

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

Date: 03/06/2014

Prefix & No.: WEL 424 Course Title: Intro to Pulse Arc GMAW Welding

Semester **Credit** Hours: 3.00

Lecture **Contact** Hours per Semester: 8.00

Lab **Contact** Hours per Semester: 80.00

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 the Gas Metal Arc Welding (MIG) process used extensively by industry with a focus on pulse metal transfer. This course emphasizes hands-on applications, GMAW pulse arc transfer concepts, GMAW pulse arc equipment, welding procedures, out of position welding, with an emphasis on stainless and mild steels 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 MIG pulse arc welding equipment
2. Adjust a pulse arc machine
3. Maintain MIG pulse arc welding equipment
4. Select proper filler metals for stainless and mild steels
5. Select proper shielding gases for stainless and mild steels
6. Set welding parameters per welding procedures
7. Produce sound welds out of position using a MIG pulse arc welder on stainless and mild steel
8. Demonstrate the skills necessary to obtain certification per the American Welding Society D1.1 welding code

Content Outline

- I. Safety in MIG Welding
 - A. Eye protection
 - B. Clothing
 - C. Electrical shock
 - D. Hazardous fumes
- II. Pulse Arc Metal Transfer
 - A. Globular transfer
 - B. Spray transfer
 - C. Pulsed arc
- III. Shielding Gases
 - A. Argon
 - B. CO₂
 - C. Helium
 - D. Mixtures
- IV. GMAW Pulse Arc Equipment Maintenance
 - A. Power supplies

- B. Wire feeder
- C. MIG guns
- D. Water supplies
- V. Filler Metals
 - A. Alloy steels
 - B. Stainless steel

Assessment

Course Competencies

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

1. Observe all safety procedures of pulse arc MIG welding
2. Determine the type of filler wire and shielding gas for a given job
3. Set up a pulse arc MIG welding station
4. Adjust machine for pulse transfer on stainless and mild steel
5. Maintain pulse arc MIG welding equipment
6. Diagnose equipment problems
7. Produce out of position pulse arc MIG welds that meet AWS D1.1 inspection and testing standards

Addendum

Prefix & No.: WEL 424 Course Title: Intro to Pulse Arc GMAW Welding

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 Joint 3/16" 2F Fillet Pulse Transfer Mild Steel
- II. ____ Tee Joint 3/16" 3F Fillet Pulse Transfer Mild Steel Vert. up
- III. ____ Tee Joint 3/16" 2F Fillet Pulse Transfer 304 Stainless
- IV. ____ Tee Joint 3/16" 3F Fillet Pulse Transfer 304 Stainless Vert. up
- V. ____ V Groove 3/8" 3G Plate Vertical Down mild steel (short or pulse)

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: