

Washtenaw Community College Comprehensive Report

UAF 190 Accelerated Welder Training Effective Term: Spring/Summer 2013

Course Cover

Division: Advanced Technologies and Public Service Careers

Department: United Association Department

Discipline: United Association Pipefitters

Course Number: 190

Org Number: 14600

Full Course Title: Accelerated Welder Training

Transcript Title: Accelerated Welder Training

Is Consultation with other department(s) required: No

Publish in the Following:

Reason for Submission: Course Change

Change Information:

Credit hours

Rationale: After operating the UA accelerated welding program, it was determined that the credits should be adjusted to 12 credits for the class. The change will more accurately reflect the student instructor contact hours. UA students attend 720 hours of training for this class. The proposed change allows 60 hours of lab time equate to one credit hour in the Accelerated Welder Training Program.

Proposed Start Semester: Spring/Summer 2013

Course Description: The focus of this 18 week/40 hours per week course is on training a novice welder for introduction into the pipe fitting industry. Topics covered are Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), Oxy-fuel Cutting (OFC), safety, basic math, basic pipe fitting techniques, piping and related equipment and terminology. Prior to the completion of this class, the student will attend, and satisfactorily complete, an OSHA 10 course, a United Association Heritage class and a class on the UA Standard for Excellence. Enrollment in this course is limited to students identified by the UA.

Course Credit Hours

Variable hours: No

Credits: 12

Lecture Hours: Instructor: 45 **Student:** 45

Lab: Instructor: 675 **Student:** 675

Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 720 **Student:** 720

Repeatable for Credit: NO

Grading Methods: Letter Grades

Audit

Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

No Basic Skills Prerequisite

College-Level Math

No Level Required

Requisites

General Education

Degree Attributes

Below College Level Pre-Reqs

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Demonstrate proper care and use of tools.

Assessment 1

Assessment Tool: Welding projects.

Assessment Date: Fall 2012

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Checklist

Standard of success to be used for this assessment: 90% of students will properly use and maintain tools.

Who will score and analyze the data: Departmental faculty

2. Set up Oxy-Fuel Cutting (OFC) equipment.

Assessment 1

Assessment Tool: Equipment set-up quiz.

Assessment Date: Fall 2012

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Checklist

Standard of success to be used for this assessment: 100% of students will set up OFC equipment in accordance with ANSI Z49.1 standards.

Who will score and analyze the data: Departmental faculty

3. Set up arc welding equipment.

Assessment 1

Assessment Tool: Equipment set-up quiz.

Assessment Date: Fall 2012

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Checklist

Standard of success to be used for this assessment: 100% of students will set up arc welding equipment in accordance with ANSI Z49.1 standards.

Who will score and analyze the data: Departmental faculty

4. Identify common joint designs and blueprint symbols used in the pipe fitting industry.

Assessment 1

Assessment Tool: Written Exam

Assessment Date: Fall 2012

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 90% of students will achieve 80% or above.

Who will score and analyze the data: Departmental faculty

5. Weld a 6" schedule 40 pipe joint in horizontal (2G) and vertical (5G) positions with the Shielded Metal Arc Welding (SMAW) Process.

Assessment 1

Assessment Tool: Welding projects.

Assessment Date: Fall 2012

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Welds will be measured in accordance with ASME B31.1 code.

Standard of success to be used for this assessment: 80% of students will produce welds in accordance with ASME B31.1 code

Who will score and analyze the data: Departmental faculty

6. Weld a 6" schedule 40 pipe joint in the horizontal (2G) and vertical (5G) positions with the Gas Tungsten Arc Welding (GTAW) process.

Assessment 1

Assessment Tool: Welding projects.

Assessment Date: Fall 2012

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Welds will be measured in accordance with ASME B31.1 code.

Standard of success to be used for this assessment: 80% of students will produce welds in accordance with ASME B31.1 code

Who will score and analyze the data: Departmental faculty

7. Assemble and weld a pipe spool piece project as directed on a blueprint with all welds conforming to ASME B31.1 weld quality standards.

Assessment 1

Assessment Tool: Welding projects.

Assessment Date: Fall 2012

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Welds will be measured in accordance with ASME B31.1 code.

Standard of success to be used for this assessment: 80% of students will produce welds in accordance with ASME B31.1 code

Who will score and analyze the data: Departmental faculty

Course Objectives

1. Transport and assemble Oxy-Fuel cutting equipment in accordance with ANSI Z49.1 standards.

Matched Outcomes

2. Demonstrate proper Oxy-Fuel cutting procedures on steel pipe.

Matched Outcomes

3. Demonstrate proper use of hand tools.

Matched Outcomes

4. Demonstrate proper use of bench and hand grinders.

Matched Outcomes

5. Demonstrate proper lifting procedures.

Matched Outcomes

6. Identify personal factors that lead to accidents on a job site.

Matched Outcomes

7. Identify physical factors that lead to accidents on a job site.

Matched Outcomes

8. List personal protective equipment commonly used in the welding and cutting industry.

Matched Outcomes

9. Identify fire hazards and methods of fire control.

Matched Outcomes

10. Explain the safety procedures for welding and cutting in confined spaces.

Matched Outcomes

11. Explain the effects of electricity and precautions used to prevent injury.

Matched Outcomes

12. Demonstrate a carburizing, neutral and oxidizing flame.

Matched Outcomes

13. Cut a straight line, square piece and slot section on 1/4" mild steel plate.

Matched Outcomes

14. Cut a bevel on a 45 degree angle on 1/4" mild steel.

Matched Outcomes

15. Cut a flat faced bevel on 2", 4" and 6" steel pipe.

Matched Outcomes

16. Prepare mild steel weld joints mechanically and thermally.

Matched Outcomes

17. Bevel and prepare welding coupons for a single V-groove weld joint on mild steel plate manually and by machine.

Matched Outcomes

18. Explain the difference between voltage and amperage.

Matched Outcomes

19. Explain the different types of welding machines and their applications.

Matched Outcomes

20. Properly set up arc welding equipment for use.

Matched Outcomes

21. Describe the American Welding Society's filler metal classification system for Shielded Metal Arc Welding electrodes.

Matched Outcomes

22. Explain the considerations applied in electrode selection on mild steel.

Matched Outcomes

23. Explain code requirements for filler metal control and storage.

Matched Outcomes

24. Weld a fillet weld in the horizontal, vertical and overhead positions with E6010 and E7018.

Matched Outcomes

25. Weld an open root V-groove in all positions with E6010 and E7018.

Matched Outcomes

26. Pad weld 6" and 2" pipe in the horizontal, vertical and overhead positions with E6010 and E7018.

Matched Outcomes

27. Weld an open root V-groove on 6" and 2" pipe in the horizontal and vertical positions with E6010 and E7018.

Matched Outcomes

28. Describe the American Welding Society's filler metal classification system for Gas Tungsten Arc Welding (GTAW) rods.

Matched Outcomes

29. Explain the considerations applied in electrode selection for GTAW.

Matched Outcomes

30. List the components of a GTAW assembly.

Matched Outcomes

31. Properly assemble, pressurize and disassemble high pressure compressed gas equipment commonly used for GTAW.

Matched Outcomes

32. Explain dangers associated with purge gases.

Matched Outcomes

33. Identify purging tools and their functions.
Matched Outcomes
34. Describe the function and proper use of a purge dam.
Matched Outcomes
35. Demonstrate leak testing procedures.
Matched Outcomes
36. Explain the importance of rod wipe down in GTAW.
Matched Outcomes
37. List chemicals commonly used for joint preparation and the dangers associated with them.
Matched Outcomes
38. Prepare mild steel plate joints mechanically and thermally.
Matched Outcomes
39. Weld 6" and 2" mild steel pipe in the horizontal and vertical positions.
Matched Outcomes
40. Bevel and prepare welding coupons for a single V-groove weld joint on stainless steel plate manually and by machine.
Matched Outcomes
41. Pad weld 6" and 2" stainless steel pipe with the GTAW process in the horizontal and vertical positions with filler material.
Matched Outcomes
42. Weld a V-groove on 6" and 3" stainless pipe in the horizontal and vertical positions using a purge.
Matched Outcomes
43. Weld a 1" socket joint on 6" mild steel pipe in the horizontal, vertical and overhead positions.
Matched Outcomes
44. Weld a 1" soc-o-let and a 2" Weld-o-let joint on mild steel in the horizontal, vertical and overhead positions.
Matched Outcomes
45. Identify welding blueprint symbols.
Matched Outcomes
46. Assemble and weld a pipe spool piece as directed by a blueprint.
Matched Outcomes
47. Weld a pipe spool piece as directed by a blueprint that meets ASME B31.1 Power Piping code requirements.
Matched Outcomes
48. Meet OSHA 10 requirements.
Matched Outcomes
49. Explain the history of unions and their effects on labor in the United States.
Matched Outcomes
50. Describe the United Association's Standard of Excellence.
Matched Outcomes

New Resources for Course

Course Textbooks/Resources

Textbooks

International Pipe Trades Joint Training Committee . *Use and Care of Tools*, ed.

International Pipe Trades Joint Training Committee , 2000

International Pipe Trades Joint Training Committee . *Job Safety and Health*, ed.

International Pipe Trades Joint Training Committee , 2000

International Pipe Trades Joint Training Committee . *Oxy-Fuel Cutting and Welding and*

Shielded Metal Arc Welding, ed. International Pipe Trades Joint Training Committee , 2001

International Pipe Trades Joint Training Committee . *Gas Tungsten Arc Welding*, ed.

International Pipe Trades Joint Training Committee , 2001

Manuals

Periodicals

Software
Equipment/Facilities
Off-Campus Sites

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Amanda Scheffler</i>	<i>Faculty Preparer</i>	<i>Apr 18, 2013</i>
Department Chair/Area Director: <i>Joy Garrett</i>	<i>Default</i>	<i>Apr 19, 2013</i>
Dean: <i>Marilyn Donham</i>	<i>Recommend Approval</i>	<i>Apr 23, 2013</i>
Vice President for Instruction: <i>Bill Abernethy</i>	<i>Approve</i>	<i>Jun 24, 2013</i>