Laboratory Safety Manual

Undergraduate Computer Laboratory

Department of Mechanical Engineering

Bangladesh University of Engineering & Technology

Contents

Introduction to Laboratory Safety

This manual aims to provide an overview of the safety procedures required to safeguard everyone in the Computer laboratory. By reducing hazards and averting accidents, these protocols guarantee a safe and productive environment for students, staffs, and visitors.

General Laboratory Safety Rules

- No Eating or drinking is allowed in the laboratory
- Keep workspaces clean and uncluttered to reduce the risk of spills, accidents, and contamination.
- Make sure everyone knows where the nearest fire pull station, extinguisher, spill kit, first aid kit is.

Laboratory Safety Symbols, Signs, and Meanings

Understanding the various symbols and signs used in the laboratory is crucial for personal safety. Each symbol represents specific hazards that can be dangerous to health.

Name of the symbol	Symbols	Meaning
General Warning	General Warning	Presence of possibly hazardous materials/environment
Health Hazard	Health Hazard	Presence of chemical, physical, or biological factors with the potential to have a negative effect on our health
High Voltage	High Voltage	Supply of high-voltage electricity
Electric Hazard	Electric Hazard	Risk of getting electric shock. (The device might give mild to severe electric shock.)

Location Symbols of Specific Objects in the Lab

Name of the symbol	Symbols	Meaning
Fire Extinguisher	Fire Extinguisher	The location where the fire extinguisher is placed
First Aid	First Aid	The place with the first aid box and materials
Fire Blanket	Fire Blanket	The location where the fire blanket is placed
Emergency Bell	Emergency Bell	Bell to be pressed during an emergency like fire or accident.

Emergency Procedures

Lab safety relies on preparedness. In case of an emergency, please follow the guidelines mentioned below
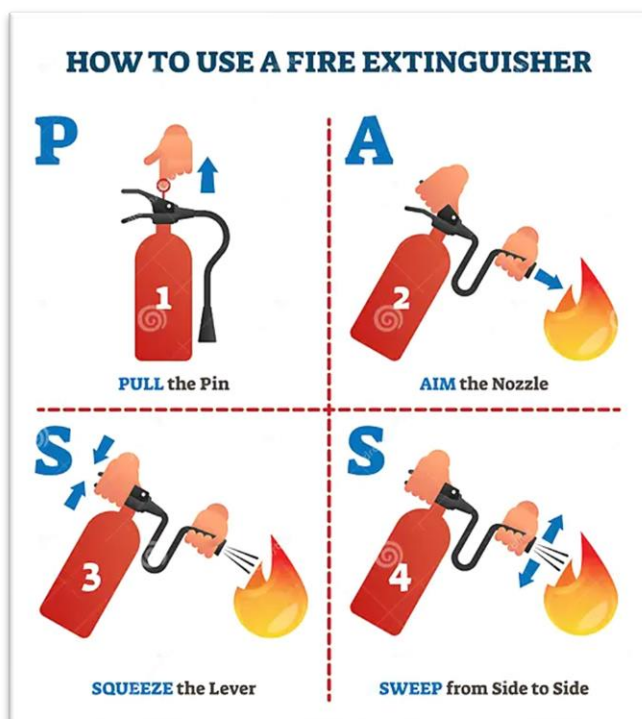
General Guidelines:

- ➢ **Remain Calm:** Try to keep a clear mind and follow emergency procedures.
- ➢ **Alert Others:** Call for help and alert everyone in the lab of the emergency. Activate the nearest emergency alarm if necessary.
- ➢ **Evacuation:** Follow evacuation protocols as per the building's emergency plan. Do not use elevators during a fire emergency.

Fire Safety

> - **Fire Prevention:** Regularly inspect lab equipment and wiring to prevent electrical fires. Ensure that combustible materials are stored properly.
> - **Evacuation Plans:** Familiarize yourself with escape routes and emergency exits. Conduct regular fire drills to practice evacuation procedures.
> - **Fire Extinguisher Use:** A fire extinguisher is a "first aid" tool suitable only for small, contained fires (not meant for controlling large fires).

How to use a portable Fire Extinguisher:

Follow the "P.A.S.S." method to tackle the flames:

P – **Pull** the Safety Pin from handle

A – **Aim** Nozzle at the Base of the Flames

S – **Squeeze** the Trigger Handle

S– **Sweep** Side to Side

By following these four easy steps, you can take control of small fires and prevent them from escalating.

Earthquake Response Procedures

While laboratory accidents are common, natural disasters like earthquakes can pose unique challenges.

- **Before an Earthquake:**
  > - Secure heavy equipment to prevent it from falling.
  > - Know where your emergency supplies are located.

- **During an Earthquake:**

  - ➢ **Drop, Cover, and Hold On:** Drop to the ground, cover your head, and hold onto furniture until the shaking stops.
  - ➢ Move away from windows, shelves, and overhead equipment.

- **After an Earthquake:**

  - ➢ **Check for Injuries:** Assess yourself and others for injuries and provide first aid.
  - ➢ **Inspect the Lab:** Check for chemical spills, broken glass, and equipment malfunctions.
  - ➢ **Evacuate:** Follow the building's evacuation protocols and wait for further instructions from emergency personnel.

First Aid Procedures for Common Injuries

- **Cuts, Punctures, and Lacerations:**

  - ➢ Clean the wound with antiseptic, apply pressure to stop bleeding, and cover with a sterile dressing.
  - ➢ For severe injuries, seek immediate medical attention.

- **Electrical Shock:**

  - ➢ **Do not touch the person** if they are still in contact with the power source. Cut off the power if safe to do so.
  - ➢ Begin CPR if necessary and call for emergency medical assistance.

Undergraduate Computer Laboratory (UCL)

Location: UCL-01: ME Building, 3rd Floor (East Side)

UCL-02: ME Building, 4th Floor (West Side)

A wide range of computation facilities are available for undergraduate students. Each laboratory contains 40 high-end PCs to make the students skilled in computer applications.

Separate computer laboratory facility is also available for Post Graduate students.

The lab provides a well-resourced environment for programming practice, equipped with modern computers, routers, a projector, and high-speed Wi-Fi or broadband connectivity. A sufficient number of PCs with updated specifications are available to ensure seamless learning.

Courses Offered:

- ME 172: Computer Programming Language Sessional
- ME 174: Mechanical Engineering Drawing & CAD
- ME 260: Mechanical Engineering Drawing-II Sessional (CAD)
- ME 262: Numerical Analysis Sessional
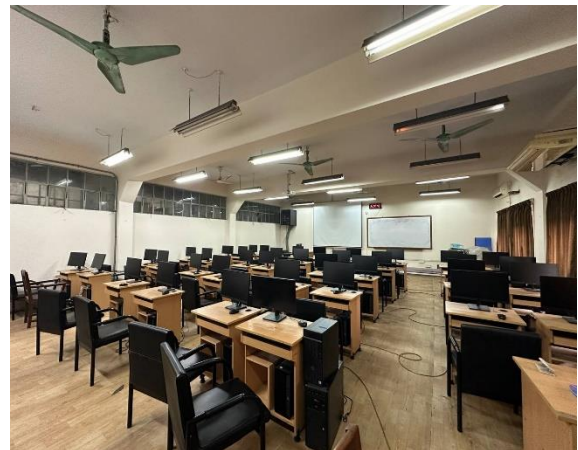

Figure: Undergraduate Computer Lab-01

Figure: Undergraduate Computer Lab-02

Figure: A Lab Computer CPU

Rules and Safety Requirements

- Do not eat, drink or smoke in the laboratory.
- Password sharing and logging in for others is prohibited. Always sign out before exiting the lab to avoid possible data breach.
- Turn off your cell phones.
- The computers are for your academic use. Playing computer games for entertainment is not allowed.
- Software may be installed by Computer Labs staff only. Do not install or modify any software on your own. Any files saved on lab computers will be routinely removed by Computer Lab staff.
- Do not overwrite the operating system, modify the autoexec.bat or config.sys or any other system parameters.
- Do not insert external USB drives into lab computers, as they may contain viruses or malware that could compromise your data and network security
- Avoid stepping on electrical wires or any other computer cables. Report any broken plugs or exposed electrical wires to the laboratory technician immediately.
- Know the location of the fire extinguisher and the first aid box and how to use them in case of an emergency.
- Do not open the system unit or monitor casing particularly when the power is 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 a fire!

- Do not touch, connect or disconnect any plug or cable without permission from the course teacher or laboratory technician.
- Familiarize yourself with emergency shut-off procedures for main electric switches in case of accidents.
- Have a first aid kit readily available and ensure personnel are trained in basic first aid.
- Ensure that all personnel are aware of fire exit routes and emergency procedures.
- Keep fire extinguishers readily accessible and ensure personnel are trained in their use.
- Activities deemed abusive to the software, hardware, or personnel by the lab aides may result in disciplinary action.

References

1. **Department of Civil Engineering, BUET:** *Civil Engineering Computer and Simulation Lab Safety Manual.* *https://ce.buet.ac.bd/laboratory-safety-manual*
2. **Department of Naval Architecture and Marine Engineering, BUET:** Naval Architecture and Marine Engineering Computer Lab Safety Manual.
3. **National Fire Protection Association (NFPA):** *Fire Safety in Laboratories.* https://www.nfpa.org
4. **American National Standards Institute (ANSI):** *Laboratory Safety Guidelines.* https://www.ansi.org
5. https://mrcet.com/downloads/Labmanuals/EEE/POWER%20SYSTEM.pdf
6. https://microbenotes.com/laboratory-safety-symbols/
7. https://www.dreamstime.com/

Emergency Contact List

Designation	Name	Phone No.
Head of the Department (ME)	Dr. Md. Afsar Ali	Office: 880-2-9665636 Mobile: 01552415088

BUET telephone operator (PABX)	Phone No.	BUET Office
	55167100	0

Medical Center:

Emergency	6666/01726698851
Medical Centre office	7798
Reception	2222

Designation	Name	Phone No.	BUET Office
Chief Medical officer	Dr. Abu Hena Abid Zafr	01309005333	7344
Senior medical officer	Dr. Md. Hasib Iskandar	01720960997	7817
Senior medical officer	Dr. SK. Hasanul Banna	01737392095	7823
Medical officer	Dr. Josmina Akter Chowdhury	01980090205	7729
Medical officer	Dr. Rokeya Sultana Sumi	01763494945	6863
Medical officer	Dr. Sazzad Hossain Razib	01710960241	

Fire service and civil defense:

Fire Brigade Emergency/Enquiry	199

Place	Mobile	Phone
Polashi	01716354370	02-8628688
Mirpur Road	01730002229	02-9001055
Mohammadpur	01712970093	02-9112078

Police & Security:

Designation	Phone
Emergency Call	999
DMP Police Emergency	01713398311/9551188
DMP Control Room	01817602050/9575500

University security & other

Designation	BUET Office
Security Emergency Call	7777
Security officer	7482
Electricity & Plumbing	7323 /01997902626
Shaheed Minar Gate (Main Gate)	7812
West Palashi (Main Gate)	6592
Bakshi Bazar R/A Gate	7825
Dhakeswari R/A Gate	7759
Palashi R/A Gate	7692
Azad R/A Gate	7760
71,72 No. Building Gate	6330