

# Welding & Metal Fabrication Syllabus



**Instructor:**     *Mr. Olesky*

**Lab:**                **E101**

**Related:**           **Room D-114**

**2011 -2012**

The Welding program is a two year program to train junior and senior high school students the entry level skills both theoretically and physically, needed to gain employment in their chosen endeavor. We feel that developing competencies in the following areas will achieve this goal.

- Develop strong safety practices in the usage of welding, fabricating and other weld related equipment in theory, lab and by taking an OSHA course
- Develop knowledge in the main welding processes: SMAW, GMAW, FCAW, GTAW on plate and have the opportunity to test according to structural codes set up by The American Welding Society.
- Develop the ability to safely use oxyfuel cutting and welding along with thermal cutting equipment both hand and mechanized.
- Develop strong blueprint reading skills along with the related math necessary for career advancement
- Develop the skills to identify different types of metal through various testing methods as well as weld testing and distortion control.
- Develop a knowledge of advanced welding and cutting systems and the impact they will have on the industry
- Develop knowledge of the expenses of equipment cost and usage along with the consumables for estimating jobs, again for advancement or as a business owner.
- Develop and apply teamwork and leadership skills along with a positive attitude gained through organizations such as Skills USA.
- Develop good communication skills and public relations through community service to the public.
- Grading Scale (School Standard)
  - A 92-100%
  - B 83-91%
  - C 74-82%
  - D 66-73%
  - F 0-65%
- Students will be graded on homework assignments, reports, tests, quizzes, projects, class participation, and notebook.
- Assessments may also include dress code, care of lab and school equipment, ability to get along with and respect other students.
- Each assessment will be worth 100 points and weighted equally.
- Students will participate in job shadowing and senior projects.
- Student will self evaluate projects before submitting for grade.

# Safety Testing

Skill and technical training is second only to the safety of our students. To that end, the Welding Program not only places a heavy emphasis on safety training, but requires that each student in the program take and pass safety tests before they begin any work that may have specific safety issues. The Welding Program gives three such tests during the course of the program.

- ⌚ **General Lab Safety:** The Welding Program has a safety test that is intended to introduce the new student to safety issues associated with this program. There will be general classroom instruction to cover these issues and a written test to assess the student's understanding of these issues and how to deal with them. This general lab safety test must be passed at 100% before the student will be allowed to begin working in the lab. A note will be sent home to the parent(s) indicating that the student has passed the test and will require a signature from them. This will be returned to the program and kept on file.
  
- ⌚ **Machine/Equipment Specific Safety:** Students will begin using different types of machines and equipment at various times throughout the program. Prior to using each machine or piece of equipment for the first time, he/she will be instructed in its safe and proper use. A test may be required to assess student understanding. These tests must be passed with 100% accuracy.

- ⌚ **OSHA 10 hour Construction Safety / General Industry Safety.**

Teaching students to work safely is more important than teaching any skill in any program. The TCTC has made passing the 10 Hour OSHA safety course a requirement for successful completion of this program. This nationally recognized certificate will go into the student's portfolio upon completion, and because safety is so important to employers these days, it gives our students an important advantage when applying for a job. The \$18 nominal fee (\$275 if taken after graduation) is part of the program fees and may be re-assessed if the student fails to complete the initial test successfully. Students will not receive their State Certificates of Program Completion if they do not successfully complete this test.

## **General Safety Policies:**

1. Students will be given safety instruction throughout the program. Students must pass any safety tests associated with this instruction before beginning any actual work in the specific area.
2. Parents of students, who fail the general lab safety, the OSHA 10 hour safety test or any specific safety test three consecutive times, will be required to attend a conference to discuss that student's requirements for continued participation in the program. This conference will be with the program teacher, program supervisor as well as the student.

## **Certifications**

At the end of the student's senior year and upon successful completion of all assignments along with an A or B average in Welding, a 90% attendance record, and recommendation of the instructor, the students will be able to take AWS structural certifications. Upon successful completion of the first, they may take a second (if successful), then a third. By passing these industry standard certifications, it will definitely help the students find gainful employment.

## **CLASS REQUIREMENTS**

In the Welding Program, students are also required to pass **Core Knowledge** related to the Manufacturing Trades. They are:

- 1: Career Exploration and Development
- 2: Business Processes
- 3: Communications
- 4: Problem Solving and Critical Thinking
- 5: Leadership and Teamwork
- 6: Legal and Ethical Aspects
- 7: Safety
- 8: Health and Environment
- 9: Tools and Equipment
- 10: Manufacturing Technology Basics

### **Welding Competencies are:**

- 44: Safety
- 45: Materials Science, Inspection and Testing
- 46: Engineering Drawings
- 47: Welding Fabrication
- 48: Oxyfuel Brazing and Soldering
- 49: Shielded Metal Arc Welding (SMAW)
- 50: Thermal Cutting
- 51: Gas Metal Arc Welding (GMAW)
- 52: Flux Core Arc Welding (FCAW)
- 53: Gas Tungsten Arc Welding (GTAW)
- 54: Advanced Welding Systems

These are competency tests that both the Juniors and Seniors are working towards completing in their two years.