

ETSU Department of Technology & Geomatics ENTC 2200 Machine Tool Laboratory Procedures A–Z

All students are expected to *always exercise caution* with respect to the health and safety of themselves and others. When the class is in the lab for an activity or demonstration, *the following procedures and regulations are to be observed at all times*:

- a) Safety goggles or safety glasses with side shields must be worn whenever you are in the laboratory. This is a state law as well as a part of the federal Occupational Safety and Health Act (OSHA) wherein **EMPLOYEES** as well as employers can be heavily fined for unsafe practices.

Students without eye protection will not be permitted
in the laboratory until eye protection is secured.

- b) The presence of an appropriately qualified state employee (i.e., the course instructor, lab graduate assistant (GA), other faculty member, etc.) is required. **Never work alone.**
- c) Do not attempt to operate any machine before you have been shown how to operate it.
- d) If you are not certain that what you are doing is a safe procedure, then **DON'T DO IT!** Ask the instructor or GA—that's what they are here for!
- e) **BEFORE leaving the laboratory**, each student is to have the instructor or GA verify that his or her work area—the machine and the floor around the machine—has been cleaned.
- This condition applies even if the machine was found to be in a dirty condition.
 - The lab grade of any student who leaves a machine or work area in dirty condition will be **LOWERED ONE LETTER GRADE PER OCCURRENCE.**
 - All tools and materials are to be properly put away after use.
- f) **COMPRESSED AIR IS NEVER TO BE USED TO CLEAN A MACHINE!** It may, however, be used to clean a vise or chuck prior to installation of a workpiece (part) in order to make a measurement—**PROVIDED** that care is exercised to prevent dirt or chips from being blown into lead screws, bearings, ways, etc.
- g) Report all injuries (no matter how minor) to your instructor—to protect yourself.
- h) Scuffling, "horse-play," and "practical" jokes are considered to be the acts of idiots and are not tolerated in the laboratory.
- i) Excessively long hair can be hazardous around machinery and must be restrained.
- j) Be certain all safety devices and guards are in place and operational. Do not operate unguarded machines.
- k) Lift heavy objects safely, preferably using mechanical devices. If you must be a hero and lift manually, at least do it correctly: **lift with the legs, keeping the spine vertical.** Remember, **spinal injuries are permanent**—they never completely heal.
- l) Never blow compressed air towards another person.

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- m) Beware of electrical hazards. Never attempt to use a machine that is on a wet floor. Keep hands, feet, and clothing dry. Although these machines operate on 208 volts RMS, your body will react to its peak-to-peak voltage (588 volts).
- n) Always clean and stone the vise base and table surface before mounting a vise on a machine. Always indicate the vise in to within 0.001" runout.
- o) Be certain the workpiece and cutter is securely and safely mounted in your machine. If you are not certain, ask your instructor to check your setup.
- p) Only one person should be operating a machine at any one time.
- q) **NEVER** leave a running machine unattended.
- r) Keep your fingers away from revolving cutters and work. In the battle of cutters vs. fingers, cutters **ALWAYS** win.
- s) **NEVER** operate a machine while wearing gloves. The glove could become caught in the machine and pull your hand or arm into the machine.
- t) Always stop a machine to make adjustments, take measurements, remove chips, or to lubricate and keep loose tools from accumulating on the machine (cutters **ALWAYS** win).
- u) Use a brush (or pliers) to remove chips (never your hands).
- v) Roll up your sleeves and remove all rings, watches, bracelets, necklaces, neckties, or anything else that might conceivably become caught in a machine.
- w) Do not leave chuck keys in a chuck, even for an instant.
- x) Any student who dulls, ruins, breaks, or destroys any cutting tool through negligence (e.g., running the cutter backwards, too fast, or too slow; failure to have the instructor check the setup, etc.) or damages/destroys a precision tool through negligence is expected to repair/replace the tool at said student's own effort and expense.
- y) Any student who violates a safety regulation will be required to leave the laboratory for the day.
- z) Any student who violates the same safety regulation a **SECOND** time will be required to leave the laboratory for a week and will receive a **maximum final letter grade of D**. Any student who violates the same safety regulation a **THIRD** time will receive a final letter **grade of F** for the course and be denied entry to the laboratory for the remainder of the semester.