

Course Objectives/Course Outline
Spokane Community College

Course Title: Shop Practices

Prefix and Course Number: CAD 141

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Have a thorough understanding of such manufacturing techniques as:
- Demonstrate and apply a full understanding of shop safety, both in general shop environment as well as in each of the fabrication methods practiced in this course
- Demonstrate Ability to Create and Maintain an Inventory of Shop Tools, Equipment, and Consumables
- Have a thorough understanding of such shop fabrication and manufacturing techniques in:
 - Drawing interpretation and part layout techniques
 - Hand tools – manual cutting, drilling, filing, etc.
 - Introductory power tools – cutting, grinding, and drilling processes
 - Introductory machining methods – Mill, Lathe, CNC applications
 - Introductory fabrication, welding, and joining processes – torch, weld, solder, etc.
 - Assembly, alignment, and inspection techniques

Course Outline:

- I. Shop Safety
 - A. Identify Shop Hazards and Demonstrate Proper Safety Practices for:
 1. General Shop Environment, Including Shop Cleanliness
 2. Working With others in the Shop
 3. Specific Safety Practices for each Tool in the Shop
 4. Safety Practices for Handling and Storing Materials
- II. Drawing Interpretation And Part Layout Techniques
 - A. Reading the Engineering Drawing for Specifications, Dimensions, and Tolerances
 - B. Layout Techniques for Various Fabrication Processes
- III. Hand Tools – Manual Cutting, Drilling, Filing, Etc.
 - A. Care, Sharpening, Set-Up, and Inventory of Hand Tools
 - B. Proper Technique For Hand Saw, Filing, Hand Drilling, Sanding (Wood, Metal, and Composites)
- IV. Introductory Power Tools – Cutting, Grinding, And Drilling Processes
 - A. Care, Sharpening, Set-Up, Inventory, and Lubrication of Power Tools
 - B. Guards, Clamping, Jigs & Fixtures
 - C. Proper Technique for:
 1. Table Saw, Band Saw, Sander
 2. Drill Press, Cut-off Saw, Grinding
 3. Mill, Lathe, CNC
- V. Introductory Machining Methods – Mill, Lathe, CNC Applications
 - A. Care, Sharpening, Set-Up, Inventory, and Lubrication of Machine Tools
 - B. Guards, Clamping, Jigs & Fixtures, Cutters
 - C. Proper Technique For:
 1. Mill, Lathe, CNC

- VI. Introductory Fabrication, Welding, And Joining Processes – Torch, Weld, Solder, Etc.
 - A. Care, Guarding/Shielding, Safety, Inventory
 - B. Torch Cutting
 - C. Welding/Soldering Equipment & Techniques
 - D. Metal Bending/Forming
 - E. Gluing, Bonding
- VII. Assembly, Alignment, And Inspection Techniques
 - A. Identification and Application of Fasteners and Tools
 - B. Working with Fits, Tolerances, and Alignment Requirements
 - C. Inspection Techniques from Engineering Drawings to Fabricated Part