

## Level 1 Overview

### **Hand Tools: BMX Bikes**

Students will learn to use assorted hand tools including box wrenches, screw drivers, adjustable wrench, and a variety of pliers by disassembling and reassembling BMX bicycles.

### **Electronics and Soldering Skills**

Explanation of circuits, electrical concepts, and wiring. Students will build an “Operation” style buzzer game. They will gain experience wire stripping, terminating, soldering, and troubleshooting.

### **Laser Etching**

Students will be challenged to create a new design in CorelDraw or download a design from the internet and modify it for etching. Time will be provided to assemble the laser cut wood project. Projects may vary.

### **Arduino: Introduction to Physical Computing**

A first step into the Arduino universe of physical computing. Students will learn about Arduino hardware, bread board, IDE, Jumper cables, and LED's. Students will complete activities to assemble breadboard circuits and write code to control LED lights. **If possible, students should bring their own PC/Mac laptop with Arduino IDE installed.**

### **CAD Skills: Introduction, Sketching, & 3D Printed Keychain**

Students will be introduced to Fusion360 software for computer aided design. They will use Fusion 360 to learn fundamental CAD modeling techniques including sketching and extruding. The students will then be challenged to design their own keychain for 3D printing. The 3D printed keychain may be used in the mold making class. **If possible, students should bring their own PC/Mac laptop with Autodesk Fusion 360 Installed**

### **Hand Sewing (on-site only)**

Students will learn the basics of hand stitching including laying out and measuring fabric, preparing needles and thread, reviewing types of stitches and hems, and sewing together materials to make a customized tool belt.

### **Silk Screening: 2-Color T-Shirt**

Learn to setup silk screen press with vinyl cut designs and silk screen shirts using 2 colors. Students will make their own 2-color Urban Workshop t-shirt to take home.

### **Vacuum Forming (on-site only)**

Learn to use vacuum former to make a super hero. Learn about temperature, vacuum pressure, draft, draw depths, and part lines. Students will de-mold and, as time permits, learn special effects painting.

### **Silicone Molding: Open Face Mold**

Learn the basics of silicone-based mold making. Students will explore advantages and disadvantages of various mold making materials. They will review things such as viscosity, durometer, pressure casting, vacuum degassing, and cure time.

### **Woodshop: Hand Tool Skills & Practice**

Students will use woodshop hand tools including hand saws, hand drills, drill bits, files, sand paper, hammers, and chisels to learn fundamental woodworking skills.

### **Woodshop: Tic-Tac-Toe Game**

Use woodshop hand tools to make a tic-tac-toe board game with hidden internal game piece holder. Requires layout, pre-marking for drilling, drilling and finish sanding.

### **Woodshop: Marshmallow Crossbow**

Use hand tools to finish and fit provided parts and assemble a marshmallow crossbow.

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