Revision 0 **EEL 3111C: Safety**

EEL 3111

Although unlikely, it is possible to become injured in this laboratory. Emergency contacts by phone are **<u>911</u>**. The phone number for the Emergency Room at Shands Hospital is 395-0050. On some university phones it may be necessary to dial 9 first. Although there is no phone in this laboratory, a phone is available in NEB288 and most students and TAs have cell phones. Also, each office has a phone.

When working in any electrical laboratory, always keep electrical safety in mind. Following are some safety rules that each student should be aware of before beginning a laboratory experiment. Some of the rules do not apply to this laboratory, but to other electrical laboratories.

- 1. Never work totally alone in this or any laboratory. Someone else (in our case, the laboratory TA), should be present in the case of an emergency.
- 2. Use only the equipment provided. Do not use other equipment unless the laboratory TA approves.
- 3. Turn off the power before connecting or disconnecting any wires.
- 4. Never use damaged or malfunctioning items, whether they are leads, components, equipment, or any other item. Report damaged or malfunctioning items to your TA so he can arrange for the removal and repair. The damage or malfunction could possibly lead to a life-threatening situation.
- 5. To decrease the chances of being shocked, wear dry shoes and do not stand on metal or wet floors. Do not handle wires, components, or equipment with wet hands.
- 6. Do not wear any metal or jewelry that has any chance of coming in contact with your components or equipment. Necklaces, rings and bracelets can easily short circuit components.
- 7. In a laboratory in which soldering irons are used, keep an attentive eye on a hot soldering iron. Also, place it in the proper holder when not in use. Never leave a hot soldering iron unattended. Pregnant women should generally not use solder, nor be in confined spaces with others using solder. (Most solder contains lead. Lead-free solder can be purchased and is now required in the EU.)
- 8. Do not connect the power supply until the very last step of an experiment. This will greatly diminish your chance of being shocked. This will also help to protect the circuit from harm.
- 9. If someone is incapacitated because of electric shock, <u>NO ONE SHOULD TOUCH</u> that person until the **power is turned off**. Otherwise, the "rescuer" could also be shocked. Call for emergency services as soon as possible since resuscitation is likely if treatment is applied quickly. If breathing has stopped, begin CPR immediately and continue until qualified medical assistance has arrived.

Electrical Shock:

A 60Hz AC current of 100 to 200 mA causes ventricular fibrillation of the heart. (Higher frequency currents are even more dangerous.) This is an irregular twitching of the wall of the ventricle of the heart, and is <u>FATAL</u>. There is no known remedy or resuscitation. Wet skin has a resistance of only 150 Ω and the hand-to-foot internal body resistance is from 400 Ω to 600 Ω . In the case of, for example, 120 V and a skin plus body resistance of 800 Ω , the result is a lethal current of 150 mA.

A current from 8 mA to 100 mA produces a painful shock, and perhaps also loss of muscular control so that the victim cannot free him or herself from the cause of the shock.

Severe burns occur for a current greater than 200 mA. Also, the muscular contractions are so severe that chest muscular reaction clamps the heart and stops it for the duration of the shock. This reaction prevents ventricular fibrillation. Artificial respiration should be administered immediately and in most cases the victim can be revived.

By signing below, you are acknowledging that you have read and agree to abide by the above lab rules and policies.

Last Name:	First Name:
Signature:	Date: