



INDUSTRIAL & TRADE TECHNOLOGY
YOUR PATH TO THE FUTURE

WELD 170

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Required Text: Modern Welding ISBN 978-1-68584-656-5 Bundle (Text + Canvas 2-year Access Key Code). They can purchase directly at the SRJC bookstore.

Course Description: This is a basic welding course which provides an awareness of welding and cutting processes and develops or upgrades limited manipulative skills involving shielded metal arc welding, oxy-fuel welding, oxy-fuel cutting, and brazing. It is designed to introduce welding to the community members and students in other vocational areas. WELD 170 is designed to provide an appreciation of welding skills while teaching some of the fundamentals of SMAW, OFC, and OFW.

Student Learning Outcomes:

- A. Identify and recognize hazards associated with a welding environment utilizing Oxy-Fuel and SMAW
- B. Apply the use of Personal Protective Equipment (PPE)
- C. Apply common terminology related to safety
- D. Explain basic theory of operation of OFC, OFW, SMAW equipment
- E. Set up OFC, OFW and SMAW welding mild steel with E6010 and E7018 electrodes
- F. Recognize and explain visual defects in electric arc welding
- G. Perform SMAW and OFW welding in 1G and 2G positions
- H. Perform OAC on mild steel plate

Course Objectives:

Upon completion of this course, the student will be able to:

- A. Identify and describe personal protective equipment (PPE) related to welding industry
- B. Identify and describe welding safety practices related to specific hazards
- C. Identify and describe oxyfuel cutting and welding equipment and consumables
- D. Demonstrate how to set up, light, and shut down oxyfuel equipment
- E. Demonstrate how to perform various oxyfuel cutting procedures
- F. Identify safe practices related to preparing base metals and cleaning procedures
- G. Describe how to prepare joints for welding
- H. Identify and describe weld discontinuities and their causes
- I. Identify SMAW related safety practices and explain how electrical characteristics apply to SMAW
- J. Identify and describe SMAW equipment
- K. Explain and demonstrate how to set up and start SMAW equipment
- L. Describe the SMAW electrode classification system and how to select the proper electrode
- M. Explain and demonstrate how to successfully complete various types of beads and welds

Course Content:

Orientation

1. The classroom, shop area and its machines and tools
2. General shop rules
3. Personal conduct - attitudes and responsibilities
4. Testing and grading

Safety

1. Personal safety and habits
2. Shop safety rules
3. Oxyacetylene safety
4. Arc welding safety
5. Safety devices - fire extinguishers, fire blankets, etc.
6. General safety - grinders, hand tools, electrical, etc.
7. Safety test

Oxygen Fuel Gas Cutting, Welding, and Brazing

1. Safety
2. Manual oxygen-fuel gas
3. Cutting torches (types)
4. Oxygen-fuel gas flames, temperatures of each, etc.
5. Machine oxygen-fuel gas cutting
6. Cutting nozzles, tips, and gas pressures

Electrical Arc Welding

1. Safety
2. Machines and equipment
3. Polarity - straight and reverse
4. Nomenclature of electrodes and coatings
5. Preparations of metals for welding
6. Starting and setting machines - voltage and amperage
7. Striking and maintaining the arc
8. Running the basic welds
9. Flat and horizontal welding with various electrodes
10. Terminology, processes, procedures and techniques

Course Web Site: Students will use the Canvas course website for assignment instructions, submitting assignments, viewing classmate's work, sharing resources, and viewing grades.

Personal Protective Equipment (PPE): Students will wear appropriate PPE at all time in the welding lab and yard.

Students will be issued the following items by SRJC to use and keep as their own.

- ☐ Clear and shade 5 tinted Z87 safety glasses
- ☐ 8 inch slip joint pliers
- ☐ Hearing Protection
- ☐ Soap stone

Students will need to acquire and wear the following **PPE at all times** in the welding lab.

- ☐ Welding helmet with shade 10 lens
- ☐ Standard leather welding gloves with gauntlet for SMAW and OFW
- ☐ Leather work boots (steel toe not required)
- ☐ Pants (no cuffs, synthetic material, loose fitting)
- ☐ Welding jacket (flame resistant fabric or leather sleeve style)

Required Materials: Students are required to provide the following materials for class.

- ☐ Lock for storage locker (key or combination)

- ☐ Flint Striker for Oxy Fuel Welding (with replacement Flints)
- ☐ 1 inch three ring binder
- ☐ College ruled lined paper
- ☐ Pen and Pencil

Electronic Devices: Will not be used at any time in the classroom, can be used outside the lab during lab break time. Phone violations will result in a loss of participation for the class period. All phones will be set to vibrate. (No Ring tones.)(Calculators may be used for Math and estimation exercises)

Grading: Visit the “Grades” in Canvas to keep track of your grades. I grade once a week and post grades and comments on the online Canvas gradebook.

- | | |
|--|------|
| <input type="checkbox"/> Tests | 20% |
| <input type="checkbox"/> Written Asmts. | 10% |
| <input type="checkbox"/> Practical Midterm | 10% |
| <input type="checkbox"/> Practical Final | 10% |
| <input type="checkbox"/> Lab assignments | 40% |
| <input type="checkbox"/> Participation | 10%. |

Grade Scale

A = 90-100% B = 80-89 % C = 70-79 % D = 60-69 % F = 59-0 %

Assignments: *All assignments must be complete for a passing grade.* Assignment due dates and number of assignments can be altered by the instructor at any time. All assignments are due **at midnight PST** on the due date.

There will be practical midterm and final exams. The test material comes from the textbook, class lectures and supplemental materials. If any exam is missed, a zero will be recorded as the score. It is your responsibility to take the online exams by the due date.

Attendance: Students who fail to attend the first class (face-to-face courses) or do not log-in to an online class after the second day of the semester will be dropped from the class. It is strongly advised that if you need to miss more than one class/homework deadline in a row that you contact me to avoid being dropped from the class.

Attendance is required. Exams and quizzes must be taken on the date scheduled. *No makeup exams, quizzes, or welding tests will be given.* Attendance policy is found in the SRJC Catalog and will be followed.

All students will pass a safety test with a score of 100%. Students who cannot achieve the 100% criteria will not be able to participate and be in the welding lab which will result in the student being dropped from the course. Tests will be given in the second week of class.

Special Needs: Students with disabilities who believe they need accommodations in this class are encouraged to contact Disability Resources (527-4278), as soon as possible to better ensure such accommodations are implemented in a timely fashion.

All information and documentation is confidential. Please feel encouraged to make an appointment with me privately to discuss your specific learning needs in my class.