Agricultural Education

Laboratory Safety Guide

for

Agricultural Mechanics

DRAFT COPY

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Agricultural Education
Laboratory Safety Guide

Introduction to Safety in Agricultural Education

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General Laboratory Safety

1. Never leave power equipment “running” while unattended.

2. Know the location and use of all fire equipment in the laboratory.

3. Pay attention to what you are doing at all times.

4. Avoid loud talking, shouting, and other distracting behaviors in the classroom and laboratory.

5. Do not run in the laboratory.

6. Wear proper clothing in the mechanics laboratory.
   a. No loose clothing, loose jewelry, or unsecured long hair.
   b. No open heel or open toe shoes.
   c. Eye protection is required at all times.
   d. Special eye, face, or skin protection is required when performing certain tasks.

7. Wear safety glasses or goggles at all times while in the mechanics laboratory and in other areas specified by the instructor. Additional eye and face protection may be required when operating certain tools.

8. Use guards and safety devices at all times.

9. Turn off power equipment immediately after use.

10. Operate power equipment only on a one student at a time basis.

11. Check power equipment for safety before putting it into operation.

12. Avoid carelessness and/or “horseplay” which will not be tolerated.

13. Notify the instructor in case of accident, injury, fire, defective equipment or tools, or any prevailing safety hazard.

14. Use only those tools or machines in which you have completed safety instruction and passed a written test to become certified.

15. Avoid laying tools or materials in walkways.

16. Be sure that you are familiar with all controls before using power equipment.

17. Do not leave the laboratory or work area unless the instructor gives you permission.

General Safety Test

True/False

1. T F Never leave power equipment running while unattended.

2. T F Pay attention to what you are doing at all times.

3. T F Running in the laboratory is necessary to save time.

4. T F Power equipment should be turned off immediately after use.

5. T F Safety check power equipment each time before using.

6. T F Carelessness or horseplay will not be allowed.

7. T F Do not place tools and materials in walkways.

8. T F Become familiar with controls before using power equipment.

9. T F No student should leave the laboratory without teacher permission.

10. T F Loud talking and shouting are acceptable in the mechanics laboratory.

11. Know the _____ and use of all fire equipment in the laboratory.

12. Students will be allowed to use only those tools or machines in which they have passed a written test and become _____.

13. Power equipment should be operated by no more than _____ student(s) at a time.

14. Safety glasses or goggles must be worn _____.

15. Students should notify the instructor in case of:
    a._____
    b._____
    c._____
    d._____

16. List the clothing requirements for the mechanics laboratory.
    a._____
    b._____
    c._____
    d._____

Color Coding in the Agricultural Mechanics Laboratory

The purpose of a color code in the agricultural laboratory is to group similar areas and/or potential hazards found in the laboratory and to bring increased attention to these areas.

Descriptions of colors found in Agricultural Laboratory

1. Red – Designates the location of fire equipment, the stop button of electrical equipment, and acetylene lines and acetylene carts

2. Red with yellow letters - Indicates gasoline can

3. Orange - Designates guards, electrical control boxes, and hazardous areas

4. Yellow - Designates adjustment wheels, knobs, levers, and safety islands

5. Yellow with diagonal black stripes - Designates areas where you might stumble, fall, or strike against a hazardous object

6. Blue - Designates large electrical panels or boxes and Out of Order signs

7. Green - Indicates medicine, first aid supplies, oxygen lines, and carts

8. Ivory - Designates edges of tables and equipment

9. Aluminum-black band - Indicates waste container

10. Aluminum-orange band - Designates container for oily rags and flammable materials

11. Gray - Indicates cleanup area

Color Code Test

Matching:

_____ 1.	Gasoline can	A. Red
_____ 2.	Location of fire equipment, the stop button of electrical equipment, and acetylene lines and carts.	B. Gray
_____ 3.	Guards, electrical control boxes, and hazardous areas.	C. Red with Yellow letters
_____ 4.	Container for oily rags and flammable materials.	D. Yellow
_____ 5.	Areas where one may stumble, fall or strike against a hazardous object.	E. Orange
_____ 6.	Medicine, first aid supplies, oxygen lines, and carts.	F. Green
_____ 7.	Waste container.	G. Ivory
_____ 8.	Adjustment wheels, knobs, levers, and safety islands.	H. Aluminum with black band
_____ 9.	Edges of tables and equipment.	I. Yellow with diagonal black stripes
_____ 10.	Cleanup area.	J. Aluminum - orange band
_____ 11.	Large electrical panels or boxes and Out of Order signs.	K. Blue

Eye Protection

1. The State Department of Labor requires that anyone entering the mechanics laboratory while activities are in progress must wear eye protection.

2. Safety glasses are required at all times in the mechanics laboratory and in other areas specified by the instructor.

3. The safety glasses used in the laboratory must have a manufacturer emblem and a Z87 logo. The Z87 logo means that the safety glasses are industrial quality.

4. Equipment that requires special eye and face protection.

    a. Arc Welding – Welding helmet with a #10 filter lens and safety glasses.
    b. Oxy-Acetylene Welding – Gas welding goggles or shield (with safety glasses) with a #5 lens.
    c. MIG or TIG Welding – Welding helmet with a #12 filter lens and safety glasses.
    d. Stationary and Portable Grinders – Clear face shield and safety glasses.
    e. Metal Lathe – Clear face shield and safety glasses.

Eye Protection Test

Fill in the Blank

1. _____ law requires that a student wear safety glasses while in the mechanics laboratory.

2. Safety glasses should be worn _____ in the mechanics laboratory.

Short Answer

List the special eye and face protection needed when using the following pieces of equipment:

3. Arc Welder: _____

4. Oxy-acetylene unit: _____

5. TIG Welder: _____

6. Grinders: _____

Hand Tools

1. Never cut toward yourself unless the tool is specifically designed for that type of cutting.
2. Use tools of the proper size for the job.
3. Do not handle tools in a careless manner.
4. Use only those files and rasps that are equipped with handles.
5. Use the proper tool for the job and use it in the correct manner. Example: Never use a wrench as a hammer.
6. Keep tools clean for safety reasons and to extend tool life.
7. Handle sharp and pointed tools with extreme caution.
8. Secure work in a vise or clamp when sawing, welding, or other times when needed.
9. Do not endanger other persons or co-workers in any way. You are responsible for your actions.
10. Report all broken tools or items of equipment to the instructor immediately.
11. Return all tools or other work items to the proper storage location when the job is completed.

Hand Tool Test

Short Answer

1. What should you do if you find a hammer or other tool that is broken?

2. Explain why you would put your work in a vise while sawing, filing, drilling, etc..

True/False

3. T F You are responsible for your actions while working in the laboratory.

4. T F It is best to keep tools such as screwdrivers in your pocket while not in use.

5. T F Never use a wrench as a hammer.

6. T F Always cut away from you unless the tool is specifically designed to be used otherwise.

7. T F Never use a file with a handle, the handles are dangerous.

8. T F Throwing tools or other objects is not allowed.

Compressed Air

1. Use the lowest possible pressure to accomplish the job.
2. Avoid stretching the hose.
3. Do not insert objects into the connections.
4. Stand to the side while connecting or disconnecting air lines.
5. Do not use compressed air to clean off clothes or any part of the body.
6. Do not direct the stream of air at any person.

Compressed Air Test

True/False

1. T F Always use the highest possible air pressure since there is plenty of air.
2. T F Avoid stretching the hose.
3. T F Inserting a screwdriver in the connection is a good method to clean the air line.
4. T F Stand to the side when connecting or disconnecting air lines.
5. T F Compressed air should not be used to clean clothing or parts of the body.
6. T F Do not direct the stream of air at any person.

Greenhouse Safety

1. Do not leave hoses on the floor.
2. Do not apply water to electrical equipment.
3. Do not use any chemicals or fertilizers unless the instructor has given permission.
4. Return all tools to their proper storage area when not in use.
5. Use caution when walking on wet floors.
6. Avoid "horseplay," which is forbidden in the greenhouse.
7. Do not leave your work area unless you have the instructor's permission.
8. Do not attempt any task unfamiliar to you without the assistance of the instructor.

Greenhouse Test

True/False

1. T F It is a safe practice to return hoses to their storage rack.
2. T F Never apply water to an electrical outlet or to any electrical equipment.
3. T F Chemicals are to be used only with the permission of the instructor.
4. T F It is unsafe to leave tools laying around when not in use.
5. T F Wet floors are not considered to be a safety concern.
6. T F It is not safe to "horseplay" in the greenhouse.
7. T F Do not leave your work area unless the instructor has given you permission.
8. T F Attempting an unfamiliar task without the instructor's help can be dangerous to you or someone else.

Portable Power Tools

Portable Electric Drill
Portable Electric Drill Test
Portable Electric Sanders – Belt and Orbital
Portable Electric Sander Test
Portable Circular Saw
Portable Circular Saw Test

Portable Electric Drill

1. Properly secure drill bits in the chuck of the portable drill.
2. Remove the chuck key from the chuck before using the drill.
3. The portable electric drill should be used only on those jobs that cannot be completed on the drill press.
4. The drill should not be placed on the bench or floor until it has stopped turning completely.
5. Always set the portable drill on the workbench so as not to damage the drill bit.
6. Never use extreme force when operating the portable electric drill.
7. Do not use the electric drill, or any electric tool, in and around wet areas.
8. Do not use electric drills around flammable materials.

Portable Electric Drill Test

True/False

1. T F It is safe to use an electric drill around flammable materials.
2. T F If the drill bit will not cut, you should apply more pressure to the drill to force it through the work.
3. T F Always place the drill on the bench before the chuck stops turning.
4. T F The drill press should be used if at all possible. If it is not possible, then it is proper to use the portable drill.
5. T F Always place the drill bit end of the drill down first on the floor or bench.
6. T F Never use portable electric drills around wet areas.
7. T F Always remove the chuck key from the chuck before operating the drill.
8. T F It is not necessary to secure drill bits in the chuck of the portable drill.

Portable Electric Sanders – Belt and Orbital

1. Install sanding belts properly and securely. Unplug the sander before installing new sandpaper or sanding belts.
2. Always secure the material being sanded so as to avoid damage to the project or injury to yourself.
3. Properly ground the cords to avoid electrical shock.
4. Keep the power cord away from the moving belt.
5. Do not lay the sander down after you have finished using it while the belt is still moving.
6. Do not apply the sander to the work until the sander is at operating speed.
7. Always remove the sander from the work before stopping the motor.
8. Do not apply any extra pressure to the sander. This causes the sander to overheat.
9. Never touch the belt or sandpaper while it is moving.

Portable Electric Sander Test

True/False

1. T F The sander should be laid down while the belt is moving after you have finished using it.
2. T F Sanding belts should be installed properly before operating the sander.
3. T F The power cord should be kept away from the moving belt of the sander.
4. T F Material being sanded should be secured to avoid damage to the project or yourself.
5. T F If the sander is not doing its job quickly, apply extra pressure to help speed the process.
6. T F Always stop the motor before removing the sander from the work.
7. T F Never touch the belt or sandpaper while it is moving.

Fill in the Blank

8. In order to avoid electrical shock, the power cord of the sander should be _____.
9. Do not apply the sander to the work until the tool reaches _____ _____.

Portable Circular Saw

1. Feed the saw into the work after the motor has reached full operating speed.
2. Let the saw do the work. Do not use force to push the saw while cutting.
3. Keep the base of the saw flat on the work while cutting.
4. Do not hold the guard in the open position with your fingers while the saw is running.
5. Before starting the saw, be sure that the extension cord is away from the saw and will remain free of the blade, without restricting movement, throughout the length of the cut.
6. Be sure that the guard returns to its normal position immediately after cut has been completed.
7. When the blade binds, cut the saw off immediately.
8. Unplug from the electrical outlet when removing the blade or making an adjustment.
9. Always have the portable hand saw in working position prior to starting.
10. Never set the saw on the floor or work bench while the blade is still in motion.
11. Observe the work carefully at all times to avoid cutting into the bench or saw horse on which the material is held.

Portable Circular Saw Test

True/False

1. T F Feed the saw into the wood before the motor reaches full operating speed.

2. T F Apply force to the saw when cutting.

3. T F Keep the base of the saw flat on the work while cutting.

4. T F Leave the guard open after cutting.

5. T F Remove the plug from the electrical outlet when removing the blade or making adjustments.

6. T F Always have the portable circular saw in working position prior to starting.

7. T F Do not attempt to hold the guard open with your fingers while the saw is running.

8. T F Never set the saw on the work bench while it is still running.

Multiple Choice

9. Before starting the cut, be sure:
    a. the extension cord is clear and free to move
    b. the saw has a carbide blade
    c. the saw is kicking out sawdust.

10. Unplug the saw when:
    a. making any adjustments,
    b. marking wood measurements
    c. both of the above.

11. When the blade binds:
    a. knock it loose with hammer
    b. keep the saw running but back it out
    c. turn the saw off

12. Observe the work carefully:
    a. to keep the saw cutting straight and to prevent it from cutting into the workbench.
    b. to prevent the saw from binding
    c. both of the above.

Welding and Metalwork

Arc Welder Safety
Arc Welding Test
Oxy-Acetylene Welding and Cutting
Oxy-Acetylene Welding and Cutting Test
Grinder Safety
Grinder Test
Hot Metal
Hot Metal Test
Gas Forge
Gas Forge Test
Power Hacksaw
Power Hacksaw Test

Arc Welder Safety

1. Never allow any part of the body to become part of the electrical circuit.

2. Inspect cables, connections, and the amperage setting before starting the welder.

3. Do not mistreat the cables, electrode holder, ground clamp, or welding machine in any way.

4. Stand on dry footing when welding.

5. Do not watch the arc without proper eye protection (head shield with #10 filter lens).

6. The following clothing and equipment should be worn at all times when welding to protect you from electrical shock, radiation and burns: Safety glasses, head shield with a #10 filter lens, leather gloves, welding apron, long sleeves. Beware of clothing that is highly flammable such as windsuits and screenprinted T-shirts.

7. Always guard your eyes and face with a head shield when chipping slag.

8. Always be sure that bystanders are protected from the arc when welding.

9. Do not weld in confined places unless there is adequate ventilation. Always switch on the hood fan when in the welding booth.

10. Do not weld in or around areas which contain flammable materials such as paint, gasoline, oily rags, etc.

11. Do not handle hot metal with gloves. Use tongs to handle hot metal and cool the work in the water barrel before leaving it unattended.

12 Do not allow the electrode holder to rest on or come in contact with the welding table or any grounded metal surface.

13. Keep the area around the welder clean at all times. Place used electrode stubs in the proper container.

14. Secure all welding equipment in its proper place before leaving the area.

15. Do not weld metal, which is directly in contact with a concrete floor.

16. If the electrode freezes, switch off the machine and free the electrode.

17. Never inhale fumes created when welding galvanized metal because they are poisonous.

18. Accidental flashes are a hazard. Viewing the light of the arc, even for a short time without proper eye protection, will cause permanent eye damage.

Arc Welding Test

True/False

1. T F If you are in doubt as to the proper way of doing a welding exercise, see the instructor.

2. T F Accidental flashes are not a safety hazard.

3. T F The fumes created from welding galvanized metal are poisonous.

4. T F When an electrode freezes to the metal, you should dip it in water.

5. T F Never weld metal that is in contact with concrete floors.

6. T F It is not necessary to put equipment in its proper place because the next class will be using it.

7. T F Used electrode stubs are a safety hazard when left lying on the floor or welding table.

8. T F Do not allow the electrode holder to rest on the welding table.

9. T F Unattended hot metal is a hazard to everyone in the shop.

10. T F Welding in the paint room is permissible if proper ventilation is provided.

11. T F Welding fumes should never be allowed to accumulate in the laboratory.

12. T F When welding in the open, there is no danger to bystanders who are watching.

13. T F When welding, electrical shock, burns, or radiation may injure you if the proper safety procedures are not followed.

Fill in the Blank

14. When chipping slag, you must be sure to protect your _____ and _____.

15. A _____ _____ with a number _____ lens, along with safety glasses, is used to protect your face and eyes when you are welding.

Oxy-Acetylene Welding and Cutting

1. Check to insure that cylinders are secure before moving the portable welding cart.

2. The hoses and hardware should be free of dirt, oil, and grease.

3. Keep clothes, hands, and gloves free from grease, oil, and other flammables.

4. Never open the valve of the acetylene cylinder more than one full turn so that it can be closed quickly.

5. If a T-wrench is used to open the acetylene valve, keep it in position on the valve of the cylinder while in use.

6. Do not allow the flame or hot metal to come in contact with clothing, combustible materials, hoses or other parts of the welding equipment.

7. Never leave a lighted torch unattended.

8. Use goggles with a No. 5 filter lens and wear leather gloves and leather apron when oxy-acetylene welding or cutting.

9. Use the oxy-acetylene unit only in well ventilated areas.

10. Never inhale fumes from welding galvanized metal. These fumes are poisonous.

11. Always use a striker-type lighter to start the flame.

12. In case of flashback, fire, or unusual sounds from the torch or hoses, contact the instructor immediately.

13. Always extinguish the flame according to manufacturer specifications.

14. Cutting should be done so that sparks are contained. Do not allow sparks to hit hoses, regulators, or the cylinders.

15. When completing your work, never wrap the hoses around the regulators.

16. Do not use oxygen or acetylene to clean off clothing.

Oxy-Acetylene Welding and Cutting Test

True/False

1. T F In case of flashback, dip the torch in water.
2. T F Matches may be used to start the flame when a flint lighter is not available.
3. T F When cleaning up, the hoses should be wrapped around the regulators.
4. T F Galvanized metal fumes are poisonous.
5. T F Do not weld in an enclosed area without proper ventilation.
6. T F Always turn the torch off before laying it down.
7. T F The flame from an acetylene welder will not burn clothing.
8. T F The hoses on the acetylene welder are fireproof. Hot metal will not burn them.
9. T F The acetylene valve should be opened no more than one full turn so that it may be turned off quickly.
10. T F The blowpipes should be lightly coated with oil to prevent rust.
11. T F When moving cylinders, be certain they are tied to the cart securely.
12. T F Contain sparks while cutting.

Fill in the Blank

13. Use goggles or face shield with a number _____ filter lens when oxy-acetylene welding.

Short Answer

14. Explain how to safely start the torch and establish a neutral flame.

15. Explain how to extinguish the flame of an oxy-acetylene torch.

Grinder Safety

1. Check grinding wheels for cracks, chips and balance before grinding.
2. Make certain that the tool rest is not more than 1/8” from the wheel.
3. Do not grind on the side of the wheel.
4. Hold small pieces of metal with vise grip pliers.
5. Hold all stock firmly against the tool rest while grinding.
6. Always wear a face shield and safety glasses when grinding.
7. Avoid standing directly in line with the grinding wheel while it is in motion.
8. Properly cool metal during and after grinding to prevent from destroying the temper.
9. Use caution when wearing gloves while using the grinder.
10. Be sure all guards and shields on the grinder are in place.
11. Never touch a moving grinder wheel with your hand.

Grinder Test

Fill in the Blank

1. Grinding wheels should be check for _____, _____, and _____ before grinding.

2. The maximum clearance between the tool rest and wheel is ____.

3. Hold small pieces of metal with _____ pliers only.

4. Hold stock against the _____ _____ while grinding.

5. Properly _____ metal during and after grinding to prevent destroying its temper.

6. Be sure all _____ and shields are in place.

True/False

7. T F It is acceptable to grind on side of the wheel.

8. T F You should never stand in line with the grinding wheel while it is in motion.

9. T F It is not necessary to use caution if you wear gloves while grinding.

10. T F Never touch the grinding wheel while it is running.

Short Answer

11. List the eye protection equipment that must be used while operating the grinder.

Hot Metal

1. Always wear leather gloves and leather apron when working with hot metal.
2. Always place unattended hot stock in proper storage area.
3. Never strike the face of the anvil with a hammer.
4. Never use hammer with loose or cracked handle.
5. Use tongs that will fit the stock.
6. Do not allow mushroomed heads to form on chisels, punches, or hammers.
7. Never swing a hammer in line with anyone.
8. Keep the face of an anvil dry and free from scale.
9. Do not offer work for inspection until it is cool.
10. Always make any source of heat safe before leaving.
11. Never start a flame if there is a flammable material nearby.

Hot Metal Test

True/False

1. T F Any source of heat should be made safe before leaving the area.
2. T F When using a hammer you should never swing it in line with anyone.
3. T F One should allow mushroomed heads to form on punches, chisels, and hammers.
4. T F One should not strike the face of an anvil with a hammer.
5. T F Never start a flame if there is flammable material nearby.

Fill in the Blank

6. When working with hot metal, you should use tongs that will _____ the stock.
7. You should not offer work for inspection until it is _____.
8. A person should always wear leather _____ and leather _____ when working with hot metal.
9. Never use hammer with a _____or_____ handle.
10. The face of an anvil should be kept _____and free of scale.
11. Before leaving hot stock unattended you should put it in the proper _____ area.

Gas Forge

1. Never start the forge without removing the top from the forge.
2. Always be sure the gas valve is turned off before leaving the area.
3. Never start the forge if there are flammable materials nearby.
4. Never leave the forge unattended while it is still running.
5. Always wear leather gloves and a leather apron while working with the forge.
6. If the flame should go out, push the stop button, turn off the gas, and notify the instructor.
7. Follow the correct operating procedure for starting and stopping the forge.

Gas Forge Test

True/False

1. T F A gas forge always should be started with the top in place.
2. T F When operating, the correct procedure for starting the forge should be followed.
3. T F Never leave the forge unattended while it is still running.

Fill in the Blank

4. Never start the forge if there is any _____ material nearby.
5. When operating the forge, always be sure that the _____ valve is closed before leaving the area.

Short Answer

6. List two pieces of special clothing that should be worn when operating the forge.

7. List the three steps you should follow if the flame should go out while the forge is running.

Power Hacksaw

1. Adjust and position the vise to grip the material securely before using the power hacksaw.
2. Place a support stand under the material.
3. Never add extra weight or press on the saw blade in order to speed up the operation.
4. Never lift the saw blade while the saw is operating.
5. Always turn off the saw before adjusting the saw or positioning the work.
6. Never leave the saw while it is still running.

Power Hacksaw Test

True/False

1. T F Adjust and position the vise as to securely grip the work.
2. T F It is necessary to press on the saw blade when cutting thick pieces of metal.
3. T F Never lift the saw blade while the saw is operating.
4. T F It is not always necessary to turn off the saw while making adjustments to the saw or work.
5. T F It is not a safe practice to leave the saw unattended while it is in operation.

Fill in the Blank

1. Place a _____under the material.

Stationary Woodworking Equipment

Drill Press
Drill Press Test
Band Saw
Band Saw Test
Jointer
Jointer Test
Planer
Planer Test
Table Saw
Table Saw Test
Radial Arm Saw
Radial Arm Saw Test
Wood Lathe
Wood Lathe Test

Drill Press

1. Always use a sharp drill bit.
2. Use a lubricant or cooling medium when drilling metal.
3. Be sure you have proper type drill and that it is properly centered and secured in the press before starting the drill press.
4. Secure loose clothing and long hair, remove rags, unnecessary tools, and other materials on the press table before starting the drill press.
5. Always operate the drill press at proper speed for the material.
6. The feed of the drill should be enough to keep it cutting at its maximum capacity.
7. Never look away from your work while in the process of drilling.
8. Properly secure all stock to the drill press table using a vise or clamps.
9. Remove the chuck key and/or drift key from the chuck before operating the drill press.
10. Remove drill bit from chuck after use.

Drill Press Test

True/False

1. T F Always concentrate your attention to your work.
2. T F The feed of the drill should be sufficient to keep the drill cutting at its maximum.
3. T F Always operate the drill press at its fastest speed to get the job finished quickly.
4. T F When drilling metal, a cutting oil is usually required.
5. T F On individual projects, always remove the drill bit from the chuck after use.
6. T F The chuck key can best be removed from the chuck by starting the drill.
7. T F Be sure you have the proper drill bit, properly centered and secured in the chuck before applying power.

Fill in the Blank

8. Always use a _____ drill bit.
9. All stock should be properly _____ to the drill press table.

Short Answer

10. List the items that should be removed or secured before operating the drill press.

Band Saw

1. Keep all guards in place.
2. Adjust the blade guards to within 1/8 to 1/4" of the stock.
3. Maintain the stock flat on the table.
4. Never cut round stock on the band saw.
5. Concentrate your attention on the job at hand.
6. Never leave the machine operating while unattended.
7. Keep the work area clean.
8. If the blade comes out of the guides or breaks, stop the machine instantly by turning off the power.
9. Do not reach across the saw line.
10. Never back material out of a cut until power has been turned off and the motion of the blade has stopped.
11. Always use a push stick when sawing small stock.
12. Do not hold the stock in line with the saw blade.
13. Keep your hands and fingers several inches from the side of the blade.
14. Use ‘relief cuts’ on tight curves to avoid breaking the blade.

Band Saw Test

Fill in the Blank

1. The guards on the band saw should be adjusted to within _____ inch of the stock.

2. A _____ piece of material should not be cut on the band saw.

3. Scraps that are lying near the blade should not be removed until the blade has _____.

4. The work area around the band saw should be kept _____.

5. When stock is to be cut it should lay _____ on the saw table.

6. All _____ should be kept in place on the saw.

7. If the blade comes out of the guides or breaks, _____ the machine instantly.

8. Always use a _____ _____ when sawing small stock.

True/False

1. T F A band saw should never be left in operation while unattended.

2. T F To avoid accidents, you should keep your mind on your work at all times.

3. T F While cutting a piece of stock, you should reach across the saw line to better control the feed of the stock through the saw.

Short Answer

4. Explain the procedure for backing material out of a cut.

Jointer

1. Apply downward and sideward pressure on the stock to hold it firmly against the table and fence.
2. Always use a push stick or hold-down push block when jointing small or short stock.
3. Always check the depth setting before using the jointer.
4. Do not set jointer to make the depth of the cut in excess of 1/8”.
5. Never wear loose clothing when jointing.
6. Always be sure all guards are in place.
7. Always keep hands and fingers away from the area directly above the cutterhead.
8. Keep the surface of the jointer free of excess sawdust and the floor free of scraps.
9. Always make sure the fence is locked before jointing.
10. Never joint a piece of stock less than twelve inches long.
11. All stock should be jointed with the grain of the wood. Never joint the end grain or end of a board without special instruction and permission.

Jointer Test

Fill in the Blank

1. Never joint the _____ of a board without permission and advanced instruction
2. Never joint a piece of stock less than _____ inches long.
3. Always use a _____ _____ when jointing short or small stock.
4. Always be sure the all _____ are in place when using the jointer.
5. Never wear _____ clothing when using the jointer.

True/False

6. T F Always keep the surface of the jointer free of excess sawdust and the floor free of sawdust and wood scraps.
7. T F Jointers can safely cut ½ inch of wood per pass through the machine.
8. T F Do not allow fingers to be positioned near the cutterhead.
9. T F Always check the depth of cut to be taken before using the jointer.
10. T F It is not necessary to lock the fence before jointing.

Planer

1. When operating the planer, keep your hands away from the top of the table.
2. Never wear loose clothing when operating the planer.
3. Be sure all guards are in place.
4. Never jam a piece of stock into the planer.
5. Do not plane any piece of stock less than two feet long.
6. Do not plane any piece of stock less than 1/4 inch thick.
7. Do not make excessive cuts with the planer.
8. Be sure the floor around the planer is kept free of wood scraps and sawdust.
9. Never plane inferior or used lumber.
10. When running stock through the planer a second time, pass it around the planer and not over it.
11. Check lumber for nails, staples, and other hardware that can damage the planer knives or cause injury.

Planer Test

True/False

1. T F Do not make excessively deep cuts with the planer.
2. T F Keep hands away from the top of the table when operating the planer.
3. T F Never wear loose clothing when operating the planer.
4. T F Keep the floor clear of wood scraps and sawdust.
5. T F Always make sure all guards are in place.
6. T F If a piece of stock does not go in the planer easily, you should force it.
7. T F Never plane inferior or used lumber.

Fill in the Blank

8. Never plane a board less than _____ inch thick.
9. Never plane a piece of stock less than _____ feet long.
10. When running stock through the planer a second time, pass the stock _____ the planer and not over.

Table Saw

1. Keep guards in place at all times.
2. Adjust the blade so that it is ¼ inch above the wood being cut. As a rule, do not expose more than three teeth above the wood.
3. Use a push stick while ripping narrow pieces of wood.
4. Do not make any adjustments while the blade is in motion.
5. Use caution to keep hands and fingers away from the saw blade.
6. Do special set-ups only with the instructor's assistance.
7. Never brush away material from the saw table with the hand. Wait until the blade stops and use a piece of scrap wood.
8. Always inspect material for nails, screws, and other hardware.
9. When taking long material from the saw, do not pull until signaled to do so by the operator.
10. Do not attempt to cut round stock on the saw table.
11. Never leave the saw operating while unattended.
12. Never stand in line with the saw blade while it is in motion.
13. Always use a miter gauge when crosscutting.
14. Do not use both the miter gauge and the rip fence at the same time. The stock could bind and kick back on the operator.

Table Saw Test

Fill in the Blank

1. No more than _____ teeth or ____ inch should be exposed above the wood.

2. No adjustments are to be made while the blade is in motion.

3. A _____ _____ should be used when ripping narrow pieces

4. Always use a _____ to brush away material from the saw table, never use your _____.

5. Never stand in line with the _____ _____ while it is in motion.

Multiple Choice

6. Use caution to keep_____ away from the saw blade.
    a. tools
    b. scrap wood
    c. hands and fingers
    d. all of these

7. What shaped stock should not be cut on a table saw?
    e. flat
    f. long
    g. round
    h. square

8. Keep guards in place:
    a. at all times
    b. when doing a hazardous job
    c. when ripping

True/False

9. T F Special set-ups such as a cutting a compound angle should be done only with the instructor's assistance.

10. T F All material should be inspected prior to cutting.

11. T F When taking long material from the saw, do not pull until signaled to do so by the operator.

12. T F You may leave the saw operating while unattended because the guards do not expose the blades.

Short Answer

13. Explain the dangers of using the both the miter gauge and rip fence at the same time.

Radial Arm Saw

1. Always turn off the power and wait until the blade stops turning before making any adjustments on the radial arm saw.
2. Be sure the material rests firmly against the fence before starting the saw.
3. Keep the guards in place at all times.
4. Support the work properly before turning on the saw.
5. Pull the saw through the work slowly.
6. Always grasp the handle firmly when sawing.
7. Always lock the carriage after making each cut.

Radial Arm Saw Test

True/False

1. T F Never lock the carriage after making each cut.
2. T F Always grasp the handle firmly when sawing.
3. T F Pull the saw through the work slowly.
4. T F Support the work properly before turning on the saw.
5. T F Keep the guards in place at all times.
6. T F Be sure the material rests firmly against the fence before starting the saw.
7. T F Always turn off the power and wait until the blade stops turning before making adjustments on the saw.

Wood Lathe

1. Never use knotty, soft, or inferior pieces of wood on the wood turning lathe.
2. Never wear loose fitting clothing while using the lathe.
3. Properly center and fit material between the lathe centers.
4. Adjust the tool rest to 1/8 inch below the center line of the stock.
5. Set the space or clearance between the tool rest and wood at 1/8 inch.
6. Turn the stock by hand several times to check for security and proper tool rest clearance.
7. When using wood that has been glued, be sure that it has set at least 24 hours.
8. Always use sharp tools.
9. Have the stock of wood shaped to smallest dimensions possible prior to turning.
10. Operate the lathe at the proper speed based on the diameter of the wood.
11. Have all shields in place before operating the lathe.
12. Never check the smoothness of the wood while it is turning.
13. Hold the chisel properly in both hands while standing slightly to the side of the cut.
14. Remember to readjust the tool rest distance to 1/8 inch clearance of work while wood is being removed.
15. Stop the lathe prior to make adjustments or before any use of calipers or other devices used for measuring purposes.
16. When turning objects such as bowls, use the proper sized screw to secure the wood to the face plate.

Wood Lathe Test

Fill in the Blank

1. Never use _____, _____, or _____ pieces of wood on the wood turning lathe.
2. The tool rest should be adjusted to _____ inch below the center line of the stock.
3. The space or clearance between the tool rest and wood should be set at no more than _____ of an inch and checked frequently while wood is removed.
4. Operate the lathe at the proper speed based on the _____ of the wood.

True/False

5. T F All shields should be in place before operating the lathe.
6. T F Always use sharp tools.
7. T F Always check the smoothness of the wood while it is being turned.
8. T F Stop the lathe before doing any measuring with calipers or any other device.
9. T F Secure face plates to the wood with nails.
10. T F Properly center and secure the material between the lathe centers.

Multiple Choice

11. When working on the lathe, you should never wear:
    a. tennis shoes
    b. a hat or cap
    c. loose fitting clothing.

12. When using wood that has been glued, be sure that it has set at least:
    a. 5 hours
    b. 12 hours
    c. 24 hours.

13. To check for security and proper tool rest clearance:
    a. turn the stock by hand several times
    b. turn the lath on
    c. check the stock before putting it on the lathe

14. Before turning the stock:
    a. sand
    b. shape it to the smallest dimensions possible

Specialty Areas

Agricultural Machinery Sales and Service Lab
Agricultural Machinery Sales and Service Lab Test
Chain Hoist
Chain Hoist Test
Steam Cleaner
Steam Cleaner Test
Milling Machine
Milling Machine Safety Test
Chain Saw
Chain Saw Test

Agricultural Machinery Sales and Service Lab

1. Tractors and other engines will not be operated inside the lab except to be moved.
2. Fuels and lubricants will be stored in the designated place and container.
3. Spilled fuels or lubricants will be cleaned up immediately
4. Oily rags will be kept in their proper containers.
5. All safety rules will be followed when hoisting.
6. All jacking and supporting equipment must be securely placed and on a firm base.
7. Caution will be used when moving large pieces of equipment inside the laboratory.
8. Tools and parts will be stored in their proper places and not left on the floor.
9. Caution will be used when using parts washing fluid or other liquids.
10. Always check equipment for neutral and lock wheels before making operational tests.

Agricultural Machinery Sales and Service Lab Test

True/False

1. T F Follow all safety rules when hoisting.
2. T F Fuels and lubricants will be stored in the designated place and container.
3. T F Do not splash parts washing fluid or other liquids.
4. T F Always check equipment for neutral and lock wheels before making operational tests.
5. T F Use caution when moving large pieces of equipment inside the lab.
6. T F Spilled fuels or lubricants will be cleaned up immediately.
7. T F Tools and parts will be stored in their proper places and not left on the floor.
8. T F Tractors and other engines will not be operated inside the lab except to be moved.
9. T F All jacking and supporting equipment must be securely placed and on a firm base.
10. T F Oily rags will be kept in their proper containers.

Chain Hoist

1. Do not load the chain hoist beyond its rated capacity.
2. Properly secure the object to be lifted to the hook on the chain hoist.
3. Raise the object slowly.
4. Once the object is on the lifting device, stop raising the item and check the connections for security.
5. Slowly lower the object until all weight is removed from the chain hoist.
6. Never leave an unattended load suspended in the air.
7. Stand clear of all loads when hoisting or moving them.
8. Do not kink or twist the chain.
9. Do not force the hook into the load.
10. Always center the load to be lifted.
11. Seat the load correctly in the hook.
12. Never touch a welding electrode to the chain or use it as a ground.

Chain Hoist Test

Fill in the Blank

1. Do not load the chain hoist beyond its _____ _____.

2. Never leave an _____ load suspended in the air.

True/False

3. T F Do not force the hook into the load.

4. T F Always twist the chain to remove any slack.

5. T F Never center the object being lifted.

6. T F Stand clear of loads when hoisting or moving them.

7. T F The load should be seated correctly in the hook.

8. T F Work as quickly as possible.

Steam Cleaner

1. Be sure the water is circulating before igniting the flame.
2. If the machine fails to ignite, turn off the fuel valve, and call the instructor.
3. Always wear leather gloves and a face shield when operating the steam jenny.
4. Steam cleaning chemicals are very caustic.
5. Keep clear of the flame coming from the exhaust stack.
6. Direct the steam at such an angle to the work that it will not splatter back on the operator.
7. When the fusible plug blows, cut off the fuel only and call the instructor.
8. Never turn off the water supply unless the machine is cool.

Steam Cleaner Test

True/False

1. T F The water supply should be turned off as soon as the fuel is turned off.

2. T F Gloves and face shield are not necessary since the spray nozzle has an insulated handle.

3. T F When the steam jenny fails to ignite, turn the fuel knob to the "off" positions and try again.

Fill in the Blank

4. Steam cleaning chemicals are dangerous and should be handled carefully because they are _____ .

5. Keep clear of _____ coming from exhaust stack.

6. Steam should be directed at an _____ to avoid splattering.

7. Be sure_____ is circulating before igniting the flame.

Multiple Choice

8. If the fusible plug blows, you should cut off:
   a. water
   b. fuel
   c. chemicals
   d. electricity

Milling Machine

1. Always properly secure the work to the milling machine.

2. Keep the machine table free of all tools and other material. Do not remove chips from the table by hand or blow them off with compressed air. Use a brush or vacuum cleaner for that purpose.

3. Before inserting the arbor or adapters into the spindle, be sure both the arbor and spindle hole is clean and free from nicks.

4. Sprung arbors should not be used.

5. To avoid striking hands on the cutter while setting up, do the setup as far away from the cutter as possible.

6. Do not attempt to clean or oil the machine or make any adjustments to the work while the machine is in motion.

7. When the operator has finished an operation, or before he/she leaves his/her machine for any reason, he/she should shut off the power and make sure the machine has stopped.

8. Always wear safety glasses and a face shield when operating the milling machine.

9. Do not wear loose clothing around the milling machine.

Milling Machine Safety Test

True/False

1. T F After completing a milling machine operation you can safely leave the machine immediately after you push the "stop" button.
2. T F Safety glasses are optional when working around the milling machine.
3. T F Work should be properly secured to the machine.
4. T F All tools should be kept off the table when the milling machine is in operation.
5. T F It is safe to wear loose clothing when operating the milling machine.
6. T F It is unsafe to clean or oil the milling machine while it is in motion.
7. T F Chips can be safely removed from the milling machine table with your hands.
8. T F Setting up work on the milling machine should be done as far away from the cutter as possible.
9. T F Sprung arbors should not be used.

Multiple Choice

10. The principle hazard to the operator of a milling machine is contact with the:
    a. table
    b. cutter
    c. handles
    d. work material.

Chain Saw

1. Always use both hands when operating the chain saw.
2. Always safety check the saw before starting it.
3. Never start the saw at the fueling site.
4. Use the proper starting procedure.
5. Before starting the saw, make sure the blade is clear of all objects.
6. Cut off the saw when carrying it from one site to another.
7. Carry the saw with the blade pointing behind you.
8. Make sure all bystanders are a safe distance away while the saw is in operation.
9. Watch out for small limbs and trash that can cause the saw to grab.
10. Never refuel the saw while it is still hot.
11. Always wear eye protection equipment when using the chain saw.
12. Never use the chain saw unless you are under the direct supervision of the instructor.

Chain Saw Test

True/False

1. T F It is acceptable to use a chain saw with one hand for some jobs.
2. T F A safety check should be made before starting the saw.
3. T F Use the proper starting procedure.
4. T F When carrying the saw from one location to another, shut off the engine.
5. T F Make sure that all bystanders are a reasonable distance away.
6. T F Small limbs can be dangerous when using a chain saw.
7. T F It is not necessary to wear eye protection while using the chain saw.

Fill in the Blank

8. Never start the saw at the _____ site.
9. Before starting, make sure that the blade is _____ of all objects.
10. Never fuel a _____ saw.
11. Never use the chain saw unless you are under the direct supervision of the _____.

Short Answer

12. How should you carry a chain saw?