Hand & Power Tools Outline

1. Course Objectives
   a. Definition of Terms
   b. Learn about Hand Tool Safety
   c. Learn about Power Tool Safety
   d. Learn about Extension Cords
   e. Learn about Bench Grinder Safety

2. Hazard Prevention of Hand and Power Tools
   a. Keep all tools in good condition with regular maintenance
   b. Use the right tool for the job
   c. Examine each tool for damage before use and do not use damaged tools
   d. Operate tools according to the manufactures’ instructions
   e. Provide and use the right PPE

3. Definitions
   a. Hand Tools
      i. Tools that are powered manually
   b. Power Tools
      i. Tools that are powered with electricity, pneumatic, fuel, hydraulic, or powder-actuated.

4. Hand Operated Tools Standards
   a. Employers shall not issue or permit the use of unsafe hand tools.
   b. Wrenches, including adjustable, pipe, end, and socket wrenches shall not be used when jaws are sprung to the point that slippage occurs.
   c. Impact tools, such as drift pins, wedges, and chisels, shall be kept free of mushroomed heads.
   d. The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.
      i. Tools – Hand and Power (1926.301)

5. Hand Tool Safety
   a. Never use a tool that has a cracked or splintered handle
   b. Keep tools clean to allow for easy inspection
   c. Do not wrap handles with any tape
   d. Tools with mushroomed heads must be redressed with a grinder
   e. Hand tools can produce sparks, because of this be aware of any flammables around the area where you are using the tool
   f. Use tools as they were intended to be used

6. Tips For Using a Knife Safely
   a. Always wear safety gloves to protect your hand.
   b. Keep knife blades sharp – a dull blade can easily slip from the object being cut.
   c. Always cut away from your hand
   d. Never attempt to catch a dropped knife
   e. Retract blade when not in use
7. Power Tool Types
   a. Electric
   b. Pneumatic
   c. Liquid Fuel
   d. Hydraulic
   e. Powder-Actuated

8. Power Tool Switches
   a. Constant Pressure Switch – Shuts off power when switch is release (e.g. hand-held drill, circular saw, chainsaw)
   b. On-Off Switch (e.g. router, planers)

9. General Power Tool Precautions
10. Electrical Tool Hazards
    a. Electrical burns and shocks.
    b. Amputation
    c. Projectiles
    d. Caught in

11. Electrical Tool Precautions
    a. Operate electrical tools according to manufacturers guidelines
    b. Use appropriate PPE
    c. Store electric tools in a dry place when not in use
    d. Avoid using electrical tools in damp or wet locations
    e. Ensure that a ground-fault circuit interrupter or an equipment-grounding conductor protects all tools.
    f. Disconnect tools from power source when servicing
    g. Keep all people not involved with the task at a safe distance
    h. Do not carry tool by switch button while it is plugged in
    i. Keep tools maintained and in good working order
    j. Do not wear loose clothing when operating power tools
    k. Remove all damaged tools from service and tag “Do Not Use”

12. Electrical Tool Power Cord Precautions
    a. Ensure cords do not present a tripping hazard
    b. Never carry a tool by the cord
    c. Never yank the power cord to disconnect from receptacle
    d. Keep cord away from heat, harmful chemicals, and sharp edges

13. Pneumatic Tool Precautions
    a. Tools must be fastened to hose securely with a short wire or positive locking device
    b. Attachments must be secured with a safety clip or retainer
    c. Eye protection is required for employees working with Pneumatic Tools
    d. Hearing protection may be required based on decibels of tools

14. Liquid Fueled Tools Precautions
    a. Use liquid fueled tools in a well ventilated environment
    b. Before refueling, the user must shut off the engine and allow it to cool
    c. Do not smoke while fueling liquid fueled tools
    d. Wear eye, face, hand, and hearing protection
e. Keep a fire extinguisher in close proximity of the tool

15. Powder-Actuated Tool Precautions
   a. Can only be operated by trained employees
   b. Must wear eye, ear, hand, and face protection
   c. Do not operate in a flammable or explosive environment
   d. Do not store a loaded tool
   e. Do not fire fasteners into material that would allow the fastener to pass through to the other side

16. Extension Cord Precautions
   a. Choose the right extension cord for the tool you use
   b. Inspect extension cords daily before use
   c. Damaged extension cords shall be removed from service immediately
   d. Do not place extension cords in high traffic areas
   e. Protect cords from any damage (i.e. sharp corners, heat, doorways, etc.)

17. Bench Grinder Precautions
   a. Before using a grinder visually inspect the grinding wheel and perform the ring test.
      i. Show ring test video
   b. Make sure the grinder RPM rating is not higher than the RPM rating on the grinding wheel.
   c. Use eye and face protection
   d. Do not wear loose fitting gloves
   e. Start the bench grinder while standing off to the side (most grinding wheel failures occur during startup)

18. Bench Grinder Setup
   a. Work Rest
      i. Work rest must not be more than an 1/8” from grinder wheel
      ii. This prevents jamming the object that you are grinding between the wheel and the work rest.
   b. Adjustable Tongue Guard
      i. Tongue guard must be no more than 1/4” from grinding wheel
      ii. The tongue is meant to deflect any debris away from the operator

19. What We Learned
   a. Definition of Terms
   b. Learned about Hand Tool Safety
   c. Learned about Power Tool Safety
   d. Learned about Extension Cords
   e. Learned about Bench Grinder Safety