

## Level 1 Overview

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

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

### **Sheet Metal Fabrication – Metal Marquee Star**

Learn how to operate a spot welder to permanently attach the sheet metal star frame together.

### **DC Electronic Circuits – Metal Marquee Star**

Wire up 5 LED's, a switch, and batteries to complete a DC electronic circuit and make the metal star light up. Install electronics in the metal star using wire strippers, crimpers, scissors, heat gun, soldering iron, and multi-meter.

### **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, breadboard, IDE, Jumper cables, and LEDs. Students will complete activities to assemble breadboard circuits and write code to control LED lights.

### **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 keychains for 3D printing.

### **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 set up a silkscreen press with vinyl cut designs and silkscreen 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 superhero. 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 the advantages and disadvantages of various mold-making materials. They will review things such as viscosity, durometer, pressure casting, vacuum degassing, and cure time.

### **Woodshop: Toolbox**

Students will use woodshop hand tools including hand saws, hand drills, drill bits, files, sandpaper, hammers, and chisels to learn fundamental woodworking skills as they construct a toolbox.

### **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.