

ELC 213 INSTRUMENTATION

COURSE DESCRIPTION:

Prerequisites: ELC 112 or ELC 131

Corequisites: None

This course covers the fundamentals of instrumentation used in industry. Emphasis is on electric, electronic, and other instruments. Upon completion, students should be able to install, maintain, and calibrate instrumentation. Course Hours Per Week: Class, 3. Lab, 2. Semester Hours Credit, 4.

LEARNING OUTCOMES:

A student that successfully completes this course will be able to:

- a. Explain, discuss and describe the principles and theories related to basic process control instrumentation.
- b. Read and analyze instrumentation diagrams.
- c. Design a simple instrumentation system.

OUTLINE OF INSTRUCTION:

- I. The nature of process control
 - A. Measuring
 - B. Comparing
 - C. Computing
 - D. Correcting

- II. Elements of process control
 - A. Measuring variables
 - B. Analog signals
 - C. Digital Signals
 - D. Open and closed loop control

- III. Process control signals
 - A. Analog and digital signals
 - B. Linear signals
 - C. Non-linear signals
 - D. Signal errors
 - E. Signal transmission
 - F. Control loops

- IV. Instrumentation drawings
 - A. Tag numbers
 - B. Drawing symbols
 - C. P&ID
 - D. Loop diagrams
 - E. Location drawings
 - F. Wiring diagrams

- V. Using diagrams in process control
 - A. Flowcharts
 - B. Electrical diagrams
 - C. PLC diagrams

REQUIRED TEXTBOOK AND MATERIAL:

Stafford, Todd. Fundamentals of Instrumentation. Thomson/Delmar Learning.

STATEMENT FOR STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 686-3652 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.