



## Full PI Checklist

Name: \_\_\_\_\_

Version 4.0 (Spring 2023)

To complete the Full PI Checklist, please learn and get signed off on all tools and skills in the following table. We encourage you to keep this document digital. You may learn as many of the bonus tools as you wish. Ask for help from the PI on duty or from the respective room's Master. Once you have completed this checklist, schedule an interview with the Director of Operations and bring your filled out checkoff sheet with you.

Tool Group	Tool	PI Name (Print)
<b>3D Printing</b>	Resin Printing	
	Unclogging Ultimaker Nozzles	
	PVA	
	Items Not to Print	
<b>Lasers</b>	All Rotary Tools	
	FLP Laser	
	Cermark	
<b>Electronics</b>	Oscilloscope	
	Waveform Generator	
	Multimeter	
<b>Paint Booth</b>	Post Processing with XTC-3D, Primer, and Bondo	
<b>Craftland</b>	Button Maker	
	Printable Stickers	
<b>Metal Room</b>	Horizontal Bandsaw	
	Vertical Bandsaw	
	Cold Cut Saw	
	Changing Belt on Belt Sander	
	Buffing Wheel	
	Dremel	
<b>Waterjet</b>	ProtoMax	
	Turning on the Hopper	
	Brittle Materials	
	Clearing Faults	
	Clearing Clog in Garnet Hose	
	Changing Start and Stop Points of Path in Layout	
<b>Wood Room</b>	Nail Gun	
	Table Router	
	Trim Router	
	Track Saw	
	Crosscut Sled	
	Drum Sander	
	Work Holding (Bar Clamps, Bench Dogs, etc.)	

## Bonus Tools and Skills

The list below contains all the additional tools and skills that are available in the Invention Studio for you to learn.

\* Denotes tool that must be taught by the respective master

### Wood Room

- Wood lathe\*
- Chisels and hand planes\*
- Domino
- Kreg Jig
- Japanese Hand Saws

### Laser

- DXF cleanup
- Dithering
- Leather engraving
- Puzzle-making software

### Paint Booth

- Air Brush\*
- Create a stencil
- Strip paint off an object

### Electronics

- PCB Mill\*
- Hot air rework station
- Microscope with monitor
- Battery recycling/charge measuring container
- Heat shrink wrap
- SMD soldering
- Circuit design software (recommend KiCAD or EAGLE)
- Arduino design and programming

### Waterjet

- Etch/scribe\*
- Clear garnet clog on ProtoMAX\*
- Waterjet Brick (for small parts) & Alternatives (sacrificial material)
- Saw Mode

## **Metal Room**

- Metal Lathe\*
- Angle Grinder
- Grinding Wheels
- Spot Welder
- Tapping and countersinking holes
- Sand Blaster
- Nibbler
- Reciprocating Saw
- Compact Bandsaw
- Three Wheel Bender

## **3D Printing**

- 3D Scanner\*
- Markforged\*
- Creality Belt Printer\*
- Using specialty/composite materials on Ultimaker S5\*
- Dual-extrusion (two-color) prints
- Manual bed leveling

## **Craftland**

- Embroidery Machine\*
- Leather Sewing\*
- Serger\*
- Heat press Vinyl (T-shirt Press)
- Foam cutting tools
- Vinyl Cutter – Trace Panel, Print Set-Up, Cardstock, Multiple Tools, Extra Tools, Cutting without a matt, Basic Troubleshooting, etc.

## **CNC**

- CAMaster\*
- Manual Mill\*
- Tormach\*
- Pocket NC\*
- EMCO\*

**Bike**

- Identify parts of a bicycle\*
- Identify common sources of play (bottom bracket, headset, dropout/axles)\*
- Chain cleaning procedures\*
- Rear derailleur adjustment\*
- Rim brake/mechanical disc/hydraulic disc brake adjustment\*
- Wheel truing\*
- All pegboard tools\*

**CAE**

- SolidWorks modeling basics
- SolidWorks simulation basics