

# **Agricultural Power and Technology Syllabus**

## **COURSE PREREQUISTES:**

This course is designed for upper level students who have completed Introduction to Agriscience (Ag I). A satisfactory completion of Ag I is a required for enrollment in this class.

## **COURSE DESCRIPTION:**

This is a one-credit course to develop knowledge and skill in the fundamentals of agricultural mechanics and power equipment. Physical science and mathematics principles will be integrated throughout the course. Major areas of content include the meaning and importance of agricultural mechanics and power; personal and employability safety; identifying, using, and maintaining common hand and power tools; planning and organizing facilities and shops; using measuring devices; selecting and using wood and metal materials; using fasteners and hardware; preparing and using simple project plans; metal fabrication; and machinery and engines. FFA and supervised experience will also be included as appropriate.

## **CURRICULUM:**

Comprehensive Agricultural Mechanics 2009 CIMC

## **COURSE OBJECTIVES:**

Students will gain an understanding of advanced principles in the following disciplines of Agricultural Power and Technology:

General Safety  
Welding Fundamentals  
Shielded Metal  
Arc Welding  
Gas Metal Arc Welding  
Oxyfuel Welding  
Oxyfuel and Plasma Arc Cutting  
Electrical Safety  
Electrical Circuits  
Land Measurement and Surveying  
Soil and Water Management

## **SHOP SAFETY:**

Students are expected to behave in a responsible manner when in the lab.

### Primary Shop Safety Requirements:

- Students will wear appropriate clothing at all times in shop, closed toed shoes and pants are required.
- Safety glasses will be worn at all times.
- Horse play will NOT be tolerated.
- No student is allowed to use equipment without instructor's approval and satisfactory training on that equipment has been passed.
- Report all injuries and broken equipment immediately to the instructor.

Shop Safety Test:

- All students enrolled in class will be required to pass a shop safety test with 95% success in order to participate in the shop area. This test will be kept on file for the duration of the course.

Shop Safety Agreement:

- All students and parents will be required to read and sign the attached “Shop Safety Agreement.” It will be kept on file with the Shop Safety Test.

**GRADING:**

Test/Quiz (50%) – Students will be responsible for tests and quizzes for each unit as it is covered.

Technical Skills Assessment (35%) – Students will perform the duties and activities based on skills required. Grades will be assessed on the following rubric:

General Ag Mech	Poor	Fair	Good	Excellent
	0 points	2 points	3 points	5 points
Safety	Poor	Fair	Good	Excellent
	Did not regularly follow lab safety procedures	Needed to be reminded to follow lab safety procedures	Regularly followed lab safety procedures	Always followed lab safety procedures
Difficulty	Poor	Fair	Good	Excellent
	Project was far too simple in nature	Project was not of required difficulty	Project was on proper difficulty level.	This was a very difficult project
Craftsmanship	Poor	Fair	Good	Excellent
	No Attention to detail, project looks very shabby	Some attention to detail but lacking on many details	Good attention to detail but missing few finishing touches, Nice work.	Attention to detail project looks like a sturdy item.
Accuracy	Poor	Fair	Good	Excellent
	All materials unevenly measured and mixed. Does not follow plan	Most materials unevenly measured. Looks like plan but not correct sizes.	Some materials not in correct proportion. Project is close to following plan.	All materials evenly placed. Project follows plan.
Finish	Poor	Fair	Good	Excellent
	Many beads not ground off, poorly painted. Poor welds	Some welding beads, welds are average, paint average.	Good finish. A few welding beads, some paint runs.	Excellent finished project. Smooth welds.
Strength	Poor	Fair	Good	Excellent
	The welds are not strong. Breaks easily	Weld is somewhat strong. Bends some before breaking	Weld is strong. Either bends slightly or cracks slightly.	Welds are very strong. Stays in shape and together under pressure.

Record Book (15%) – An essential component of the Agricultural Education curriculum is a Supervised Agricultural Experience (SAE). All students will be required to develop and maintain an entrepreneurship, placement, research, or exploratory SAE. The record books will be graded once a month based on completeness, detail, and involvement.

### **SHOP MAINTAINENCE:**

All students will take part in the clean-up and maintenance of the shop area. Each student will be assigned a task each week to perform. The jobs to be performed are:

- (1) Shop Foreman – In charge of determining when the clean-up should start, makes sure that all supplies required are present, and that all students are aware of their designated duties.
- (2) Sweep Main Floor – Sweeps all areas around the shop; may be performed by 2-4 students
- (3) Tool Room Foreman – Makes sure that all tools are returned to their appropriate storage area. Maintains inventory so that no tools are not accounted for.
- (4) Clean Tables and work areas – cleaned off of debris and other items.
- (5) Arc Welding Booths – Cleared of all discarded welding rods, metal, and other items. Helmets and other tools are stored away.
- (6) Bathroom – Cleaned
- (7) Cut-Off Saw – All metal filings, debris and other items are cleaned and swept around saw.
- (8) Metal Storage Area – Any metal that was used is stored back on racks or storage area.
- (9) Power Tool Inspection and Reporting – All power tools (drills, grinders, presses, vises, etc.) are stored away if not stationary and inspected for wear, chips, or other defects. All defects are reported to the instructor.
- (10) Absentee Job – This student performs the duties if someone is absent. This insures that the job will not go undone.

Example Shop Maintenance Table:

	Week of School										
Student Name	1	2	3	4	5	6	7	8	9	10	Job to be Done
	1	2	3	4	5	6	7	8	9	10	(1) Shop Foreman
	2	3	4	5	6	7	8	9	10	1	(2) Sweep Main Floor
	3	4	5	6	7	8	9	10	1	2	(3) Tool Room Foreman
	4	5	6	7	8	9	10	1	2	3	(4) Clean Tables and Work Area
	5	6	7	8	9	10	1	2	3	4	(5) Arc Welding Booths
	6	7	8	9	10	1	2	3	4	5	(6) Bathroom
	7	8	9	10	1	2	3	4	5	6	(7) Cut-Off Saw
	8	9	10	1	2	3	4	5	6	7	(8) Metal Storage Area
	9	10	1	2	3	4	5	6	7	8	(9) Power Tool Inspection
	10	1	2	3	4	5	6	7	8	9	(10) Absentee Job

Other jobs that might be substituted: Plasma Torch and Plasma Cam; Oxy-Ace Torch and Table area; Safety supplies, gloves, glasses, etc.

## **General Shop Safety Agreement**

1. I will wear clothing which is conducive to work in the mechanics laboratory, i.e., coveralls, shop coats, etc. Shop clothing should not be loose, baggy or highly flammable.
2. I will wear approved safety glasses and I know they must be worn at all times in the mechanics.
3. I will wear other personal protective equipment as needed by specific shop jobs, i.e., respirator for painting, welding gloves for welding, etc.
4. I will not visit and disturb others during the laboratory period. I will stay busy on my assigned work; if completed, I will check with the instructor for further directions.
5. I will not hurry or rush, I will avoid cutting corners and unsafe work practices. I will not allow myself to get caught in rush situations.
6. I will notify the instructor immediately in the case of an injury, accident or fire.
7. I will notify the instructor immediately in the case of defective tools and equipment. I will not use a piece of equipment of tool that has an out of order sign placed on it.
8. I will avoid horseplay and other hazardous scuffling and pushing while working the mechanics laboratory.
9. I will clean my work station and return all tools to their proper storage before leaving the mechanics laboratory.
10. I will never leave the lab without the instructor's knowledge or permission.
11. I will be alert and think each action through before it is performed. If in doubt about how to perform a procedure, I will check with the instructor before proceeding.
12. I will never use power equipment or tools which have not been demonstrated to me. Before using any piece of power equipment I will pass a written test on safety and operation of the equipment item, as well as, a hands-on performance.
13. I will become familiar with the laboratory color coding system and observe the warnings issued by each color while working in the mechanics lab. Ex: Red=Danger; Yellow=Caution; etc.
14. I will remove any loose jewelry and secure long hair while working the mechanics lab.
15. I will remind visitors of safety precautions when entering or present in the lab area. I will be cognizant of their presents and not operate a piece of equipment that could endanger or startle them.

I have read the shop safety agreement and understand that I must pass all safety exams with 100% accuracy before being allowed to work in the shop

Student \_\_\_\_\_ Date \_\_\_\_\_

Parent \_\_\_\_\_ Date \_\_\_\_\_

## Operating a Bench Grinder

1. Operate only after you have received instruction.
2. Wear proper clothing.
3. Wear face shield, safety glasses, or goggles and use glass safety guard on grinder.
4. See that the guard is in place.
5. Set tool rest 1/16 inch to 1/8 inch from the wheel.
6. Dress wheel when necessary.
7. Make sure that no one but you is inside the operator's area.
8. Adjust grinder for your job before turning power on
9. Stand to one side of wheel when turning power on. The wheel may be cracked, causing it to break up.
10. Turn on power after permission is given.
11. Keep hands away from the wheel while it is in motion.
12. Hold work with your hands. Ask permission to grind small pieces.
13. Use the face of the wheel only.
14. Press materials against wheel with correct amount of pressure.

Safety Sets for Operating a Bench Grinder are mastered on \_\_\_\_\_

Signed by Student \_\_\_\_\_

Signed by Teacher \_\_\_\_\_

# General Safety Instructions for Operating Power Tools

1. Know your power tool. Read operator's manual carefully. Learn its applications and limitations as well as the specific potential hazards peculiar to this tool.
2. Ground all tools—unless double-insulated. If tool is equipped with three-prong plug, it should be plugged into a three-hole electrical receptacle. If adapter is used to accommodate two-prong receptacle, the adapter wire must be attached to a known ground. (Usually the screw secures the receptacle cover plate.) Never remove third prong.
3. Keep guards in place and in working order.
4. Keep work area clean. Cluttered areas and benches invite accidents.
5. Avoid a dangerous environment. Do not use power tool in damp or wet locations. Keep the work area well lighted.
6. Keep children away. All visitors should be kept safe distance from work area.
7. Store idle tools. When not in use, tools should be stored in a dry, high, or locked place.
8. Don't force a tool. It will do the job better and safer at the rate for which it was designed.
9. Use the right tool. Do not force a small tool or attachment to do the job of a heavy-duty tool.
10. Wear proper apparel. Wear no loose clothing or jewelry to get caught in moving parts. Rubber gloves and footwear are recommended when working outdoors.
11. Use safety glasses with most tools. Also face or dust mask should be used if cutting operation is dusty.
12. Do not abuse cords. Never carry tool by its cord or yank the cord to disconnect the tool from receptacle. Keep cords from heat, oil, and sharp edges.
13. Secure work. Use clamps or a vise to hold work. Using a vise or clamp is safer than using your hand, and both hands are free to operate the tool.
14. Do not over-reach. Keep proper footing and balance at all times.
15. Maintain tools with care. Keep tools sharp at all times, and keep them clean for the best and safest performance. Follow instructions for lubricating and changing accessories.
16. Disconnect tools when they are not in use, before servicing, and when changing attachments, blades, bits, cutters, etc.
17. Remove adjusting keys and wrenches. Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.
18. Avoid accidental starting. Do not carry a plugged-in tool with your finger on switch.

Safety Skills for Operating Power Tools are mastered on \_\_\_\_\_

Signed by Student \_\_\_\_\_

Signed by Teacher \_\_\_\_\_

# Hand Tool Safety

1. Do not continue to work if your safety glasses become fogged. Stop work and clean the glasses until the lenses are clear and defogged.
2. Use tied off containers to keep tools from falling off of scaffolds and other elevated work platforms.
3. Carry all sharp tools in a sheath or holster.
4. Tag worn, damaged or defective tools "Out of Service" and do not use them.
5. Do not use a tool if its handle has splinters, burrs, cracks, splits or if the head of the tool is loose.
6. Do not use impact tools such as hammers, chisels, punches or steel stakes that have mushroomed heads.
7. When handing a tool to another person, direct sharp points and cutting edges away from yourself and the other person.
8. When using knives, shears or other cutting tools, cut in a direction away from your body.
9. Do not chop at heights above your head when you are working with a hand axe.
10. Do not carry sharp or pointed hand tools such as screwdrivers, scribes, aviation snips, scrapers, chisels or files in your pocket unless the tool or your pocket is sheathed.
11. Do not perform "make-shift" repairs to tools.
12. Do not use "cheaters" on load binders or "boomers".
13. Do not carry tools in your hand when you are climbing. Carry tools in tool belts or hoist the tools to the work area using a hand line.
14. Do not throw tools from one location to another, from one employee to another, from scaffolds or other elevated platforms.
15. Transport hand tools only in tool boxes or tool belts. Do not carry tools in your clothing.

## Knives/Sharp instruments

1. When handling knife blades and other cutting tools, direct sharp points and edges away from you.
2. Cut in the direction away from your body when using knives.
3. Use the knife that has been sharpened; do not use knives that have dull blades.
4. Use knives for the operations for which they are named.
5. Do not use knives that have broken or loose handles.
6. Do not use knives as screwdrivers, pry bars, can openers or ice picks.
7. Do not leave knives in sinks full of water.
8. Do not pick up knives by their blades.
9. Carry knives with their tips pointed towards the floor.
10. Do not carry knives, scissors or other sharp tools in your pockets or an apron unless they are first placed in their sheath or holder.
11. Do not attempt to catch a falling knife.
12. Store knives in knife blocks or in sheaths after using them.
13. Follow this procedure for picking up any bags that have sharp objects protruding from them: Grab the top of the bag above the tie-off, using both hands, and hold the bag away from your body.
14. Do not submerge hot glass in cold water nor submerge cold glass in hot water.
15. When opening cartons use the safety box cutters. Do not cut with the blade extended beyond the guard.
16. Do not use honing steels that do not have disc guards.



## Files/Rasps

1. Do not use a file as a pry bar, hammer, screwdriver or chisel.
2. When using a file or a rasp, grasp the handle in one hand and the toe of the file in the other.
3. Do not hammer on a file.

## Chisels

1. Use the chisel that has been sharpened; do not use a chisel that has a dull cutting edge.
2. Do not use chisels that have "mushroomed" striking heads.
3. Hold a chisel by using a tool holder if possible.
4. Clamp small workpieces in the vise and chip towards the stationary jaw when you are working with a chisel.

## Hammers

- Use a claw hammer for pulling nails.
- Do not strike nails or other objects with the "cheek" of the hammer.
- Do not strike a hardened steel surface, such as a cold chisel, with a claw hammer.
- Do not strike one hammer against another hammer.
- Do not use a hammer if your hands are oily, greasy or wet.
- Do not use a hammer as a wedge or a pry bar, or for pulling large spikes.
- Use only the sledge type hammer on a striking face wrench.

## Saws

1. Keep control of saws by releasing downward pressure at the end of the stroke.
2. Do not use an adjustable blade saw such as a hacksaw, coping saw, keyhole saw or bow saw, if the blade is not taut.
3. Do not use a saw that has dull saw blades.
4. Oil saw blades after each use of the saw.
5. Keep your hands and fingers away from the saw blade while you are using the saw.
6. Do not carry a saw by the blade.
7. When using the hand saw, hold the workpiece firmly against the work table.
8. Use the circular saw guard when using the circular saw.

## Screwdrivers

1. Always match the size and type of screwdriver blade to fit the head of the screw.
2. Do not hold the workpiece against your body while using a screwdriver.
3. Do not put your fingers near the blade of the screwdriver when tightening a screw.
4. Use a drill, nail, or an awl to make a starting hole for screws.
5. Do not force a screwdriver by using a hammer or pliers on it.
6. Do not use a screwdriver as a punch, chisel, pry bar or nail puller.
7. When you are performing electrical work, use the screwdriver that has the blue handle; this screwdriver is insulated.
8. Do not carry a screwdriver in your pocket.
9. Do not use a screwdriver if your hands are wet, oily or greasy.
10. Do not use a screwdriver to test the charge of a battery.

11. When using the spiral ratchet screwdriver, push down firmly and slowly.

## **Wrenches**

1. Do not use wrenches that are bent, cracked or badly chipped or that have loose or broken handles.
2. Do not slip a pipe over a single head wrench handle for increased leverage.
3. Do not use a shim to make a wrench fit.
4. Use a split box wrench on flare nuts.
5. Do not use a wrench that has broken or battered points.
6. Use a hammer on striking face wrenches.
7. Discard any wrench that has spread, nicked or battered jaws or if the handle is bent.
8. Use box or socket wrenches on hexagon nuts and bolts as a first choice, and open end wrenches as a second choice.

## **Pliers**

1. Do not use pliers as a wrench or a hammer.
2. Do not attempt to force pliers by using a hammer on them.
3. Do not slip a pipe over the handles of pliers to increase leverage.
4. When you are performing electrical work, use the pliers that have the blue rubber sleeves covering the handle; these pliers are insulated.
5. Do not use pliers that are cracked, broken or sprung.
6. When using the diagonal cutting pliers, shield the loose pieces of cut material from flying into the air by using a cloth or your gloved hand.

## **Vises & Clamps**

1. When clamping a long workpiece in a vise, support the far end of the workpiece by using an adjustable pipe stand, saw horse or box.
2. Position the workpiece in the vise so that the entire face of the jaw supports the workpiece.
3. Do not use a vise that has worn or broken jaw inserts, or has cracks or fractures in the body of the vise.
4. Do not slip a pipe over the handle of a vise to gain extra leverage.
5. Do not use the C-clamp for hoisting materials.
6. Do not use the C-clamp as a permanent fastening device.

## **Snips**

1. Wear your safety glasses or safety goggles when using snips to cut materials.
2. Wear your work gloves when cutting materials with snips.
3. Do not use straight cut snips to cut curves.
4. Keep the blade aligned by tightening the nut and bolt on the snips.
5. Do not use snips as a hammer, screwdriver or pry bar.
6. Use the locking clip on the snips after you have finished using them.

## **Tool Boxes/Chests/Cabinets**

1. Use the handle when opening and closing a drawer or door of a tool box, chest, or cabinet.
2. Tape over or file off sharp edges on tool boxes, chests or cabinets.
3. Do not stand on tool boxes, chests or cabinets to gain extra height.
4. Lock the wheels on large tool boxes, chests or cabinets to prevent them from rolling.
5. Push large chests, cabinets and tool boxes; do not pull them.
6. Do not open more than one drawer of a tool box at a time.
7. Close and lock all drawers and doors before moving the tool chest to a new location.
8. Do not use a tool box or chest as a workbench.
9. Do not move a tool box, chest or cabinet if it has loose tools or parts on the top.

Safety Skills for Operating Hand Tools are mastered on \_\_\_\_\_

Signed by Student \_\_\_\_\_

Signed by Teacher \_\_\_\_\_

## Bench Vice

1. Mount the vise firmly. Keep it tight on bench. A loose vise is dangerous and inefficient.
2. Lock swivel base securely. Tapered-gear lock bolt prevents slippage.
3. Do not hammer the handle. Too much pressure may damage the work.
4. Never use handle extension. Normal leverage will hold work securely in place.
5. Do not hammer the beam. Your vise will give almost unlimited use. But it will not stand continued abuse.
6. Oil the screw. Remove front jaw. Use oil or light grease. This should be done frequently to prevent screw wear.
7. Keep jaw faces clean. Use wire brush or file card to remove chips and dust.

Safety Skills for Operating a Bench Vice are mastered on \_\_\_\_\_

Signed by Student \_\_\_\_\_

Signed by Teacher \_\_\_\_\_

## Operating a Portable Disc Sander/Grinder

1. Operate only after you have received instruction.
2. Wear proper clothing. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating properly.
4. Wear face shield, goggles, or safety glasses.
5. Before connecting to the power source, be sure the switch is in the "off" position.
6. Make sure back-up pad and disc are securely fastened to the tool. Unplug the sander when changing discs.
7. Do not allow the edge of the disc to touch the edge of the stock.
8. Stand clear of the spark line or spark area.
9. Sand or finish with a stroking motion; do not pause in one spot.
10. Set sander on back or on rubber stand when not in use and disconnect from power source.

Safety Skills for Operating Portable Disc Sander/Grinder \_\_\_\_\_

Signed by Student \_\_\_\_\_

Signed by Teacher \_\_\_\_\_

## Operating a Portable Electric Drill

1. Operate only after you have received instruction.
2. Wear proper clothing. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Always use proper eye protection.
4. "Unplug" the drill when changing bits.
5. Make sure switch is off and chuck key removed before connecting to power source.
6. Mark hole location with center punch (metal) or AWL (wood) before drilling.
7. Be sure work is tightly clamped or otherwise secure before drilling.
8. Drill with straight, even, steady pressure.

Safety Skills for Operating Electric Drill are mastered on \_\_\_\_\_

Signed by Student \_\_\_\_\_

Signed by Teacher \_\_\_\_\_

# Operating an Oxygen-Acetylene Welder

1. Operate only after you have received instruction.
2. Wear proper clothing and protective equipment. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Be sure that you wear welding goggles. All assistants and observers must also wear welding goggles.
4. Close cylinder valve and replace protective cover before moving cylinder.
5. Fasten cylinders with a chain or other suitable device as a protection against falling or rolling.
6. Keep welding equipment free of oil and grease. Use only clean rags for wiping off welding equipment.
7. Inspect hose before using.
8. Make sure that hose is properly connected and that all connections are tight.
9. Report any leaking of cylinders or connections to supervisor immediately.
10. Make sure you have ample ventilation.
11. Keep all flammable material away from working area.
12. Release regulator pressure screw. Open cylinder valves gradually.
13. Open acetylene cylinder valve 1 turn or less. Keep wrench in place so that valve may be shut off quickly if necessary.
14. Keep acetylene pressure in the hose below 15 pounds per square inch
15. Use a flint lighter to ignite torch.
16. Close acetylene valve first if torch backfires.
17. Make certain lighted torch always points away from you and other students.
18. Keep sparks and flame away from cylinders.
19. Close cylinder valve when you have finished your welding job.
20. Quench section of metal that has been welded or mark with chalk or soapstone the word "hot" on the metal if it is necessary for you to leave your work.

Safety Skills for Operating Oxy-Ace Welder are mastered on \_\_\_\_\_

Signed by Student \_\_\_\_\_

Signed by Teacher \_\_\_\_\_

## Operating an Electric Welder

1. Operate only after you have received instruction.
2. Wear proper clothing to protect from arc burns. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Wear a hood with proper observation window, treated gauntlet gloves, and treated leather apron. All assistants and observers must also wear this equipment.
4. Rubber-soled shoes, without tacks, should be worn when electric welding.
5. Operator of electric welder is to allow no one to look at the arc without the dark shield (No. 10-12 lens).
6. Make sure electric welding is done only in a correctly constructed booth or room, or behind proper screens.
7. Make sure there is ample ventilation.
8. Keep all flammable material away from working area.
9. See that floor area is clear of all obstructions.
10. Report to supervisor at once if electrode holder, holder cable connection, cable, or cable terminals at the welding machine, ground clamps, lugs, or cable get hot.
11. While removing scale from the work, wear ordinary safety glasses or goggles.
12. Have a dry-chemical fire extinguisher handy when electric welding.
13. Hang up electrode holder and turn off welder when work is being changed or when work has been completed.

Safety Skills for Operating Electric Welder are mastered on \_\_\_\_\_

Signed by Student \_\_\_\_\_

Signed by Teacher \_\_\_\_\_



## Operating a Table Saw

1. Operate only after you have received instruction.
2. Wear proper clothing. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Wear safety goggles or glasses.
4. Make sure saw guards are in place and operative. Guards must be kept down over the saw while machine is being operated.
5. The saw must not be raised above the table *more* than absolutely necessary to make the cut, approximately 1/8 inch.
6. A push stick must be used when ripping narrow pieces of lumber.
7. The clearance block must be fastened to fence when cutting off short pieces of stock.
8. Fence must not be adjusted until saw is at a dead stop.
9. Sawdust underfoot is slippery; keep floor around saw area clean.
10. Use brush to keep table clear of scraps; never use the hands.
11. Fingers must be kept clear of track of saw, and hands must never be allowed to cross saw line in advance of the end of the board while machine is in operation.
12. Reaching over the saw blade or passing wood over saw blade is prohibited.
13. All special set-ups and dado heads must be inspected by supervisor before power is turned on.
14. The dado head must be taken off the saw arbor after use.
15. When helping to "tail-off" the saw, students must never pull on a board being ripped. They should hold board up and allow operator to push stock through saw.
16. Re-sawing must not be done on circular saw without special permission of the supervisor.
17. Cylindrical stock must not be cut on circular saw.
18. Never lower pieces of stock down over the saw. This operation is sometimes performed when cutting holes in rails for drawer fronts. Special permission should be obtained from the supervisor for doing this type of work.
19. Ripping stock without using the ripping fence or cross-cutting stock without using the sliding cross-cutting fence is extremely dangerous and is absolutely forbidden. This rule applies to dado head work.
20. See that no fence or set-up will be in line of saw before starting work or turning on power.
21. Be sure that saw or tilting arbor saw will clear on both sides when sawing angles before power is turned on.
22. Never stand directly behind the blade; stay to the left.
23. Only operator turns machine on and off.
24. Only operator should be in safety area of the saw.

Safety Skills for Operating Table Saw are mastered on \_\_\_\_\_

Signed by Student \_\_\_\_\_

Signed by Teacher \_\_\_\_\_