

WLD 112 Thermal Cutting & Welding

1-3 credits

Course Competencies

PART 1: THERMAL CUTTING (36 hours minimum)

= 2 credits

NOTE: The following requirements apply to tasks #1-10

- Straightness of cut edge must be within $\pm 3/32$
 - Cut edge must be $\pm 2^\circ$ of being square.
 - Use #1 or #0 tip
- Big Bend Community College uses Victor tip #1 and #0; other equipment and apparatus suppliers are acceptable.
1. Straight Cutting - Use $3/8'' \times 4'' \times 8''$ plate
 2. Straight Cutting - $3/4'' \times 4'' \times 8''$ plate
 3. Round Bar - $1/4''$ to $1''$ material; 90° cut and 35° bevel
 4. Square Tube (or rectangular tube) - Any size or thickness or material; Student must be able to use a square for cutting.
 5. H & I Beam - Any available material; any size or thickness; Student must be able to use a square for cutting.
 6. Angle Iron (or Channel Iron) - Any available material; any size or thickness; Student must be able to use a square for cutting.
 7. Bevel 35° Straight Cut $3/8''$ plate and $3/4''$ plate
 8. Scarfing - Remove cracks, seams, scabs, breaks
 9. Piercing Holes ($1/4''$, $3/8''$, $1/2''$, $3/4''$, and $1''$) in each size plate $1/4''$, $3/8''$, $1/2''$, $3/4''$, up to $1''$
 10. Pipe Straight, bevel 30° (any $4''$, $6''$, $8''$ or $10''$ pipe and any 40 - 120 schedule thickness)

NOTE: For Tasks #11 - #14

- BBCC has necessary equipment and will provide demonstration for high school students upon request.
 - Students will receive instruction when they enroll in the college program if not taught in their high school.
11. Machine Cutting (Straight Cutting - Using $3/8'' \times 4'' \times 8''$ Plate & $3/4'' \times 4'' \times 8''$ Plate) & Bevel 35° Straight Cut - $3/8'' \pm 3/4''$ Plate
 12. Machine Cutting Repeat Task #10 – Pipe Straight, bevel 30° (Optional if equipment is available) Any $4''$, $6''$, $8''$ or $10''$ Pipe or Any 40-120 Schedule Thickness
 13. Plasma Arc Cutting (Optional if equipment is available)
 14. Carbon Arc Cutting (Optional if equipment is available)

PART 2 OXY-ACETYLENE GAS WELDING (24 hours minimum)

= 1 credit

15. Carbon Steel Running Bead Without Rod (Flat, Vertical, Horizontal) – Overhead (Optional)
16. Carbon Steel Running Bead With Rod (Flat, Vertical, Horizontal) – Overhead (Optional)
17. Butt Joint: 16 gauge $1'' \times 6''$ preferred; any thickness acceptable (Flat, Vertical, Horizontal) – Overhead (Optional)
18. T or Corner Joint (Flat, Vertical, Horizontal) – Overhead (Optional)
19. Lap Joint (Flat, Vertical, Horizontal) – Overhead (Optional)

NOTE: The following requirements apply to tasks #20-25

Three positions, between $3/32''$ - $1/8''$ rod with flux or pre-coated brass rod

20. Brazing Running Beads (Flat, Horizontal, & Vertical) Overhead -Optional
21. Brazing Butt Joint (Flat, Horizontal, & Vertical) Overhead-Optional
22. Brazing Lap Joint (Flat, Horizontal, & Vertical) Overhead-Optional
23. Brazing T Joint (Flat, Horizontal, & Vertical) Overhead-Optional
24. (Optional) Aluminum Running Beads, any available material
 - Flux cored (COR-AL used at BBCC)
 - Flat and vertical positions
25. (Optional) Aluminum Butt Joint, available material
 - Flux cored (COR-AL used at Big Bend Community College)
 - Flat and vertical positions