieces of equipment in the diagram and the various control loops.
11. Be able to follow the basic flow path of a process using a Piping & Instrumentation Diagram and be able to identify the major pieces of equipment on the diagram.