

# Safety and Incident Management Plan for Measurement, Instrumentation, and Control Lab

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## Introduction

The Measurement, Instrumentation, and Control Lab at Ahsanullah University of Science & Technology (AUST) is a key facility for developing students' understanding of measurement techniques and control systems. The lab includes equipment such as a Programmable Logic Controller (PLC), AC Servo motor control systems, PCT53 pressure control, Pneumatic trainer, and Electro-Pneumatic trainer, enabling students to gain practical experience in measuring variables and working with automation systems. This document provides a safety and incident management plan to meet accreditation requirements and ensure a safe learning environment.

## Safety Rules and Practices

The following safety rules and procedures are implemented to maintain a safe environment in the lab:

- **Personal Protective Equipment (PPE):** All lab users must wear appropriate PPE, including lab coats, safety goggles, and insulated gloves when working with electrical components.
- **Restricted Access:** Access to the lab is restricted to authorized personnel only. Students must be supervised by the Lab In-Charge or Lab Assistant while using lab equipment.
- **Safe Handling of Equipment:** Users must follow operating instructions for all equipment, especially PLCs, AC Servo motors, and control systems, to prevent electrical hazards and mechanical injuries. Malfunctioning equipment should be reported immediately.
- **Electrical Safety:** Electrical equipment, such as control systems and PLCs, should be operated with caution. Insulated gloves are required, and equipment must be powered off after use.
- **Pneumatic and Electro-Pneumatic Safety:** Students must handle pneumatic and electro-pneumatic trainers carefully, following guidelines for pressure control and connection to avoid accidental release of compressed air.

- **Emergency Exits and Fire Safety:** Emergency exits are unobstructed, and fire extinguishers are accessible in the lab. Fire evacuation procedures are reviewed with students.

## Incident and Accident Prevention Procedures

To minimize the risk of incidents, the following preventive measures are implemented:

- **Routine Inspections:** The Lab In-Charge conducts routine inspections to ensure all equipment is safe and functioning properly.
- **Equipment Maintenance:** All lab equipment, including control systems and pneumatic trainers, undergo regular maintenance to prevent malfunctions.
- **Safety Training:** Students receive safety training covering PPE usage, emergency procedures, and specific handling instructions for electrical and pneumatic equipment.
- **Emergency Drills:** Periodic emergency drills familiarize students and staff with evacuation routes and procedures in the event of a fire or other emergencies.

## Provisions for Managing Accidents and Health Hazard Conditions

In the event of an accident or health hazard, the following provisions are in place to ensure a quick and effective response:

- **Emergency Contacts:** Contact details for the Lab In-Charge, Warden, Assistant Warden, and emergency medical services are posted prominently in the lab.
- **First Aid Kit:** A fully stocked first aid kit is available in the lab to treat minor injuries, such as cuts or burns.
- **Fire Extinguishers and Emergency Power-Off Switches:** Fire extinguishers and emergency power-off switches are strategically located to quickly shut down equipment in case of electrical hazards.
- **Emergency Response Protocol:** In emergencies, the Lab In-Charge should be notified immediately. If necessary, the Lab In-Charge will contact the Warden and Assistant Warden to coordinate with the AUST Fire/Disaster Safety Team.
- **Evacuation Procedure:** For severe incidents, such as electrical fires or gas leaks, all personnel should follow designated evacuation routes to the assembly point outside the building.

# Roles and Responsibilities

## Lab In-Charge

The Lab In-Charge holds overall responsibility for lab safety and incident management. Key responsibilities include:

- Conducting regular safety checks and maintenance inspections of all lab equipment.
- Providing initial safety training to students and lab personnel before experiments.
- Responding to incidents and coordinating with the Warden and Assistant Warden during emergencies.
- Reporting safety concerns to the Department Head and ensuring corrective actions are implemented.

## Lab Assistant/Attendant

Under the Lab In-Charge's supervision, the Lab Assistant is responsible for:

- Assisting with the setup and maintenance of lab equipment.
- Monitoring students during lab sessions to ensure adherence to safety protocols.
- Reporting any equipment issues or safety concerns to the Lab In-Charge.

## Warden and Assistant Warden

As part of the AUST Fire/Disaster Safety Team, the Warden and Assistant Warden are responsible for:

- Assisting with evacuation procedures during emergencies.
- Coordinating with emergency services if required.
- Reporting incidents to the Campus Safety Task Force for further action.

## Lab-Specific Incident Prevention Plan

The following guidelines apply to the Measurement, Instrumentation, and Control Lab to ensure safe conduct of activities:

1. **Programmable Logic Controller (PLC) Usage:** Only trained students should operate PLC systems. All electrical connections should be double-checked before activation.
2. **AC Servo Motor Control:** Students must avoid direct contact with moving parts of the motor during operation. Proper PPE and safety measures should be followed at all times.

3. **PCT53 Pressure Control:** Use caution when handling the pressure control system. Ensure pressure settings are within safe limits, and wear safety goggles and gloves.
4. **Pneumatic and Electro-Pneumatic Trainers:** Handle pneumatic systems with care to prevent accidental release of air. Verify all connections before operation, and follow proper shutdown procedures.

## Conclusion

The Measurement, Instrumentation, and Control Lab is committed to maintaining a safe learning environment for all students, faculty, and staff. Through established safety protocols, incident prevention practices, and emergency response measures, the lab minimizes risks and ensures prompt and effective incident management. Regular reviews and updates to this safety plan ensure compliance with accreditation standards and evolving safety practices.