PTEC C117: INSTRUMENTATION 2

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

The purpose of this course is to study the advanced instrumentation used in the petrochemical and refining industries. Students will be able to select instrumentation loops and describe industrial processes controls. ADVISORY: PTEC C116. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Evaluate monitoring control output signals and recommend adjustments to the process based on that output.
2. Given a basic description of a process and a PID of its ESD Systems, select appropriate emergency shutdown devices.

Course Objectives

- 1. Given a PID identify key process variables that should be monitored.
- 2. Define terms associated with miscellaneous measuring devices such as load cells, density, vibration, rotational speed, amperage and decibels.
- 3. Given a drawing or actual device, identify and describe the operation of the following: local controller, remote controller, split-range controller, ratio controller, Cascade/Remote Set Point (RSP) controller.

Lecture Content

REGULATORS, SWITCHES, RELAYS AND ENUNCIATOR SYSTEMS SIGNAL TRANSMISSION AND CONVERSION Controllers Control Schemes Digital Control Programmable Logic Control Distributed Control Systems Instrumentation Power Supply Emergency DIGITAL CONTROL PROGRAMMABLE LOGIC CONTROL DISTRIBUTED CONTROL SYSTEMS INSTRUMENTATION POWER SUPPLY INSTRUMENTATION MALFUNCTIONS EMERGENCY SHUTDOWN SYSTEMS (ESD) Interlocks Protective Devices

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 Center for Advancement of Process Tech. Instrumentation, 1 ed. 9780137004133: Pearson, 2010 Rationale: - Legacy Textbook Transfer Data: Legacy text

Other Resources

1. Coastline Library