

# Penn State Behrend School of Engineering Electrical Laboratory Student Use Guidelines

## **Student Laboratory Access**

All upper division students (CENBD, ECET, EE BD, and SE BD majors) are automatically granted the following access to the electrical labs.

*M-F: 7AM-Midnight, 8AM-6PM on weekends*

Lower division students enrolled in classes that utilize electrical labs are provided the following access to the electrical labs:

*M-F: 7AM-7PM, 8AM-6PM on weekends*

Additional laboratory access hours can be requested at

[http://pennstatebehrend.psu.edu/academic/engineering/lab\\_request.cfm](http://pennstatebehrend.psu.edu/academic/engineering/lab_request.cfm)

## **General Laboratory Rules**

Students must adhere to the following Laboratory Rules:

1. Students should not work alone in the machinery designated (M) labs.
2. All injuries that occur in labs must be reported to the instructor and Police & Safety (telephones and emergency numbers are provided in each lab).
3. No food or tobacco is permitted in the labs. Only beverages with secure lids are permitted.
4. No "horseplay" in the labs.
5. Safety glasses must be worn when soldering, snipping leads, etc.).

Any student violating the above rules or access times will be subject to having their lab access privileges revoked.

## **Electrical Hazards Information**

The following information is taken directly from CRC Handbook of Laboratory Safety (Items 1-18). The majority of these items apply to high voltage equipment (>25 volts).

### I. The Effects of Electric Shock

- Currents only slightly in excess of one's let-go current (the current at which a person is frozen to the circuit and unable to let go) are said to "freeze" the victim to the circuit.
- Prolonged exposure to currents only slightly in excess of a person's let - go limit may produce exhaustion, asphyxia, collapse, and unconsciousness followed by death.

### II. Electrical Safety Procedures

1. Equipment producing a "tingle" should be reported promptly for repair.
2. "Shorts" (ground faults) are extremely hazardous especially where in contact with metal frame-work of an exhaust hood or damp floor.
3. Do not rely on grounding to mask a defective circuit nor attempt to correct a fault by insertion of another fuse, particularly one of larger capacity.
4. Keep use and length of extension cords to a minimum.
5. Work on electrical devices should be done after the power has been disconnected or shut off and suitable precautions taken to keep the power off during the work.

6. Never work on live equipment (over 25 volts) alone.
7. Use only tools and equipment with nonconducting handles when working on electrical devices.
8. Treat all electrical devices as if they are live.
9. Drain capacitors before working near them or removing the device from service, and keep the short on the terminals during the work since some of the charge may return due to a dielectric effect.
10. Never touch another person's equipment or electrical control devices unless instructed to do so.
11. Enclose all electric contacts and conductors so that no one can accidentally come into contact with them.
12. Never use metallic pencils or rulers, or wear rings or metal watchbands when working with high voltage (>25V) electrical equipment.
13. Laboratory wiring should be done by electricians. Electronic equipment wiring should be done by trained technicians or electronic engineers, or by students under professional supervision.
14. Never handle electrical equipment when hands, feet, or body are wet or perspiring, or when standing on a wet floor.
15. With high voltages regard all floors as conductive and grounded unless covered with well maintained and dry rubber matting of suitable type for electrical work.
16. Whenever possible, use only one hand when working on circuits or control devices.
17. When it is necessary to touch electrical equipment (for example, when checking for overheated motors), use the back of the hand. Thus, if accidental shock were to cause muscular contraction, you would not "freeze" to the conductor.
18. Avoid using or storing highly flammable liquids near electrical equipment.
19. Keep in mind that on some equipment the interlocks disconnect the high voltage source when a cabinet door is open but power for control circuits remains on.
20. De-energize open experimental circuits and equipment if left unattended.
21. Unplug cords by gripping the plug end, do not pull on the cord.
22. Do not wear loose clothing or ties near rotating equipment.

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## Student Acknowledgement

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By signing below, the student acknowledges that he/she has read and understands:

1. Student Laboratory Access information.
2. General Laboratory Rules.
3. The Electrical Hazards Information

Further the student agrees to comply with the lab policy and realizes that there are other potential hazards in addition to the ones stated. Students who violate the rules or abuse the labs are subject to having their lab access privileges revoked.

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*signature*

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*date*

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*printed name*

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*course*