

# Safety and Incident Management Plan for Basic Thermodynamics Lab

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## 1 Introduction

The Basic Thermodynamics Lab is one of the foundational laboratories in the undergraduate Mechanical Engineering program at AUST. The lab is equipped with apparatus necessary for sessional classes and research projects, including Bomb Calorimeter, Orsat Gas Analyzer, Saybolt Viscometer, Sling Psychrometer, Pressure Gauge, Flash and Fire Point Apparatus, Carbon Residue apparatus, among others. This plan outlines the safety rules, procedures, and practices in place to prevent and manage incidents and accidents, ensuring a safe environment for students, faculty, and staff.

## 2 Safety Rules and Practices

To ensure safety in the lab, the following rules and practices are strictly enforced:

- **Personal Protective Equipment (PPE):** All individuals must wear appropriate PPE, including lab coats, safety goggles, and gloves, when conducting experiments.
- **Restricted Access:** Access to the lab is restricted to authorized personnel only. Students must be supervised by a faculty member or lab assistant when conducting experiments.
- **Proper Use of Equipment:** Equipment must be used according to the manufacturer's instructions and lab guidelines. Any malfunctioning equipment should be reported immediately to the Lab In-Charge.
- **Chemical Safety:** Handling of chemicals (such as fuels and residues) must follow proper protocols. Safety Data Sheets (SDS) for all chemicals used are available in the lab for reference.
- **Emergency Exits and Fire Safety:** Emergency exits must be kept clear at all times. Fire extinguishers and safety showers are accessible in the lab.
- **Waste Disposal:** Hazardous waste, such as used oils and chemical residues, must be disposed of in designated containers according to environmental safety guidelines.

### 3 Incident and Accident Prevention Procedures

To prevent incidents and accidents in the lab, the following measures are in place:

- **Regular Inspections:** The Lab In-Charge is responsible for conducting regular safety inspections of equipment and facilities. Any safety hazards identified should be addressed immediately.
- **Maintenance of Equipment:** All lab equipment must be routinely maintained. Calibration of devices, such as the Pressure Gauge, is performed periodically to ensure accurate readings.
- **Safety Training:** All students must undergo safety training before being allowed to conduct experiments. Training includes proper use of PPE, emergency procedures, and specific safety precautions for each apparatus.
- **Emergency Drills:** Periodic emergency drills are conducted to familiarize students and staff with evacuation procedures in case of a fire or other emergency.

### 4 Provisions for Managing Accidents and Health Hazard Conditions

In the event of an accident or health hazard condition, the following provisions are in place:

- **Emergency Contacts:** Emergency contact numbers for the Lab In-Charge, Warden, Assistant Warden, and medical services are posted prominently in the lab.
- **First Aid Kit:** A fully stocked first aid kit is available in the lab, including items for treating minor injuries such as cuts, burns, or chemical exposure.
- **Fire Extinguishers:** Fire extinguishers are placed in accessible locations within the lab for use during emergencies.
- **Emergency Response Protocol:** In case of an emergency, the Lab In-Charge should be notified immediately. If required, the Lab In-Charge will contact the designated Warden and Assistant Warden, who are part of the AUST Fire/Disaster Safety Team, to coordinate further emergency actions.
- **Evacuation Procedures:** If a severe incident occurs, such as a fire or chemical spill, students and staff should follow the designated evacuation route to the assembly point outside the building.

### 5 Roles and Responsibilities

#### 5.1 Lab In-Charge

The Lab In-Charge has overall responsibility for the safety and management of the lab. Responsibilities include:

- Conducting safety inspections and maintenance checks on a regular basis.
- Providing safety training to students and staff before conducting experiments.
- Responding to any incidents or accidents and coordinating with the Warden and Assistant Warden in case of emergencies.
- Reporting safety concerns to the Department Head and ensuring corrective actions are taken.

## **5.2 Lab Assistant/Attendant**

The Lab Assistant/Attendant works under the supervision of the Lab In-Charge and is responsible for:

- Assisting with the setup and maintenance of lab equipment.
- Monitoring students during experiments to ensure safety protocols are followed.
- Reporting any equipment malfunctions or safety issues to the Lab In-Charge.

## **5.3 Warden and Assistant Warden**

In cases of emergency, the Warden and Assistant Warden, who are members of the AUST Fire/Disaster Safety Team, are responsible for:

- Assisting with the evacuation and ensuring that all personnel are safely outside the building.
- Coordinating with emergency services if required.
- Reporting the incident to the Campus Safety Task Force.

# **6 Conclusion**

The Basic Thermodynamics Lab is committed to maintaining a safe environment for all students, faculty, and staff. By implementing comprehensive safety rules, procedures, and emergency protocols, the lab aims to minimize the risk of incidents and ensure a prompt and effective response to any accidents. Regular reviews and updates to the safety plan will be conducted to ensure compliance with accreditation requirements and evolving safety standards.