



# **Laboratory Safety Policy**

IN COMPLIANCE WITH

**VCCS Guidance on Best Practices Safety Inventory for High Risk  
Instructional Programs**

Revised 3/02/15

# T A B L E O F C O N T E N T S

Safety Policy/Safety Program Policies and Objectives	p. 3
Statement of Practices and Precautions	p. 4
General Safety Checklist	p. 5
Air Conditioning, Refrigeration and Heating	p. 6
Art	p. 7
Biology	p. 8
Chemistry	p. 9
Computer Manufacturing Technology	p. 11
Criminal Justice	p. 13
Electricity/Electronics	p. 15
Environmental Science	p. 17
Health Occupations / Nursing	p. 19
Medical Lab Technician	p. 20
Networking	p. 21
Physics	p. 22
Radiography	p. 23
Respiratory Therapy	p. 24
Welding	p. 26
Plan for Periodic Inspections and Maintenance	p. 32
Emergency Procedures in Event of an Accident	p. 32
Supplement I – Eye Protective Devices	p. 33
Potential Eye Hazards – Type of Protection Needed	p. 33
Supplement II – Safe Handling of Compressed Air	p. 34
Incident Report Form	p. 35
Safety Monitoring Program - Curriculum	p. 36
Safety Monitoring Program – Instructional Space and Facilities	p. 37
Safety Monitoring Program – Supplies and Equipment	p. 39

# Mountain Empire Community College

## LAB SAFETY PROGRAM

### Safety Policy

Mountain Empire Community College recognizes that the safety of its students and employees on College property or when engaged in college-authorized functions is a fundamental responsibility. Faculty, Staff and students are encouraged to exercise proper care in using any apparatus, and in moving from one area to another.

In order to provide a safe environment for education, the college shall develop procedures for ensuring that all buildings shall be kept safe, clean and attractive and in good repair, and that all walkways are in good repair and clearly lit.

The college shall develop rules to govern laboratory safety. These rules, together with such preventive measures and practices applicable to individual locations, shall be explained to all students and personnel by faculty at the beginning of each course, included in the syllabi, and copies of the rules and procedures shall be posted in all labs.

The college shall develop an eye protection program to be established and implemented that will provide adequate eye protection to pupils, personnel or visitors exposed to any hazardous materials or potentially dangerous equipment.

The college shall develop procedures for the maintenance in safe condition of all equipment used in courses as well as all equipment used by personnel, such as vehicles, equipment, and any tools necessary to the maintenance of college property.

These rules, regulations and procedures shall comply in all respects with applicable Virginia law.

### **I General Policies for the Safe Operation of College Courses**

Mountain Empire Community College recognizes and is committed to provide a safe environment in the operation of all courses and College functions. Through the combined efforts of the Board, the administration, the faculty, staff, and students, the College's Safety Program will be implemented to provide an "on-going" process to promote and reinforce safety regulations.

### **II High Risk Instructional Program Safety Objectives**

- To orient all students to proper standards of conduct in all courses.
- To provide clean, organized labs and properly displayed safety signage as appropriate.
- To include safety rules and stress the importance of safety in the course syllabus
- To orient and instruct all students to proper use and location of lab safety equipment.
- To instruct all students in fire drill and emergency evacuation procedures from labs/classrooms and buildings.

- To instruct and have students demonstrate the proper use of specific tools and equipment in the lab prior to use.
- To assess with a written and performance test, a student's knowledge of safety practices and procedures before allowing the student to work in the lab.
- To instruct all students in proper personal safety habits and implement specific practices and precautions required for safe operation within each separate course.
- To orient, instruct and enforce all students to comply with all safety standards.
- To instruct all students in proper safety operations of specific machinery and to be able to identify potentially hazardous conditions of such machinery.
- To conduct periodic inspections and maintenance of facilities, tools, machines, equipment and personal protective devices.
- To provide emergency procedures to be followed in the event of an accident involving a student, faculty member or any other individual.
- To identify and properly label hazardous work areas.
- To instruct students in the safe handling and use of chemicals related to their respective trade areas.
- To instruct students in the fundamentals of the Virginia Employees Occupational Safety and Health Act as related to their respective trade areas.
- To instruct students in the fundamental requirements and standards of the Environmental Protection Agency as related to their respective trade areas.
- To utilize advisory councils to review safety plans to ensure currency with industry standards.

### **III Specific statements of practices and precautions required for safe operation within each separate course.**

#### **A. Statement**

The safety of students is of paramount importance and will be a controlling factor in course. At no time should safety be a secondary consideration. If an objective cannot be achieved within the bounds of good safety practices, it has no place in the program. It is the faculty's responsibility to provide a continuing program of safety education. Students must be kept constantly aware of what constitutes safe procedures, especially as they pertain to their specific activities. Students must be closely supervised by instructors at all times.

B. **General Safety Checklist**

- Unauthorized tools or equipment should never be used in the classroom.
- Complete safety instruction precedes the use of all equipment.
- All machine tools are properly guarded.
- All portable electric tools are correctly grounded.
- Oily rags are always placed in an approved safety can.
- Flammables are always stored properly.
- All electric cords are kept in good condition.
- Temporary electrical wiring is never used.
- Scraps of material are never on the floor (exclusive of sawdust, shavings, and dust from filing operations).
- Each tool has a definite storage space and is returned there after each use.
- All material has a definite storage space.
- Storage lockers are inspected regularly for accumulated scraps, etc.
- Cutting tools are kept sharp for maximum learning and efficiency.
- Machine tools are inspected at frequent intervals and any defects are corrected immediately of the machine is taken out of service until such time that proper repairs have been made.
- Only one student at a time is ever allowed in the operator's zone of a machine.
- Machine tools are thoroughly cleaned with a brush by each student after use.
- Eye protection must be worn at all times in designated work areas.
- Students are never permitted to operate machines unless long hair and loose clothing are confined and, neckties and jewelry have been removed.
- Safety instruction is incorporated with regular teaching units in addition to specific lessons concerning safety.
- An accurate record is kept of each safety lesson and of the students present at the lesson.
- Periodic tests are given to check up on the adequacy of the safety program.

## Air Conditioning, Refrigeration and Heating

### LAB SAFETY PROCEDURES:

Faculty shall orient and instruct students to general safety rules and procedures in the shop:

1. Emergency exit procedure
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

Safety goggles/glasses be worn at all times in designated work areas.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

Students must demonstrate competence with all shop equipment and hand tools prior to specific use.

Report any injury, no matter how insignificant you think it is, to your instructor.

Power tools and equipment must be disconnected when changing operational set-up.

Properly dispose of flammable material.

Use hoists or lifts for lifting compressors and other equipment over 60 lbs.

Ensure that cylinders are never filled over 75% of their capacity.

Ensure that disposable cylinders are never refilled.

Check recommended operating pressures for each refrigerant prior to its use.

Students should be instructed in the methods of evacuating Refrigerant as required by the E.P.A. regulations.

Follow safe handling and use of chemicals procedures related to the trade area.

## Art

### LAB SAFETY PROCEDURES:

Faculty shall orient and instruct students to general safety rules and procedures in the lab:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

Report any injury, no matter how insignificant you think it is, to your instructor.

Safety goggles/glasses be worn at all times in designated work areas.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

Students must demonstrate competence with all shop equipment and hand tools prior to specific use.

All power tools and equipment must be disconnected when changing operational set-up.

Properly dispose of flammable material.

Ensure proper use and storage of chemicals.

Ensure that material is adequately supported and/or secured when using portable power tools.

## **Biology**

### **LAB SAFETY PROCEDURES:**

Faculty shall orient and instruct students to general safety rules and procedures in the lab:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

Please note the location of the first aid kit.

Report any injury to the lab instructor no matter how insignificant you think it is.

Safety goggles/glasses be worn at all times in designated work areas.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

Students must demonstrate competence with all shop equipment and hand tools prior to specific use.

**Never** eat and drink in the lab.

**Never** smoke in the lab.

**Never** inhale an unknown substance. Gently fan the vapors to you.

**Never** add water to an acid. Add the acid to the water

Wear old clothes.

Know where the fire exits are located.

Know the location of all safety equipment.

Place all broken glassware in the sharps container

If something needs to be labeled, label it.

Clean your area prior to leaving.

Put scopes away properly.

Be careful of others around you.

Please push you stools back under the lab bench.

Place all trash in proper receptacle.

Please turn off cell phones. You are not allowed to receive or make calls during lab.



## Chemistry

### LAB SAFETY PROCEDURES:

Faculty shall orient and instruct students to general safety rules and procedures in the lab:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

Please note the location of the fire extinguisher, first aid kit, and safety showers

Please report any injury to your instructor, no matter how insignificant you think it is.

Responsible behavior is essential. The dangers of spilled acids, chemicals and broken glassware created by thoughtless actions are too great to be tolerated.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

Students must demonstrate competence with all lab equipment and prior to specific use.

Wear approved eye protection at all times in the laboratory and in any area where chemicals are stored or handled.

- Eye protection should protect against impact and chemical splashes. Goggles are strongly recommended and may be required.
- If you get a chemical in your eye, first rinse with isotonic sterile solution, then wash with flowing water from a sink or fountain for at least 15 minutes. Get medical attention immediately.
- Do not wear contact lenses in the laboratory, even with safety goggles. Contact lenses prevent rinsing chemical splashes from the eye. Vapors in the laboratory (HCl, for example) dissolve in the liquids covering the eye and concentrate behind the lenses. "Soft" lenses are especially bad as chemicals dissolve the lenses themselves and are released after several hours.

Perform no unauthorized experiments. This includes using only the quantities specified, no more. Consult your instructor if you have any doubts about the instructions.

In case of fire or accident, call instructor at once.

- Wet towels can be used to smother small fires
- In case of a chemical spill on your body or clothing, wash the affected area with large quantities of running water.
- Remove clothing that has been wet by chemicals to prevent further reaction with skin.

Do not eat or drink in the lab

- This applies to both food and chemicals. The obvious danger is poisoning.
- Not so obvious is that you should never touch chemicals. Many chemicals are absorbed through the skin. Wash all chemicals off with large quantities of running water.
- Wash your hands thoroughly with soap and water when leaving the laboratory.

Do not smoke in the laboratory.

Avoid breathing fumes of any kind.

- To test the smell of a vapor, collect some in a cupped hand. Obtain your instructor's written permission before you smell and chemical.
- **Never** smell a chemical reaction while it is occurring.
- Work in a hood if there is the possibility that noxious or poisonous vapors may be produced.

**Never** use mouth suction in filling pipets with chemical reagents. **Always** use a suction device

**Never** work alone in the laboratory, there must be at least one other person present. In addition, an instructor should be readily available.

Wear closed toed shoes in the laboratory.

Confine long hair and loose clothing in the laboratory.

A laboratory apron or lab coat provides protection at all times.

- A lab coat is required when wearing easily combustible clothing (synthetic and light fabrics)

Keep your work area neat at all times.

Clean your area prior to leaving the laboratory. Put away and properly store all chemicals and equipment.

Be careful when heating liquids; add boiling chips to avoid "bumping."

- **Never** heat flammable liquids such as ethers, hydrocarbons, alcohol, acetone, and carbon disulfide over an open flame.

**Always** pour acids into water when mixing. Otherwise the acid can spatter, often quite violently.

Do not force rubber stoppers onto glass tubing or thermometers. Lubricate the tubing and stopper with glycerol or water.

Dispose of excess liquid reagents by flushing small quantities down the sink. Consult the instructor about large quantities. Dispose of solids in crocks. **Never** return reagents to the dispensing bottle.

Spatters are common in chemistry laboratories. Test tubes being heated or containing reacting mixtures should never be pointed and anyone.

If you have a cut on your hand be sure to cover with a bandage or wear appropriate gloves.

## Computerized Manufacturing Technology

Faculty shall orient and instruct students to general safety rules and procedures in the shop:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

Safety goggles/glasses be worn at all times in designated work areas.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

Students must demonstrate competence with all shop equipment and hand tools prior to specific use.

In case of injury, no matter how slight, you must report it to the instructor.

Shoes must be worn in any shop area. No one wearing sandals will be allowed to enter any shop area. The minimum footwear must cover the entire foot.

Do not operate any item of equipment unless you are familiar with its operation and have been authorized to operate it. If you have any questions regarding the use of equipment ask the instructor.

Avoid excessive use of compressed air to blow dirt or chips from machinery to avoid scattering chips. **Never** use compressed air guns to clean clothing, hair, or aim at another person.

Do not attempt to remove foreign objects from the eye or body. If chemicals get in the eye(s), wash eye(s) for 15 minutes in an open flow of water before proceeding for medical treatment. Notify the instructor immediately.

Machines must be shut off when cleaning, repairing, or oiling.

Do not wear ties, loose clothing, long sleeves, jewelry, gloves, etc. around moving or rotating machinery. Long hair must be tied back or covered to keep it away from moving machinery. Hand protection in the form of suitable gloves should be used for handling hot objects, glass or sharp-edged items.

Wear appropriate clothing for the job. Wear protective clothing where appropriate.

Do not work in the shop if tired, or in a hurry.

Never indulge in horseplay in the shop areas.

All machines must be operated with all required guards and shields in place.

A brush or gentle air blasts should be used for removing chips, shavings, etc. from the work area. Never use your hands.

Keep all body parts clear of the point of operation of machines by using special tools or devices, such as, push sticks, hooks, pliers, etc. NEVER use a rag near moving machinery.

A hard hammer should not be used to strike a hardened tool or any machine part. Use a soft faced hammer.

Practice cleanliness and orderliness in the shop areas. Never leave a dirty piece of equipment.

Keep the floor around machines clean, dry and free from trip hazards. Do not allow chips to accumulate.

Before starting a machine, always check it for correct setup and always check to see if machine is clear by operating it manually, if possible.

Don't rush or take chances. Don't say you know how to do something, when you don't. Obey all safety rules at ALL times.

If you have not worked with a particular material before, check the hazardous materials data sheets book for any specific precautions to be taken while working with the material. Also, ask the instructor before cutting any unusual material.

Heavy sanding and painting should only be done in well ventilated areas, preferably outside.

Follow all appropriate precautions when working with solvents, paints, adhesives or other chemicals. Use appropriate personal protective equipment.

Check the power cords and plugs on portable tools for before using them.

Always store oily rags in an approved metal container.

Obey all posted signs, warnings, posters and special instructions.

## Criminal Justice

Instructors shall orient and instruct students to general safety rules and procedures in the classroom:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

The instructors shall require that all students successfully complete a written and practical safety test prior to the use of lab equipment or supplies.

The instructor shall lecture and demonstrate the use of all equipment, Law Enforcement equipment and related class equipment.

Do not attempt to remove foreign objects from the eye or body. If chemicals get in the eye(s), wash eye(s) for 15 minutes in an open flow of water before proceeding for medical treatment. Notify the instructor immediately.

When using the forensic lasers, do not point the light into another person's eye or look into the laser light. When using fluorescent laser powder, a mask must be worn.

Follow all instructions for each lab that your instructor gives you.

Perform no unauthorized experiments. This includes using only the quantities specified, no more. Consult your instructor if you have any doubts about the instructions. The lab tables must be cleaned with bleach and water or alcohol and water after completion of labs. Anyone using a needle or lancet must deposit the item into a sharps container provided in the lab. Do not put these items in the trash can.

In case of fire or accident, call instructor at once.

- Wet towels can be used to smother small fires
- In case of a chemical spill on your body or clothing, wash the affected area with large quantities of running water.
- Remove clothing that has been wet by chemicals to prevent further reaction with skin.

Do not eat or drink in the lab

- This applies to both food and chemicals. The obvious danger is poisoning.
- Not so obvious is that you should never touch chemicals. Many chemicals are absorbed through the skin. Wash all chemicals off with large quantities of running water.
- Wash your hands thoroughly with soap and water when leaving the laboratory.

Avoid breathing fumes of any kind.

- **Never** smell a chemical reaction while it is occurring.
- Work in a hood if there is the possibility that noxious or poisonous vapors may be produced.

**Never** work alone in the laboratory, there must be at least one other person present. In addition, an instructor should be readily available.

## **Electrical / Electronics**

Instructors shall orient and instruct students to general safety rules and procedures in the shop:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

The instructor shall require safety goggles/glasses be worn at all times in designated work areas.

The instructor shall lecture and demonstrate the use of all shop equipment and hand tools and assess the student's competence prior to specific use.

The instructor shall require that all students successfully complete a written and practical safety test prior to the use of individual machines and power tools.

The instructor shall require that power tools and equipment be disconnected when changing operational set-up.

The instructor shall instruct the students in proper disposal of flammable materials.

The instructor shall instruct the students in the proper use of the eye wash station.

Be familiar with the electrical hazards associated with your workplace.

You may enter the laboratory only when authorized to do so and only during authorized hours of operation.

Be as careful for the safety of others as for yourself. Think before you act. Be tidy and systematic.

Avoid bulky, loose or trailing clothes. Avoid long loose hair. Remove metal bracelets, rings or watchstraps when working in the laboratories.

Food, beverages and other substances are strictly prohibited in the laboratory at all times. Avoid working with wet hands and clothing.

Use extension cords only when necessary and only on a temporary basis.

Request new outlets if your work requires equipment in an area without an outlet.

Discard damaged cords, cords that become hot, or cords with exposed wiring.

Before equipment is energized ensure, (1) circuit connections and layout have been checked by a Teaching Assistant (TA) and (2) all colleagues in your group give their assent.

Know the correct handling, storage and disposal procedures for batteries, cells, capacitors, inductors and other high energy-storage devices.

Experiments left unattended should be isolated from the power supplies. If for a special reason, it

must be left on, a barrier and a warning notice are required.

Equipment found to be faulty in any way should be reported to the DSC immediately and taken out of service until inspected and declared safe.

Voltages above 30 Volts are always considered dangerous. Extra precautions should be considered as voltage levels are increased.

Never make any changes to circuits or mechanical layout without first isolating the circuit by switching off and removing connections to power supplies.

Know what you must do in an emergency.

Emergency Power Off:

Every lab is equipped with an Emergency Power Off System. This consists of a large red mushroom switch on the wall labeled 'Emergency Power Off'. When this switch is depressed, electrical power to the lab will shut off, except for the lights. Only authorized personnel are permitted to reset power once the Emergency Power Off system has been engaged. The instructor shall instruct the students to approach all circuits as hot.



## Environmental Science

Faculty shall orient and instruct students to general safety rules and procedures in the lab:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

Please note the location of the fire extinguisher, first aid kit, and safety showers

Please report any injury to your instructor, no matter how insignificant you think it is.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

Responsible behavior is essential. The dangers of spilled acids, chemicals and broken glassware created by thoughtless actions are too great to be tolerated.

Wear approved eye protection at all times in the laboratory and in any area where chemicals are stored or handled.

- Eye protection should protect against impact and chemical splashes. Goggles are strongly recommended and may be required.
- If you get a chemical in your eye, first rinse with isotonic sterile solution, then wash with flowing water from a sink or fountain for at least 15 minutes. Get medical attention immediately.
- Do not wear contact lenses in the laboratory, even with safety goggles. Contact lenses prevent rinsing chemical splashes from the eye. Vapors in the laboratory (HCl, for example) dissolve in the liquids covering the eye and concentrate behind the lenses. "Soft" lenses are especially bad as chemicals dissolve the lenses themselves and are released after several hours.

Perform no unauthorized experiments. This includes using only the quantities specified, no more. Consult your instructor if you have any doubts about the instructions.

In case of fire or accident, call instructor at once.

**Never** work alone in the laboratory, there must be at least one other person present. In addition, an instructor should be readily available.

Wear closed toed shoes in the laboratory.

Confine long hair and loose clothing in the laboratory.

Keep your work area neat at all times.

Clean your area prior to leaving the laboratory. Put away and properly store all chemicals and equipment.

Be careful when heating liquids; add boiling chips to avoid "bumping."

**Never** heat flammable liquids such as ethers, hydrocarbons, alcohol, acetone, and carbon disulfide over an open flame.

**Always** pour acids into water when mixing. Otherwise the acid can spatter, often quite violently.

Do not force rubber stoppers onto glass tubing or thermometers. Lubricate the tubing and stopper with glycol or water.

Power tools and equipment must be disconnected when changing operational set-up.

## **Health Occupations / Nursing**

Instructors shall orient and instruct students to general safety rules and procedures in the shop:

1. Emergency exit procedures
2. Locations of personal safety protective devices

The instructor shall require safety goggles/glasses be worn at all times in designated lab areas.

The instructor shall lecture and demonstrate the use of all patient care equipment and instruments and assess the student's competence prior to specific use.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

All simulated practice needles are to be covered with needle sheath. Needles and syringes are not to be discarded in trash containers.

All individuals utilizing sharps in the laboratories are responsible for safe disposal of items in designated impermeable needle boxes and never into regular trash.

Return equipment to designated location; example - needle and syringes to syringe box in designated areas.

Syringe boxes, syringes and needles must remain in Lab.

No eating or drinking in the lab. When taking a break outside the lab, use a waste container provided.

Keep beds in appropriate position with linens straightened before leaving.

Replace manikins neatly in the bed.

Report any incidents or malfunctions to the faculty.

Special rules will be shared regarding Simulated Learning Resources, their use and their security.

It is the responsibility of the individual student or instructor to make it known if they have a latex sensitivity and to take appropriate precautions. Only latex free gloves will be purchased for the laboratory.

- If a latex or betadine allergy exists or is suspected, please notify your clinical instructor and the lab personnel.

Please do not apply water, povidone-iodine, ink or any substance to the mannequins or patient simulators unless specifically instructed.

## **Medical Lab Technician**

### **LAB SAFETY PROCEDURES:**

Faculty shall orient and instruct students to general safety rules and procedures in the lab:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

Report any injury, no matter how insignificant you think it is, to your instructor.

Safety goggles/glasses be worn at all times in designated work areas.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

Students must demonstrate competence with all shop equipment and hand tools prior to specific use.

Report broken glassware to your instructor. Do not attempt to clean it up.

## **Networking**

Instructors shall orient and instruct students to general safety rules and procedures in the shop:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

Safety goggles/glasses be worn at all times in designated work areas.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

Students must demonstrate competence with all shop equipment and hand tools prior to specific use.

## Physics

### LAB SAFETY PROCEDURES:

Faculty shall orient and instruct students to general safety rules and procedures in the lab:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

The first aid kit is located to the left of the board at the front of the room.

There are fire extinguishers located at the entrance to the lab near the light switch and in the lab prep room on the wall on the left side of the room near the door to the hallway.

Report any injury to the lab instructor no matter how insignificant you think it is.

Safety goggles/glasses be worn at all times in designated work areas.

When safety glasses are provided, do not remove them until instructed to do so.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

No food or drink in the lab.

No tobacco products in the lab.

**Never** inhale an unknown substance.

Know where the fire exits are located.

Know the location of all safety equipment.

Report broken glassware to your instructor. Do not attempt to clean it up.

Only use equipment provided. Do not remove any equipment from the cabinets unless instructed to do so.

Be mindful of your surroundings. Always make sure there is a clear path when operating lasers, projectile launchers, etc.

Clean your area prior to leaving.

Please push your stools back under the lab bench.

## Radiography

### LAB SAFETY PROCEDURES:

Faculty shall orient and instruct students to general safety rules and procedures in the lab:

1. Emergency exit procedures
  - a. Only one exit door from lab.
2. Power on and shut-off buttons/sequence
  - a. To power on unit: flip on breaker, turn on control panel
  - b. To power off unit: turn off control panel, flip off breaker
3. Locations of personal safety protective devices
  - a. PPE includes gloves; Radiation safety devices include: gloves, aprons, thyroid shields, etc.

Report any injury, no matter how insignificant you think it is, to your instructor.

Dosimeters must be worn at all times in designated work areas.

This is an Energized Radiographic machine. NO exposures are to be made on live persons! Exposures on phantoms, image receptors, or other inanimate objects are to occur ONLY under the direct supervision of Radiography faculty. No exposures are to occur without Radiography faculty present.

Students will stand behind the lead-equivalent secondary barrier wall during all exposures.

Contrast samples, IV supplies, colostomy supplies, enema supplies, etc. are for demonstration purposes only.

Students will practice radiographic positioning/procedures on fellow students. Each student will participate in role-playing scenarios as “tech” and as “patient”. No exposures will be made during practice.

Students will correctly use proper body mechanics and utilize equipment manipulation buttons including tube locks, detents, and directional movement buttons.

Students will follow proper power on/off and care for CR workstations, Viewing, PACS workstations.

Students will correctly use and manipulate bucky trays, image receptors, grids, and markers.

Students will clean table, wall bucky, and tube after every lab.

No food or drinks around radiographic equipment, CR reader, darkroom, or lab computers.

## **Respiratory Therapy**

Instructors shall orient and instruct students to general safety rules and procedures in the shop:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

The instructor shall require safety goggles/glasses be worn at all times in designated lab areas.

The instructor shall lecture and demonstrate the use of all patient care equipment and instruments and assess the student's competence prior to specific use.

All students must successfully complete a written test and a clinical laboratory simulation prior to clinical practice.

### **Storage, Handling, and Use of Cylinders:**

Special care shall be used in the identification and selection of cylinders to insure that the proper type of gas is used. Identification shall be made from the cylinder tag instead of depending on the cylinder color code.

The PIN index system will be followed concerning medical gases and regulators. Adaptors should never be used and fittings never changed on medical gas containers. If a connection does not fit, it is not supposed to fit. Never force a connection to fit or alter the PIN index system to provide a fit that is not meant to be.

### **Won't Connect? Don't Connect!**

Medical gas cylinders should be properly secured at all times to prevent tipping, falling, or rolling. They can be secured with straps or chains connected to a wall bracket or other fixed surface, or by use of a cylinder stand.

The cylinder storage area should be located in an area where the cylinders will not be knocked over or damaged by falling objects, passing vehicles, or persons. When a cylinder is not being used, the valve should be closed and the valve protector secured when applicable.

Ensure that gas cylinders are transported so that they do not tip, fall or roll. The gas cylinder should be secured to the cylinder truck or cart. Dropping or striking may damage the cylinder valve, which could turn the cylinder into a dangerous torpedo with the potential to destroy property and/or injure personnel.

Cylinder valves will be "cracked" to remove any dust or debris to reduce the chance of fire within the regulator. A lubricant (oil based) should not be used around any medical gas regulator.

Medical Gases supporting combustion include:

- Oxygen
- Nitrous Oxide



- Oxygen & Carbon Dioxide Mixtures
- Oxygen & Helium Mixtures
- Oxygen & Nitrogen Mixtures

Non-Flammable gases include\*\*:

- Carbon Dioxide
- Helium

\*\* Non-Flammable gases are not a fire hazard, but they are compressed gasses and should be considered a danger.

## **Welding**

Faculty shall orient and instruct students to general safety rules and procedures in the lab:

1. Emergency exit procedures
2. Emergency power shut-off buttons
3. Locations of personal safety protective devices

Report any injury, no matter how insignificant you think it is, to your instructor.

Safety goggles/glasses be worn at all times in designated work areas.

All students must successfully complete a written and practical safety test prior to the use lab equipment.

Students must demonstrate competence with all shop equipment and hand tools prior to specific use.

## **PROTECTIVE CLOTHING AND EQUIPMENT**

Protective clothing and equipment shall be suitable for the type of work to be performed, kept in good repair, and kept free of oil and grease.

Sleeves shall be kept buttoned at the wrist.

Collars shall be kept buttoned.

Fire resistant gauntlet gloves, aprons of leather or asbestos, and leggings shall be used as protection against radiated heat or sparks.

Capes or shoulder covers made of leather or other flame and heat-resistant material shall be worn during overhead welding or cutting operations. Leather skull caps worn under helmet provide protection against head burns. When working in a confined space or an overhead location, ear plugs shall be worn or the ears covered with wire screen protectors.

Low cut shoes shall not be worn unless the ankles are covered with protective leggings.

Students required to wear respirators shall keep them clean and sterilized. When not in use, such equipment shall be stored in closed containers.

## **EYE PROTECTION**

Goggles, helmets, hand shields, or other suitable eye protection having the proper lens shade for the work being done shall be worn during all welding or cutting operations. (See attached tables.)

Goggles, helmets, and hand shields shall be checked frequently. Equipment with light leaks shall not be worn, as radiation burns will result. Cracked, broken, or loose filter plates must be replaced immediately.

Protective colored flash goggles with side shields shall be worn under a hood for protection against harmful rays, flying chips, and sparks when an arc is struck prematurely before the helmet is lowered. The lenses shall be No. 1 or No. 3 shade. Inert gas metal-arc welding by nearby welders requires goggles under the helmet with lens shade as per table.

**NOTE:** Momentary observation of an arc without protective lenses can cause a retinal burn, which, in turn, may result in a permanent dark area in the field of vision.

When arc welding operations are performed in an area that is not enclosed or isolated, workers or other persons near the welding area (generally within 75' of the arc) shall wear appropriate goggles.

**FILTER LENS SHADE NUMBERS FOR PROTECTION AGAINST RADIANT ENERGY**

<u>Gas Welding Operation</u>	<u>Shade Number</u>
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1"	3 or 4
Medium cutting, 1" to 6"	4 or 5
Heavy cutting, over 6"	5 or 6
Gas welding (light), up to 1/8"	4 or 5
Gas welding (medium), 1/8" to 1/2"	5 or 6
Gas welding (heavy), over 1/2"	6 or 8
<u>Electric Arc Welding Operation</u>	<u>Shade Number</u>
Shielded metal-arc welding 1/16, 3/32, 1/8, 5/32 inch diameter electrodes	10
Gas-shielded arc welding (nonferrous) 1/16, 3/32, 1/8, 5/32 inch diameter electrodes	11
Gas-shielded arc welding (ferrous) 1/16,3/32, 1/8, 5/32 inch diameter electrodes	12
Shielded metal-arc welding 3/16, 7/32,1/4 inch diameter electrodes	12
5/16, 3/8 inch diameter electrodes	14
Atomic hydrogen welding	10 – 14
Carbon-arc welding	14

**GAS WELDING AND CUTTING**

Storage, Handling, and Use of Cylinders:

Special care shall be used in the identification and selection of cylinders to insure that the proper type of gas is used. Identification shall be made from the cylinder tag instead of depending on the cylinder color code.

Cylinders shall be handled carefully. They shall not be dropped or jarred.

Cylinders shall be stored so that they will not be knocked over or damaged by falling objects, passing vehicles, or persons.

Cylinder valves shall be closed and valve protection caps replaced before cylinders are moved or placed into storage.

## **ELECTRIC ARC WELDING**

Before starting operations, all electrical connections shall be checked to determine that they are securely made and firmly attached to the work.

Work leads shall be kept as short as possible.

Equipment shall be examined frequently to determine that all electrical connections and insulations on holders and cables are in good condition. Loose cable connections may overheat or arc and cause a fire.

Safety devices such as circuit breakers and interlocks shall not be shunted out or disconnected. Power sources or line fuses shall be locked out or removed when equipment is being installed, inspected, or serviced.

Terminals of the welding generator shall not contact the frame of the welder. This produces an electrical ground.

Only electrode holders designed to safely handle the maximum rated current required shall be used. viii. Electrode holders that are not fully insulated shall be replaced. Holders with protruding screws shall not be used.

Electrodes shall be removed from the holder when not in use.

An arc shall not be struck on a gas cylinder or any pressure vessel as it may seriously weaken the vessel.

Only welding cables that are completely insulated, flexible, and of proper size for the maximum current requirements of the work shall be used. Cables shall be regularly inspected for cracks, wear, or damage and repair or replace if necessary.

Lengths of cable shall be connected by fully insulated lock-type connectors having a capacity equal to that of the cable.

Cable lugs shall be soldered to the cable and shall be securely fastened to give full electrical contact.

The exposed metal parts of lugs shall be completely covered with rubber tape and protected with friction tape. Exposed parts of electrical units shall have insulating covers in place before the power is turned on.

Proper electrical contact shall exist at all joints when a building structure or pipeline is used temporarily as a ground-return circuit.

When a structure or pipe is continuously used as a ground for the machine, all joints shall be electrically bonded to establish a good ground.

Pipe containing gases, flammable liquids, or conduits carrying electrical conductors shall not be used as a ground-return circuit.

Welders shall make every effort to keep welding cables dry, grease and oil-free, and protected from sparks or hot metal.

Cables laid on the floor or ground shall be protected so they will not be damaged or cause a tripping hazard.

Welding cables shall not be located close to other power supply cables or other high-tension leads.

When discontinuing work, the power supply switch in the equipment shall be opened and the unit disconnected from the source of power.

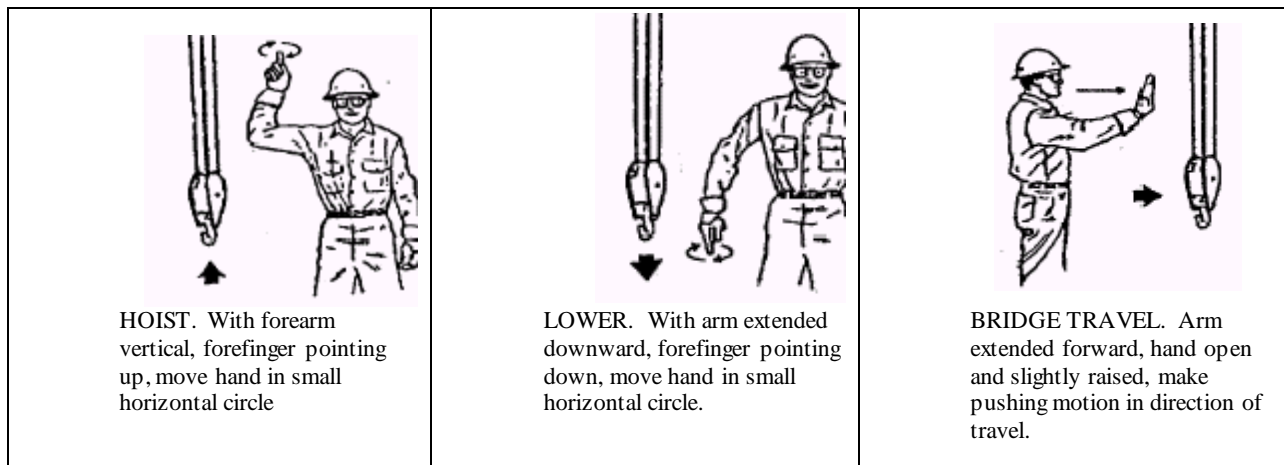
Welding rods shall be stored in the container on the welding machine; not thrown on floors or staging.


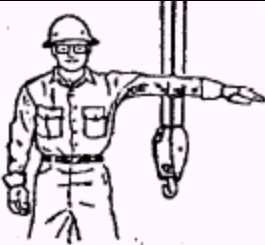
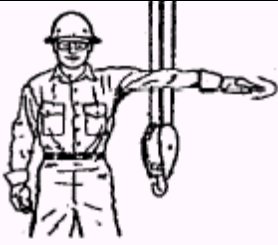
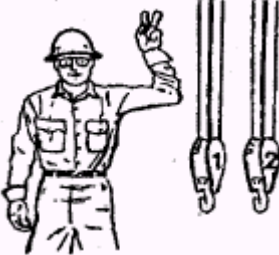

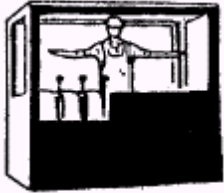
Welding shall never take place in damp areas without insulation to protect workers against electrical shock.

NOTE: The hazards connected with atomic hydrogen and heli-arc welding are essentially the same as described herein for arc welding.

## **OVERHEAD CRANE SAFETY**

### **Standard Hand Signals For Controlling Overhead And Gantry Cranes**



 <p>TROLLEY TRAVEL. Palm up, fingers closed, thumb pointing in direction of motion, jerk hand horizontally.</p>	 <p>STOP. Arm extended, palm down, hold position rigidly.</p>	 <p>EMERGENCY STOP. Arm extended, palm down, move hand rapidly right and left.</p>
 <p>MULTIPLE TROLLEYS. Hold up one finger for block marked "1" and two fingers for block marked "2". Regular signals follow.</p>	 <p>MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist Slowly shown as an example.)</p>	 <p>MAGNET IS DISCONNECTED. Crane operator spreads both hands apart – palms up.</p>

An operator must not carry a load over another employee.

A crane must not be used to make a side pull (except where it has been specifically authorized by a qualified person after making specific determinations).

Compressed gases can only be lifted by a cradle or enclosed platform.

An employee cannot ride a hoisting device, such as a magnet, hook, ball, or load. The only exception is a work platform that meets all the requirements in the Construction Safety Standard Part 10. Lifting & Digging Equipment.

When attaching or moving a load, the operator, rigger, or hooker must make sure of all of the following:

- The hoisting rope or chain is free of kinks or twist and not wrapped around the load.
- The load is attached to the load block hook by means of a sling or other approved device.
- The sling and load will clear all obstacles or obstructions.
- The load is balanced and secured before lifting the load more than a few inches.
- Multiple lines are not twisted around each other.
- The hook is brought over the load in a manner to prevent swinging.
- There is no sudden acceleration or deceleration of the moving load.

## Inspection

The inspection procedure for cranes in regular service is divided into 2 general classifications:

- Frequent inspections are done monthly to quarterly or at intervals of 100 hours of use, whichever comes first.
- Periodic inspections are done annually or at intervals of 500 hours of use, whichever comes first.

The inspections cover topics outlined in the standard or manufacturers guidelines.

## Maintenance

The employer must maintain a crane and its accessories in a condition that will not endanger an operator or other employee.

A preventative maintenance program will be established and the program will be based on the manufacturer's recommendations and for the application as reviewed by a qualified person.

Before adjustments or repairs are made on a crane, all of the following precautions must be taken:

- The crane will be moved to a location where it will cause the least interference with other moving equipment on the track or rails and operations in the area.
- Controllers will be placed in the "off" position.
- The main switch will be placed in the "off" position or "open" position and **LOCKED OUT**, except where power is necessary to adjust or service the crane.
- A warning sign or "out of order" sign will be placed at the operator control station.
- Illumination of 15 footcandles intensity will be provided while maintenance is performed on the crane.

If any other crane uses the same runway, then a protective device must be used to prevent interference with the idle crane undergoing repairs. If a protective device is impracticable, then a signal person must be placed at a visual vantage point to warn the operator of the active crane when it reaches the limit of safe distance from the idle crane.

A crane that has been adjusted or repaired must not be returned to normal operation until all guards have been replaced, locks removed by those who installed them, or their supervisor, safety devices reactivated, and the maintenance equipment removed.

**IV. Periodic Inspections and Maintenance of Facilities, Tools, Machines, Equipment and Personal Protective Devices.**

**A. Instructor**

1. Daily inspection of tools, machines, equipment and safety devices.
2. Report, in writing, malfunctioning and/or defective items to the Dean and the facilities manager.
3. Prohibit the use of malfunctioning or defective items.
4. Instruct students on proper care and maintenance of shop equipment, tools and safety devices, etc.

**B. Students**

1. Learn and recognize proper care and maintenance of shop equipment, tools, etc.
2. Report malfunction and/or defective items to instructor.

**C. Custodial Staff**

1. Daily inspection of the physical plant for safety hazards.
2. Daily preventive maintenance of facility.
3. Report, in writing, all potential and hazardous conditions to facilities manager.

**D. Administration**

1. Facilities manager will take prompt action on reports of hazardous conditions submitted by instructors and custodians.
2. Facilities manager will be involved in the overall safety operations of the college.
3. The Dean and the Facilities manager will be responsible for the coordination and implementation of all safety maintenance and inspection programs.

**V. Emergency Procedures in the Event of an Accident**

A. In the event of an accident, the following procedures will be followed:

1. The instructor will assess the nature of the accident.
2. The instructor will either provide first aid or call 911 for emergency assistance and stabilize the victim.
3. The instructor will complete an incident form.

B. All accidents are to be reported immediately by telephone to the campus police 523-7473. An incident report, on the form provided, is to be completed.



## **EYE PROTECTIVE DEVICES**

Protective eye devices must be worn by every student and employee participating in any of the following courses:

A. Vocational or industrial art shops or laboratories involving experience with:

1. Hot molten metals, or explosives are used or in which welding of any type;
2. Milling, sawing, stamping, grinding or cutting of any solid materials;
3. Heat treatment or tempering or kiln firing of any metal or other material;
4. Gas or electric welding;
5. Repair of any vehicle;
6. Caustic or explosive materials.

B. Chemical or combined chemical-physical laboratories involving caustic or explosive chemicals or hot liquids or solids. Students and personnel shall be required to wear industrial quality eye protection devices at all times while participating in such courses or laboratories. Visitors to such classroom or laboratories shall also be required to wear such protective devices.

“Industrial quality eye protection devices” as used in this section, means devices providing side protection and meeting the standards of the American Standards Association Safety Code, Virginia Statute 22-10.7

### Kind and type of Eye Protective Devices Utilized

- a. SPECTACLES – WITH SIDE SHIELDS –clear or colored
- b. GOGGLES – clear, colored or splash type
- c. SHIELDS – clear or colored
- d. WELDING HELMETS
- e. HOODS – very special operations

### POTENTIAL EYE HAZARD

### TYPE OF PROTECTION NEEDED

- |                                   |  |
|-----------------------------------|--|
| a. Caustic or explosive chemicals | Clear GOGGLES, splash proof            |
| b. Explosives (solids or gases)   | Clear GOGGLES                          |
| c. Dust producing operations      | Clear GOGGLES, splash proof            |
| d. Electric arc welding           | Welding Helmet                         |
| e. Oxy-acetylene welding          | Colored GOGGLES or WELDING HELMET      |
| f. Hot liquids and gases          | Clear GOGGLES – splash proof           |
| g. Hot solids                     | Clear or colored GOGGLES or SPECTACLES |

- |  |  |
|--|--|
| h. Hot molten metals   | Clear or colored GOGGLES                                 |
| i. Heat treatment or tempering metals  | Clear or colored GOGGLES or SPECTACLES                   |
|  | Clear or colored GOGGLES or SPECTACLES or WELDING HELMET |
| k. Shaping or solid materials: chipping, cutting, grinding, milling, sawing, stamping  | Clear or colored GOGGLES or SPECTACLES                   |
| l. Other   |  |
| Any similar activity being conducted in the instructional program where exposure might have a tendency to cause damage to the eyes required the use of proper <u>eye</u> protective devices. |  |

### **CHECK YOUR SAFE HANDLING OF COMPRESSED AIR**

Compressed air can be dangerous, even fatal. At 40 psi, a blast of air from a distance of 4” can rupture an eardrum and possibly cause a fatal brain hemorrhage. At 40 psi, metal chips and other debris can be driven at a speed of 70 mph. Directed into the mouth, air at this pressure can rupture lungs and intestines. Aimed at the eyes, it can produce blindness. Compressed air directed against the skin can cause tissue damage similar to burns, in addition to driving dirt and chips deep into the flesh.

Safety glasses should always be worn when working with compressed air. Compressed air should never be used to blow out dust out of the hair or clothing. Aside from the dangers mentioned above, air can be driven into a slight scratch or puncture in the skin causing agonizing pain and swelling, and perhaps even bubbles of air in the blood. The utmost caution should accompany the use of compressed air in cleaning machines, engine parts, etc. The most inexcusable injuries, and often the worst damage, results from horseplay, which can never be tolerated.

**MECC Incident Report**

**Name of individual(s) involved in Incident:** \_\_\_\_\_

**SSN or EMPLID:** \_\_\_\_\_

**Address:**  
\_\_\_\_\_  
\_\_\_\_\_

**Email Address:** \_\_\_\_\_

**Telephone:** \_\_\_\_\_

**Name of Individual Reporting the Incident:**  
\_\_\_\_\_

**Date and Location of Incident:**  
\_\_\_\_\_

**Summary of Incident:**

**Resolution:**

**Copy:**  
Person involved in incident \_\_\_\_  
Person resolving the incident \_\_\_\_  
Director of Student Services \_\_\_\_

**Date:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

**Current Student ID Verified Yes** \_\_\_\_ **No** \_\_\_\_

Mountain Empire Community College  
**SAFETY MONITORING PROGRAM**

**Instructor** \_\_\_\_\_ **Program** \_\_\_\_\_ **Date** \_\_\_\_\_ **Building** \_\_\_\_\_  
**Raters** \_\_\_\_\_

- Ratings:
1. Meets standards
  2. Use of behavior or skill indicated additional growth needed
  3. Does not meet standards or does not demonstrate behavior or skill
- NA Non Applicable to program being monitored

**I. CURRICULUM**

**COMMENTS AND RECOMMENDATIONS**

- \_\_\_\_\_ 1. Instructional activities are based on stated safety program objectives, which guide the organization and teaching of instruction content.
- \_\_\_\_\_ 2. Safety instruction is documented in syllabus.
- \_\_\_\_\_ 3. Individual safety tests for machines and power tools are complete and are in each student's file.
- \_\_\_\_\_ 5. All chemicals in the shop and classroom have been identified and labeled and an MSDS sheet is available.
- \_\_\_\_\_ 6. Students are provided with instruction in the area of occupational health and awareness in their respective trade areas.

Mountain Empire Community College  
**SAFETY MONITORING PROGRAM**

**Instructor** \_\_\_\_\_ **Program** \_\_\_\_\_ **Date** \_\_\_\_\_ **Building** \_\_\_\_\_  
**Raters** \_\_\_\_\_

- Ratings:
1. Meets standards
  2. Use of behavior or skill indicated additional growth needed
  3. Does not meet standards or does not demonstrate behavior or skill
- NA Non Applicable to program being monitored

**II. INSTRUCTIONAL SPACE AND FACILITIES**

**COMMENTS AND RECOMMENDATIONS**

- \_\_\_\_\_ 1. Seating and work stations in labs or classes are sufficient in number to meet needs of the largest class. There is satisfactory ratio of students to work stations.
- \_\_\_\_\_ 2. Utilities such as air, water, and electricity are adequate and available at appropriate locations.
- \_\_\_\_\_ 3. Eye wash solutions are provided in labs as required and are in proper working order.
- \_\_\_\_\_ 4. Emergency power buttons are clearly marked and in proper working order.
- \_\_\_\_\_ 5. Fire extinguisher locations are clearly marked and extinguishers are periodically checked, maintained and serviced.
- \_\_\_\_\_ 6. Fire exits are clearly marked. Emergency instructions are posted near exit.
- \_\_\_\_\_ 7. Exit doors are kept clear of any obstructions.
- \_\_\_\_\_ 8. Ample space is provided for a free flow of traffic in classrooms, laboratories and labs.

## COMMENTS AND RECOMMENDATIONS

- \_\_\_\_\_ 9. Classrooms, laboratories, and other instructional space are adequate in size, location, arrangement, and facilities to provide for safe, orderly and effective instruction.
- \_\_\_\_\_ 10. Provisions have been made for appropriate floor markings in laboratories and other facilities, identifying aisle ways, work stations, potential hazards and traffic patterns.
- \_\_\_\_\_ 11. The location of instructional areas eliminate undue interference with or from other college activities.
- \_\_\_\_\_ 12. Adequate visual control and supervision of all instructional areas is possible.
- \_\_\_\_\_ 13. Space and facilities are provided for storage of scrap and salvage, student work in progress, instructional supplies, and movable tools and equipment.
- \_\_\_\_\_ 14. Suitable safe storage is provided for storage of inflammables, chemicals and gases.
- \_\_\_\_\_ 15. Eye safety warning signs are posted above appropriate machines.
- \_\_\_\_\_ 16. Emergency fire blankets are properly secured to wall and in good condition as required.
- \_\_\_\_\_ 17. Corridor fire doors close at the proper rate.
- \_\_\_\_\_ 18. Flammable materials are stored the required distance from the ceiling.

Mountain Empire Community College  
**SAFETY MONITORING PROGRAM**

**Instructor** \_\_\_\_\_ **Program** \_\_\_\_\_ **Date** \_\_\_\_\_ **Building** \_\_\_\_\_  
**Raters** \_\_\_\_\_

- Ratings:
- 1. Meets standards
  - 2. Use of behavior or skill indicated additional growth needed
  - 3. Does not meet standards or does not demonstrate behavior or skill
- NA Non Applicable to program being monitored

**II. SUPPLIES AND EQUIPMENT**

**COMMENTS AND RECOMMENDATIONS**

- \_\_\_\_\_ 1. Equipment is maintained in safe operating condition.  
Equipment not in safe operating condition is taken out of service.
- \_\_\_\_\_ 2. Spacing between the equipment is sufficient for the safe handling of materials used in the training.
- \_\_\_\_\_ 3. Work areas around machines are cleared marked.
- \_\_\_\_\_ 4. Eye and face protection supplies and equipment are adequately supplied and in proper working condition.
- \_\_\_\_\_ 5. Occupational head protection supplies and equipment are adequately supplied and in proper working condition.
- \_\_\_\_\_ 6. Ear protection supplies and equipment are adequately supplied and in proper working condition.
- \_\_\_\_\_ 7. Protective footwear is adequately supplied and in proper working condition.
- \_\_\_\_\_ 8. Protective gloves are supplied and maintained as needed.
- \_\_\_\_\_ 9. All machines have guards in place and in proper working condition.

**COMMENTS AND RECOMMENDATIONS**

- \_\_\_\_\_ 9. All machines have guards in place and in proper working condition.
- \_\_\_\_\_ 10. All pedestal grinders have tool rests, set at required distances, and shields in place with grinding wheels periodically checked for cracks.
- \_\_\_\_\_ 11. All ladders, fixed and portable, meet O.S.H.A. standards.
- \_\_\_\_\_ 12. Supplies and equipment are stored in uncluttered organized manner.
- \_\_\_\_\_ 13. Appropriate first aid supplies are available and readily accessible in the classroom or instructional area.