**BARTON COMMUNITY COLLEGE**

**COURSE SYLLABUS**

# **GENERAL COURSE INFORMATION**

Course Number: MEAS 1105

Course Title: Pressure and Volume Control

Credit Hours: 3

Prerequisite: None

Division/Discipline: Workforce Training and Community Education/ Gas Measurement Program.

Course Description: This instructor led and web based course prepares the student install, maintain, and troubleshoot the devices that regulate gas flow. Common types of control valves, pressure regulators, and safety relief devices are discussed. Topics include theories of operation, applications, and safety concerns.

# **INSTRUCTOR INFORMATION**

# **COLLEGE POLICIES**

Students and faculty of Barton Community College constitute a special community engaged in the process of education. The College assumes that its students and faculty will demonstrate a code of personal honor that is based upon courtesy, integrity, common sense, and respect for others both within and outside the classroom.

Plagiarism on any academic endeavors at Barton Community College will not be tolerated. The student is responsible for learning the rules of, and avoiding instances of, intentional or unintentional plagiarism. Information about academic integrity is located in the Student Handbook.

The college reserves the right to suspend a student for conduct that is determined to be detrimental to the College educational endeavors as outlined in the College Catalog, Student Handbook, and College Policy & Procedure Manual. (Most up-to-date documents are available on the College webpage.)

Any student seeking an accommodation under the provisions of the Americans with Disability Act (ADA) is to notify Student Support Services via email at [disabilityservices@bartonccc.edu](mailto:disabilityservices@bartonccc.edu).

# **COURSE AS VIEWED IN THE TOTAL CURRICULUM**

The concept of gas measurement must include methods for regulating flow to ensure that required amounts of gas are delivered. This course addresses that aspect of the industry. Proper regulation of gas protects the end customer financially and personally. A properly trained technician reinforces the intent of gas regulation.

1. **ASSESSMENT OF STUDENT LEARNING**

Barton Community College assesses student learning at several levels:  institutional, program, degree and classroom.  The goal of these assessment activities is to improve student learning.  As a student in this course, you will participate in various assessment activities.  Results of these activities will be used to improve the content and delivery of Barton’s instructional program.

## Course Outcomes, Competencies, and Supplemental Competencies

1. Explain the theory of operation for control valves found in today’s natural gas pipelines.
2. Define dead band in a control valve.
3. Define process variability.
4. Contrast different actuator position designs.
5. Explain valve response time.
6. List the various types of control valves used in natural gas systems.
7. Contrast different valve type functions.
8. List components of specified control valve types.
9. Compare the different styles of valve actuators.
10. Contrast variations of spring and diaphragm actuators.
11. Define actuator terminology.
12. Detail the theory of operation behind electro-hydraulic actuators.
13. Describe manual actuators.
14. Illustrate different styles of valve positioners
15. State the purpose of the valve positioner.
16. Explain the theory of operation for electro-pneumatic valve positioners.
17. Explain the function of positioners for rotary shaft valves.
18. Show examples of digital valve controllers.
19. Compare the types of pressure-relieving valves and safety valves.
20. Define terms associated with pressure-relieving valves and safety valves.
21. Explain the construction and operation of spring and pilot operated relief valves.
22. Show examples of pilot operated safety valves.
23. List applications for huddling chamber safety valves.

1. List the Federal regulations that pertain to relieving devices.
2. Catalog the federal regulatory categories that pertain to safety and relief devices.
3. Summarize the AMSE standards that apply to inspection, maintenance, testing, and adjustment of relief valves.
4. Summarize the basic operation of pressure regulators.
5. Define the general purpose of pressure regulators.
6. Define the aspects of direct-operated pressure regulators performance.
7. Summarize the operation of pilot-operated pressure regulators.
8. Illustrate the loading and unloading regulator design.

## **INSTRUCTOR'S EXPECTATIONS OF STUDENTS IN CLASS**

## **TEXTBOOKS AND OTHER REQUIRED MATERIALS**

## **REFERENCES**

## **METHODS OF INSTRUCTION AND EVALUATION**

## **ATTENDANCE REQUIREMENTS**

## **COURSE OUTLINE**