SAFETY TRAINING: LAB 1

TODAY'S DATE: SEPTEMBER 11TH
LOCATION: PE 002
INSTRUCTOR:
TIME: 3:00 P.M. TO 5:00 P.M.
PLEASE SIGN-IN
## OUTLINE

**Four Parts to this Training:**

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SECTION 1: ONLINE TRAINING VIDEO

1. Google > UNR Safety Training
   1. Click first link: Training – Environmental Health & Safety
2. Click on: Register for Training
3. Register for the Mechanical Engineering Student Manufacturing Lab Safety Training
4. Log in with netid
5. Follow along with Safety Training Video
6. After video, click Step Two to take quiz.

https://ehslegacy.unr.edu/learning/Events.aspx
SECTION 2: MACHINE/TOOL TERMINOLOGY

• Manual Mill:

  • Manual Milling is where machining a flat, curved or unusual surface by putting a piece of equipment against a rotating cutter, with cutting edges. The motor-driven spindle mounts and revolves the milling cutter, and a reciprocating adjustable worktable, which mounts and feeds the work piece. The process of Manual Machining can carry out a variety of different operations from small parts to heavy-duty milling. There’s a range of various tools that can be used within this process to create precision parts.
Manual Lathe

A lathe is a machine tool primarily used for shaping pieces of metal and sometimes wood or other materials. Lathes operate by spinning the block of material to perform various tasks such as cutting, sanding, or drilling with tools that are applied to the workpiece. Operating a manual lathe can be a difficult undertaking. By paying close attention to the steps you need to successfully cut material, you can continuously create accurate parts.
Haas Automation, Inc is an American machine tool builder headquartered in Oxnard, California, that designs and manufactures precision machine tools and specialized accessory tooling, mostly computer numerically controlled (CNC), such as vertical machining centers and horizontal machining centers, lathes/turning centers, and rotary tables and indexers.
SECTION 2: MACHINE/TOOL TERMINOLOGY

• Horizontal Bandsaw

• Vertical Bandsaw
  • A bandsaw (also written band saw) is a power saw with a long, sharp blade consisting of a continuous band of toothed metal stretched between two or more wheels to cut material. They are used principally in woodworking, metalworking, and lumbering, but may cut a variety of materials.
SECTION 2: MACHINE/TOOL TERMINOLOGY

• Torchmate Plasma Cutter
  • Plasma cutters work by sending an electric arc through a gas that is passing through a constricted opening. The gas can be shop air, nitrogen, argon, oxygen, etc. This elevates the temperature of the gas to the point that it enters a 4th state of matter.
SECTION 2: MACHINE/TOOL TERMINOLOGY

• Drill Press

• Drill press, also called Drilling Machine, device for producing holes in hard substances. The drill is held in a rotating spindle and is fed into the workpiece, which is usually clamped in a vise resting on a table. The drill may be gripped in a chuck with three jaws that move radially in unison, or it may have a tapered shank that fits into a tapered hole in the spindle. Means are always provided for varying the spindle speed and on some machines for automatically feeding the drill into the workpiece.
SECTION 3: SAFETY TRAINING FOR POWER TOOLS

• Power Drill Safety Tips
  • When it comes to using power tools, a little knowledge goes a long way toward preventing injuries and prolonging the life of your tools. If you frequently use a power drill in your home improvement or automotive projects, you may know the basics of drill safety already. Below are some power drill safety tips that will help you protect yourself and your tools. Some of them may seem new or just a good safety refresher.

1. Avoid Baggy Clothing
2. Wear Protective Gear
3. Secure Your Work Piece
4. Drill Pilot Holes
5. Use a Drill Stand
6. Properly Set the Drill Bit
7. Use a Enter Punch to Start Holes
8. Apply Proper Pressure to the Drill
Angle Grinder Safety Tips:

1. Always use the right disc for the task: a grinding disc for grinding, a cutting disc for cutting.
2. Always use the appropriate disc for the material being worked on.
3. Only use discs which are made for angle grinders. Never use a multi-cutter blade on an angle grinder unless it has been fitted with full spring loaded guarding.
4. Never use discs which are too large or too small for the angle grinder being used.
5. The maximum revolutions per minute (RPM) disc speed (marked on the disc) must always be higher than the maximum speed of the angle grinder.
6. Always use the correct spindle flange and lock nut for the disc and follow manufacturer instructions for correct fitting.
7. Never use discs which are worn, damaged or have decreased in size from use.
8. Always remove the plug from the power point before fitting or changing a disc.

SECTION 3: SAFETY TRAINING FOR POWER TOOLS
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• Grinder Safety
  • Wheel Covers: This OSHA-compliant Wheel-Cover allows no more than a total of 90 degrees of the wheel left exposed. (65 degrees from horizontal plane to the top of wheel-cover). Never exceed these wheel-cover maximum opening dimensions. Larger wheel-cover openings create a wider pattern of flying debris should the wheel explode.
  • Double-Wheel and Single-Wheel Bench Grinder Shields: Double-wheel bench grinder shields provide protection for both wheels of the grinder with one continuous shield. The durable shield is made of clear, -inch-thick polycarbonate and measures 18-inch x 6-inch. A special shield bracket adds stability to the top of the shield. The single-wheel bench grinder shield is made of clear, -inch-thick polycarbonate and measures 6-inch x 6-inch. This sturdy, impact-resistant shield is designed for use when a single wheel needs safeguarding. These shields have a direct-mount base that attaches directly to the grinder table or pedestal.
Belt Sander Safety Tips:

1. Wear safety glasses or goggles, or a face shield (with safety glasses or goggles).
2. Wear a dust respirator for dusty operations.
3. Make sure the sander is switched "OFF" before connecting the power supply.
4. Disconnect power supply before changing a sanding belt, making adjustments, or emptying dust collector.
5. Inspect sanding belts before using them. Replace those belts worn or frayed.
6. Install sanding belts that are the same widths as the pulley drum.
7. Adjust sanding belt tension to keep the belt running true and at the same speed as pulley drum.
8. Secure the sanding belt in the direction shown on the belt and the machine.
9. Keep hands away from a sanding belt.
10. Use two hands to operate sanders – one on a trigger switch and the other on a front handle knob.
11. Keep all cords clear of sanding area during use.
12. Clean dust from the motor and vents at regular intervals.
• Safety Training Activity:

Steel Block:
1. Drill ¼” hole in middle
2. Chamfer edge with Angle Grinder
3. Chamber edge with Bench Grinder

Aluminum Block:
1. Drill ¼” hole in middle
2. Chamfer edge with Angle Grinder
3. Chamber edge with Bench Grinder

Wooden Block:
1. Drill ¼” hole in middle
2. Chamfer edge with Belt Sander
3. Chamber edge with Hand Sander

Plastic Block:
1. Drill ¼” hole in middle
2. Chamfer edge with Belt Sander
3. Chamber edge with Hand Sander
SECTION 4: SAFETY ACTIVITY

• Pick up Activity Sheet
• Pick up PPE Safety Glass
• Follow instructor to Manufacturing Lab