

Safety and Incident Management Plan for Applied Mechanics and Mechanics of Machinery Lab

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Introduction

The Applied Mechanics and Mechanics of Machinery Lab is a foundational laboratory in the undergraduate Mechanical Engineering program at AUST. The lab is furnished with essential apparatus such as the Epicyclic Gear Train, Helical Spring Testing Apparatus, Torsion Testing Machine, and equipment for Combined Shear Force and Bending Moment. These facilities enable empirical and experimental studies vital to the students' hands-on experience. This document outlines the lab's safety protocols to prevent and manage incidents, in line with accreditation requirements.

Safety Rules and Practices

To maintain a safe environment, the following rules and procedures are strictly enforced:

- **Personal Protective Equipment (PPE):** All personnel must wear PPE such as lab coats, safety goggles, and gloves when conducting experiments.
- **Restricted Access:** Access to the lab is limited to authorized individuals. Students must be supervised by the Lab In-Charge or Lab Assistant during experiments.
- **Equipment Handling:** All apparatus must be used following the manufacturer's instructions and lab protocols. Malfunctioning equipment should be reported immediately.
- **Emergency Exits:** Emergency exits are kept unobstructed, and fire extinguishers are accessible at key locations.
- **Waste Disposal:** Hazardous materials, including chemical residues, are disposed of in designated containers per environmental safety regulations.

Incident and Accident Prevention Procedures

To prevent incidents, the following measures are implemented:

- **Regular Inspections:** The Lab In-Charge conducts routine safety checks to identify and address any hazards.

- **Equipment Maintenance:** Equipment is regularly calibrated and maintained to ensure safe and accurate operation.
- **Safety Training:** Students undergo training on PPE usage, emergency procedures, and specific safety practices before performing experiments.
- **Emergency Drills:** Periodic drills familiarize students and staff with the evacuation procedures in case of emergencies.

Provisions for Managing Accidents and Health Hazard Conditions

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

- **Emergency Contacts:** Contact numbers for the Lab In-Charge, Warden, Assistant Warden, and medical services are posted prominently.
- **First Aid Kit:** A fully stocked first aid kit is available in the lab, including supplies for treating minor injuries.
- **Fire Extinguishers and Safety Showers:** Fire extinguishers and safety showers are accessible and maintained for use in emergencies.
- **Emergency Response Protocol:** The Lab In-Charge should be notified of any emergencies immediately. If required, they will contact the Warden and Assistant Warden, who coordinate with the AUST Fire/Disaster Safety Team.
- **Evacuation Procedures:** For severe incidents, such as fire or chemical spills, personnel should follow evacuation routes to the designated assembly point.

Roles and Responsibilities

Lab In-Charge

The Lab In-Charge oversees lab safety and manages incidents. Responsibilities include:

- Conducting regular safety and maintenance checks.
- Providing safety training to all lab users.
- Coordinating with the Warden and Assistant Warden during emergencies.
- Reporting safety concerns to the Department Head.

Lab Assistant/Attendant

The Lab Assistant works under the Lab In-Charge's supervision and is responsible for:

- Assisting with equipment setup and maintenance.
- Monitoring student adherence to safety protocols.
- Reporting malfunctions or safety issues to the Lab In-Charge.

Warden and Assistant Warden

As members of AUST's Fire/Disaster Safety Team, the Warden and Assistant Warden:

- Assist with evacuations.
- Coordinate with emergency services when necessary.
- Report incidents to the Campus Safety Task Force.

Lab-Specific Incident Prevention Plan

The following experiments are conducted in the lab, each with specific safety precautions:

1. **Helical Spring Test:** Users must handle loaded springs carefully to avoid sudden releases. Safety goggles are mandatory.
2. **Epicyclic Gear Train Study:** Ensure gears are properly engaged before operating to prevent jamming.
3. **Gyroscope Measurements:** Handle the gyroscope with caution, as it can rotate at high speeds and pose injury risks.
4. **Free Damped Vibration Experiment:** Secure the apparatus to avoid accidental dislodgement during oscillation.

Conclusion

The Applied Mechanics and Mechanics of Machinery Lab adheres to rigorous safety standards to protect all users. Comprehensive safety protocols, incident prevention measures, and emergency response strategies aim to minimize risks and ensure a prompt response to any accidents. The safety plan undergoes regular review to ensure compliance with accreditation standards and adapt to evolving safety requirements.