Syllabus
Welding technology I

School: Career and Technology Center

Instructor: Travis Leake

Course title: Welding I

Course Description: In this course students will learn the safety associated with the welding trade. Students will also learn to safely use the oxyfuel cutting process, get an introduction to the (SMAW) arc welding process, learn basic filler metal recognition, and learn to use some of the hand tools related to welding. Upon completion of this course the student will be prepared to enter Welding Technology II.

Credits: One unit (9 Weeks)

Prerequisites: none

Grading scale:
- Major 60%
- Minor 40%

Course Competencies/Objectives

Unit A: Welding Safety
1. Identify some common hazards in welding.
2. Explain and identify proper personal protection used in welding.
3. Demonstrate how to avoid welding fumes.
4. Explain some of the causes of accidents.
5. Identify and explain uses for material safety data sheets.
6. Demonstrate safety techniques for storing and handling cylinders.
7. Explain how to avoid electric shock when welding.
8. Demonstrate proper materials handling methods.

Unit B: Oxyfuel Cutting
1. Identify and explain the use of oxyfuel cutting equipment
2. Set up oxyfuel equipment
3. Light and adjust oxyfuel torch
4. Shut down oxyfuel cutting equipment
5. Disassemble oxyfuel equipment
6. Change empty cylinders
7. Perform oxyfuel cutting
    - Strait line and square shapes
    - Piercing and slot cutting
  - Bevels
  - Washing
  - Gouging

Operate a motorized, portable oxyfuel gas cutting machine

Unit C: Base metal preparation

1. Clean base metal for welding or cutting
2. Identify and explain joint design.
3. Explain joint design considerations.

Unit D: SMAW- Equipment and Setup

1. Identify and explain shielded metal arc welding (SMAW) safety.
2. Identify and explain welding electrical current.
3. Identify and explain arc welding machines.
4. Explain setting up arc welding equipment.
5. Set up a machine for welding.
6. Identify and explain tools for weld cleaning.

Unit E: SMAW- Electrodes and selection

1. Identify factors that affect electrode selection.
2. Explain the American Welding Society (AWS) and the American Society of Mechanical Engineers (ASME) filler metal classification system.
3. Identify different types of filler metals.
4. Explain the storage and control of filler metals.
5. Explain filler metal traceability requirements and how to use applicable code requirements.
6. Identify and select the proper electrode for an identified welding task.

Unit F: SMAW- Beads and Fillet welds

1. Set up shielded metal arc welding (SMAW) equipment.
2. Describe methods of striking an arc.
3. Properly strike and extinguish an arc.
4. Describe causes of arc blow and wander.
5. Make a stringer, weave, and overlapping beads.
6. Make fillet welds in the:
   - Flat (1F) position
   - Horizontal (2F) position
   - Vertical (3F) position
   - Horizontal overhead (4F) position