

Level 4 Overview

- A/C Wiring – Pipe Lamp
- Introduction to Prototyping
- Advanced Laser Etching – Rotary Tool & Enclosures
- Electronics Troubleshooting and Multi-Meters
- Woodshop – Power Tools Workshop
- Woodshop – Build a Wooden Bench
- Master Project – Bluetooth Speaker Box

A/C Wiring Techniques

Activity: Use black pipe to construct a lamp that mimics a living creature. Modify the black pipe to allow for the fitment of A/C wiring and light fixture to make it a fully functioning desk lamp. Discuss the difference between alternating current and direct current circuits. Learn wire splice and preparation techniques specific to A/C wiring as used in home construction.

Tools used: Assorted electronics hand tools including: wire strippers, crimpers, scissors, heat gun, soldering iron, multi-meter and assorted hand tools.

Introduction to Prototyping

Activity: Students are challenged with a small project concept and need to determine the best materials, method of manufacture, and tools to use. They will then execute their plan to build a project learning if their plans were any good along the way and correcting on the fly. Projects will vary.

Tools used: Varies but all Urban Workshop tool kits are available to them.

Advanced Laser Etching Techniques

Activity: Students make their own designs in Corel Draw and then set it up for engraving on a cylindrical object. Students are also challenged to design and laser cut an interlocking panel enclosure giving them the skills to make complex structures.

Tools used: Laser etcher and rotary tool

Electronics Troubleshooting and Multi-Meters

Activity: Students reinforce their understanding of A/C and D/C circuits and are challenged to troubleshoot faulty circuits using a variety of test meters and techniques. Sample test circuits will include D/C circuits, common A/C circuits used in home construction, validation of hardware including relays, and techniques to pin-out hardware.

Tools used: Assorted electronics hand tools and multi-meter, assorted hand tools

Woodshop – Power Tools Workshop

Activity: Learn to use a variety of portable power tools that are useful for practical projects around the house or project site. Students use the jig saw, skill saw, circular saw, saws-all, and more while learning how to setup, adjust, use, and clean up. This class gives students the skills and confidence to use professional level equipment for any project.

Tools used: Jointer, Jig saw, circular saw, saws-all, skill saw, planer, vibrating sander, belt sander, chop saw.

Woodshop – Build a Wooden Bench (4 Classes)

Activity: Use basic and powered shop tools to make a bench out of hardwood. Cut and prepare all materials and perform glue up of board. Students will be allowed to customize the designs to make it their own. Complete assembly, perform finishing using wood shop equipment, and add clear coat finish.

Tools used: Wood shop professional tools, powered hand router with bits, file, sand paper, hammer, clamps, brushes, polishing wheel / pads.

Master Project – Bluetooth Speaker Box (3 Classes)

Activity: The goal of this project is to bring together multiple disciplines into one project. This project requires students to design the speaker enclosure to fit the components provided, manufacture the enclosure using wood shop tools and the laser etcher, assemble and install the electronics, complete the enclosure, and then make and attach a leather carrying handle.

Tools used: Assorted hand, power, and electronics tools, wood shop tools, laser etcher, leather tools.