



**Columbus State Community College
Design, Construction & Trades Department
Skilled Trades Technology**

Class Schedule

SKTR 1180 B01-05663, B02-05664, B03-05665

Welding: Intro to Stick

Autumn Semester 2017

COURSE NUMBER: SKTR 1180 B01-05663, B02-05664, B03-05665

COURSE TITLE: Welding: Introduction to Stick

INSTRUCTOR: Scott Laslo, MS., CWI|CWE

CONTACT: slaslo1@csc.edu

CREDITS: 2

CLASS HOURS PER WEEK: 3

PREREQUISITES: MATH 1024

DESCRIPTION OF COURSE

This course introduces the learner to the welding profession, welding tools, welding safety, Oxy-Fuel setup, cutting, and heating, base metal preparation, weld quality, and several aspects of Shielded Metal Arc Welding (SMAW) (known as "Stick Welding") including equipment setup, and basic electrode selection. Through this course the learner will be able to assess what other welding skills and knowledge they desire and/or need for the work place.

COURSE STUDENT LEARNING OUTCOMES

- List the types of jobs in the Welding industry
- Explain the primary steps in welding fabrication
- Demonstrate how to work safely
- Identify degree of burns
- Explain the importance of proper ventilation
- Demonstrate electrical safety
- Solve basic welding fabrication math problems
- Round numbers
- Convert mixed units, fractions and decimals
- Give examples of ways to conserve metal
- Discuss job skills that will help ensure that a welder will be a more valuable employee
- Demonstrate safe equipment operation.

- Describe the Shielded metal arc process.
- Explain the three units to describe an electric current
- Describe the force that causes arc blow
- Explain how each type of welding power source produces the welding current
- Determine duty cycle
- Demonstrate how to set up a welding station
- Explain F2, F3, and F4 electrodes
- Demonstrate fabrication skills
- Demonstrate making square butt, outside corner, lap and tee joints
- Identify all the components and equipment found in a typical oxyfuel welding station
- Demonstrate proper assembly, testing, lighting, adjusting, and disassembling of an oxyfuel system
- List safety procedures for setting up and operating an oxyfuel system
- Demonstrate safe method of setting up cylinders, regulators, hoses, and the cutting torch
- Demonstrate how to maintain a cutting tip and torch
- Demonstrate how to light, adjust and make a cut using a cutting torch
- Describe a good oxyfuel cut
- Discuss safety procedures to be followed when oxyfuel cutting

PROGRAM OUTCOMES

- Understand the role and function of the skilled trades in the construction industry
- Discriminate the work they perform and how it interrelates with the other trades in the overall scope of a construction project
- Apply underlying theories and principles that are foundational to the trade that they have chosen
- Read, interpret, and follow construction drawings.
- Apply current industry-specific building codes in the planning and execution of work
- Demonstrate the use of proper safety procedures in all activities

OUTCOMES BASED ASSESSMENT OF STUDENT LEARNING

For this course, students are expected to demonstrate the skills associated with the Institutional Learning Goals (ILG) identified below:

- Critical Thinking
- Ethical Reasoning
- Quantitative Skills
- Scientific Literacy
- Technological Competence
- Communication Competence
- Cultural & Social Awareness
- Professional and Life Skills

In class students are assessed on their achievement of these outcomes. Names will not be used when reporting results. Outcomes-based assessment is used to improve instructional planning and design and the quality of student learning throughout the college.

COURSE MATERIALS REQUIRED

1. Blue jeans or work pant
 - a. No holes or frayed cuffs
2. Work shoe
 - a. Leather uppers and hard sole
 - b. Steel toed (preferred)
3. Long sleeve shirt
 - a. 100% cotton
4. Welders Jacket
5. Hat
6. Baseball cap
7. Welders cap
8. OSHA approved safety glasses
9. Leather work gloves
 - a. Welders glove
 - b. Drivers Glove
10. White Board; PC Terminal with Video Display and Projection Capability; Demonstration Tools, Construction Materials, and Protective Clothing

TEXTBOOK(S), MANUALS, REFERENCES, AND OTHER READINGS

1. ULINC
<https://lincolneh.plateau.com/learning/user/portal.do?siteID=OH%5fPS%5fCOLUMBUS%20STATE&landingPage=login>
Skilled Trades Manual
Operator Manuals for Tools

GENERAL INSTRUCTIONAL METHODS

Lecture, Demonstration, Practical Exercise, Technical Video

STANDARDS AND METHODS FOR EVALUATION

Attendance 10%
Quizzes 30%
Homework 10%
Final Project 20%
Final Exam 30%

GRADING SCALE

- A: 91% – 100%
- B: 81% – 90%
- C: 71% – 80%
- D: 61% – 70%
- E: 00% – 60%

SPECIAL COURSE REQUIREMENTS

Lab

Backpacks or book bags are **not** allowed in the lab area. All students are required to follow proper safety procedures in the lab. Proper safety procedures require students to demonstrate at all times proper individual safety and group safety. Students must understand and follow the concept of safety first when using the Welding lab. All students must wear proper garments and protective gear when using the Welding lab. The student must wear long pants (**no shorts, skirts, or dresses**) and a long-sleeve shirt. The protective gear includes but is not limited to the following safety goggles, welding gloves, welding apron, leather boots or shoes. Sandals are NOT Permitted. If a student does not have the proper safety gear, he/she will not be allowed to use the lab that class session, resulting in a grade of Zero for that session.

Late Work

Late work will not be accepted for any un-excused absence or work that is not turned in by the established due date. This is to include due dates included in this document or published on the Black Board Course website.

ATTENDANCE POLICY

Your instructor determines attendance policy, as follows: Due to the nature of this course, it is in your best interest to attend every class. If an absence is unavoidable, students are responsible for obtaining any materials or information given out in their absence from another student or if available from Black board. If you are absent on the day of a quiz or test, you may not make up the quiz or test without official, written documentation. Coming in late to lecture or lab will result in your attendance/safety grade being reduced by **50%**. In the event it is a scheduled test or quiz, the quiz or test grade will be **reduced 5%** for every **15minute** increment you are late in conjunction with a **50% reduction** of your attendance/safety grade.

COLLEGE SYLLABUS STATEMENTS

Columbus State Community College required College Syllabus Statements on College Policies and Student Support Services can be found at www.csc.edu/syllabus or on the College website Quick Links “Syllabus Statements”.



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WEEK	UNIT OF INSTRUCTION	ASSESSMENT METHODS	ASSIGNMENTS	ASSIGNMENT DUE DATE
Week 1	<u>Module One</u> Welcome to Welding Industrial Safety Shop Equipment Careers in Welding Safe Working Conditions Personal Protective Equipment Fire Safety	Tests Quizzes Assignments Lab Practical Record RealWeld Status	<u>Module One</u> Career in Welding H01 Power Equipment Safety Test Careers in Welding-Quiz#1 Safe Working Conditions Assessment Personal Protective Equipment Assessment Fire Safety Assessment Pedestal Grinder Safety Test 6013 Bead on plate 6010 Bead on plate 7018 Bead on plate	<u>Module One Assignments Due 9/5/17 @11:59PM</u> Career in Welding H01 Power Equipment Safety Test Careers in Welding-Quiz#1 Safe Working Conditions Assessment Personal Protective Equipment Assessment Fire Safety Assessment Pedestal Grinder Safety Test <u>Lab Assignments Due at End of Lab session 8/28/17</u> 6013 Bead on plate 6010 Bead on plate 7018 Bead on plate
Week 2	<u>Module One (Cont'd)</u> Inspection and Troubleshooting AWS/ANSI Z49.1:2012 Standard Electrical Safety The SDS Sheet Arc Welding and Cutting Equipment Safety First Aid	Tests Quizzes Assignments Lab Practical Record RealWeld Status	<u>Module One (Cont'd)</u> Inspection and Troubleshooting Assessment AWS_ANSI Z49_1_2012 Assessment Electrical Safety Assessment The SDS Sheet Assessment Arc Welding and Cutting Equipment Safety Assessment First Aid Assessment Welding Safety Quiz #2	<u>Module One Assignments Due 9/11/17 @11:59PM</u> Inspection and Troubleshooting Assessment AWS_ANSI Z49_1_2012 Assessment Electrical Safety Assessment The SDS Sheet Assessment Arc Welding and Cutting Equipment Safety Assessment First Aid Assessment Welding Safety Quiz #2 <u>Lab Assignments Due at End of Lab session. No LAB on 9/4/17 Labor Day. College is closed</u>
Week 3	<u>Module Two</u> Vision and Body Position Principles of SMAW Lincoln Electric Technique Examples SMA Leading Angle SMA Power Source SMAW Evaluation and Troubleshooting SMAW Maintenance and Repair SMA Trailing Angle SMAW Welding of Plate	Tests Quizzes Assignments Lab Practical Record RealWeld Status	<u>Module Two</u> Vision and Body Position Assessment Principles of SMAW Assessment SMAW Evaluation and Troubleshooting Assessment SMAW Maintenance and Repair SMAW Welding of Plate SMAW Equipment, Setup and Operation Assessment SMAW Quiz #1 X-assembly (6010,6013,7018)	<u>Module Two Assignments Due 9/18/17 @11:59PM</u> Vision and Body Position Assessment Principles of SMAW Assessment SMAW Evaluation and Troubleshooting Assessment SMAW Maintenance and Repair SMAW Welding of Plate SMAW Equipment, Setup and Operation Assessment SMAW Quiz #1

WEEK	UNIT OF INSTRUCTION	ASSESSMENT METHODS	ASSIGNMENTS	ASSIGNMENT DUE DATE
	SMA Power Source SMAW Equipment, Setup and Operation			Lab Assignments Due at End of Lab session 9/11/17 X-assembly (6010,6013,7018)
Week 4	Module Three Addition and Subtraction of Decimals Multiplication and Division of the Decimal Inch Division of Fractions and Mixed Fractions Conversion of Fractional Inch to Decimal Inch Conversion of Decimals to Closest Fractional Inch Introduction to Dimensional Analysis Using Dimensional Analysis in Welding Conversion of Angles to Decimal Degrees Calculating Perimeter and Area of Objects Calculating Volume of Objects Calculating Material Weights Oxyfuel - Cylinder Regulator installation Oxyfuel - Gas Cutting and Welding Torch Installation	Tests Quizzes Assignments Lab Practical Record RealWeld Status	<u>Module Three</u> Addition and Subtraction of Decimals Assessment Multiplication and Division of the Decimal Inch Assessment Division of Fractions and Mixed Fractions Conversion of Fractional Inch to Decimal Inch Conversion of Decimals to Closest Fractional Inch Assessment Introduction to Dimensional Analysis Using Dimensional Analysis in Welding Conversion of Angles to Decimal Degrees Calculating Perimeter and Area of Objects Calculating Volume of Objects Calculating Material Weights Shop Math Quiz Oxyfuel - Cylinder Regulator installation Oxyfuel - Gas Cutting and Welding Torch Installation	Module Three Assignments Due 9/25/17 @11:59PM Addition and Subtraction of Decimals Assessment Multiplication and Division of the Decimal Inch Assessment Division of Fractions and Mixed Fractions Conversion of Fractional Inch to Decimal Inch Conversion of Decimals to Closest Fractional Inch Assessment Introduction to Dimensional Analysis Using Dimensional Analysis in Welding Shop Math Quiz Lab Assignments Due at End of Lab session 9/18/17 X-assembly (6010,6013,7018) Project 9-3 Oxyfuel Cutting
Week 5	Oxyfuel Welding and Cutting Equipment, Setup, and Operation	Tests Quizzes Assignments Lab Practical	<u>Module Four</u> Oxyfuel #3 Oxyfuel #4 Oxyfuel #5 Oxyfuel #6 Oxyfuel Welding and Cutting Equipment, Setup, and Operation SKTR 1180 Quiz#3 T-Joint 6010, 7018, 6013 Lap-Joint 6010, 7018, 6013 Project 9-3 Oxyfuel Cutting Project 9-4 Oxyfuel Cutting	Module Four Assignments Due 10/02/17 @11:59PM Oxyfuel Welding and Cutting Equipment, Setup, and Operation SKTR 1180 Quiz#3 Lab Assignments Due at End of Lab session 9/25/17 T-Joint 6010, 7018, 6013 Lap-Joint 6010, 7018, 6013 Project 9-3 Oxyfuel Cutting Project 9-4 Oxyfuel Cutting
Week 6	Oxyfuel - Lighting and shutting down an oxyacetylene torch Using Alternate Fuel - The Harris Products Group Flame Cutting #1 Flame Cutting #2 Flame Cutting #3 Oxyacetylene Cutting	Tests Quizzes Assignments Lab Practical Record RealWeld Status	<u>Module Five</u> Oxyacetylene Cutting SKTR 1180 Quiz#4 SKTR 1180 Quiz#5	Module Five Assignments Due 10/09/17 @11:59PM Oxyacetylene Cutting SKTR 1180 Quiz#4 SKTR 1180 Quiz#5 Lab Assignments Due at End of Lab session 10/02/17 T-Joint 6010, 7018, 6013 Lap-Joint 6010, 7018, 6013 Project 9-3 Oxyfuel Cutting Project 9-4 Oxyfuel Cutting
Week 7	Lab Final Written Final Exam Review	Lab Final Exam	<u>Module Final Exam</u> Safety/SMAW/OFC Final lab exam	FINAL LAB EXAM SCHEDULE Due on 10/16/17 -Final lab exam
Week 8	Written Final Exam (Online Only)	Online Written Exam	Module Final Exam Written Exam Safety/SMAW/OFC (Online Only)	FINAL WRITTEN ONLINE EXAM SCHEDULE Due on 10/21/17 @ 11:59PM- Online Final

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