

Senior Design and Lab Safety

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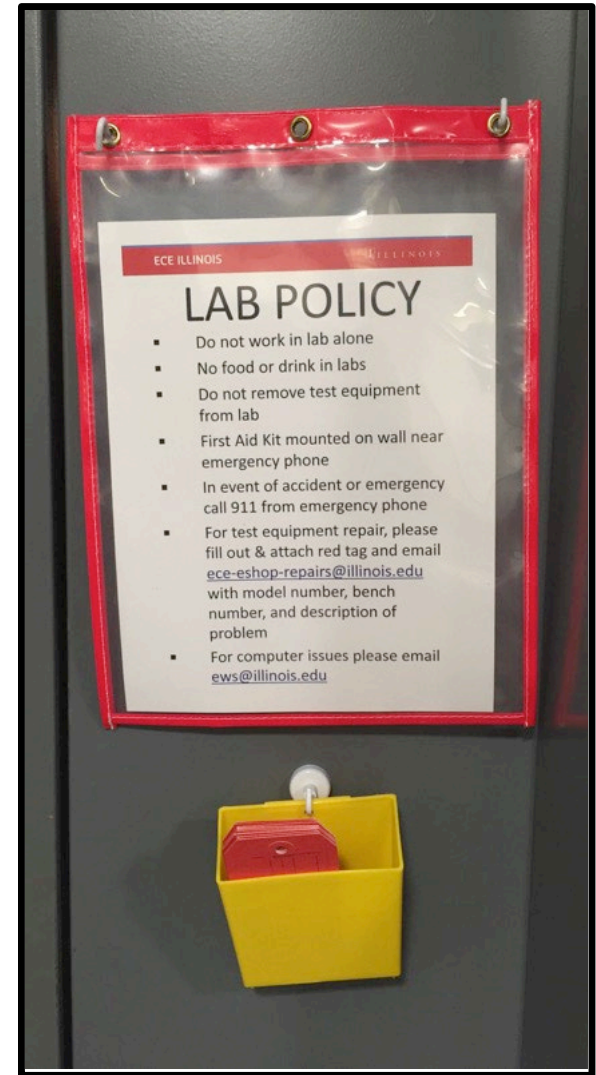
I ILLINOIS

Electrical & Computer Engineering

COLLEGE OF ENGINEERING

Lab Policies

- **No working alone!**
TA or Lab monitor must be present
- No food or drink
- Do not remove equipment from lab
- When AC wall potential is used an instructor or TA must be present.



Lab in the time of COVID

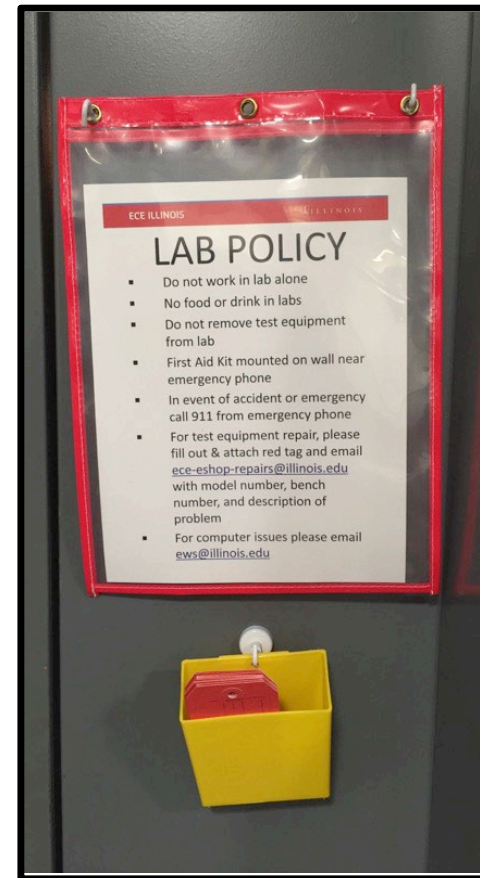
**Please adhere to all campus
issued public health guidelines.**

<https://covid19.illinois.edu/>



What happens in Senior Design...

- Minimize use of instructional labs
 - ADSL - ECEB 2076 is used only by ECE 395.
 - Power Lab - ECEB 4024 is not to be used without special permission.
 - Wireless Lab - ECEB 5080 is not to be used without special permission.
 - Open Lab – ECEB 2024 – No coursework.
- Do not plan to use instructional lab equipment in your design. (ECE 385, 343...)
- ***Complete online laboratory safety training for 2070 access***



Bench Setups

Typical

Power

RF



\$8,500



\$16,500

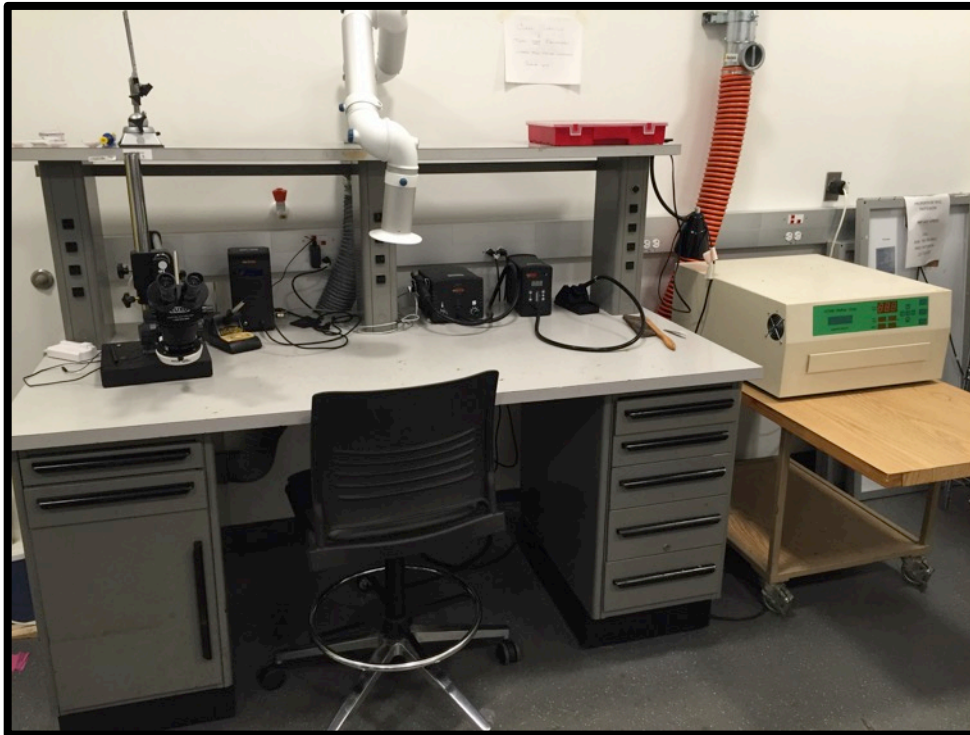


\$35,500



Soldering Stations

SMD

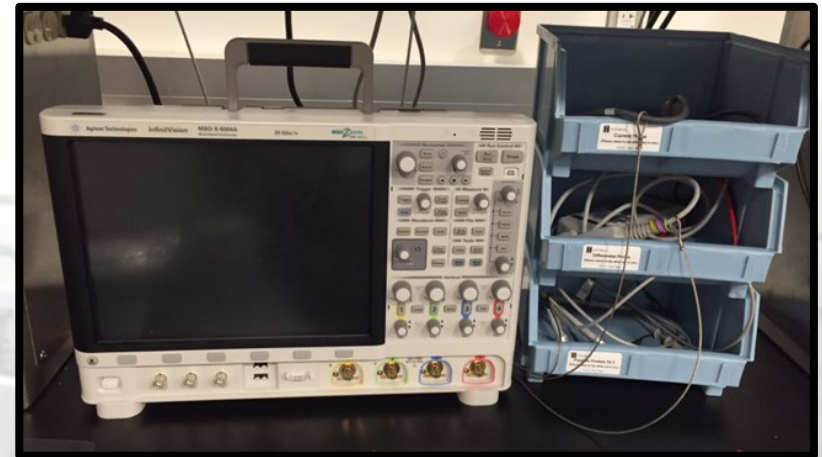


General



Keep it clean

- NO FOOD OR DRINK IN LABS!
- Keep lab clean
 - Clean benches after sessions.
 - Cables on hangers / Probes in Bins
 - Kits and components put away
 - Email if you need clearing supplies.
- No-tolerance lab policy
 - If lab is a mess it will be locked
- End of Semester Cleanup
 - As part of your final checkout you will be responsible for cleaning your work area.



Power Hazards

- **Electrocution**

- Don't make changes to a circuit when power is applied. Always treat cases as electrically live & do not leave circuits exposed.
- Avoid presenting body as ground path. One Hand Rule.
- Do not defeat ground connections with adaptors.
- Capacitors can hold charge a long time after power is removed and deliver that charge very rapidly.
- Current cannot change in inductors instantly. Don't forget motors are inductors!

- **Burns**

- Use wiring of appropriate length and gauge. Does it smell hot?
- As little as 1W can cause burns for small parts

- **Fires**

- Do not use a battery when a bench power supply will do.
- Cover battery terminals to avoid shorts. High short circuit currents!
- Store batteries in yellow lockers. No unattended charging.



Equipment Damage

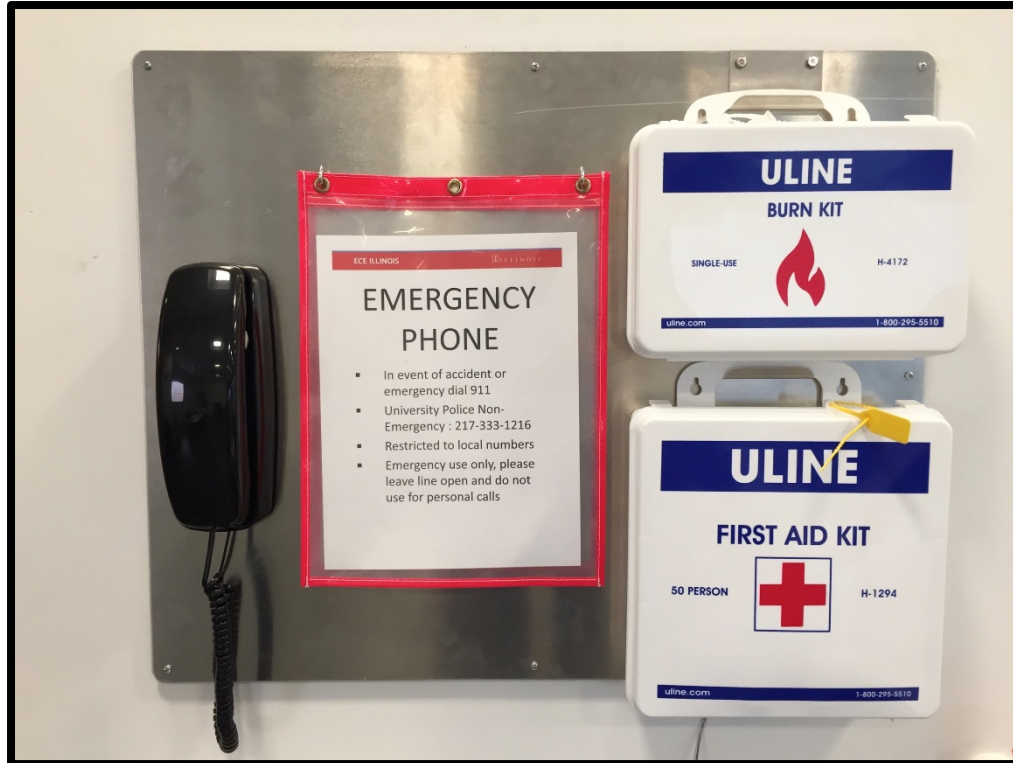
- Check Ratings
 - Does the function and ratings of the instrument match the signals you are attempting to measure?
 - If in doubt ask!
- Understand how probes and sources are grounded
- Do not to cram too much into lockers. Items pressing against lock make lockers very difficult to get open.
- Report malfunctioning equipment
 - E-mail ece-eshop-repairs
 - 'Red Tag' equipment



If a Problem Occurs

- Tend to your immediate safety first!
Leave area if necessary and get help!
- Shut off power
- Locate problem before power is restored
- If circuit breaker is tripped, report to ece-eshop-repairs to reset
- If help is needed contact me or electronics shop for assistance
- In event of an accident or emergency call 911

First Aid Stations

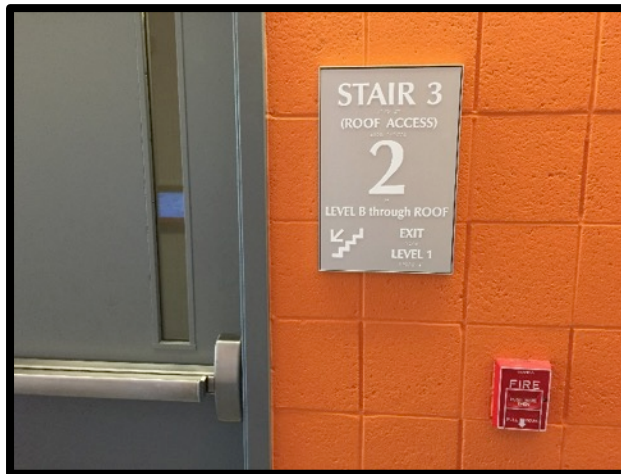


- First Aid Kits considered single use. Report all use to me for restock.
- Report all injuries to [ece-safety](#) & course staff immediately.
- Land-Line phone works in event of cell phone or power interruption.
- In event of an accident or emergency call 911

Fire Safety



- Shut off soldering irons!
- Plan ahead: Identify closest alarm pulls and exits.
- Identify location of fire extinguishers in your lab. (If equipped)
- Personal safety comes first. Pull alarm, and evacuate building.
- Assemble in grassy area East of ECEB



BEAP

- **B**uilding **E**mergency **A**ction **P**lan
 - Each floor has floor coordinator.
 - Areas of rescue assistance with marked call boxes.
 - SW Stairwells on floors 2-3.
 - E & W Stairwells on Basement and floors 2-5.
- **Get Out / Run**
 - Fire, Earthquake, Finals Week, Etc
 - Evacuation assembly areas are grassy area E of ECEB outside main lobby or inside Beckman Institute Atrium in bad weather.
- **Stay In / Hide**
 - Storms
 - Refuge areas in basement and interior hallways and bathrooms.
 - Security Threat
 - Secure your classroom or lab.
 - Run / Hide / Fight



HELP!?

- **TAs** – This should always be the first stop.
- **Lab Support** - ECEB 2044 - cjsmith0@illinois.edu
- **Electronics Shop** – ECEB 1041 - eshop.ece.illinois.edu
 - Talk to Wally! - ece-eshop@illinois.edu
 - Kits
- **ECE Machine Shop** – ECEB 1047
 - Talk to Gregg! – gbenntt@illinois.edu
 - Mechanical Fabrication
- **ECE Supply Center** – ECEB 1031
 - Talk to Josh! - ece-stores@illinois.edu
 - Electronic Components

