Senior Design and Lab Safety

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Lab in the time of COVID

- Always wear your mask
- Maintain social distance when possible
- Wash hands before/after session
- Take wipe on entry and wipe down high contact surfaces
  - Keyboard
  - Mouse
  - Benchtop
  - Chair
  - Test Equipment

Questions? Please email: ece-safety@illinois.edu
Bench Setups

Typical  
Power  
RF

$8,500  
$16,500  
$35,500
Soldering Stations

SMD

General
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**
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.
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 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

• **Building Emergency Action Plan**
  • 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