Western Technical College

31442312  Welding - Fabrication 2

Course Outcome Summary

Course Information

| Description | A course of instruction to include precision layout with the use of rulers/scales, hand tools, operation of the press brake, welding joint designs, shearing and sawing materials, grinders and belt sanders. Assemble projects by various welding processes with the use of blueprint symbols. |
| Career Cluster | Manufacturing |
| Instructional Level | Technical Diploma Courses |
| Total Credits | 2 |
| Total Hours | 72 |

Textbooks


Learner Supplies

Welding sateen jacket, welding work gloves (long leather gauntlet, short leather work gloves), welding helmet, leather cape and sleeves. **Vendor:** To be discussed in class. Required.

Tools: 25’ steel tape measure, metal combination square, and scribe. **Vendor:** To be discussed in class. Required.

Six inch leather steel toed work books - $75.00-150.00. **Vendor:** To be discussed in class. Required.

Safety glasses with side eye protection that meet Z87 OSHA guidelines. **Vendor:** Campus Shop. Required.

Success Abilities

1. Apply mathematical concepts.
2. Demonstrate ability to think critically.
3. Demonstrate ability to value self and work ethically with others in a diverse population.
4. Make decisions that incorporate the importance of sustainability.
5. Transfer social and natural science theories into practical applications.
6. Use effective communication skills.
7. Use technology effectively.

Program Outcomes

1. Demonstrate industry recognized safety practices
2. Interpret welding drawings
3. Produce shielded metal arc welds (SMAW)
4. Produce gas metal arc welds (GMAW)
5. Produce flux core welds
6. Produce gas tungsten arc welds (GTAW)
7. Perform thermal cutting

Course Competencies

1. **Weld with Positioner**

   Assessment Strategies
   1.1. using safety issues.
   1.2. using notes taken in class text and video.
   1.3. reading and using lab sheet.
   1.4. using previous cutting and welding skills in a safe lab environment.

   Criteria
   
   *Criteria - Performance will be satisfactory when:*
   1. learner will demonstrate how to set up positioner.
   2. learner will construct weld joint completely filled.
   3. learner will have labs (120 minutes) to complete with 100% proficiency.
   4. learner will be able to understand acceptable weld quality according to AWS D1.1

   Learning Objectives
   1.a. Set up positioner speed.
   1.b. Set up welding parameters.
   1.c. Make a continuous weld around 10"-12" pipe without stopping.
   1.d. Identify a good weld.
   1.e. Shut down equipment.
   1.f. Clean up area.

2. **Operate Victory Plasma Table**

   Assessment Strategies
   2.1. using safety issues.
   2.2. using notes taken in class text and video.
   2.3. reading and using lab sheet.
   2.4. using previous cutting and welding skills in a safe lab environment.

   Criteria
   
   *Criteria - Performance will be satisfactory when:*
   2.1. learner will demonstrate how to program CNC flame machine by use of pattern.
   2.2. learner will cut programmed part with plasma cutting process.
   2.3. learner will complete pattern in 1 1/2 hours.

   Learning Objectives
   2.a. Change of components of torch head.
   2.b. Set up of plasma cutting equipment.
   2.c. Program CNC to achieve cut part to proper size.
   2.d. Understand cutting speeds.
2.e. Shut down equipment.
2.f. Clean-up area.

3. **Operate Press Brake**

   **Assessment Strategies**
   3.1. using safety issues.
   3.2. using notes taken in class text and video.
   3.3. reading and using lab sheet.
   3.4. using previous cutting and welding skills in a safe lab environment.

   **Criteria**

   *Criteria - Performance will be satisfactory when:*
   3.1. learner will demonstrate use of 8' hydraulic press brake.
   3.2. learner will demonstrate the calculations of bend allowances.
   3.3. learner will air bend 100% proficiency on mild steel to given specifications.
   3.4. learner will complete in assigned time depending on difficulty of project.

   **Learning Objectives**
   3.a. Set up press brake using proper punch and die.
   3.b. Figure bend allowances.
   3.c. Shear and square mild steel to proper size.
   3.d. Layout for bending.
   3.e. Perform accurate bends to given degrees assigned.

4. **Fabricate Mild Steel**

   **Assessment Strategies**
   4.1. using safety issues.
   4.2. using notes taken in class text and video.
   4.3. reading and using lab sheet.
   4.4. using previous cutting and welding skills in a safe lab environment.

   **Criteria**

   *Criteria - Performance will be satisfactory when:*
   4.1. learner will demonstrate the construction of mild steel projects.
   4.2. learner will demonstrate previous learned weld skills.
   4.3. learner will understand acceptable weld quality.
   4.4. learner will understand tolerances of welding fabrication according to AWS D1.1.
   4.5. learner will complete in assigned time depending on difficulty of project.

   **Learning Objectives**
   4.a. Set up of various clamps.
   4.b. Proper sequence of tacking.
   4.c. Maintaining squareness and tolerances +/- 1/16”.
   4.d. Clean-up weld when completed.
   4.e. Shut down weld equipment.
   4.f. Clean up area.