Level 2 Overview

Power Mechanics: 4 Cycle Engines
Students will disassemble and reassemble a 4-stroke lawn mower engine using a variety of hand tools, including wrenches and pliers. Throughout the process, they'll explore the internal components and mechanical systems that power small engines. This project introduces students to the four-stroke engine cycle—Intake, Compression, Power, and Exhaust—while building mechanical understanding, tool skills, and confidence in hands-on diagnostics.

MIG Welding
Students will learn the fundamentals of MIG welding, including how to safely operate the machine and understand key settings like voltage, wire speed, and shielding gas flow. They'll explore basic material properties, how to properly prepare metal surfaces, select the correct welding wire, and complete post-weld clean-up. This hands-on course emphasizes technique, safety, and the practical skills needed to create strong, clean welds.

Torches & Jewelry Making
Students will learn how to set a flat backed cabochon in a copper bezel to create a necklace. They will learn soldering techniques with a torch and get familiar with industry jewelry making tools.

Woodshop: Power Tool Introduction
Students will be introduced to woodshop power tools through the creation of a custom wooden keepsake box. They will learn to safely and accurately operate tools such as the miter saw, table saw, router/shaper, belt sander, and powered hand drill with various bits. This project focuses on building confidence with power tools while reinforcing precision, safety, and craftsmanship in woodworking. They will learn how to make rip and cross cuts, miter edges, plane surfaces down to the correct thickness, glue and clamp edges, and assemble their completed boxes.

Painting and Finishing Techniques
Using the keepsake box, students will prep and stain their keepsake box, learning natural staining & common finishing techniques used in woodworking. They will explore surface preparation, natural staining techniques, and how to apply finishes that enhance both the look and durability of their work. This class encourages creativity while teaching practical skills in staining, sealing, and decorative finishes—giving each student the chance to personalize their project with a professional touch.

CAD Skills
Review drafting principles and create drawings of parts files provided to produce a manufacturable drawing. They will create a design using OnShape to make their very own custom toy building off skills they learned in level one, 2d design, now they will be creating a 3d design. If possible, students should bring their own PC or Mac based laptops with an OnShape.com student account pre-installed.

Vacuum Forming
Students will explore the world of thermoplastics and mold-making by designing and creating their own custom toy using a vacuum forming machine. They'll learn how to shape molds, prepare materials, and operate the vacuum former to form heated plastic over their designs. This hands-on project introduces students to industrial manufacturing techniques and material properties, while allowing them to take home a finished, one-of-a-kind toy.

Acrylic & LED
In this project, students will design and build their own illuminated acrylic sign using laser engraving and LED lighting. They'll start by creating a custom graphic design, then engrave it onto clear acrylic using a laser cutter. After preparing the base and wiring the LED light strip, students will assemble their sign and see their design glow to life. This project combines digital design, fabrication, and basic electronics to create a personalized and functional display piece. They will use their skills in the woodshop intro class to create a base for their personal sign to sit on.

* Urban Workshop reserves the right to change class topics and the order the classes are taught without notice.