Course Outline

Course Title: Introduction to Process Control
Semester Course Prefix and Number: PAS 1275
Old Quarter Course Prefix and Number: 
Number of Credits: 2
Semester(s) Offered: Spring
Class Size: 24
Negotiated by AASC on: (date)

Course Purpose Code:

- 0 - Developmental Courses
- 1 - Non-transferable, General Education
- 2 - Technical course related to career programs
- 3 - College course which has the primary goal of applying certain concepts (e.g. vocal ensemble)
- 4 - Other college course not considered a part of general education (MNTEC) (e.g. computer science, health, physical education)
- 5 - Course which is intended to fulfill the Minnesota Transfer Curriculum (MNTEC) requirements or intended for transfer.
- 9 - Continuing Education/Customized Training specialized credit course (not occurring in 0-5)

Catalog Description:

This course is an introduction to industrial process control. The course will cover basic definitions, types of control, symbols and units, instruments used in control, and elementary control loop design. The course will identify the duties and tasks performed by instrumentation technicians. The course is a prerequisite to additional instrumentation courses offered by Mesabi Range College.

Prerequisites and/or recommended entry skills/knowledge:

Course Prerequisite(s): EIAT/PAS 1253, EIAT/PAS 1233, EIAT/PAS 1243, EIAT/PAS 1295, & EIAT/PAS 1244
Reading Prerequisite: None
Composition Prerequisite: None
Mathematics Prerequisite: None

Career Programs and Transfer Majors Accessing this Course:

Process Automation Systems Diploma
Process Automation Systems AAS

Minnesota Transfer Curriculum Goal(s) partially met by this course if applicable:
(Notes: No more than two goals may be met by any one course. Curriculum Committee review and the Chief Academic Officer's approval are required.)

0. X None
1. ____ Communications
2. ____ Critical Thinking
3. ____ Natural Sciences
4. ____ Mathematical/Logical Reasoning
5. ____ History and the Social and Behavioral Sciences
6. ____ The Humanities and Fine Arts
7. ____ Human Diversity
8. ____ Global Perspectives
9. ____ Ethical and Civic Responsibility
10. ____ People and the Environment

PAS 1275 Intro to Proc Control
**Learning Outcomes:** (including any relevant competencies listed in the Minnesota Transfer Curriculum)

Following the completion of this course the student will be able to demonstrate the ability to:

1. identify the stages of control functions
2. define process control
3. define terms used in process control
4. define what a process is and give examples of processes.
5. describe and give examples of process parameters.
6. list and describe the fundamental stages of control functions.
7. define process control and terminology.
8. identify the terms associated with the components of control systems.
9. identify the function, purpose and location of different instruments in a control loop.
10. identify instruments for making physical and chemical measurement
11. describe the method used to convert physical/chemical action or effects
12. define terms used to describe instrument characteristics
13. identify the functions of transducers in control loops.
14. identify functions provided by signal conditioners.
15. identify types of signals used to transmit information in control loops.
16. describe "Smart Transmitters" advantages over conventional transmitters.
17. identify the terms associated with final control elements.
18. identify and describe the operation of final control elements.
19. describe methods and devices used to actuate final control elements.
20. describe the operation and use of signal conditioners for final control elements.
21. describe the operation of controllers.
22. describe the different types of control modes.
23. identify the basic input and output of controllers.
24. define tuning parameters.
25. diagram four types of control loops.
26. associate each type of control loop to specific control applications.
27. identify symbols and diagrams used in process control to illustrate the type, application, and location of instruments.
28. identify instrument drawing connection lines used to define the types of signals that interconnect instrumentation devices.
29. identify logic symbols defining the function of relays, transmitters and controllers.
30. identify symbols representing primary and final control elements.
31. Identify types of wire used for instrumentation.
32. Identify environmental problems that can effect instrument signals.
33. Identify proper techniques and wiring practices for instrumentation wiring.
34. Lay-out wiring for control loops.

**Student Assessment Methods:**

Lab assignments, worksheets, papers, and tests.

**Use of Instructional Technology:** (includes software, interactive video and other instructional technologies):

PLCs, Programming software, and analog devices.

**Outline or Statement of Major Course Content:**

This course will focus on the basic applications of process control. The course will identify terminology used in process control, the types of process control, identify common measured variables, and equipment used for measurement and control.

**Additional Special Information:** (special fees, directives on hazardous materials, etc.)

Laptop Computer Lease
Transfer Information:  (Please list colleges/majors that accept this course in transfer.)

None

Approvals:

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Distribution:  Original – Administrative Office
Copies:  Curriculum Committee Chair, AASC Chair, Transfer Specialist, Originating Faculty Member, Scheduler, Records, Student Services, Learning Center, Library
Revised:  October 2006