Classification System for Student Access Shops

Revised September 18, 2015

Device Class	1	2	3	4	5
Power	**Low power hand / small bench tools** (2 - 4 amp @ 120 VAC, 18V or less cordless)	**Medium power tools** (¼ to ½ hp) (< 10 amp @ 120 VAC, >18V and up to 24V cordless); specialized enclosed CNC-computer tools	**Powerful portable and small benchtop tools** (> ½ hp) (10-15 amps @ 120 V AC, 24V-36V portable, pneumatics, hydraulics)	**Light industrial tools** (typically benchtop, > ½ hp, pneumatics, hydraulics)	**Large industrial tools** (manual and CNC-controlled) (some of these tools may be off-limits to any student use) **Highest hazard tools in bold**
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 • Corded 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 • Chop / 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 shear
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	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 [i] • Grads – buddy system	• Undergrads – monitored [i] • Grads – buddy system	• Undergrads – only under professional supervision[ii] 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

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			• Signed agreement regarding code of conduct and list of tools approved for use	specified accuracy • Signed agreement regarding code of conduct and list of tools approved for use	performing certain operations to specified accuracy • Signed agreement regarding code of conduct and list of tools approved for use
Monitor / Supervisor Training	• Tool experience	• Tool experience	• Tool experience • Yale EHS shop safety training class for monitors and supervisors • First aid	• Extensive tool experience-documented • Yale EHS shop safety training class for monitors and supervisors • First aid	• Professional-level experience-documented • Yale EHS shop safety training class for monitors and supervisors • First aid
Emergency Shut-Offs					Room-level emergency shut-offs for electrical power to Class 5 tools
Tool Access Controls	Locked cabinet (Tool key / code lockout for 3d printers)	Locked cabinet (Tool key / code lockout for laser or thermal foam cutters)	Locked cabinet	Tool power lockout (for tiered access shops)	Tool power lockout (for tiered access shops)
Remote Monitoring (Future Enhancement)	As desired	As desired	(Cameras in shop)	(Cameras in shop)	(Cameras in shop)

[i] "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.
[ii] "Supervisors" are staff or faculty with professional-level training and experience in applicable tool set-up, use, and maintenance