



*HLC Accreditation Evidence*

Title: Gas Tungsten Arc Welding

Office of Origin: Higher Learning Commission Website

# BARTON COMMUNITY COLLEGE

## COURSE SYLLABUS

### I. GENERAL COURSE INFORMATION

<u>Course Number:</u>	WELD 1349
<u>Course Title:</u>	Gas Tungsten Arc Welding (GTAW)
<u>Credit Hours:</u>	3
<u>Prerequisite:</u>	None
<u>Division/Discipline:</u>	Workforce Training and Community Education/Welding
<u>Course Description:</u>	Through classroom and/or lab/shop learning and assessment activities, students in this course will: explain the gas tungsten arc welding process (GTAW); demonstrate the safe and correct set up of the GTAW workstation; relate GTAW electrode and filler metal classifications with base metals and joint criteria; build proper electrode and filler metal selection and use based on metal types and thicknesses; build pads of weld beads with selected electrodes and filler material in the flat position; build pads of weld beads with selected electrodes and filler material in the horizontal position; perform basic GTAW welds on selected weld joints; and perform visual inspection of GTAW welds.

### II. INSTRUCTOR INFORMATION

### III. 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).

### IV. 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.

## V. 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 the gas tungsten arc welding process (GTAW)
  - 1. Differentiate between types and uses of current
  - 2. Identify the advantages and disadvantages of GTAW
  - 3. Identify types of welding power sources
  - 4. Identify different components of a GTAW workstation
  - 5. Describe basic electrical safety
  
- B. Demonstrate the safe and correct set up of the GTAW workstation
  - 1. Demonstrate proper inspection of equipment
  - 2. Demonstrate proper use of personal protective equipment (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 GTAW equipment and perform minor maintenance
  
- C. Relate GTAW electrode and filler metal classifications with base metals and joint criteria
  - 1. Identify electrode classifications
  - 2. Explain the American Welding Society (AWS) electrode and filler metal nomenclature
  - 3. Determine proper electrode and filler metal for given joint based on material and position of weld
  - 4. Determine proper type of electrodes to be used in a variety of industry applications
  
- D. Build proper electrode and filler metal selection and use based on metal types and thicknesses
  - 1. Use safety hazard precautions and PPE
  - 2. Properly prepare the tungsten electrode profile relative to base material
  - 3. Perform weld using GTAW process appropriate to electrode size and filler metal size
  - 4. Select the proper electrode and filler metal type and size relative to metal size, type and thickness
  - 5. Select the proper electrode and filler metal type and size based on material specifications
  - 6. Use tools appropriate for the task
  
- E. Build pads of weld beads with selected electrodes and filler material in the flat position
  - 1. Use safety hazard precautions and PPE
  - 2. Demonstrate proper equipment setup and troubleshooting
  - 3. Create a pad of beads using GTAW process
  - 4. Weld exhibits proper uniformity and profile
  
- F. Build pads of weld beads with selected electrodes and filler material in the horizontal position
  - 1. Use safety hazard precautions and PPE
  - 2. Demonstrate proper equipment setup and troubleshooting
  - 3. Create a pad of beads using GTAW process
  - 4. Weld exhibits proper uniformity and profile
  
- G. Perform basic GTAW welds on selected weld joints

1. Conduct proper base metal preparation
2. Use safety hazard precautions and PPE
3. Demonstrate proper equipment setup and troubleshooting
4. Perform fillet weld in flat position
5. Perform a fillet weld in horizontal position
6. Perform a groove weld in a flat position
7. Perform a groove weld in a horizontal position
8. Use tools appropriate for the task

H. Perform visual inspection of GTAW 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 tools appropriate for the inspection

**VI. INSTRUCTOR'S EXPECTATIONS OF STUDENTS IN CLASS**

**VII. TEXTBOOKS AND OTHER REQUIRED MATERIALS**

**VIII. REFERENCES**

**IX. METHODS OF INSTRUCTION AND EVALUATION**

**X. ATTENDANCE REQUIREMENTS**

**XI. COURSE OUTLINE**