

COURSE NAME: Production Welding

DATE: March 13, 2017

INSTRUCTOR: Mr. Leroy Begay **Phone:** (c) 410-591-5977 (w) 717-391-6931
Email: begay@stevenscollege.edu

COURSE HOURS: Monday through Friday 8:00 to 11:00 a.m., 100 hours of Theory/Lab.

COURSE DESCRIPTION: This course develops skills in Oxyfuel Cutting (OFC), Shielded Metal Arc Welding (SMAW) and Flux Cored Arc Welding (FCAW). Students will learn Theory, applications, set-up, electrode identification, operations and troubleshooting of these processes. Significant hands-on practice is provided.

ELECTRONIC DEVICES: Use of electronic devices, cell phones and iPads are NOT allowed.

DRESS CODE: Fire retardant trousers, sleeved shirts and leather work boots (steel toe preferred) are required in the training area. Hats and hoodies are not allowed in the classroom & Welding Lab areas.

PERSONAL PROTECTION EQUIPMENT (PPE):

- Welding Helmet
- Welding Hat
- Leather Welding Sleeves/Bib or Jacket
- Leather Welding Gloves
- Safety Glasses (clear lense)
- Chipping Hammer
- Wire Brush
- Leather Boots
- Ear Plugs (optional)

COURSE OBJECTIVES:

1. Welding Safety
2. Define the SMAW/FCAW processes
3. Describe the operation of the SMAW/FCAW processes
4. Tell where the SMAW/FCAW processes are used
5. Identify the Personal Protection Equipment (PPE) used in the welding industry and cite their applications
6. Cite the most common OSHA regulations which regulate the welding industry
7. Read and interpret welding blueprints
8. Identify common ferrous and nonferrous metals
9. Set up and adjust SMAW/FCAW equipment
10. Perform simple maintenance on SMAW/FCAW equipment
11. Monitor the use of consumable materials (gases, tips,, etc)
12. Hold and position welding gun & electrode correctly

Learning Goals: Students will be able to:

1. Identify the conditions which affect weld bead shape
2. Adjust speed of travel to insure correct weldment
3. Set-up Oxyfuel Cutting equipment and adjust flame
4. Prepare materials for cutting and welding
5. Set voltage and current to meet welding requirements
6. Identify correct shielding gases for welding application
7. Describe bead characteristics and their causes
8. Remove slag and clean weldment
9. Weld in the flat position
10. Weld in the horizontal position
11. Weld in the vertical position
12. Weld in the overhead position
13. Weld by making multiple passes
14. Analyze welding faults, determine causes, and cite corrective actions
15. Qualification to AWS D1.1, Structural Code, Steel

Lab Assignments: 75% of grade

Exam: 25% of grade

Students must maintain 70% to pass course.

ATTENDANCE AND TARDINESS:

All absences must be approved. The definition of an approved absence is illness with a doctor's excuse, doctor appointments with documentation and court appearances with documentation. In the event of an illness, the student is required to notify Mr. Begay at (w) 717-391-6931 (c) 410-591-5977. Leave a message on voicemail if you do not get to talk to him directly.

Tardiness is not acceptable in this class. Due to the intense pace of instruction and the number of students enrolled, students are required to be in class by the start of class with all the issued instructional materials.

PLANNED SEQUENCE OF LEARNING ACTIVITIES:

First Week:

Monday

- Issue Identification cards/PPE
- Introduction
- 5 Essentials to Welding/Codes
- Safety/OSHA Presentation – Chapter 1
- Welding Blueprint Reading – Chapter 2

Tuesday

- Safety/Review
- 5 Common Welding Joint designs
- Oxyfuel Process – Chapter
- Set-up OFC and perform cutting

Wednesday,

- Safety/Review
- SMAW Process – Chapter 5 & Chapter 6
- SMAW Set-up & Welding Beads (padding in flat and horizontal positions)
- Welding Beads (padding in flat and horizontal positions)

Thursday,

- Safety/Review
- Welding Joint, Position and Symbols – Chapter 3
- SMAW Process (Lap & T-Joints)

Friday,

- Safety/Review
- SMAW Process (Lap & T-joints)

Second Week:

Monday,

- Safety/Review
- SMAW Process (T-Joint & Groove)

Tuesday,

- Safety/Review
- SMAW Process (T-Joint & Butt)

Wednesday,

- Safety/Review
- SMAW Process (Butt Joint & T-Joint Multi passes)

Thursday,

- Safety/Review
- SMAW Process (Butt Joint & T-Joint Multi Passes)

Friday

- Safety/Review
- SMAW Process (Butt Joint & T-Joint Multi Passes)

Third Week

Monday,

- Safety/Review
- SMAW Process (Butt Joint & T-Joint)

Tuesday,

- Safety/Review
- Meeting with Laurie Grove, Director of Career Services
- SMAW (Butt Joint, Open Corner, T-Joint)

Wednesday,

- Safety/Review
- FCAW Introduction and set-up (padding)

Thursday,

- Safety/Review
- Metal Identification, Chapter 28
- FCAW Process & Electrode Identification

Friday,

- Safety/Review
- FCAW Welding Beads (Padding F,H,V & OH)

Fourth Week**Monday,**

- Safety/Review
- FCAW Process (Padding F,H,V & OH)

Tuesday,

- Safety/Review
- FCAW Process (Padding/Lap joints)

Wednesday,

- Safety/Review
- FCAW (Lap joint and T-joints)

Thursday,

- Safety/Review
- FCAW (Lap joints and T-joints)

Friday, April 7

- Safety/Review
- FCAW (Lap joint and T-joints)

Fifth Week

Monday,

- Safety/Review
- FCAW (Open grove)

Tuesday,

- Safety/Review
- FCAW (Open grove)

Wednesday, 2

- Safety/Review
- FCAW Open Groove

Thursday,

- Safety/Review
- FCAW Testing

Friday,

- Safety/Review
- FCAW Testing

Sixth Week

Monday,

- Safety/Review
- GMAW Process

Tuesday, Safety/Review

- GMAW Process

Wednesday, Safety/Review

- GMAW process

Thursday

- Safety/Review
- GMAW Process

Friday

- Safety/Review
- GMAW Process

Seventh (final)

Monday,

- Safety/Review
- GMAW Process

Tuesday

- Safety/Review
- GMAW Process

Wednesday
Graduation

References:

- Modern Welding, 11th edition, Althouse/Turnquist/Bowditch/Bowditch/Bowditch

Prepared by Leroy Begay, June 20, 2016



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