Linn-Benton Community College

# **ADVANCED ARC WELDING**

**SMAW & FCAW**

## Instructor: Nick Collins Course Number: WD4.246

## Phone: (541) 917-4687 Office: IC 103A

## \*Email: [collinn@linnbenton.edu](mailto:collinn@linnbenton.edu) Hours: By Appointment

## CRN: 43285 Classroom: IC 103

**Course Description**

# **WD4. 246 Adv Arc Welding (SMAW & FCAW) - Credits (6)**

Stresses safety and equipment familiarization with lab exercises for skill development in the fundamentals of electric arc welding SMAW and FCAW processes. It includes technical information lectures in related subjects and preparation for AWS welder's certification.

### **Prerequisite**

WD 4.240 Basic Arc Welding AND WD 4.241 Intermediate Arc Welding with a grade of C or better.

### **Offered**

Offered Spring only

### **Outcomes**

Upon successful completion of this course, students will be able to:

Use welding machines and related equipment safely. Set up and operate welding machines and related equipment utilized for arc welding processes. Recognize and name the components necessary to operate welding machines and related equipment. Perform welding with commonly used welding consumables in preparation for welder tests. Utilize Code - allowable welding techniques and progressions. Perform welds in the 3G and 4G welding positions. Produce welds in the weld joint configurations utilized for welder qualification/certification tests.

**Textbook**

The text for this course will be online at <https://openbook.millerwelds.com/>

You can use the following link to get started. This is an instruction video to log into your account. You should have an email from openbook on your student email with a link as well.

<https://www.youtube.com/watch?v=i_zrc5FI0Pw&index=10&list=PLk_D-eUr0YKhBaNib0h8ZrJ5bkeEKi9Vm&t=0s>

**Communication**

If you are going to be late or absent from class it is your responsibility to communicate with the instructor and to schedule time to make up the hours missed to ensure completion of the course. I prefer email as my number one form of communication. If you don’t have access to email right away and need to let me know you won’t be attending class please call and leave me a voicemail or let another student know to tell me you will be late or absent.

**Grading**

* 1. 50% of grade will be determined by performance on daily welding tasks, written assignments, homework, and quizzes.
  2. 50% of grade will be determined by performance on midterm and final examination.
  3. **Highest grade you can earn for class is a reflection of the % of your attendance.**
  4. There will be a final exam.
  5. **All assigned homework must be turned in, regardless if it is late or on time. Failure to turn in all assigned homework will result in an INC for this class.**
  6. **There is an online training component for this class. The % of modules completed will reflect on the highest eligible grade you can earn for this class.**

**Homework**

Given the circumstances of this term all homework will be in the first weeks of class and are to be completed online using Miller Openbook as described in the textbook section of the syllabus. With a tighter timeline and restrictions for Spring term all homework must be completed by the due dates assigned in the course outline below.

**Safety**

The student is responsible to follow all safety rules and shop procedures and to perform all tasks in a safe and conscientious manner. This includes wearing the required safety items (safety glasses, high top boots or shoes, etc.) during the lab time.

**NOTE:** The instructor will verbally warn the student when required safety items are not being worn in the shop, or when safety procedures are not being followed. Repeated safety violations may require the student to be withdrawn from the course by the instructor. Three strikes and you’re out. Third warning could result in being dismissed from the class.

**Personal Communication Devices**

All personal communication devices must be turned off or kept on silent (NOT VIBRATE) during all classes and lab times. If personal communication devices are used or go off during class or lab time, your final grade could be reduced by a full letter grade. This includes texting.

**Disabilities Services and Emergency Planning – Meet With Instructor Week 1**

If you have emergency medical information for your instructor, need special arrangements to evacuate campus, or have a documented disability; please meet with your instructor, by appointment, no later than the first week of the term to discuss you needs. If you have a documented disability that will impact you at college and you seek accommodations, contact the Office of Disability Services (ODS) for intake and to document your disability with LBCC. Then each term, at least two to three weeks prior to the start of classes, submit your “Request for Accommodations” form to ODS and pickup instructor letters. ODS may be reached from any LBCC campus/center by email to [ODS@linnbenton.edu](mailto:ODS@linnbenton.edu) or by calling 917-4789. Letter pickup is available at each LBCC campus/center.

**LBCC Comprehensive Statement of Nondiscrimination**

LBCC prohibits unlawful discrimination based on race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, marital status, disability, veteran status, age, or any other status protected under applicable federal, state, or local laws. (for further information [http://po.linnbenton.edu/BP1015 - Nondiscrimination and Nonharassment Policy.pdf](http://po.linnbenton.edu/BP1015%20-%20Nondiscrimination%20and%20Nonharassment%20Policy.pdf))

**Center for Accessibility Resources**

LBCC is committed to inclusiveness and equal access to higher education. If you have approved accommodations through the Center for Accessibility Resources (CFAR) and would like to use your accommodations in the class, please talk to your instructor as soon as possible to discuss your needs. If you believe you may need accommodations but are not yet registered with CFAR, please visit the [CFAR Website](https://www.linnbenton.edu/cfar) for steps on how to apply for services or call (541) 917-4789.

**Advanced Arc Welding (SMAW & FCAW)**

**Course Weekly Outline - OpenBook**

## **Week 1 Online: Miller Open book - Due 4/12/20**

## [Introduction to Welding - Selecting Filler Metal or Electrodes](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14476&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Introduction-to-Welding---Selecting-Filler-Me)

## [Basic Electricity](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14471&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Basic-Electricity)

## [Terms for Welding](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14468&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Terms-for-Welding)

## [Types of Welding Power Sources](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14466&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Types-of-Welding-Power-Sources)

## **Week 2 Online: Miller Open book - Due 4/19/20**

## [Welding Techniques](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14477&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Welding-Techniques)

## [Current and Polarity](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14463&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Current-and-Polarity)

## [Welding Defects](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14464&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Welding-Defects)

## [Arc Control, DIG, & Hot Start](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14470&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Arc-Control-DIG-Hot-Start)

## **Week 3 Online: Miller Open book - Due 4/26/20**

## [Common Weld Defects](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14478&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Common-Weld-Defects)

## [Wires](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14480&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Wires)

## [Shielding Gases](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14472&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Shielding-Gases)

## **Week 4 Online: Miller Open book - Due 5/3/20**

## [Arc Transfer Modes](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14481&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Arc-Transfer-Modes)

## Advantages and Limitations

## [Electrodes](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14479&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Electrodes)

## **Week 5 Online: Miller Open boon - Due 5/10/20**

## [Filler Metals](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14473&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Filler-Metals)

## [Arc Starting Methods](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14482&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Arc-Starting-Methods)

## [Power Supply and Welding Prep](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14474&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Power-Supply-and-Welding-Prep)

## [Shielding Gases](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14475&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Shielding-Gases)

## [Introduction to Metals - Identifying Metals](https://openbook.millerwelds.com/Courses/ViewCourseSectionModule?courseItemId=14465&sectionId=2891&courseSlug=Advanced-Arc&sectionSlug=Advanced-Arc-SP20-Collins&moduleSlug=Introduction-to-Metals---Identifying-Metals)

## **Week 6:**

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## **Week 7:**

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## **Week 8:**

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## **Week 9:**