

**Western Iowa Tech Community College
Course Outline of Record**

Date: 03/20/2014

Prefix & No.: WEL 191 Course Title: Gas Tungsten Arc Welding

Semester **Credit** Hours: 3.00

Lecture **Contact** Hours per Semester: 16.00

Lab **Contact** Hours per Semester: 64.00

Clinical **Contact** Hours per Semester: 0.00

OJT or Internship **Contact** Hours per Semester:

Course/Lab Fee: Yes No

Pre and Post Assessments: __

Course Description

This course combines lecture and lab activities to present Tungsten Inert Gas (TIG) welding process. Students study equipment use, welding procedures, position welding, welding of common metals and safety precautions. Topics include welding in all positions on ferrous and nonferrous metals, and small diameter pipe.

Prerequisite: WEL 120 Oxy Fuel Welding and Cutting

Corequisite: None

Course Needs Statement

This course will expose the student to the use of Tungsten Inert Gas Welding of aluminum, stainless steel, and carbon steel and be able to obtain a skill level to meet AWS requirements. This type of welding will produce high quality welds that are required in industries such as food processing equipment manufactures and nuclear power plants.

Required Textbooks and/or materials

Yes No Other

Course Objectives:

The course will provide information which should enable the student to:

1. Set up and operate a TIG welder in a safe manner
2. Select the proper current for different types of TIG welding
3. Identify various tungsten's and their use
4. Select the correct filler metal
5. Determine what shielding gas to use
6. Prepare different types of joints
7. Produce sound welds in all positions
8. Produce welds to meet AWS standards

Content Outline

- I. TIG Welding Equipment
 - A. Water cooled torches
 - B. Water supplies
 - C. Power sources
 - D. Flow meters and regulators
 - E. Cables
 - F. Remote controls
- II. Current Selection
 - A. Direct current
 - B. Alternating current
 - C. High frequency
 - D. Remote switches
 - E. Pulsed ARC
- III. Tungsten Electrodes
 - A. Size selection
 - B. Thorium

- C. Zirconium
- D. Shaping
- IV. Fillet Metals
 - A. Ferrous metals
 - B. Non ferrous metals
- V. Shielding Gases
 - A. Argon

Assessment

Course Competencies

At the conclusion of the course, the student will be able to:

1. Utilize safe welding procedures for a TIG welder.
2. Demonstrate TIG welder set up
3. Complete the following competencies by AWS standards on a pass-fail basis. (* competencies must pass AWS bend test)
 - a. Stringer beads (flat)
 - b. Sq. butt 1/16" mat'l (flat)
 - c. Tee 1/8" fillet 1/16" mat'l
 - d. Tee 1/8" fillet vertical up
 - e. Tee 1/8" fillet horizontal
 - f. V groove root pass 3/8" plate flat TIG 7018 to the face *
 - g. V groove root 3/8" plate vert. up TIG root 7018 to the face *
 - h. Aluminum tee 1/8" material
 - i. Aluminum lap 1/8" plate
 - j. Aluminum tee 1/8" fillet vert. up
 - k. V groove 1/4" plate vertical up *
 - l. V groove 1/4" plate overhead *

Addendum

Prefix & No.: WEL 191 **Course Title:** Gas Tungsten Arc Welding

Key words:

Required Textbooks and/or Materials

Title: Welding Principles and Applications

Author: Jeffus & Johnson

Edition: Current

Publisher: Delmar Publications

ISBN-13:

ISBN-10:

Other Materials: Tools per list

Course/Lab Fee: \$63.00

Rationale (usage) for lab fees: welding materials

Additional Information:

Common Final: Yes No

See Division Chair for facility and equipment needs.

Reminder: Each Course Outline of Record is expected to be reviewed every five (5) years.

Attached Files: