

# Dakota County Technical College

## ETSA 1531: Process Controls/Instrumentation I

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 2

Lab Hours/Week: 1

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course covers the fundamental principles of process measurement and control equipment and systems. Students will acquire the knowledge required to read and interpret piping and instrument diagrams, understand the terminology and language of control systems, and control strategies. Students will be introduced to a variety of instruments commonly used in industry for measurement and control.

**B. COURSE EFFECTIVE DATES:** 09/08/2010 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

### D. LEARNING OUTCOMES (General)

1. define terms used in process control such as open and closed loop control, scaling, and proportional, integral and derivative (PID) control
2. describe and apply proper safety procedures for working with process systems
3. describe the application of sensors such as RTD's, thermistors, capacitive level and pressure sensors, and flow meters
4. describe the operation and application of transmitters and transducers
5. describe the operation and applications of final control elements such as heaters, valves, and pumps
6. describe the operation of on/off, proportional and time-proportional control loops
7. perform conversions between measurement units, sensor units, output units and display units using both English and Metric units
8. read piping & instrumentation diagrams

### E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

### F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

### G. SPECIAL INFORMATION

None noted