### Classification System for Student Access Shops

**Revised September 18, 2015**

<table>
<thead>
<tr>
<th>Device Class</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td><strong>Power</strong></td>
<td>Low power hand / small bench tools (2 - 4 amp @ 120 VAC, 18V or less cordless)</td>
<td>Medium power tools (½ to ½ hp) (&lt; 10 amp @ 120 VAC, &gt; 18V and up to 24V cordless); specialized enclosed CNC-computer tools</td>
<td>Powerful portable and small benchtop tools (&gt; ½ hp) (10-15 amps @ 120 V AC, 24V-36V portable, pneumatics, hydraulics)</td>
<td>Light industrial tools (typically benchtop, &gt; ½ hp, pneumatics, hydraulics)</td>
<td>Large industrial tools (manual and CNC-controlled) (some of these tools may be off-limits to any student use) HIGHEST hazard tools in bold</td>
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| **Common Examples** | • Dremel tool  
• Cordless drills 18V or less  
• Palm Sanders  
• Soldering irons and guns  
• Heat guns  
• Hot melt glue guns  
• Sewing machines  
• Manual hand tools  
• 3d printers | • Jig saw  
• 3/8” hand drill  
• Cored devices < 1/3 hp  
• Cordless drills greater than 18V and up to 24V  
• Benchtop and self-standing manual tools  
• Laser cutters / engravers  
• Thermal foam cutters | • Circular saw  
• Belt sander  
• Framing nailer  
• ½ hp geared drill  
• Reciprocating saw  
• > 24V cordless tools  
• Shop / miter saws  
• Routers  
• Mini-lathe  
• Angle grinders  
• Printing presses (Vandercook) | • Small bandsaw  
• Small drill press  
• Small/benchtop milling machines  
• Small/benchtop metal lathes  
• Woodturning lathes  
• Belt/disc sander  
• Horizontal saw  
• Scroll saw  
• Planer, jointer  
• Panel saw  
• Surface grinder  
• Bench grinder  
• Iron worker  
• SawStop-style tablesaw only  
• Powered Platen Style Printing Presses | • Full sized milling machine  
• Full sized metal lathe  
• Radial arm saw  
• Large drill press  
• Large band saw  
• Surface grinder  
• Large jointer/planer  
• Shaper/moulder  
• Power shears |

| **Shop Access Control** | By permission of Shop Supervisor and/or Monitor | By permission of Shop Supervisor and/or Monitor | All student shops – ID Card | All student shops – ID Card |
| **Tool Use Restrictions and Oversight** | • Performed in shops or designated approved locations, i.e. theater  
• Undergrads - buddy system | • Undergrads – monitored ¹  
• Grads – buddy system | • Undergrads – monitored ¹  
• Grads – buddy system | • Undergrads – only under professional supervision² after extensive training  
• Grads – buddy system  
• Emergency self-alert devices for low occupancy shops / times |

| **User Training** | • Introduction to shop safety and individual tools by shop supervisor / manager  
• Directions in manual or on wall postings  
• Required to read operator manual | • Introduction to shop safety and individual tools by shop supervisor / manager  
• Signed agreement regarding code of conduct and list of tools approved for use | • Basic shop safety orientation by shop supervisor / manager  
• Individual tool instruction  
• Demonstrate proficiency by performing certain operations to specified accuracy | • Basic shop safety orientation by shop supervisor / manager  
• Individual tool instruction  
• Hands-on use training/ experience  
• Demonstrate proficiency by performing certain operations to | • Basic shop safety orientation by shop supervisor / manager  
• Individual tool instruction  
• Extended hands-on training/ experience  
• Demonstrate proficiency by |

¹ Undergrads – buddy system (time will be limited to ensure all student use is supervised)  
² Undergraduate students must also require a tool indoctrination by shop supervisor / manager before using any tool in the shop.
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<td>Monitor / Supervisor Training</td>
<td>• Tool experience</td>
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<td>Emergency Shut-Offs</td>
<td></td>
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<td>Room-level emergency shut-offs for electrical power to Class 5 tools</td>
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<tr>
<td>Tool Access Controls</td>
<td>Locked cabinet (Tool key / code lockout for 3D printers)</td>
<td>Locked cabinet (Tool key / code lockout for laser or thermal foam cutters)</td>
<td>Locked cabinet</td>
<td>Tool power lockout (for tiered access shops)</td>
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<td>Remote Monitoring (Future Enhancement)</td>
<td>As desired</td>
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1 “Monitors” are experienced graduate students or higher with full authority over shop use and control who have been recommended by the Shop Supervisor and completed required safety training.

2 “Supervisors” are staff or faculty with professional-level training and experience in applicable tool set-up, use, and maintenance