

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

Date: 09/24/2015

Prefix & No.: WEL 148 Course Title: ARC Welding Intermediate (SMAW)

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 is the second of two courses designed for students to prepare for the AWS certification. A combined lecture and lab course, students study safety, heat settings, polarity, penetration welding, horizontal and vertical welding, and the proper selection of electrodes in the arc welding process. Topics include welding on carbon steel plate using visual and destructive methods of determining weld quality to AWS Standards

Prerequisite: WEL 147 ARC Welding Introduction (SMAW)

Corequisite: None

Course Needs Statement

This course was revised to meet local industry needs and national accreditation requirements for WITCC welding students.

Required Textbooks and/or materials

Yes No Other

Course Objectives:

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

1. Follow safety procedures for welders
2. Visually inspect welds and to do practice weld tests
3. Select welding parameters based on advanced weld joints (i.e., type of current, amp setting)
4. Describe various advanced weld joints
5. Meet AWS's test requirements for flat position full penetration welds
6. Make a vertical weld

Content Outline

- I. Orientation
- II. Safety in Welding
 - A. Eye & ear protection
 - B. Respiratory protection
 - C. Ventilation
 - D. Electrical safety
 - E. Work clothes
 - F. Gas cylinders
 - G. Hand & power tools
- III. Weld Inspection and Testing
 - A. Advanced Weld Porosity and its causes
 - B. Slag inclusions
 - C. Weld size and dimension
 - D. Philip Weld Break Testing
 - E. AWG Visual Inspection Criteria
 - F. Nondestructive testing
 - G. Identify common welding failures
 - H. Stress factors on common welds

- IV. AWS Testing (Flat Position)
 - A. Philip Weld Guided bend test
 - B. Etching
 - C. Fillet weld break test

Assessment

Course Competencies

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

1. Observe all safe welding practices
2. Describe weld defects
3. Determine joint design & weld size based on AWG Testing
4. Describe the differences in welding power sources
5. Set up an arc welding machine
6. Produce welds in flat and horizontal positions
7. WEL 1232 Task Demonstration List
 - a. 3-bead tee 3/8" fillet E7018 horizontal
 - b. Sq. butt weld E6010 flat)
 - c. 3-bead tee 3/8" fillet E6010 horizontal
 - d. Lap joint E6010 E6013 E7018 horizontal (3/16" plate)
 - e. V-groove 3/8" plate E7018
 - f. Tee 3 bead 3/8" fillet E7018 vertical up
 - g. Tee joint 3/16" fillet E6010 vertical down
 - h. Tee joint 3/16" fillet E6010 vertical up
 - i. Lap joint 3/16" plate vertical down

Addendum

Prefix & No.: WEL 148 **Course Title:** ARC Welding Intermediate (SMAW)

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: Safety Glasses, Wire Brush, Chipping Hammer, Gloves and Pliers

Course/Lab Fee: \$0.00

Rationale (usage) for lab fees:

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: