

Western Iowa Tech Community College
Course Outline of Record

Date: 03/06/2014

Prefix & No.: WEL 421 Course Title: Flux Core Arc Welding (FCAW)

Semester **Credit** Hours: 4.00

Lecture **Contact** Hours per Semester: 16.00

Lab **Contact** Hours per Semester: 96.00

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 introduce the Flux Cored Arc Welding (FCAW) process used extensively by industry. Students learn through hands-on applications and will be introduced to the theory of metal transfer, FCAW equipment, welding procedures, out of position welding, and safety.

Prerequisite: WEL 422 GMAW for Production

Corequisite: None

Course Needs Statement

This course was developed through the DACUM process 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. Safely operate FCAW welding equipment
2. Identify and use various types of metal transfer
3. Maintain FCAW welding equipment
4. Select proper filler metals
5. Select proper shielding gases
6. Set welding parameters per welding procedures
7. Produce sound welds out of position using a FCAW welder
8. Demonstrate the skills necessary to obtain certification per the American Welding Society D1.1 welding code

Content Outline

- I. Safety in CV Welding
 - A. Eye protection
 - B. Clothing
 - C. Electrical shock
 - D. Hazardous fumes
- II. Principles of Operation
 - A. Advantages
 - B. Limitations
 - C. Electrodes
- III. Shielding Gases
 - A. Argon
 - B. CO₂
 - C. Helium
 - D. Mixtures
- IV. Equipment Maintenance
 - A. Power Supplies
 - B. Wire Feeder

- C. FCAW Guns
- D. Water Supplies
- V. Joint Considerations
 - A. T Joints
 - B. V Grooves
 - C. Out of Position Welds

Assessment

Course Competencies

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

1. Observe all safety procedures of FCAW welding
2. Determine the type of metal transfer to be used
3. Determine the type of shielding required
4. Determine the type of electrode for a given job
5. Set up a FCAW welding station
6. Operate FCAW welding equipment in a safe manner
7. Adjust machine to produce sound welds out of position
8. Adjust machine to produce dual shielded welds
9. Diagnose basic equipment problems
10. Maintain FCAW welding equipment
11. Produce out of position FCAW welds that meet AWS D1.1 inspection and testing standards

Addendum

Prefix & No.: WEL 421 Course Title: Flux Core Arc Welding (FCAW)

Key words:

Required Textbooks and/or Materials

Title: **Welding Principles and Applications**

Author: **Jeffus & Johnson**

Edition: **Current**

Publisher: **Delmar**

ISBN-13:

ISBN-10:

Other Materials: **Safety glasses, gloves, pliers, and leathers**

Course/Lab Fee: \$0.00

Rationale (usage) for lab fees:

Additional Information:

Competencies According AWS D1.1 Standards

- I. ____ Tee 3/16" Fillet 2F Horizontal
- II. ____ Lap Joint 3/16" Plate 2F Horizontal
- III. ____ Tee Joint 3/16" Fillet 3F Vertical Down
- IV. ____ Lap Joint 3/16" PLATE 3F Vertical Down
- V. ____ Multi Pass 5/8" Fillet 2F Horizontal
- VI. ____ Vee Groove 3/8" Plate 1G Flat
- VII. ____ Tee Joint 3/16" Fillet 3F Vertical Up
- VIII. ____ Tee Joint 3/16" Fillet 4F Overhead
- IX. ____ V Groove 3/8" Plate 3G Vertical Up
- X. ____ V Groove 3/8" Plate 3G Vertical Down
- XI. ____ V Groove 3/8" Plate 4G Overhead

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: