

TECHNICAL DIVISION
SAFETY
PROGRAM



Delgado
COMMUNITY COLLEGE



Office of Safety, Risk, and Compliance
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TECHNICAL DIVISION SAFETY PROGRAM

SPRING 2015

Program prepared by:
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Education that works!

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INTRODUCTION

1.0 INTRODUCTION

- 1.1 This policy establishes safe work practices for students, faculty, staff, and visitors working in any technical shop. It defines safety guidelines, training requirements, and response procedures in case of emergency to minimize injuries and illness when working in a technical shop.
- 1.2 The purpose of this program is to outline the requirements to minimize/eliminate technical shop related injuries. This program is developed in accordance with Occupational Safety and Health Administration (OSHA) regulations and Delgado Community College programs and policies:
 - 29 CFR 1910 Subpart I, "Personal Protective Equipment"
 - 29 CFR 1910 Subpart O, "Machinery and Machine Guarding"
 - 29 CFR 1910 Subpart P, "Hand and Portable Powered Tools and Other Hand-Held Equipment"
 - Delgado Work Environment Safety Program
 - Delgado Control of Hazardous Materials
 - Delgado Access Control Procedures
- 1.3 Scope: This Technical Division Safety Program establishes and outlines the Delgado Office of Safety, Risk, and Compliance; division, instructor, and student responsibilities; identification of safety hazards and control measures; training, inspection, and recordkeeping for Delgado technical shops. The program applies to all Delgado staff and students whose work and class duties require them to utilize equipment within the technical shops. This program covers all rooms that are dedicated to the housing of technical shop equipment and are used for student instruction, the completions of student tasks, or the completion of work by Delgado staff.

RESPONSIBILITIES

2.0 RESPONSIBILITIES

2.1 *Office of Safety, Risk, and Compliance*

2.1.1 Office of Safety, Risk, and Compliance provides consultation to Delgado staff working in technical shops by making recommendations for safety procedures to instructors and departments.

2.2 *Delgado Community College/Workforce Development and Technical Education*

2.2.1 Each department or working units within a department where technical shops are present are responsible for the following:

2.2.1.1 Ensure the applicable components of the Technical Division Safety Program are available to staff/students.

2.2.1.2 Provide applicable training to staff/students expected to utilize hand and power tools as part of their job duties within technical shops.

2.2.1.3 Ensure shop equipment is properly maintained and any equipment deficiencies are addressed to ensure staff/student safety.

2.2.1.4 Maintain manufacturer manuals and other applicable documentation related to the technical shop equipment in use.

2.2.1.5 Develop and implement Standard Operating Procedures for operations requiring specialized knowledge/skills.

2.3 *Instructors/Supervisors*

2.3.1 Delgado staff who supervise students with responsibilities to work in technical shops should be informed of the program contents, address safety hazards in a timely manner, provide all appropriate personal protective equipment (PPE), ensure

RESPONSIBILITIES

appropriate safety programs are in place (i.e. hazard communication, hot work, heating conservation, etc.), maintain good housekeeping skills, and maintain appropriate records.

- 2.3.2 Set an example by wearing all required PPE in designated safety controlled areas.
- 2.3.3 Instruct students about the potential hazards in the classroom or lab and the proper environmental, health, and safety requirements to the task they are performing.
- 2.3.4 Ensure all students wear PPE while located inside a designated safety controlled area, classroom, and lab or designated work area.
- 2.3.5 Ensure all students wear PPE while performing their tasks.
- 2.3.6 Instruct students in the proper procedures to clean biohazards or chemical spills.
- 2.3.7 Ensure all students receive proper health and safety training.
- 2.3.8 Ensure that all visitors are aware and are complying with health and safety requirements within classrooms and labs.
- 2.3.9 Ensure all students clean their work areas daily and return all tools, materials, or any other item(s) that should be stored in designated places or disposed of.

2.4 *Authorized Person*

- 2.4.1 Staff and students working with technical shop equipment must be fully trained to ensure applicable elements of the Delgado Technical Division Safety Program are followed. Staff and students are

GENERAL TECHNICAL SHOP SAFETY RULES

responsible for reporting equipment deficiencies, use of PPE, and safe use of technical shop equipment at all times

- 2.4.1.1 Comply with all health and safety rules and regulations.
- 2.4.1.2 Report all hazardous conditions to your instructor immediately.
- 2.4.1.3 Never indulge in horseplay, practical jokes, or fighting.
- 2.4.1.4 Do not make any unauthorized repairs or modifications to equipment or tools. Immediately report defected items to instructor.
- 2.4.1.5 Certain areas of study require students to supply their own tools as a condition of taking the course. Student supplied tools must be in good condition and inspected on a regular basis. These tools must be approved by the teacher or instructor before use.
- 2.4.1.6 Read and obey all signs, labels, danger notices, and other warning devices. Never remove without proper notification.

3.0 GENERAL TECHNICAL SHOP SAFETY RULES

3.1 *Only fully trained employees and students are permitted to use technical shop equipment. The following general technical shop safety guidelines apply to general technical shop duties and do not serve as adequate replacement of specific technical shop equipment training. These guidelines must be implemented to ensure safety and health in technical shops; failure to do so may result in serious injury or death.*

- 3.1.1 Eye protection (i.e. safety glasses, goggles, or face shields) is required in all technical shop areas whether working or not.

GENERAL TECHNICAL SHOP SAFETY RULES

- 3.1.2 Prescription glasses must have side shields and both must meet the ANSI Z877.1 safety standards or must be covered with OSHA approved safety glasses with side shields or safety goggles.
- 3.1.3 Open-toe shoes are prohibited within shops. Closed-toe shoes are required when in any shop area. Steel-toe shoes may be required if working with heavy materials such as metal.
- 3.1.4 Adequate hand protection must be worn depending on the material being handled.
- 3.1.5 Instructors will provide a list of appropriate attire for each technical shop.
- 3.1.6 At least two people should be present when operating any machinery, power equipment, and/or tools.
- 3.1.7 In the event of injury or exposure to a chemical, the Campus Police should be contacted and an accident report completed.

During normal business hours: (504) 671-6111 or
(504) 671-6112.

After 10 p.m. Monday through Friday and weekends:
(504) 818-6254.

- 3.1.8 In the event of serious/severe injuries or exposures call 9-1-1 immediately for medical attention.

**Main Campus
Office of Health Services
Phone (504) 671-5620
615 City Park Avenue, Building 2, Room 208W
Hours: Monday - Friday, 7:30 a.m. - 4:30 p.m.**

To seek medical treatment for minor injuries if the Office of Health Services is closed or unavailable, the following locations are close to campuses:

GENERAL TECHNICAL SHOP SAFETY RULES

New Orleans
Tulane University Hospital
1415 Tulane
New Orleans, LA
(504) 988-5344

West Bank
Algiers Urgent Care
3801 General De Gaulle
New Orleans, LA
(504) 362-2829

Jefferson
Ochsner Health Center
1221 S. Clearview
New Orleans, LA
(504) 733-1600

- 3.1.9 Do not attempt to remove foreign objects from the eye or body. Seek medical attention immediately. If chemicals are splashed into the eyes, utilize an eyewash station to rinse eyes for 15 minutes before seeking medical attention.
- 3.1.10 During repair, cleaning, or oiling, machines and equipment must be shut off and locked out to ensure unauthorized startup does not occur.
- 3.1.11 Neck ties, loose clothing, jewelry, gloves, etc. are prohibited around moving or rotating equipment. Long hair must be tied back.
- 3.1.12 All machines must be operated with required guards.
- 3.1.13 Damaged or broken equipment/tools must be removed from service and tagged "DO NOT USE" (or something similar.)
- 3.1.14 Maintain technical shops in a clean and orderly manner.
- 3.1.15 Keep floor around machines clean, dry, and free of trip hazards.
- 3.1.16 Perform a brief inspection of the equipment prior to use to ensure it is in proper working order and free from any noticeable hazards.
- 3.1.17 Food and drinks are prohibited in the technical shop areas.
- 3.1.18 Be aware of the MSDS for all chemicals used and stored in the shop.

CLEANING AND GENERAL HOUSEKEEPING

3.1.19 Ensure power cords are in adequate condition, free from damage and fraying.

3.1.20 Store oily rags in approved containers only.

4.0 CLEANING AND GENERAL HOUSEKEEPING

4.1 *Shops should be maintained in a clean and orderly manner.*

4.2 *Floors should be swept clean at the end of each work shift or class.*

4.3 *Ensure work areas are cleaned daily and return all tools, materials, or any other item(s) to designated places or disposed of in proper trash containers.*

4.4 *Equipment/tools should be cleaned after use.*

4.4.1 Turn off the power to any equipment or tool prior to cleaning.

4.4.2 Remove chips/shavings from the tool work area, remove any dust/metal collecting containers, and dispose of any waste materials properly.

4.4.3 Do not use compressed air for cleaning equipment.

4.4.4 A specialized tool is preferred for removal of chips from work areas. Never use hands to clear work areas.

4.5 *Report any damage or missing parts to tools/equipment to the shop instructor immediately.*

4.6 *Place storage guards back on tools/equipment after use if applicable.*

PERSONAL PROTECTIVE EQUIPMENT (PPE)

5.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

5.1 *Required in all Technical Courses*

- 5.1.1 Prescription glasses must have side shields and both must meet the ANSI Z87.1 safety standards or must be covered with OSHA approved safety glasses with side shields or safety goggles.
- 5.1.2 Contact lenses are allowed except in designated “No Contact Lenses Allowed” environments, such as welding and any other environment dictated by OSHA requirements. Please refer to specific technical course lab safety guidelines.
- 5.1.3 Wear clothing appropriate for the task being performed. Do not wear loose gloves, sleeves, scarves, neckties, necklaces, or other loose clothing or jewelry that can become entangled in moving equipment.
- 5.1.4 Technical shop and lab students must wear ankle-length trousers, slacks, or jeans. Shirts and blouses must cover shoulder and midriff. Skirts and shorts are not permitted.
- 5.1.5 Wear long sleeves shirts and clothing made of natural fabrics (cotton, denim leather) when performing hot work.
- 5.1.6 While working with machinery, keep long hair confined. Head covering must not hang loosely nor allow hair to protrude.
- 5.1.7 Remove all loose or dangling earrings, bracelets, rings, or similar jewelry in shop areas.
- 5.1.8 Personal headsets are not permitted.

5.2 *Welding, Burning, or other Hot Work*

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- 5.2.1 All leather (leather tongue) and steel-toe shoes are required in welding related areas (Steel-toe tennis shoes may only be worn if used with spats).
- 5.2.2 Welding shields with the appropriate shade lens are required.
- 5.2.3 Contact lenses are not allowed per OSHA requirements.
- 5.2.4 Burning goggles with the appropriate shade lens are required.
- 5.2.5 OSHA approved safety glasses with side shields under welding shield are required.
- 5.2.6 Gauntlet (or longer) welding gloves should be worn.
- 5.2.7 Leather sleeves or jackets are recommended.
- 5.2.8 Hearing protection (when applicable) should be worn.
- 5.2.9 Respiratory protection (exception: well ventilated booths or outside) should be worn.
- 5.2.10 Always inspect torches and torch lines for tightness, leaks and wear. Report any deficiencies to your instructor immediately. **DO NOT USE IF THERE ARE SIGNIFICANT DEFICIENCIES IN EQUIPMENT!**
- 5.2.11 All welding shield gas must be equipped with a flow meter.
- 5.2.12 Use the flow meter to check for leakage.
- 5.2.13 Do not leave electrodes in unattended electrode holder.
- 5.2.14 Inspect welding lines and electrodes daily before first use.



PERSONAL PROTECTIVE EQUIPMENT (PPE)

5.2.15 Know the locations of fire extinguishing equipment before starting hot work.

5.2.16 Ensure welding equipment is properly grounded.

5.3 *Grinding, Various Power Tools, and Pipe Fitting*

5.3.1 Face shield should be worn.

5.3.2 OSHA approved safety glasses with side shields under face shield is required.

5.4 *Machine Operations (Lathes, Mills, Presses, etc.)*

5.4.1 Safety glasses with side shields are required.

5.4.2 Prescription glasses must have side shields and both must meet the ANSI Z87.1 safety standards or must be covered with OSHA approved safety glasses with side shields or safety goggles.

5.4.3 Gloves.

5.4.3.1 Do not wear gloves when hands come within close proximity of moving machine parts.

5.4.3.2 Use rubber or neoprene gloves when handling cutting oils or other lubricants.

5.4.4 Hearing protection should be worn (when applicable).

5.4.5 Take steps to avoid getting pulled into moving parts by buttoning shirt fronts and sleeves, tucking in shirttails, and tying up loose or long hair.

5.4.6 At the end of work, remove cutting bits and blades and store in a safe manner.

5.4.7 Lower saw blades to safe positions for storage.

5.4.8 Remove all loose or dangling earrings, bracelets, rings,

HAZARD COMMUNICATION

or similar jewelry in technical shop areas (no jewelry may be worn in welding lab while welding).

5.5 *Electrical*

- 5.5.1 OSHA approved safety glasses with side shields are required.
- 5.5.2 Prescription glasses must have side shields and both must meet the ANSI Z877.1 safety standards.
- 5.5.3 Hearing protection should be worn (when applicable).
- 5.5.4 Remove all loose or dangling earrings, bracelets, rings, or similar jewelry and other conductive items in shop areas.
- 5.5.5 Do not wear synthetic fabrics such as nylon, polyester, or rayon.

6.0 **HAZARD COMMUNICATION**

- 6.1 The purpose of the Hazard Communication Program is to ensure faculty/staff/students are aware of the hazardous chemicals in the workplace and are provided information regarding the potential hazards associated with exposure to these chemicals. Specifically, hazardous chemicals produced or imported into the workplace are to be evaluated for physical and health hazards. This information is to be provided to faculty/staff/students. The program also covers material safety data sheets, employee training, and emergency procedures. This program is designed to comply with the OSHA Hazard Communication Program.
 - 6.1.1 Technical shops that use or store hazardous chemicals must utilize the hazard control log and implement the hazard communication policy.
 - 6.1.2 Chemical containers must be in adequate condition and properly labeled.

HAZARD COMMUNICATION

6.1.3 MSDS must be maintained in the technical shop for all chemicals present.

6.2 *Solvents and resins are common chemicals found in technical shops. The following are guidelines for proper storage and use.*

6.2.1 Before using a chemical, users should know the safe use, storage, and exposure concerns.

6.2.2 Use water-based cleaners instead of solvents and other less hazardous products whenever possible.

6.2.3 Use solvents in well ventilated areas. Use of solvents in confined areas can result in exposure issues.

6.2.4 Avoid skin contact with solvents. Appropriate hand protection should be worn by users when handling solvents.

6.2.5 Smoking is not permitted in technical shops, laboratories or any College site. Flames and spark production is prohibited in areas where solvents are stored.

6.2.6 Used solvents should never be poured down the drain or disposed outdoors. Contact Facilities Management for chemical disposal services.

6.2.7 Clean up solvent and chemical spills immediately. In the event of a large spill, contact Facilities Management for cleanup services.

6.2.8 The use of respirators may be necessary depending on the type of chemical used and the application.

7.0 ACCESS CONTROL

7.1 *Technical shops contain tools and equipment which, if used by unauthorized personnel, can cause serious injury. Efforts should be in place to ensure access to the technical shop is controlled.*

ACCESS CONTROL / MACHINE GUARDING

7.1.1 Delgado Student/Teaching Technical Shops

7.1.1.1 When students are present, the course instructor must be present at all times to ensure all tools and equipment are used properly and safely.

7.1.1.2 When students are not present in the technical shop, the technical shop must be locked to limit access by unauthorized personnel.

8.0 MACHINE GUARDING

8.1 *Tools and equipment where hazards are present due to points of operation, nip points, rotating parts, flying chips, and sparks must be properly guarded according to OSHA guidelines. All tools and equipment MUST be equipped with the appropriate machine guards. A properly guarded tool helps to minimize injuries associated with its use.*

8.2 *Guards must not pose additional hazards to the worker.*

8.3 *At no time should a guard be manipulated, removed, or changed in any way.*

8.4 *If a guard is found to be missing from a piece of equipment, it should be tagged to prevent use and reported to the technical shop supervisor. Once the equipment is properly guarded, it may be placed back in service.*

8.5 *Never remove or alter a guard or safety device. If equipment comes with a guard, then you must use it with the guard in place and intact.*

8.6 *Never disable a safety device or override a normal operating control switch or push button. On tools designed with a trigger safety device, the devices must function properly to avoid inadvertent activation if the trigger is mistakenly pressed.*

8.7 *Portable electrical tools must be suitably grounded or double insulated.*

COMPRESSED AIR / HAZARD MATRIX

8.8 *Continuous run control on handle held electric tools must be disabled before tools are placed into service.*

9.0 COMPRESSED AIR AND GASES

9.1 *Use compressed or cylinder air or gas only for their intended purposes. Do not use compressed air for cleaning equipment.*

9.2 *Always insert caps on unused cylinders.*

10.0 TECHNICAL SHOP HAZARD MATRIX

10.1 *A hazard matrix including some of the common types of tools/equipment found in technical shops can be found in Appendix B. The matrix will utilize three hazard categories (Low, Medium, and High) depending on the type of tool/equipment being used.*

10.2 *The matrix, found in Appendix B, provides the requirements for each technical shop based on the hazard category of the equipment present.*

10.2.1 *The three hazard categories are provided at the top of the matrix (low, medium, high).*

10.2.2 *General Design – this category contains a basic explanation of the size and power of the technical shop equipment.*

10.2.3 *Common Examples - this category is a listing of the common equipment types fitting the criteria for each hazard level.*

10.2.4 *Technical Shop Monitoring – this category outlines what individual must be physically present in order to allow technical shop equipment to be used.*

TECHNICAL SHOP HAZARD MATRIX

10.2.4.1 Adequate monitoring/oversight of all technical shop activities is vital to minimize the potential for injury during the use of tools/equipment.

10.2.4.2 Individuals designated as technical shop monitors must be capable of identifying existing and predictable hazards in a technical shop environment and have the authority to take prompt corrective actions.

10.2.4.3 Technical shop staff members may serve as shop monitors provided they are given the authority to do so. Students should not serve as shop monitors.

10.2.4.4 As listed in Appendix B:

10.2.4.4.1 No monitor is necessary during the use of “low” hazard equipment.

10.2.4.4.2 A monitor must be present during the use of “medium” hazard equipment.

10.2.4.4.3 A technical shop staff member with professional level training and experience must be present during the use of “high” hazard equipment.

10.2.5 Training – this category outlines the level of training required to operate the technical shop equipment.

10.2.5.1 Training levels are provided in the Technical Shop Hazard Matrix.

10.2.5.1.1 “Equipment Specific Training” (Appendix E) – provides specific information on the safe use of high hazard equipment. Anyone using high

INSPECTIONS AND RECORDKEEPING

hazard equipment must complete this training.

10.2.5.1.2 “General Technical Shop Safety Training” (Appendix D).

10.2.5.2 Basic first aid training is strongly recommended for technical shop monitors and instructors.

10.2.5.3 Refresher training must be provided if

10.2.5.3.1 Changes in the technical shop render previous training obsolete.

10.2.5.3.2 Changes in the type of technical shop equipment render previous training obsolete.

10.2.5.3.3 The operator has been observed using the equipment in an unsafe manner.

10.2.5.3.4 The operator has been involved in accident or near miss.

11.0 INSPECTIONS AND RECORDKEEPING

11.1 *Technical shop instructors or their designee should perform technical shop inspections at regular monthly intervals to ensure safety is maintained throughout the year.*

11.2 *Safety, Risk, and Compliance may perform additional inspections throughout the year to ensure safety requirements are being met.*

11.3 *Records to be maintained by the technical shop supervisor include the following:*

11.3.1 Completed technical shop safety inspection checklists.

11.3.2 Training records for all technical shop employees.

AREAS WITH EQUIPMENT

11.3.3 Tool/equipment manufacturer instruction/owner manuals.

11.3.4 Repair/maintenance records for applicable tools/equipment.

12.0 ROOMS, LABORATORIES, OR AREAS WITH MISCELLANEOUS EQUIPMENT

12.1 *Not all rooms, labs, or areas at Delgado that contain equipment/tools are classified as technical shops. Research laboratories, non-traditional workspaces, temporary locations, etc. may utilize individual tools or equipment.*

12.2 *It is the responsibility of the instructors for these types of areas to ensure proper safety guidelines are followed.*

12.2.1 At a minimum, these areas should have a monitoring program, training program, and machine guarding practices to ensure the safety of the users.

12.2.2 Research labs utilizing technical shop equipment must have adequately developed standard operating procedures, which address hazards of equipment use and safeguards.

APPENDIX A

APPENDIX A – MACHINE GUARDING REFERENCE

Machine Guarding Reference Guide

- The following are general guidelines regarding machine guarding. In many cases there is more than one way to achieve proper machine guarding.
- This is not intended to be an all-inclusive list of technical shop equipment.
- Consult with the Technical Division and/or equipment manufacturer for additional machine guarding information.

Guarding Requirements for All Shop Equipment

The following points must be adequately guarded on all types of technical shop equipment:

- Point of operation: area where the machine performs work. An example would be where a saw blade meets the material being cut.
- Power transmission devices: elements of the mechanical system that transmits energy. Examples would include flywheels, belt, chains, and pulleys.
- Other moving parts: other parts of the machine that move when the machine is in cycle.

Unguarded



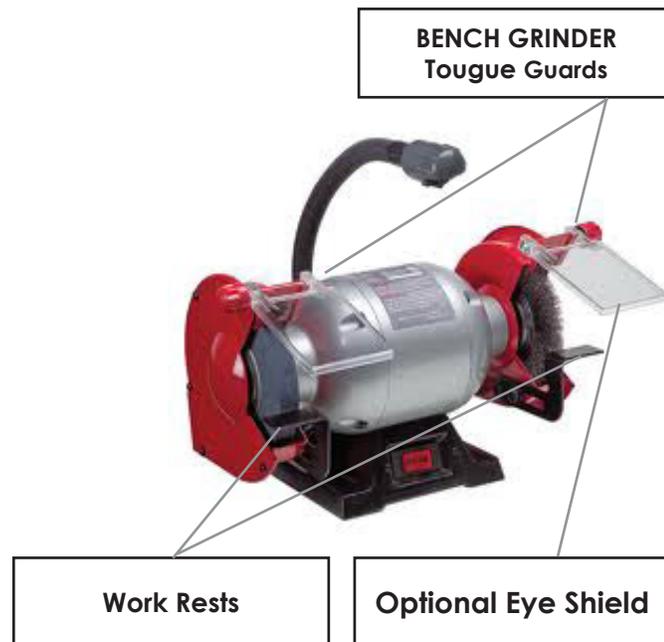
Guarded



APPENDIX A

Bench Grinder

- Guarding Requirements
 - Adjustable tongue guard 1/4" from wheel.
 - Adjustable work rest 1/8" from wheel.
 - Bench grinder needs to be secured to work surface.
 - The required guarding for a wire brush attachment is a tongue guard. A tool rest is not recommended in this situation.
- Safe Work Practices
 - Grinding wheel must be dressed to prevent a ridge from forming.
 - Perform a ring test before mounting an abrasive wheel.
 - * The abrasive wheel must not be used if a dull sound is noted.
- If the grinding wheel is cracked, do not use it, as it could shatter.



Grinder Dresser Tool



APPENDIX A

Band Saw

- Guarding Requirements
 - Adjustable guard: set the guard as close as possible to the stock.

**BAND SAW
Blade Guard**



Milling Machine

- Guarding Requirements
 - Point of operation guard.

**MILLING MACHINE
Point of
Operation Guard**



**BELT/DISC SANDER
Fixed Guards**



Belt/Disc Sander

- Guarding Requirements
 - Fixed guards at pinch and nip points.

Angle Grinders

**ANGLE GRINDER
Guard**

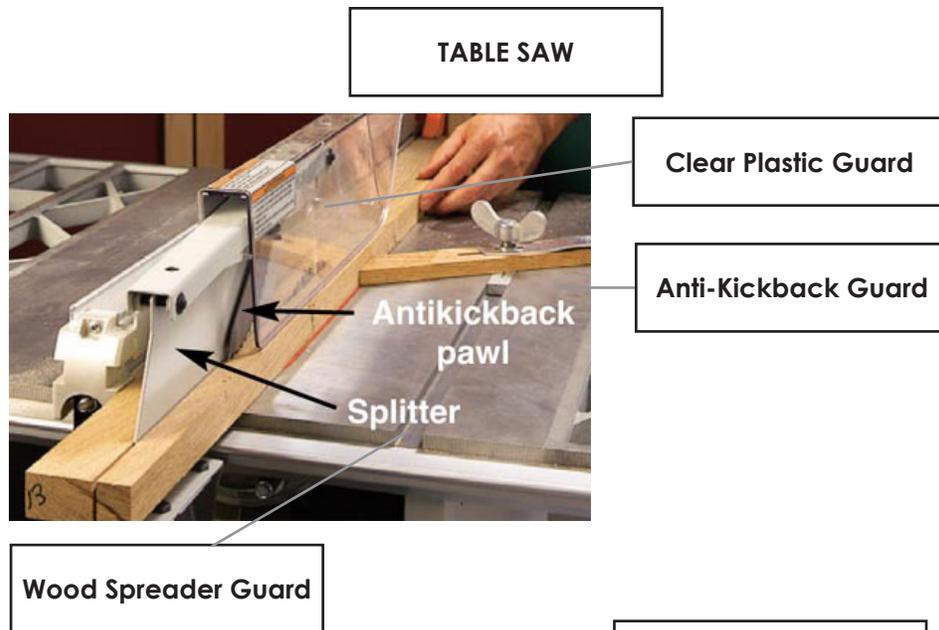


- Guarding requirements
 - A fixed guard must be on the grinding wheel enclosing one-half or 180° of the grinding wheel.

APPENDIX A

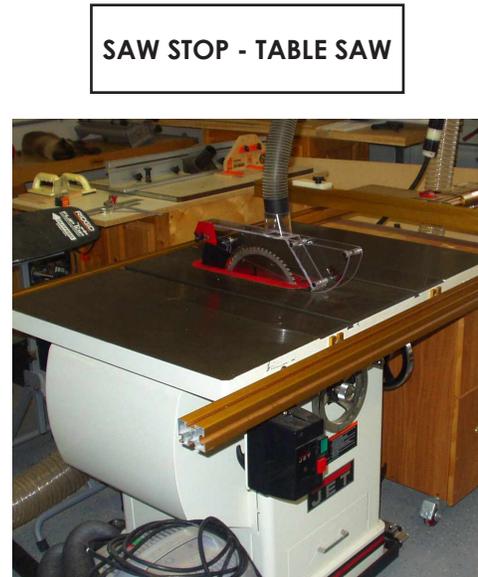
Table Saw

- Guarding Requirements
 - There are three guards needed on a table saw: a wood spreading guard, anti-kickback guard, and a self-adjusting guard over the blade.
- Safe Work Practices
 - A push stick must be used when stock being cut is small.
 - The top of the teeth of the table saw blade shall not extend 1/4" above the material being cut.



Saw Stop – Table Saw

- Guarding Requirements
 - The guarding requirements for a “saw stop” table saw are the same as those for a standard table saw.



APPENDIX A

Radial Arm Saw

- Guarding Requirements
 - A self-adjusting guard below the blade.
- Safe Work Practices
 - The radial arm saw must be returned to the original position after a cut is finished.
 - Saw should only be used for cross cutting. A table saw is a better tool for ripping.

**RADIAL ARM SAW
Self-Adjusting Guard**



**RADIAL ARM SAW
Self-Adjusting Guard**



Jointer (Manual)

- Guarding Requirements
 - Self-adjusting blade guard.
- Safe Work Practices
 - If the wood stock is small, use a push stick to feed the stock.

**PLANER/MOULDER
Completely Enclosed**



Planer/Moulder (Automatic)

- Guarding Requirements
 - Cutter heads must be completely enclosed, except for the opening needed to feed the stock into the tool.

APPENDIX A

Circular Saw

- Guarding Requirements
 - Self-adjusting blade guard.
- Safe Work Practices
 - If the saw cut is stopped before the cut is finished, the saw must be turned off before being removed. If the saw is pulled out before stopping, kickback could occur.

CIRCULAR SAW
Self-Adjusting
Blade Guard



Routers

- Guarding Requirements
 - Self-adjusting guard above cutting bit on bench version.
 - Fixed guard on hand held version.

ROUTERS



APPENDIX A

Welding and Brazing

- PPE
 - Fire resistant clothing
 - * Coat
 - * Pants
 - Welding helmet or tinted face shield
 - * Tinted number depends on what type of welding or torch being used.
 - * If face shield is used, safety glasses are required.
 - Leather gloves
 - * Heat resistant
 - Respiratory Protection (site specific)
- Safe Work Practices
 - Oxygen and acetylene cylinders must be secured to a cart by using chain or webbing strap.
 - If a cylinder does not have a regulator attached, it must be capped.
 - Inspect work area for any combustibles.

WELDING AND BRAZING

Oxygen Acetylene Torch



Stick Welding



APPENDIX A

Chop/Miter Saws

- Guarding Requirements
 - Both saws must have self-adjusting blade guards.
- Safe Work Practices
 - Only use the recommended blade based on size and revolutions per minute (RPM).

**CHOP SAW
Self-Adjusting Guard**



**MITER SAW
Self-Adjusting Guard**



Reciprocating Saw

- Guarding Requirements
 - Must be equipped with hand/finger guard.

**RECIPROCATING SAW
Hand/Finger Guard**



APPENDIX A

Jig Saw

- Guarding Requirements
 - Upper portion of the blade, above the tool rest, must be guarded.

JIG SAW
Blade Guard



Scroll Saw

- Guarding Requirements
 - Blade guard

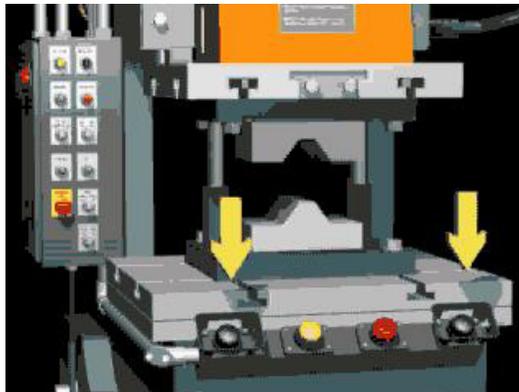
SCROLL SAW
Blade Guard



Power Press Brake

- Guarding Requirements
 - Note: There are many different methods which can be used to effectively guard this equipment. They are listed below. The best means of guarding will depend on how the press brake is used.
 - * Moveable barrier guards
 - * Fixed guards
 - * Presence-sensing devices
 - * Pull back devices
 - * Restraint devices
 - * Two-hand trip devices

POWER PRESS BRAKE
with Two-Hand Control



APPENDIX A

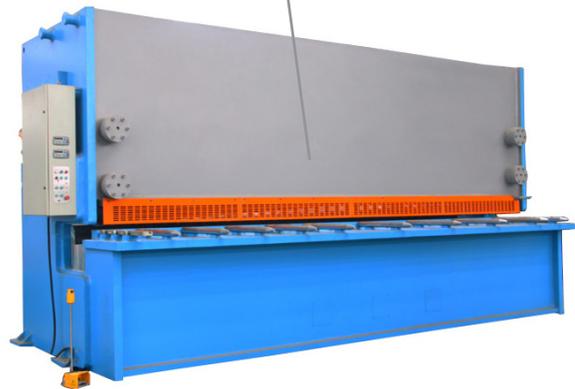
Power Shear

- Guarding Requirements
 - Adjustable guard

Power Press (Mechanical and Hydraulic) (Part Revolution and Full Revolution)

- Guarding Requirements
 - Note: Depending on the size and type of power press a variety of guarding methods are available. The following are examples of such methods. Contact the Technical Division or the equipment manufacturer for consultation.
 - * Point of operation guard
 - * Pull back device
 - * Restraint device
 - * Gate type guards (A and B types)
 - * Two-hand trip
 - * Two-hand control
 - * Presence-sensing device
- Safe Work Practices
 - Operators must never place their hands in the die area (point of operation) while performing normal production operations.
 - Hand tools designed for freeing or removing work or scrap pieces from the die must be used.
 - OSHA has a specific standard on Mechanical Power Presses. (CFR 1910.217 – Mechanical Power Presses.)

POWER SHEAR
Adjustable Guard



MECHANICAL
POWER PRESS



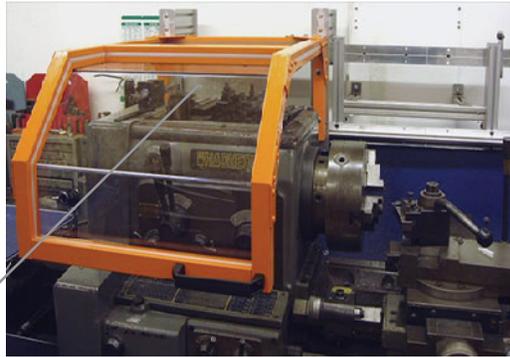
HYDRAULIC
POWER PRESS



APPENDIX A

Lathe (Automatic and Manual) (Wood and Metal)

- Guarding Requirements
 - A guard over the chuck.
 - For lathes used for turning long stock, a guard over top of the stock.
- Safe Work Practices
 - Tie back hair and secure loose clothing so it doesn't get caught on the spinning chuck.
 - After making adjustments to the machine, remove the chuck key.



LATHE



APPENDIX A

Drill Press

- Guarding Requirements
 - Chuck guard
- Safe Work Practices
 - Small material being cut shall be clamped to prevent any spinning.
 - The drill press machine must be secured so it will not “walk”.

DRILL PRESS



Milling Machine

- Guarding Requirements
 - Adjustable or permanent chip/coolant shield.
- Safe Work Practices
 - Tie back hair and secure loose clothing so it doesn't get caught on the spinning chuck.
 - Do not allow large quantities of chips to accumulate around the work piece or machine table.

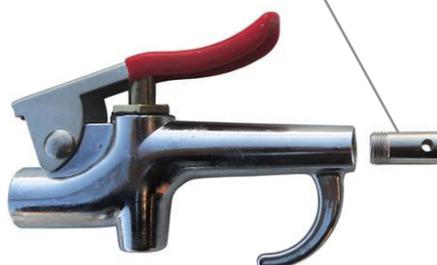
MILLING MACHINE



Compressed Air Tools

- Guarding Requirements
 - Safety tips must be installed to relieve air pressure in the event the nozzle is “dead-ended”.
 - Air pressure must be less than 30 PSI when using compressed air for cleaning.
- Safe Work Practices
 - Compressed air tools shall never be used to remove dirt from clothing or skin.

COMPRESSED AIR TOOLS
Safety Tip



APPENDIX B

APPENDIX B – SHOP HAZARD MATRIX

Hazard Level	Low	Medium	High
General Design	Hand tools (non-powered), Small powered tools, Small bench top tools	Larger portable power tools, Larger powerful bench top tools, Light industrial tools	Large industrial tools and equipment
Common Examples	Belt sander (handheld), Dremel tool, Drill (corded/cordless), Hand tools (non-powered), Heat guns, Jig saw, Laser cutter/engraver, Oven Paint booth, Palm sander, Scroll saw, Soldering iron	Angle grinder, Belt/disc sander (pedestal), Bench grinder, Circular saw, Chop/miter saw, Drill press (benchtop), Enclosed CNC machine, Horizontal band saw, Larger than 3/8” drills, Manual brake, Manual shear, Milling machine (benchtop), Nail guns, Planer, Reciprocating saw, Routers, Water jet	Band saw (free standing), Cranes and hoists, Drill press (free standing), Hydraulic/mechanical press, Lathe, Milling machine (standing), Open CNC mill, Power press brake, Power shear, Radial arm saw, Surface grinder, Table saw, Vertical band saw, Welding (Hot Work)
Shop Monitoring	Equipment use is permitted in designated area of the shop or other pre-approved location. Employees - Direct monitoring is not required for low hazard level tools. Students – Direct safety monitoring is not required, but students shall not work alone with low hazard level tools; student must have prior approval to use equipment.	Equipment use is permitted only in designated areas. Employees – direct monitoring is not required, but worker should not work alone with medium hazard level tools. Students – Safety monitor MUST be present during operation to ensure safe use of equipment.	Equipment use is permitted only in designated areas. Employees – direct monitoring is not required, but worker MUST not work alone; and the monitor/supervisor must be available in the event of an emergency. Students – Safety monitor MUST be present during operation to ensure safe use of equipment.
Required Training	1. General shop information 2. General shop safety training	1. General shop information 2. General shop safety training 3. Equipment specific safety training	1. General shop information 2. General shop safety training 3. Equipment specific safety training

APPENDIX C

APPENDIX C – TECHNICAL SHOP SAFETY INSPECTION CHECKLIST

Building/Room:			
Inspector(s):			
Department:			
A. Housekeeping	Yes	No	N/A
1. Shop is maintained in a clean and orderly manner			
2. Shop is free from slip/trip/fall hazards			
B. Chemical Safety			
1. Chemical containers and cylinders are clearly labeled			
2. Chemical containers are in good condition			
3. Chemicals are properly stored and segregated			
C. Personal Protective Equipment			
1. PPE is available and used where necessary			
2. Eye protection			
3. Hand protection			
4. Hearing protection			
5. Foot protection			
6. Respiratory protection			
7. Are eyewash/shower stations labeled, accessible and routinely tested			
D. Fire Protection			
1. Exits are clearly marked.			
2. Fire extinguishers labeled and accessible			
3. Fire extinguishers properly mounted			
4. Fire extinguishers serviced in the last 12 months			
5. All emergency pull stations are accessible			
6. Sprinklers have at least 18 inched of clearance			
7. Oily rags and combustible wastes stored properly			
8. Flammable liquids are properly stored			
E. Electrical Safety			
1. Equipment is free from frayed or exposed wiring			
2. All disconnecting means are labeled to indicate the equipment served			
3. At least 3 feet of clearance in front of electrical panels			
4. All electrical openings are covered			
5. All switches and outlets equipped with tight fitting covers			
6. All extension cords equipped with grounding connectors			
7. Portable power tool wires either grounded or double-insulated			
F. Equipment/Tools/Machinery			
1. Equipment is free from exposed or moving parts (machine guarding)			
2. Machine guarding is in proper working order			
3. Emergency stop mechanisms are adequately identified and working			
4. Equipment controls clearly labeled			
5. Warning stickers are legible			
6. Equipment is arranged to prevent unauthorized access during use			
7. Are work rests in place and adequately secured			
8. Is compressed air used for cleaning utilized at less than 30 psi			
9. Equipment is capable of being locked out for service			
10. All hand tools are in working condition			

APPENDIX C

G. Material Storage and Handling			
1. Materials are stored in a safe manner			
2. Compressed gas cylinders are properly secured			
3. Cylinders not in use are stored with protective caps in place			
4. Means for lifting/moving heavy materials in place (crane/pallet jack)			
5. Load ratings clearly marked on all hoisting equipment			
H. Occupational Health			
1. Adequate ventilation exists for the work being conducted			
2. Exhaust ducts are in good condition			
3. Local ventilation is used where necessary			
4. Noise levels are maintained at a safe level			
5. Lighting is adequate			
6. Repetitive motion injuries are addressed			
7. First aid supplies are maintained in a usable manner			
I. Hazardous Waste			
1. Waste materials are placed in appropriate containers			
2. Waste is removed by Facilities Management routinely			
3. Waste containers are properly labeled			
4. Spill cleanup supplies are available			

Note any other inspection items here:

Corrective actions listed here:

APPENDIX D

APPENDIX D – GENERAL SHOP SAFETY TRAINING

Only fully trained and competent personnel are permitted to utilize shop equipment and tools. The following shop safety guidelines apply to general shop duties and do not serve as adequate replacement of specific shop equipment training. The guidelines should be implemented to ensure safety and health in shops; failure to do so may result in serious injury or death.

- Safety glasses, goggles, or face shields are required when in any shop area, whether working or not.
- Open-toe shoes or sandals are prohibited within shops. Closed-toe shoes are required when in any shop area. Steel-toe shoes may be required if working with heavy materials, such as metal.
- Adequate hand protection must be worn depending on the materials being handled.
- Wear appropriate clothing for the shop and tasks being completed.
- Operation of any piece of shop equipment is not permitted unless the user is fully trained on the contents of the Delgado Shop Safety Program and specific equipment training has been completed.
- Two people should be present in shops when equipment and/or tools are in use.
- In the event of injury or exposure to a chemical, the Campus Police should be contacted and an accident report completed.

During normal business hours: (504) 671-6111 or (504) 671-6112.

After 10 p.m., Monday through Friday, and weekends: (504) 818-6254.

In the event of serious/severe injuries or exposures call 9-1-1 immediately for medical attention.

**Main Campus
Office of Health Services
Phone - (504) 671-5620
615 City Park Avenue, Building 2, Room 208W
Hours: Monday - Friday, 7:30 a.m. - 4:30 p.m.**

APPENDIX D

To seek medical treatment for minor injuries if the Office of Health Services is closed or unavailable, the following locations are close to campuses:

New Orleans
Tulane University Hospital
1415 Tulane
New Orleans, LA
(504) 988-5344

West Bank
Algiers Urgent Care
3801 General De Gaulle
New Orleans, LA
(504) 362-2829

Jefferson
Ochsner Health Center
1221 S. Clearview
New Orleans, LA
(504) 733-1600

- Do not attempt to remove foreign objects from the eye or body. Seek medical attention immediately. If chemicals are splashed into the eyes, utilize an eyewash station to rinse eyes for 15 minutes before seeking medical attention.
- During repair, cleaning, or oiling, machines **MUST** be shut off and locked out to ensure unauthorized startup does not occur.
- Neck ties, loose clothing, jewelry, gloves, etc. are prohibited around moving or rotating machinery. Long hair must be tied back or covered to keep it away from moving machinery.
- All machines must be operated with all required/recommended guards and shields in place.
- A brush, hook or specialized tool is preferred for removal of chips, shaving, etc. from work areas.
- Keep fingers and hands clear of points of operation on shop equipment. Use specialized tools such as push sticks, pliers, clamps, or hooks to maintain materials in place or move them through work areas. Never use rags near moving equipment/machinery.
- Damaged or broken equipment/tools must be removed from service and tagged "DO NOT USE", or something similar, to ensure tools/equipment are not used in an unsafe manner. Repairs must be made prior to placing equipment back in service.
- Maintain shops in a clean and orderly manner.
- Keep the floor clean, dry, and free from trip hazards.
- Perform a brief inspection of the equipment prior to use to ensure it is in proper working order and free from any noticeable hazards.
- Food and drinks are prohibited in shop work areas.
- Be aware of the Material Safety Data Sheets (MSDS) for all chemicals used and stored in the shop.
- Ensure power cords are in adequate condition free from damage or fraying.
- Store oily rags in approved containers only.

APPENDIX E

Trainer:

Name (print):	
Signature:	
Date:	

Trainee(s):

Name:		Signature:	

APPENDIX E – EQUIPMENT SPECIFIC TRAINING

Equipment specific training documents student has been fully trained to operate certain types of tools/equipment within the shop.

To obtain certification:

- Equipment specific training must be provided by the shop instructor or their designee, who can demonstrate full competency of the equipment.
- The trainee/student must complete the General Shop Information and General Shop Safety Training prior to equipment specific training.
- The trainer must provide:
 - o An overview of the equipment.
 - o Hands-on training providing exact use of the equipment
- Student must demonstrate competency to become certified to operate the tool/equipment.

Once complete, equipment specific training certification is permanent unless:

- Changes in the machine shops render previous training obsolete.
- Changes in the type of shop equipment render the previous training obsolete.
- The operator is observed using the equipment unsafely.
- The operator has been involved in an accident or near miss.

APPENDIX E

Utilize the following page to document equipment specific training. Add additional equipment as necessary.

Equipment Specific Training - Proof of Training

Initial and date all applicable shop equipment.

Tool/Equip.	Trainer	Date	Tool/Equip.	Trainer	Date
	Initials			Initials	
Angle grinder			Power shear		
Band Saw (free standing)			Radial arm saw		
Belt/Disc sander (free standing)			Reciprocating saw		
Bench grinder			Router		
Chop / Miter saw			Shaper/molder		
Circular saw			Surface grinder		
Drill press (bench top)			Table saw		
Drill press (free standing)			Vertical band saw		
Enclosed CNC Machine			Water jet machine		
Horizontal band saw			Welding/brazing (Hot Work)		
Hydraulic/mechanical press			Horizontal Grinder		
Jointer			Vertical Grinder		
Laser cutting			Burning Torch		
Large drills			Plasma Torch		
Lathe					
Manual brake					
Manual shear			Other:		
Milling machine (bench top)					
Milling machine (free standing)			Other:		
Nail guns					
Open CNC mill			Other:		
Planer					
Plastic Injection molding			Other:		
Power press brake					

Trainee Name (Print):	Trainee Signature:	Date:

Delgado
COMMUNITY COLLEGE