Virginia Western Community College
WEL 121
Arc Welding

Prerequisites
WEL 120 or division approval.

Course Description
Studies the operation of AC and DC power sources, weld heat, polarities and electrodes for use in joining various alloys by the SMAW process. Covers welds in different types of joints and different welding positions. Emphasizes safety procedures. List and identify the components of a SMAW station. Demonstrate the ability to select the correct electrode, current, and polarity to use while SMAW in a given welding position. Describe how and why electricity flows in an electrical circuit and list the 3 variables in Ohm's Law.

Semester Credits: 2 Lecture Hours: 1 Lab/Clinical/Internship Hours: 3

Required Materials
Textbook:
Modern Welding. Althouse

Edition: 12, Revised

ISBN: 9781635636864

Other Materials

The student supplies the following PPE for student use in the welding labs:

- Safety Glasses MUST BE WORN AT ALL TIMES IN LAB
- Helmet
- Proper Shade Lens
- Welding Hood / Jacket
- Gloves

Students are responsible for replacing any lost or removed equipment.

Course Outcomes
At the completion of this course, the student should be able to:

- List and identify the components of a SMAW station.
- Demonstrate the ability to select the correct electrode, current, and polarity to use while SMAW in a given welding position.
- Describe how and why electricity flows in an electrical circuit and list the 3 variables in Ohm's Law.
- Perform basic arc welding projects listed in course outline.

- Perform basic stringer and weave bead patterns.
- Students will take an AWS certification test as the “final exam” in the SMAW process on 3/8” plate in either the 1G or 3G position. Students may elect consideration for certification by American Welding Society by paying a non-refundable fee of $50 prior to testing. The certification fee is also non-transferable to other WEL courses. Students whose test coupons pass the AWS standard will receive certification from AWS.

Topical Description

Week	1	Orientation; Complete Lesson 1-C & 12-B
Week	2	Introduction to Arc Welding; Lesson 1-C & 12-B due; Read Chapter 5 & Complete Lesson 5-B
Week	3	Performing SMAW; Types of power sources; Lesson 5-B due
Week	4	AC & DC Operations
Week	5	Quiz: Read Chapter 6; Complete Lesson 6-A
Week	6	Electrode ID; Lesson 6-A due
Week	7	Electrode selection
Week	8	Electrode motion technique for different weld positions; complete job 6-A-2
Week	9	Joint design
Week	10	Quiz
Week	11	Welding different metals: Complete Lesson 6-B
Week	12	Quiz
Week	13	Tentative
Week	14	Tentative
Week	15	Tentative
Week	16	Final Examination All projects and workbooks due

Notes to Instructor

- None

ADA Statement (PDF)

Title IX Statement (PDF)