

## **School of Business and Technology**

### **ENGINEERING DEPARTMENT GENERAL LABORATORY SAFETY POLICY**

The Engineering & Aviation Science department is committed to providing a safe and healthy working environment for its students, staff, & faculty. The department requires its students, staff, and faculty to adhere to basic General Laboratory Safety Rules in the Electrical and mechanical Engineering laboratories. All laboratory operations contain some elements of danger. Safe working habits are essential in experimental work. Good housekeeping, using the right tools for the right jobs, avoiding hazards, keeping the lab area clean - all contribute to safe operation. Accidents should be reported as soon as possible to a Faculty member. Emergency service is available 24 hours a day at ext. 3300.

#### **GENERAL LABORATORY SAFETY RULES**

- Food, drink and related utensils shall not be brought into, stored in or consumed in a laboratory.
- Smoking is prohibited in laboratories.
- Shoes shall be worn that provide full coverage of the feet, and appropriate personal clothing shall be worn in laboratories.
- Appropriate eye protection shall be worn, when using or operating mechanical equipment.
- Occupants shall be familiar with the locations and operation of safety and emergency equipment such as fire extinguishers, first aid kits, emergency eye wash stations and emergency showers, emergency power off, emergency telephones, and emergency exits.
- Learn and know what to do in an emergency.
- Unauthorized person(s) shall not be allowed in a laboratory.
- 'Authorized' means having business in the laboratory with the permission of the Engineering department. Anyone under the age of eighteen has to be under immediate and direct supervision of a qualified authorized person at all times.
- Laboratory shall remain locked other than office hours.
- Never open (remove cover) of any equipment in the laboratories.
- Report all problems to the Lab manager, 410-621-2297.
- In case of emergency, Campus Security 3300 or dial 9-911 .

#### **Electrical Safety Guidelines**

- No power laboratory should be performed without a Faculty present.

- Before equipment is made live,

(1) Circuit connections and layout should be checked by a faculty, unless specifically advised otherwise, and

(2) All colleagues in your group should give their assent.

- Voltages above 50 V rms ac and 50 V dc are always dangerous. Extra precautions should be considered as voltage levels are increased.
- Never make any changes to circuits or mechanical layout without first isolating the circuit by switching off and removing connections to supplies.
- Be familiar with the electrical hazards associated with your workplace.
- You may only enter the laboratory when authorized to do so and at authorized times.
- Be as careful for the safety of others as for yourself. Think before you act. Be tidy and systematic.
- Avoid bulky, loose or trailing clothes. Avoid long loose hair. Remove metal bracelets or watchstraps.
- Do not take food or drink into the laboratory. Avoid wet hands and clothing.
- Use extension cords only when necessary and only on a temporary basis.
- Discard damaged cords, cords that become hot, or cords with exposed wiring.
- Know the correct handling procedures for batteries, cells, capacitors, inductors and other high energy-storage devices.
- Experiments left unattended should be isolated from the supplies. If for a special reason, it must be left on, a barrier and a warning notice are required.
- Equipment found to be faulty in any way should be reported immediately and not used until it is inspected and declared safe.
- Know what you must do in an emergency.

## **Electrical Emergency Response**

The following instructions provide guidelines for handling two types of electrical emergencies:

### **1. Electric Shock:**

When someone suffers serious electrical shock, he or she may be knocked unconscious. If the victim is still in contact with the electrical current, immediately turn off the electrical power source. If you cannot disconnect the power source, push in the Emergency Power Off button.

## **IMPORTANT:**

Do not touch a victim that is still in contact with a power source; you could electrocute yourself. Have someone call for emergency medical assistance immediately.

Administer first-aid, as appropriate.

## **2. Electrical Fire:**

If an electrical fire occurs, try to disconnect the electrical power source, if possible. If the fire is small, you are not in immediate danger, and you have been trained in fighting fires, use any type of fire extinguisher except water to extinguish the fire. When in doubt, push in the Emergency Power Off button.

### **IMPORTANT:**

Do not use water on an electrical fire.

## **SOLDERING**

Soldering electrical components is an everyday activity to the electrical or electronics engineer but it is not without its risks. The most obvious one is that of a burn from the hot iron or solder. There is also the risk of electric shock if the soldering equipment has a damaged lead or defective wiring. Always check the mains lead and plug for damage before starting work and take care not to rest the iron on the lead and burn it. A less obvious risk is from the flux fumes. These contain formaldehyde, which can cause an asthma attack. While the risk is small, soldering should as far as possible, always be carry out in a well ventilated area and care taken to minimize the inhalation of the fumes. If you feel at all unwell stop work immediately and try and get some fresh air. Remember too that solder contains lead so avoid contact between hands and mouth and wash your hands thoroughly before handling food.

## **PROJECTS**

DO NOT work on your power project in an unsupervised laboratory.

DO ensure you know the additional rules that apply if you are working in a research laboratory. It is your responsibility to ask your supervisor about this, and his or hers to train you.

DO NOT work with unprotected live mains. All electronic equipment should be fused with the correct rating of fuse. Projects on motors etc using mains MUST be conducted on a bench which has mains protection. All project benches have this. MAINS PROTECTION SYSTEMS ARE NOT FOOL PROOF. MAKE SURE YOU KNOW WHICH TYPES OF FAULTS ARE NOT COVERED.

DO NOT use the workshop equipment's without prior training. Ask the faculty to arrange this.

## **FIRE HAZARDS & PROCEDURES:**

### **Fire Alarms**

The EASC building is fitted with a fire detection system. The system is a series of smoke detector, which are situated in the corridors, and a few selected laboratories are also connected centrally and will automatically call the Fire Brigade in the event of a fire. It is important however that in the event of a fire notify security who will call the Fire Brigade. DO NOT ASSUME THE FIRE DETECTION HAS DETECTED THE FIRE UNLESS YOU CAN HEAR THE ALARMS.

## **Fire Safety**

If you discover a fire, immediately make people in the vicinity aware of the danger. Then phone the Campus Security \* 3300. Mention room location, floor number and that this is Building EASC. Only return with others to the area of the fire if it is small enough to tackle. Never place yourself in danger attempting to fight a fire alone. Do not attempt to tackle a large fire. If possible switch off electricity and gas supplies to the area. Remove any inflammable materials. Use a suitable fire appliance at hand to contain or reduce the blaze. Wait at a distance and be available to assist the fire services.

## **Security**

We earnestly request your utmost cooperation in maintaining a climate of concern for proper use and care of the equipment, materials and supplies in the labs. It is requested that all students and staff keep laboratories and work areas locked when they are not in use. If you are the last person leaving the lab, be sure to close and lock all windows and doors. If you were issued keys, these are for your own personal use and should be kept under your control.

It is very important that you restrict access only to authorized persons.

Unauthorized individuals and random curiosity seekers should be challenged and asked to obtain visiting permission from Faculty or staff members.

Please notify the E&AV Science Department Office or Security Officers immediately if any evidence of theft or unlawful entry is found. Security can be contacted 24 hours a day at (Ext. 3300).