



# **Mehran University of Engineering & Technology Jamshoro**

## **Institute of Environmental Engineering & Management**

# **Health and Safety Policy**

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**Departmental Committee**

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## INSTITUTE OF ENVIRONMENTAL ENGINEERING & MANAGEMENT

### Health and Safety Policy

#### Institute of Environmental Engineering and Management Mehran UET

##### 1. Introduction

This policy sets forth a commitment to maintaining a safe and healthy environment for students, faculty, staff, and visitors, aligning with the institute's overarching mission of excellence in education, research, and community service.

With a steadfast dedication to fostering a culture of safety consciousness, the policy aims to create an environment that is conducive to learning, research, and professional development. It encompasses a range of principles and guidelines designed to identify, assess, and mitigate potential risks and hazards, thus minimizing accidents, injuries, and occupational health concerns.

Moreover, this policy is a testament to the institute's dedication to continuous improvement. It encourages a collaborative approach, involving all members of the institute's community, to actively participate in the identification of potential hazards, development of safety protocols, and implementation of best practices. By doing so, the institute seeks to foster a climate of shared responsibility and accountability, wherein each individual plays a vital role in upholding the highest standards of health and safety.

Overall, the Health and Safety Policy of the Institute of Environmental Engineering and Management at Mehran University of Engineering and Technology exemplifies a steadfast commitment to safeguarding the well-being and welfare of its community members. It underscores the institute's dedication to providing a safe and secure environment, where learning, research, and professional growth can thrive harmoniously. Through this policy, the institute reaffirms its role as a responsible and caring institution, deeply invested in the welfare of its constituents and the broader community.

##### 2. Purpose and Scope

The purpose of this Health and Safety Policy is to provide a framework for promoting and maintaining a safe and healthy environment for all members of the Institute of Environmental Engineering and Management, including students, faculty, staff, and visitors. This policy applies to all activities and spaces within the institute, including laboratories, classrooms, faculty offices, seminar library, and seminar hall.

##### 3. Responsibilities

###### 3.1. Director

The Director is responsible for:

- Ensuring that this policy is implemented and followed.
- Allocating resources for health and safety measures.
- Appointing a Health and Safety Coordinator responsible for overseeing the institute's health and safety program.

### **3.2. Health and Safety Coordinator**

The Health and Safety Coordinator is responsible for:

- Developing, implementing, and reviewing health and safety procedures and protocols.
- Conducting regular risk assessments and audits to identify potential hazards.
- Ensuring that all faculty, staff, and students are aware of and trained in relevant health and safety procedures.

### **3.3. Faculty and Staff**

All faculty and staff are responsible for:

- Complying with all health and safety policies and procedures.
- Reporting any unsafe conditions or incidents promptly to the Health and Safety Coordinator.

### **3.4. Students**

All students are responsible for:

- Complying with all health and safety policies and procedures.
- Reporting any unsafe conditions or incidents promptly to their respective instructors or the Health and Safety Coordinator.

## **4. Risk Assessment and Management**

- Regular risk assessments will be conducted to identify, evaluate, and control potential hazards.
- Control measures will be implemented to minimize or eliminate identified risks.

## **5. Laboratory Safety**

- Personal protective equipment (PPE) must be worn at all times in laboratories.
- Proper handling, storage, and disposal of hazardous materials will be strictly adhered to.
- Emergency procedures, including evacuation routes, will be prominently displayed.
- Further Safety Protocols for each laboratory in Institute of Environmental Engineering and Management are attached as **ANNEXURE-A**

## **6. Classroom Safety**

- Classrooms will be arranged to allow for easy access and egress.
- Emergency procedures, including evacuation routes, will be prominently displayed.

## **7. Faculty Offices Safety**

- Faculty members are responsible for maintaining a safe and clutter-free workspace.
- Electrical equipment should be regularly inspected and maintained.

## **8. Seminar Library Safety**

- Aisles and exits should be always kept clear.
- Shelving and furniture should be stable and in good repair.

## **9. Seminar Hall Safety**

- Adequate seating and clear walkways will be maintained.

- Emergency exits will be clearly marked and easily accessible.

#### **10. Fire Safety**

- Fire extinguishers and alarms will be regularly inspected and maintained.
- Fire drills will be conducted periodically.

#### **11. First Aid**

- First aid kits will be available in designated areas.
- Trained first aid responders will be identified and accessible.

#### **12. Reporting Incidents**

- All incidents, accidents, and near misses must be reported to the Health and Safety Coordinator immediately for investigation and corrective action.
- The incidents will be reported on the form attached in **ANNEXURE-B**.
- The incident reporting form will be filled in by Health and Safety Coordinator or class advisor at the time of incident.

#### **13. Review and Revision**

This policy will be reviewed annually and updated as necessary to reflect changes in regulations, technology, and institute operations.



## INSTITUTE OF ENVIRONMENTAL ENGINEERING &amp; MANAGEMENT

WATER AND SOIL TESTING LABORATORY**Lab Safety Protocols****1. General Personal Safety**

- Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in areas where specimens are handled.
- Food and drink are not stored in refrigerators, freezers, cabinets, or on shelves, countertops, or bench tops where blood or other potentially infectious materials are stored or in other areas of possible contamination.
- Long hair, ties, scarves and earrings should be secured.
- Keep pens and pencils **OUT OF YOUR MOUTH!!**
- Appropriate Personal Protective Equipment (PPE) will be used where indicated.
- **Lab coats** or disposable aprons should be worn in the lab to protect you and your clothing from contamination. Lab coats should not be worn **Protective** outside the laboratory.
- **Lab footwear** should consist of normal closed shoes to protect all areas of the foot from possible puncture from sharp objects and/or broken glass and from contamination from corrosive reagents and/or infectious materials.
- **Gloves** should be worn for handling blood and body fluid specimens, touching the mucous membranes or non-intact skin of patients, touching items or surfaces soiled with blood or body fluid, and for performing venipunctures and other vascular access procedures. Cuts and abrasions should be kept bandaged in addition to wearing gloves when handling hazardous materials.
- **Eyewear** and/or masks may need to be worn when contact with hazardous aerosols, caustic chemicals and/or reagents is anticipated.
- **NEVER MOUTH PIPETTE!!** Mechanical pipetting devices must be used for pipetting all liquids.
- Frequent hand washing is an important safety precaution, which should be practiced after contact with patients and laboratory specimens.
- Proper hand washing techniques include soap, running water and 10-15 seconds of friction or scrubbing action. Hands should be dried, and the paper towel used to turn the faucets off.

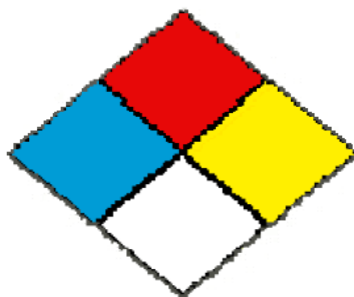
## 2. Eye Safety

### Eye goggles should be worn:

- When working with certain caustic reagents and/or solvents, or concentrated acids and bases.
- When performing procedures that are likely to generate droplets/aerosols.
- When working with reagents under pressure.
- Wearing contact lenses in the laboratory is discouraged and requires extra precaution if worn. Gases and vapors can be concentrated under the lenses and cause permanent eye damage. Furthermore, in the event of a chemical splash into an eye, it is often nearly impossible to remove the contact lens to irrigate the eye because of involuntary spasm of the eyelid. People who must wear contact lenses should inform their supervisor to determine which procedures would require wearing no-vent goggles.

## 3. Chemical and Gas Safety

To provide a safe working environment, all personnel should be aware of potentially hazardous materials and the proper way of handling this material. Avoid unnecessary exposure to chemicals. Occupational Safety and Health Administration (OSHA) requires any necessary information in the form of MATERIAL SAFETY DATA SHEETS (MSDS) concerning the handling of hazardous materials to be available to all laboratory personnel, so that they may achieve and maintain safe working conditions.



**Flammable (Red); Instability (Yellow); Health (Blue)  
and Special Notice (White)  
NFPA Chemical Hazard Sign**

## 4. Toxic and Corrosive Materials (acids and alkali):



### **Toxic or Poison Hazard**



### **Corrosive Hazard**

- To avoid dangerous splatter, ALWAYS ADD ACID TO WATER!
- Toxic materials should be labeled with special tape when used in compounded reagents and stored in separate containers. These materials should be handled carefully and kept in the hood during preparation.
- Acids and alkali should be carried by means of special protective carriers when transported.
- Acid and alkali spills should be covered and neutralized by using the material from the 'spill bucket'. All material, spill and compound, should be swept up and placed in a plastic bucket for proper disposal.

- In case of spillage, wash all exposed human tissue (including eyes) generously with water and notify your supervisor for proper reporting of the incident.

## 5. Flammable Compounds



- All flammable reagents should be always kept in the flammable storage facilities (closet or refrigerator) when not in use. Any solutions compounded from these reagents should be labeled as flammable.
- Flammable substances should be handled in areas free of ignition sources.
- Flammable substances should never be heated using an open flame.
- Ventilation is one of the most effective ways to prevent accumulation of explosive levels of flammable vapors. An exhaust hood should be used whenever appreciable quantities of flammables are handled.
- Flammable compounds should be placed in proper receptacle for disposal.

## 6. Fire Safety



A. **KNOW WHERE ALL FIRE EXITS, FIRE EXTINGUISHERS AND FIRE ALARMS ARE LOCATED!**

B. **KNOW HOW TO PROPERLY OPERATE APPROPRIATE FIRE ALARMS AND FIRE SAFETY EQUIPMENT!**



Portable fire extinguishers are classified by their ability to handle specific classes of fires:

For burning combustible materials (wood, paper, clothing, trash). **GREEN TRIANGLE WITH THE LETTER 'A'**, uses water or an all-purpose dry chemical.



For burning liquids: **RED SQUARE WITH THE LETTER 'B'**, uses foam, a dry chemical or carbon dioxide.



For electrical fires: **BLUE CIRCLE WITH THE LETTER 'C'** uses non-conducting extinguishing agents (carbon dioxide or a dry chemical).

Multipurpose: Recommended for all types of fire. Most common extinguisher found in most clinical laboratories.

C. Know the proper procedure for notifying colleagues and proper personnel of a fire.





**INSTITUTE OF ENVIRONMENTAL ENGINEERING & MANAGEMENT**

**HIGH-TECH LABORATORY**

**Lab Safety Protocols**

**1. General Safety Guidelines:**

- Wear Appropriate Personal Protective Equipment (PPEs)
- Never touch anything without permission.
- Keep all areas clean.
- Dispose of the waste properly in the containers.
- Never operate high voltage equipment without permission.
- Clean up spills immediately.
- Never eat or drink from the laboratory glassware.
- Keep exposed skin covered in the laboratory.
- Keep pens and pencils OUT OF YOUR MOUTH!!
- Long hair, ties, scarves, and earrings should be secured.
- Always keep in mind the general guidelines while handling the chemicals:
- Always label all containers with chemicals.
- Mark the date on all c containers upon receipt and again when reopened.
- Immediately read the warning labels when opening newly received reagent chemicals.
- Store bottles in chemical safe bags especially those hazardous and moisture-absorbing chemicals.
- Use separate cabinets for acid solutions with concentration more than 6 M.
- A periodic check on chemical containers for rust, corrosion, and leakage is a must.
- Always use chemicals with adequate ventilation. Check with the MSDS and also the Standard Operating Procedure to work out what type of ventilation is required.
- Hazardous chemicals should be used only as directed.
- Never pour water upon the acids, always pour acids upon water slowly while diluting any acid.
- Use protective equipment for eye protection and make sure to wear a laboratory coat.
- Avoid intentional smelling, inhaling, and tasting chemicals.
- Always avoid direct contact with chemicals, far from your hands face, clothes, and shoes.
- Use fuming hood while working with volatile, flammable, and other fuming chemicals.
- Smoking, drinking, eating and the application of cosmetics is forbidden in areas where hazardous chemicals are used or stored.



## **Institute of Environmental Engineering & Management**

### **Solid Waste management /Thermo/Air & Noise Pollution Control Laboratories**

#### **LABORATORY SAFETY PROTOCOLS**





##### **1. General Safety**

- Always wear lab coat in laboratory
- Wear always shoes in Laboratory
- Never touch anything without permission
- Clean workplace before and after lab work
- While performing experiments regarding solid waste use of face mask and hand gloves is mandatory.
- Ventilation should be proper in the laboratory while performing experiments on solid waste due to smell, vapors, and gases.
- Use facemask while performing experiments on exhaust emission.
- While measuring noise levels (If noise is greater than 85 dB) use ear plugs
- Don't run/operate AMPTS equipment and Software.
- Drinking, eating food and/or smoking is prohibited.
- It is prohibited to sit in the Laboratory Without any work.
- Don't heat any combustible liquid and liquid chemical in distillation assembly.
- Provide ventilation and remove flammable materials, while release of methane gas from CSTR Digester (Anaerobic Digester)
- Read chemical material safety data sheet (MSDS) prior to use any chemical.
- Use always latex hand gloves while use of chemical and reagents.
- Don't touch the heating mantle and round bottom flask while distillation process.
- Never operate muffle furnace and Lab. Ovens without permission
- Don't put hands inside muffle furnace/oven.
- Use always pair of tongs inside muffle furnace/oven taking of samples.
- Use always face mask and heat resistance hand gloves.
- Never open muffle furnace/oven while operation.
- Don't sit in thermo laboratory while muffle furnace/oven are in operation due smell, emissions, and vapors.
- Never put any combustible material in muffle furnace
- Do not bring any flammable material close to the furnace.

## 2. Chemical Safety

To provide a safe working environment, all personnel should be aware of potentially hazardous materials and the proper way of handling this material. Avoid unnecessary exposure to chemicals. Occupational Safety and Health Administration (OSHA) requires any necessary information in the form of MATERIAL SAFETY DATASHEETS (MSDS) concerning the handling of hazardous materials to be available to all laboratory personnel, so that they may achieve and maintain safe working conditions.

## 3. Fire safety follows chart for types of fires & its extinguishers.

<b>Fire Extinguisher Types</b>							
<b>Extinguisher</b>		<b>Type of Fire</b>					
Colour	Type	Solids (wood, paper, cloth, etc)	Flammable Liquids	Flammable Gasses	Electrical Equipment	Cooking Oils & Fats	Special Notes
	Water	✓ Yes	✗ No	✗ No	✗ No	✗ No	Dangerous if used on 'liquid fires' or live electricity.
	Foam	✓ Yes	✓ Yes	✗ No	✗ No	✓ Yes	Not practical for home use.
	Dry Powder	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✗ No	Safe use up to 1000v.
	Carbon Dioxide (CO <sub>2</sub> )	✗ No	✓ Yes	✗ No	✓ Yes	✓ Yes	Safe on high and low voltages.

## **4. Lab. Equipment Safety**

### **4.1 Muffle Furnace Safety Precautions**

- The furnace may not be used for heating food and drink for the purpose of consumption.
- When operating the furnace considerable amounts of heat as well as harmful gases and vapors can be released depending on the type of material used. These must be led outside in an appropriate manner. Non-observance can result in fire risk and danger to health.
- Operating the furnace with explosive gases or mixtures, or with explosive gases or mixtures created in the process is not permitted. Caution: Danger to life! If the furnace is provided with a protective gas connection only non-flammable and non-explosive protective gases are permitted.
- Only use materials whose properties are known.
- In case of unexpected procedures inside the furnace (e.g. strong smoke or odour development) switch the furnace off immediately and wait until it has cooled down by itself. Do not open the door beforehand – there is a risk of fire or explosion.
- The furnace housing/lid and the door handle/ handle can get very hot during operation. If the furnace is opened at high temperatures (even when a great distance is kept) there is a risk of burns. Wear suitable protective clothing/safety goggles.
- Do not bring any flammable material close to the furnace (keep a safety distance of 0.5 m to the sides and 1 m to the top).
- Do not place any objects on the furnace as otherwise the carrying-off of heat is impeded, the furnace is damaged and there is a fire hazard.
- Do not insert objects into the openings in the furnace casing, such as exhaust air holes or cooling slots of the switching system. There is a danger of electric shock.
- Always replace the new “Test Tag” for every new test

### **4.2 Lab. Oven Safety Precautions**

- The oven may not be used for heating food and drink for the purpose of consumption.
- When operating the oven considerable amounts of heat as well as harmful gases and vapors can be released depending on the type of material used. These must be led outside in an appropriate manner. Non-observance can result in fire risk and danger to health.
- Only use materials whose properties are known.
- In case of unexpected procedures inside the furnace (e.g. strong smoke or odour development) switch the oven off immediately and wait until it has cooled down by itself. Do not open the door beforehand – there is a risk of fire or explosion.
- The oven grills and the door handle/ handle can get hot during operation. There is a risk of burns.
- Wear suitable protective clothing/safety goggles.
- Do not bring any flammable material close to the oven.
- Always replace the new “Test Tag” for every new test

### **4.3 AMPTS Safety Precautions**

- Use a face mask during Batch preparation.
- Wear always Lab Coat
- When handling NaOH, always wear glasses, a lab coat, and plastic gloves.
- Don't not operate AMPTS Software if you are not aware of it.
- The handling of NaOH should always be done in an environment with good ventilation.
- Always be cautious when handling electrical devices close to water.
- The Agitation System contains rotating parts. Make sure to tie back any loose hanging objects like clothing or hair when using the instrument.
- Before starting AMPTS ensure that there is water in the temperature-controlled water bath and gas measuring device.
- Don't put anything in Gas measuring device.

### **4.4 Flue Gas Analyzer Safety Precautions**

- Only operate the analyzer properly, for its intended purpose and within the parameters specified in the technical data. Do not apply force to the analyzer.
- Do not operate the analyzer if there are signs of damage on the housing, power supply, or sample lines.
- Do not perform contact measurements on non-insulated, live electrified parts.
- Do not store the analyzer with solvents. Do not use any desiccants for storage.
- Carry out only the maintenance and repair work on this instrument that is described in the documentation. Follow the prescribed steps exactly. Use only original spare parts from testo. Service must only be carried out by authorized personnel.
- Use the device in closed, dry rooms. Protect analyzer from rain and moisture.
- During performing experiments on exhaust engines there may be dangerous emission which may cause health effects if inhaled, therefore face mask should be used



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**INSTITUTE OF ENVIRONMENTAL ENGINEERING & MANAGEMENT**

**MICROBIOLOGY LABORATORY**

**1. General safety guidelines:**

- Wash your hands with disinfectant soap when you arrive at the lab and again before you leave.
- Absolutely no food, drinks, chewing gum, or smoking is allowed in the laboratory. Do not put anything in your mouth such as pencils, pens, labels, or fingers. Do not store food in areas where microorganisms are stored.
- Purchase a lab coat and safety glasses, bring them to class, and use them. Alternatively, a long-sleeved shirt that buttons or snaps closed is acceptable protective clothing. This garment must cover your arms and be able to be removed without pulling it over your head. Leave protective clothing in the lab and do not wear it to other non-lab areas.
- Avoid loose fitting items of clothing. Wear appropriate shoes (sandals are not allowed) in the laboratory.
- Keep your workspace free of all unnecessary materials. Backpacks, purses, and coats should be placed in the cubbyholes by the front door of the lab. Place needed items on the floor near your feet, but not in the aisle.
- Disinfect work areas before and after use with 70% ethanol or fresh 10% bleach. Laboratory equipment and work surfaces should be decontaminated with an appropriate disinfectant on a routine basis, and especially after spills, splashes, or other contamination.
- Label everything clearly.
- Replace caps on reagents, solution bottles, and bacterial cultures. Do not open Petri dishes in the lab unless necessary.
- Inoculating loops and needles should be flame sterilized in a Bunsen burner before you lay them down.
- Turn off Bunsen burners when not in use. Long hair must be restrained if Bunsen burners are in use.
- When you flame sterilize with alcohol, be sure that you do not have any papers under you.
- Treat all microorganisms as potential pathogens. Use appropriate care and do not take cultures out of the laboratory.
- Wear disposable gloves when working with potentially infectious microbes or samples (e.g., sewage). If you are working with a sample that may contain a pathogen, then be extremely careful to use good bacteriological techniques.
- Sterilize equipment and materials.
- Never pipette by mouth. Use a pipetting aid or adjustable volume pipettors. [In the distant past, some lab personnel were taught to mouth pipette. This practice has been

known to result in many laboratory-acquired infections. With the availability of mechanical pipetting devices, mouth pipetting is strictly prohibited.

- Consider everything a biohazard. Do not pour anything down the sink. Autoclave liquids and broth cultures sterilize them before discarding.
- Dispose of all solid waste material in a biohazard bag and autoclave it before discarding in the regular trash.
- Familiarize yourself with the location of safety equipment in the lab (e.g., eye-wash station, shower, sinks, fire extinguisher, biological safety cabinet, first aid kit, emergency gas valve).
- Dispose of broken glass in the broken glass container.
- Dispose of razor blades, syringe needles, and sharp metal objects in the “sharps” container.
- Report spills and accidents immediately to your instructor. Clean small spills with care (see instructions below). Seek help for large spills.
- Report all injuries or accidents immediately to the instructor, no matter how small they seem.

## **2. Lab. Equipment Safety**

### **2.1 Safety precautions for colony counter:**

- Use the Counter within the ratings specified for ambient operating temperature and ambient operating humidity for each model.
- Store the Counter with the specified temperature range for each model. If the Counter has been stored at a temperature of less than --105C, allow the Counter to stand at room temperature for at least 3 hours before using it.
- Use the Counter within the performance specified for water and oil exposure fir each model.
- Do not use the Counter in locations subject to shock and vibration. Long-term usage in such locations may damage the Counter due to stress. Magnetic contactors generate a shock of 1,000 to 2,000 m/s' when switching a load. When mounting to DIN Track, separate magnetic contactors from the Counter so that the Counter is not subjected to vibration and shock. Use anti-vibration rubber.
- Do not use the Counter in locations subject to excessive dust, corrosive gases. or direct sunlight.
- Do not use organic solvents (such as paint thinner or benzene). strong alkalis. or strong acids because they will damage the external finish of the Counter.
- Separate the input devices, input wiring, and Counter as far as possible from sources of noise and power lines carrying noise.
- When using the Counter in environments subject to large amounts of static electricity (e.g., pipes carrying molding materials. powders. or fluid materials). separate the Counter as far as possible from the sources of static electricity).
- Do not remove the external case from the Counter.
- Do not use the Counter in locations where condensation ma) occur due to high humidity or sudden temperature changes. Condensation inside the Counter may result in malfunction or damage to Counter elements.

- The life of internal parts may be reduced if Counters are mounted in close proximity, to each other.
- Resin and rubber parts (e.g., rubber packing) may deteriorate, shrink, or harden depending on the operating environment (e.g., subjected to corrosive gases, ultraviolet light, or high temperatures). We recommend periodic inspection and replacement.
- Be sure that the voltage applied is nothing the specified range. Otherwise, the internal elements of the Counter may be damaged.
- Install a switch or circuit breaker that allows the operator to immediately turn off the power, and label it to clearly indicate its function.

## **2.2 Laboratory safety rules for microscope**

- Microscopes are a safe piece of science equipment. However, proper handling and care of a microscope will better ensure safety and wellbeing. The following safety tips will help prevent an unnecessary safety risk when using a microscope.
- Wear Protective Clothing Before you begin using a microscope.
- Carry with Two Hands (prevent damage to the microscope and to protect yourself from injury, always carry the microscope with two hands. Place one hand on the arm of the microscope and place the other hand underneath the base of the microscope. This method will give the microscope the most support. If you are walking with it, always hold it up high to avoid hitting tables or chairs. If you are not careful with the microscope and hit something, you could cause small pieces of the microscope to break off and create a tripping hazard).
- Do Not touch the Lens (Never touch the lens of the microscope with your bare hands. This could damage the functioning of the microscope. Instead, use a special lens paper to clean it. You may also use a soft cloth dipped in a small amount of isopropyl alcohol to clean the lens).
- Do Not Look into the Light (If you are using a microscope with a mirror, never use direct sunlight as a light source. This could cause eye damage when looking into the microscope. If you are using a microscope with a light, do not look directly into the light. This could cause eye damage as well. Also, remember to turn off the light of the microscope when it is not in use).
- Be Cautious Handling Slides (Always careful when handling glass slides and cover slips. If the slide or cover slip breaks, use protective gloves to clean up the broken glasses. This will help prevent cuts and contamination. Dispose of the glass in a designated sharps container in the laboratory).
- Storing after finished using the microscope (Always clean the slides and wipe down the microscope, with a damp cloth. According to the website, Sir-Ray.com, microscopes should be stored with the lowest objective with the nosepiece turned down to its lowest position. If you are using a microscope with a light, remember to turn off the light before unplugging it from the outlet).



### **2.3 laboratory safety rules for water bath**

- Use it with caution.
- It is not recommended to use a water bath with moisture sensitive or pyrophoric reactions. Do not heat bath fluid above its flash point.
- Water level should be regularly monitored and filled with distilled water only. This is required to prevent salt from depositing on the heater.
- Disinfectants can be added to prevent growth of organisms.
- Raise the temperature to 90 °C or higher to once a week for half an hour for the purpose of decontamination.
- Markers tend to come off easily in water baths. Use water resistant one,
- If application involves liquids that give off fumes, it is recommended to operate water bath in fume hood or in a well-ventilated area.
- The cover is closed to prevent evaporation and to help reach high temperatures.
- Set up on a steady surface away from flammable materials.

### **2.4 safety precautions for UV lamp:**

- Limit access to areas where UV sources are used.
- Post warning signs at the entrance to labs or other work areas using UV sources.
- Wear protective eyewear and gloves.
- Cover arms and neck and limit exposure time
- Never look directly at the beam
- Use a manual or electronic shutter to close the beam when the source is not in use.
- Use enclosed beam paths where possible.
- The total intensity from 320 to 400 nm hitting an unprotected eye should not exceed 10 W m<sup>-2</sup> for periods longer than 1000 seconds.

### **2.5 laboratory safety rules for oven**

- Inspect the oven prior to each use and ensure it is in good operating condition. Check the cord and outlet for any damage. Ensure any temperature sensing devices are properly installed and will turn off power in the event of overheating.
- If the oven is not operating within normal operating parameters, it must be taken out of service and not used until repairs are made. Unplug and place "Defective Equipment" tags on the plug and oven door to prevent use.
- Regularly check oven calibration to ensure the temperature read-out is accurate. This is normally performed with a thermometer. Never use a mercury thermometer.
- Use the correct oven for the work intended. Consider the maximum temperature needed and the temperature range of the oven. Do not use an oven that will significantly exceed the maximum safe working temperature.
- Ensure that the oven is set to the proper temperature required for the experiment. This includes the high temperature shut-off set point.
- Do not heat closed containers unless using specifically authorized equipment that includes an approved pressure relief device. This will be identified in an approved Work Activity.
- The oven should remain clean and free of chemical spills and residues.

- Do not use materials in the oven that are flammable or can create flammable vapors. This presents a fire or explosion hazard.
- Use of plastics in ovens must be avoided due to the possibility of melting. Many plastics have melting points within the range of a drying oven. If plastic melts, it can cause a fire.
- Ensure that the heating process will not create any hazardous fumes. If there is a possibility of generating fumes, the oven must be connected to an approved ventilation system.

## **2.6 Laboratory Safety Rules for Autoclave**

- Wearing appropriate Personal Protective Equipment (PPE) including a lab coat, Heat resistance gloves, and eye protection especially when unloading the autoclave.
- Never sealing containers under pressure, they pose an explosion risk.
- Never open the door to the autoclave if there is water running out the bottom. Clogged steam lines, equipment malfunction or plugged drains may cause a buildup of sealing water.
- Waiting for the pressure to reach zero and the temperature is at or below 121°C before opening the door at the end of a cycle to avoid steam burns and shattered glassware. Do not stand directly in front of the door.
- Never superheating liquids, Superheating is a condition that occurs when liquid is at a temperature above their normal boiling point but does not appear to be boiling. Any disturbance of the liquid could cause some of it to violently flash to steam and spray. In situations where personnel are in a hurry to remove flasks or bottles from the autoclave. The superheated liquids may boil out of their containers or explode.



INSTITUTE OF ENVIRONMENTAL ENGINEERING & MANAGEMENT

**GIS COMPUTER LABORATORY**

**SAFETY GUIDELINES**

**1. Safety precautions in a computer laboratory**

Accidents can happen anywhere, any time and to anyone. Even in a computer lab. An accident may cause injuries to anyone afflicted. If it were to happen in a computer laboratory, it does not only involve the individuals, but also the cost to repair the equipment would probably be high. So the best option is to prevent accidents from happening. There are several things that everyone must follow to keep accidents from happening.

**2. Computer laboratories rules and regulations**

The laboratory and its facilities can only be used for learning and research purposes. Unauthorized access to this laboratory is not permitted and students may be requested to present their ID card.

**3. General safety guidelines to be always followed**

- All users of the laboratory are to follow the directions of Academic/Laboratory Technician staff members.
- Food or drink is not permitted at any time in the laboratory.
- Students should not attempt to repair, open, tamper or interfere with any of the computer, printing, cabling, air conditioning or other equipment in the laboratory.
- Students should be aware of office ergonomic guidelines for correct posture when using computer equipment.
- Please treat fellow users of the laboratory, and all equipment within the laboratory, with the appropriate level of care and respect.

**4. Computer Lab Safety Rules for Protecting Equipment**

- Do not bring any food or drinks near the machine.
- Turn off the machine once you are done using it.
- Do not plug in external devices without scanning them for computer viruses.
- Ensure that the temperature in the room stays cool, since there are a lot of machines inside a lab as these can overheat easily.
- This is one of the many ways of ensuring computer safety.

## **5. Computer lab safety rules for protecting equipment**

- Do not bring any food or drinks near the machine.
- Turn off the machine once you are done using it.
- Do not plug in external devices without scanning them for computer viruses.
- Ensure that the temperature in the room stays cool, since there are a lot of machines inside a lab as these can overheat easily. This is one of the many ways of ensuring computer safety.
- Try not to touch any of the circuit boards and power sockets when a device is connected to them and switched on.
- Always maintain an extra copy of all your important data files

## **6. Other safety precautions**

Observe safety rules when working inside the system when handling computer components. Avoid electric shock or personal injury by observing the following warning.

### **6.1 HAZARDOUS VOLTAGE**

**WARNING:** Turn off the power and unplug the system power cable before removing the system unit.

### **6.2 ELECTROSTATIC DISCHARGE**

**WARNING:** Your computer's internal components are highly susceptible to risk of damage from electrostatic discharge (static electricity, which occurs naturally on your body due to friction). To avoid damaging your equipment, always earth yourself to your computer system before opening the system before opening the computer's chassis or handling any internal component(s).



# SAFETY RULES FOR GIS & COMPUTER LABORATORY

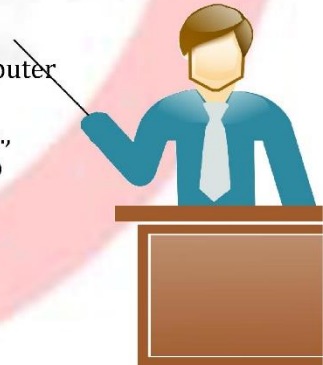
## GENERAL GUIDELINES:

### PROTECTING YOURSELF:

- Do not touch, connect or disconnect any plug or cable without permission.
- Avoid stepping on electrical wires or any other computer cables.
- Report any broken plugs or exposed electrical wires to your laboratory supervisor immediately.
- Do not open the system unit casing or monitor casing particularly when the power is turned on. Some internal components hold electric voltages of up to 30000 volts, which can be fatal.
- Do not insert metal objects such as clips, pins and needles into the computer casings. They may cause fire.
- Student must wear their student card while in the laboratory.
- Drag your chairs on their places before leaving the laboratory.
- Report fires or accidents to your laboratory supervisor immediately

### PROTECTING EQUIPMENT:

- Do not bring any food or drinks in laboratory.
- Turn off the machine once you are done using it.
- Do not plug in external devices without scanning them for computer viruses.
- Faulty computer equipment must be reported to the staff in charge immediately, prior or after usage.
- Do not put bags on computer tables.
- Student is not allowed to remove or relocate any computer equipment from its location without obtaining permission.
- Student is prohibited to change computer settings (i.e., wallpaper, folder, system file, mouse pointer, and desktop settings including operating system).
- Account/password that is given to a user must be kept secret. Student is not allowed to give the password to other users. Each student is responsible to his own account.
- Student is prohibited from bringing personal software into the laboratory.



## LABORATORY OPENING HOURS

Monday to Thursday	8.00am to 3.00pm
Friday	8.00am to 12.30pm



## COMPUTER LAB RULES SIGNS



# COMPUTER LAB RULES SIGNS



# ANNEXURE-B



## ACCIDENT / INCIDENT REPORT FORM

Accident / Incident Report Form																					
i	Name of person involved in Accident/Incident:																				
ii	Address:																				
	Contact No:																				
iii	Who was involved in the Accident/Incident: <input type="checkbox"/> Student <input type="checkbox"/> Employee <input type="checkbox"/> Public <input type="checkbox"/> Contractor <input type="checkbox"/> Visitor																				
iv	Occupation:																				
v	If an employee of the Institute please state Department:																				
vi	If no, please elaborate:																				
vii	Particulars of Accident/Incident & circumstances under which the Accident/Incident occurred: <i>Use additional pages and/or photos if necessary.</i>																				
viii	Place:																				
ix	Time: _____ Date: _____																				
x	Witness Phone No & Address:																				
	Witness Phone No & Address:																				
xi	When and to whom was the Accident/Incident initially reported?																				
xii	<p><b>Details of injury/ damage:</b> Indicate type of injury (put an 'x' in one box only)</p> <table border="0"> <tbody> <tr> <td><input type="checkbox"/> Bruising, contusion</td> <td><input type="checkbox"/> Suffocation, asphyxiation</td> </tr> <tr> <td><input type="checkbox"/> Concussion</td> <td><input type="checkbox"/> Gassing</td> </tr> <tr> <td><input type="checkbox"/> Internal injuries</td> <td><input type="checkbox"/> Drowning</td> </tr> <tr> <td><input type="checkbox"/> Open wound</td> <td><input type="checkbox"/> Poisoning</td> </tr> <tr> <td><input type="checkbox"/> Abrasion, graze</td> <td><input type="checkbox"/> Infection</td> </tr> <tr> <td><input type="checkbox"/> Amputation</td> <td><input type="checkbox"/> Burns, scalds and frostbite</td> </tr> <tr> <td><input type="checkbox"/> Open fracture (i.e. bone exposed)</td> <td><input type="checkbox"/> Effects of radiation</td> </tr> <tr> <td><input type="checkbox"/> Closed fracture</td> <td><input type="checkbox"/> Electrical injury</td> </tr> <tr> <td><input type="checkbox"/> Dislocation</td> <td><input type="checkbox"/> Property damage, Specify _____</td> </tr> <tr> <td><input type="checkbox"/> Sprain, torn ligaments</td> <td><input type="checkbox"/> Other, Specify _____</td> </tr> </tbody> </table>	<input type="checkbox"/> Bruising, contusion	<input type="checkbox"/> Suffocation, asphyxiation	<input type="checkbox"/> Concussion	<input type="checkbox"/> Gassing	<input type="checkbox"/> Internal injuries	<input type="checkbox"/> Drowning	<input type="checkbox"/> Open wound	<input type="checkbox"/> Poisoning	<input type="checkbox"/> Abrasion, graze	<input type="checkbox"/> Infection	<input type="checkbox"/> Amputation	<input type="checkbox"/> Burns, scalds and frostbite	<input type="checkbox"/> Open fracture (i.e. bone exposed)	<input type="checkbox"/> Effects of radiation	<input type="checkbox"/> Closed fracture	<input type="checkbox"/> Electrical injury	<input type="checkbox"/> Dislocation	<input type="checkbox"/> Property damage, Specify _____	<input type="checkbox"/> Sprain, torn ligaments	<input type="checkbox"/> Other, Specify _____
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<b>xiii</b>	<b>Indicate part of body most seriously injured (put an 'x' in one box only):</b>			
	<input type="checkbox"/> Head, except eyes	<input type="checkbox"/> Fingers, one or more		
	<input type="checkbox"/> Eyes	<input type="checkbox"/> Hip joint, thigh, knee cap		
	<input type="checkbox"/> Neck	<input type="checkbox"/> Knee joint, lower leg, ankle		
	<input type="checkbox"/> Back, spine	<input type="checkbox"/> Foot		
	<input type="checkbox"/> Chest	<input type="checkbox"/> Toes, one or more		
	<input type="checkbox"/> Abdomen	<input type="checkbox"/> Extensive parts of the body		
	<input type="checkbox"/> Shoulder, upper arm, elbow	<input type="checkbox"/> Multiple injuries		
	<input type="checkbox"/> Lower arm, wrist, hand	<input type="checkbox"/> Other, Specify _____		
<b>xiv</b>	<b>Consequences of the Accident/Incident:</b>			
	Fatal <input type="checkbox"/>	Date of resumption of work	Anticipated absence if not back	
	Non Fatal <input type="checkbox"/>	if back	4-7 days <input type="checkbox"/>	
		Year    Month    Day	8-14 days <input type="checkbox"/>	
		_____	More than 14 days <input type="checkbox"/>	
<b>xv</b>	<b>Treatment:</b>			
<b>xvi</b>	<b>Doctor's report and recommendation:</b>			
<b>xvii</b>	<b>Steps taken to prevent reoccurrence of this type of Accident/Incident:</b>			
	Signature of person completing report:		Date:	
	Name & Job Title:			
	Signature of Head of Department/School/Function:		Date:	