|  |  |
| --- | --- |
| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Manufacturing |
| **Course Name** | Welding I |
| **Lesson/Unit Title** | Basic Angles Project |
| **TEKS Student Expectations** | **130.363. (c) Knowledge and Skills**  (2) The student explores the employability characteristics of a successful worker in the global economy. The student is expected to  (F) demonstrate skills related to health and safety in the workplace as specified by appropriate governmental regulations  (3) The student applies academic skills to the requirements of welding. The student is expected to  (A) demonstrate effective communication skills with individuals from varied cultures such as fellow workers, management, and customers  (B) demonstrate mathematical skills to estimate costs  (C) demonstrate technical writing skills related to work orders  (D) apply accurate readings of measuring devices  (E) use appropriate tools to make accurate measurements  (F) compute measurements such as area, surface area, volume, and perimeter  (G) solve problems using whole numbers, fractions, mixed numbers, and decimals  (H) use various methods, including a calculator, to perform computations  (I) perform conversions between fractions and decimals  (K) calculate and apply the functions of angles such as using the Pythagorean Theorem  (L) diagram the parts of a circle  (5) The student understands welding joint design, symbols, and welds. The student is expected to  (B) interpret orthographic and isometric views of three-dimensional figures  (C) interpret engineering, drawings, charts, and diagrams  (E) identify types of welding joints  (F) identify positions of welding and  (G) identify types of welds such as fillet, groove, spot, plug, and flanged |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | The students will be able to:   * Apply appropriate techniques to: * Measure, * Cut, * Weld, * Grind, and * Follow instructions on a given project. * Apply correct angle measurements to fit a specified item to be built. * Weld correct angles for various projects. |
| **Rationale** | The goal of this lesson is to get students acquainted to forming correct angles for various welding projects. |
| **Duration of Lesson** | 6 Hours |
| **Word Wall/Key Vocabulary**  *(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* |  |
| **Materials/Specialized Equipment Needed** | * Basic Angles Quiz * Basic Angles Quiz Key |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | Describe a scenario where a supervisor gives instructions needing an item built requiring a specific set of angles in the metal.  SAY: “It is the worker’s job to fit the specs and make the item work appropriately. We’re going to make basic angles using pieces of pre-cut ¼” plate.” |
| **Direct Instruction \*** | Begin by reviewing the use and markings of the t-square, framing square, combination square, and protractor taught earlier in the semester during the measurement lesson).  Also review grinder safety.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  None |
| **Guided Practice \*** | Ask for questions and review if unclear. Break students into groups for practice sessions. Activities include:   * Tack together pieces to create 90-degree angle. * Use the measurement tools to ensure angle accuracy. Cut in half to create a 45-degree angle. * Weld together on outside only (nothing on inside). * Grind and file to make clean lines, edges, and corners.   Students discuss the build instructions with a partner. If they have any questions, they should consult one another, then the instructor.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  None |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | Students begin the build procedure. Follow the activities listed.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  None |
| **Lesson Closure** | Reviews the lesson and elements of basic angles (see outline notes about measurement and grinder safety). |
| **Summative/End of Lesson Assessment \*** | Successful completion of the project according to specs.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  None |
| **References/Resources/**  **Teacher Preparation** |  |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** |  |
| **Recommended Strategies** | |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy**  **Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** |  |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** |  |
| **Communication**  **90 Second Speech Topics** |  |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) |  |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | SkillsUSA |
| **Service Learning Projects** |  |
| **Lesson Notes** |  |

1. Visit the Texas College and Career Readiness Standards at <http://www.thecb.state.tx.us/collegereadiness/CRS.pdf>, Texas Higher Education Coordinating Board (THECB), 2009. [↑](#footnote-ref-1)