

PRT 121 – Instrumentation I
Fall Semester 2008

Class Time and Location: Monday & Wednesday: 5:30 to 6:45 PM – A116

Course Description: *Process Instrumentation I* is the first course of a two-semester sequence which involves the study of the instruments and their integration into instrument systems used in petroleum refining, petrochemical and chemical processing, including terminology, symbols, data highways, input-output, and basic troubleshooting.

Process Instrumentation I is intended to introduce the student to the fundamentals of control. The material is not intended for the student to be able to repair instruments. It is intended for the students to understand how the instruments work and to identify malfunctions within the process operations. Should the student desire to advance their knowledge, this course would be a solid basic course upon which to continue building their instrument-engineering career.

Course Objective:

At the end of this course, students are expected to know the following:

- How to understand the instrumentation symbols on P&IDs, as well electrical diagrams
- What are control loops, their dynamics, and how they are controlled
- Understanding and recognizing the major kinds of measuring devices
- What are final control elements, control valves, and how they are function
- The basics of controller operation and modes
- The basics of controller tuning

Students are also expected to develop an awareness of the overall role of instrumentation in Process Technology.

Required Materials:

- Instrumentation (Pearson Custom Publishing)
- A calculator (example TI-83)
- A three-ring binder for handouts and notes
- Access to a Personal Computer and the Internet

Grading:

There will be a minimum of **four** in-class tests that will **each** count as fifteen (15) percent of the final grade. Quizzes, Homework assignments, and Class Participation will collectively count as twenty (20) percent of the final grade. The final exam will be a comprehensive exam that will count as twenty (20) percent of the overall grade. The dates of the tests have already been tentatively scheduled. If you miss a test, you must present a doctor's certificate in order to receive a makeup. No other make-ups will be given. An unexcused absence during a test will result in a grade of zero. Missing the final exam will result in a grade of zero. Late homework scores will be reduced by 15% for each class day late (unless a doctor's certificate is presented). The Course Outline shows the various different assignments. These are subject to change on the day that they are assigned. The due date for the Homework will be the next class period. Homework will be accepted, and not late, if it is sent to either of my home email address before midnight on the day that it is due. Pop quizzes, if and when given, are just that, "pop" quizzes – therefore a missed pop quiz is not made-up. Homework determined to be copied will result in both papers being

scored zero. Homework that appears to be copied will result in both papers being presented to Professor Douglas for investigation.

Summary of how your Final Grade will be determined:

Four (4) in-class Tests	- 60 Percent (%)
Quizzes/Homework Assignments/Class Participation	- 20 Percent (%)
Final Exam	<u>- 20 Percent (%)</u>
	100 %

Grading Scheme showing assignment of letter grades:

95- 100	A	90 -94	A-		
87 - 89	B+	83 - 86	B	80 - 82	B-
77 - 79	C+	73 - 76	C	70 - 72	C-
65 - 69	D+	60 - 64	D	0 - 59	F

Course Requirements:

Classes are scheduled for Mondays and Wednesdays from 5:30 to 6:45 P.M. **All** students are required to attend class **regularly and punctually**. Students are also expected to participate fully in class discussions and problem solving sessions.