**BARTON COMMUNITY COLLEGE**

**COURSE SYLLABUS**

# **GENERAL COURSE INFORMATION**

Course Number: WELD 1351

Course Title: Gas Metal Arc Welding (GMAW)

Credit Hours: 3

Prerequisite: None

Division/Discipline: Workforce Training and Community Education/Welding

Course Description: Through classroom and/or shop/lab learning and assessment activities, students in this course will: explain gas metal arc welding process (GMAW); demonstrate the safe and correct set up of the GMAW workstation.; correlate GMAW electrode classifications with base metals and joint criteria; demonstrate proper electrode selection and use based on metal types and thicknesses; build pads of weld beads with selected electrodes in the flat position; build pads of weld beads with selected electrodes in the horizontal position; produce basic GMAW welds on selected weld joints; and conduct visual inspection of GMAW welds.

# **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.

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

This is one of a series of technical courses for the Welding Technology Certificate program. This course is designed to develop useful, job-oriented skills. It is highly recommended for individuals entering the fields of manufacturing, automotive and heavy equipment repair, or the machine trades.

This course is not intended for transfer.

# **ASSESSMENT OF STUDENT LEARNING**

Barton Community College is committed to the assessment of student learning and to quality education. Assessment activities provide a means to develop an understanding of how students learn, what they know, and what they can do with their knowledge. Results from these various activities guide Barton, as a learning college, in finding ways to improve student learning.

Course Outcomes, Competencies, and Supplemental Competencies:

A. Explain gas metal arc welding process (GMAW).

1. Describe different modes of transfer
2. Differentiate between types and uses of current
3. Identify the advantages and disadvantages of GMAW
4. Identify types of welding power sources
5. Identify different components of a GMAW station
6. Describe basic electrical safety

B. Demonstrate the safe and correct set up of the GMAW workstation.

1. Demonstrate proper inspection of equipment
2. Demonstrate proper use of PPE
3. Demonstrate proper placement of work piece connection
4. Check for proper setup of equipment
5. Inspect area for potential hazards/safety issues
6. Troubleshoot the GMAW equipment and perform minor maintenance

C. Correlate GMAW electrode classifications with base metals and joint criteria

1. Explain the AWS electrode nomenclature
2. Determine proper electrode for given joint based on material and position of weld
3. Determine proper type of electrodes to be used in a variety of industry applications
4. Identify proper electrode storage and handling
5. Identify consumables

D. Demonstrate proper electrode selection and use based on metal types and thicknesses

1. Identify consumables for various electrode sizes
2. Select the proper electrode type and size relative to metal size, type and thickness
3. Select the proper electrode type and size based on material specifications

E. Build pads of weld beads with selected electrodes in the flat position

1. Implement safety procedures and PPE
2. Implement proper equipment setup
3. Use the proper metal transfer
4. Create a pad of beads using GMAW
5. Weld exhibits proper uniformity and profile

F. Build pads of weld beads with selected electrodes in the horizontal position

1. Implement safety procedures and PPE
2. Implement proper equipment setup
3. Use the proper metal transfer
4. Create a pad of beads using GMAW
5. Weld exhibits proper uniformity and profile

G. Produce basic GMAW welds on selected weld joints.

1. Implement safety procedures and PPE
2. Implement proper equipment setup
3. Perform fillet weld in flat position
4. Perform a fillet weld in horizontal position
5. Perform a groove weld in a flat position
6. Perform a groove weld in a horizontal position
7. Use tools appropriate for the task

H. Conduct visual inspection of GMAW welds

1. Identify common visual discontinuities and defects on welds
2. Determine causes of discontinuities and defects of welds
3. Inspect welds for pass/fail ratings according to industry standards
4. Use appropriate tools for inspection

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

1. **TEXTBOOKS AND OTHER REQUIRED MATERIALS**

# **REFERENCES**

# **METHODS OF INSTRUCTION AND EVALUATION**

# **ATTENDANCE REQUIREMENTS**

# **COURSE OUTLINE**