PTEC C113: PROCESS TECHNOLOGY 1: EQUIPMENT

Item	Value
Curriculum Committee Approval Date	11/16/2007
Top Code	099900 - Other Engineering and Related Industrial Technologies
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)

Course Description

This course provides an introduction into the field of equipment within the process industry including industry-related equipment components, operation, and troubleshooting. ADVISORY: PTEC C110. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Describe the function of process control equipment.
2. Design a Flow Diagram Process outlining the path of resources through production and ending with the final products.
3. Assess equipment needs based on a given scenario.

Course Objectives

- 1. Describe the operation of process control equipment including: o Analyzer, Transmitter, Detector, Control loop, Flow indicator, Transducer,Pressure control valve, Recorders, Pressure alarm.
- 2. Operate process equipment and systems
- 3. Define health, safety, and environmental standards in the plant
- 4. Troubleshoot process equipment malfunctions and abnormalities
- 5. Explain the operation of plant equipment and systems
- 6. Analyze plant reaction systems.
- 7. Demonstrate maintenance procedures in process equipment and systems.

Lecture Content

EQUIPMENT TOOLS PIPING, TUBING, HOSES, FITTINGS Selection and Sizing Criteria Troubleshooting VALVES AND PUMPS Maintenance Centrifugal pumps Positive Displacement COMPRESSORS Operating Principles Safety and Environmental Issues MOTORS AND ENGINES Operating Principles Troubleshooting TURBINES POWER TRANSMISSIONS AND LUBRICATION Types of Lubricants Gear and Bearing Ratios HEAT EXCHANGERS Applications Operating Principles COOLING TOWERS FURNACES BOILERS FILTERS AND DRYERS VESSELS Operating Principles Components Types PROCESS DIAGRAMS

Method(s) of Instruction

- Lecture (02)
- DE Online Lecture (02X)

Instructional Techniques

A variety of instructional techniques will be employed to address different student learning styles. These may include, but are not limited to, lecture, discussion, projects and small group activities. Instruction will be supplemented, where appropriate, by digital media presentations and simulations, industry resources and guest speakers.

Reading Assignments

Complete reading assignments assigned from the textbook, supplemental readings, handouts, internet resources, and any assignments from Coastlines Library.

Writing Assignments

Weekly projects, plans, revisions, discussion topic responses that will demonstrate skills application through authentic projects.

Out-of-class Assignments

Read/View the required materials, conduct appropriate research, prepare documents/plans, complete and revise projects, and prepare for quizzes/exams.

Demonstration of Critical Thinking

Identify and apply the appropriate quality management policies, procedures and guidelines to demonstrate quality control competency.

Required Writing, Problem Solving, Skills Demonstration

Weekly projects, plans, revisions, written reviews/critiques and discussion topic responses that will demonstrate skills application and problem solving skills through authentic projects.

Eligible Disciplines

Electromechanical technology (industrial mechanical technology): Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience. Environmental technologies (environmental hazardous material technology, ha...: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience. Industrial technology (foundry occupations): Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience. Mining and metallurgy (oil field operations): Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

Textbooks Resources

1. Required Thomas, C. Process Technology Equipment Systems, 4th ed. 9781285444581: Pearson, 2010 Rationale: - Legacy Textbook Transfer Data: Legacy text

Other Resources

1. Coastline Library