

# CURRENT Lab Community Action Plan

## Laboratory Standard of Conduct

Every individual with access to CURRENT laboratories shall plan and work toward maintaining cleanliness, organization, and safety of the tools, equipment, and laboratory space for the benefit of all of the users of these spaces.

## Definitions

- A. Lab Community – all personnel with lab access
- B. CURRENT Student WIKI - <https://wiki.curent.utk.edu/>
- C. Designated Safety Back-up – A person assigned as your second person when performing experiments with test voltages above 50 V.
- D. SDS – Safety Data Sheet
- E. MSDS – Material Safety Data Sheet

## Expectations

### 1. Lab Cleanliness

Personnel shall keep their assigned bench, file cabinets, and storage cabinets clean.

- a. Parts & boxes of parts shall be stored in assigned storage cabinets or in student offices. Boxes and parts should not be left on the floor or benches.
- b. Junk and trash shall be disposed of properly by taking it to the trash receptacles. Trash includes unused boxes, cut wire, tape, cups, paper, bags, etc. Empty boxes shall be put in hallway next to the trash receptacles.
- c. Scrap materials shall be disposed of immediately after fabrication is finished.
- d. Common areas shall be cleaned after personnel use them. This includes the fume hood, the device characterization bench, printer area, and the soldering bench.
- e. Tape shall be removed from all surfaces after use. Tape shall not be applied to walls or floors.
- f. Personnel shall not write on equipment.

### 2. Lab Organization

It is expected that personnel will work to improve and maintain organized lab and storage spaces for overall lab community productivity.

- a. Tools shall be returned to the proper drawer in the main tool boxes immediately after personnel finish using the tool (return tools to their proper location every

- day). Do not store tools in your own workbench drawers or office and be sure to put them in the proper place so others can easily find them.
- b. Tools borrowed from other labs shall be returned to the lab it was borrowed from and put it in its proper tool box before the student leaves the lab for the day.
  - c. Tool boxes shall only be used for mechanical tools and shall not be used as repositories for unused wire, fasteners, soldering materials, test equipment, probes, scrap metal, etc.
  - d. Test equipment, probes and community tools shall not be put in boxes, file cabinets, storage cabinets or offices. These are community items and should be readily available for everyone's use.
  - e. All test equipment & accessories shall be put back in the storage room when not actively being used. This includes probes, test leads, cameras, test fixtures, etc.
  - f. Equipment check-out/check-in. The list of equipment on your bench shall be kept up to date by notifying the Lab Committee of all changes (as you check items out and as you return items).
  - g. If lab part stock is out or getting low, inform the lab committee. This includes wire, heat shrink, fasteners, cable ties, wire lug terminals.

### 3. Training

All personnel shall take all safety training required by CURENT.

- a. Personnel shall take all classes defined in the CURENT Student WIKI under the Safety Training section prior to entering CURENT Lab space.
- b. Personnel shall make every effort to attend any classroom safety training scheduled i.e., 1<sup>st</sup> Aid, CPR, AED, etc., when it is offered.
- c. Personnel shall submit to the Lab Manager the results of any training completed.
- d. Personnel shall attend any presentations by CURENT which relate to laboratory operation or safety.

### 4. Tools and Equipment

- a. Personnel shall be trained on how to properly and safety use tools/equipment before using. Always ask for help or instruction prior to using a tool that you have not previously used or if you have any questions on its operation.
- b. Test Equipment shall not be put on the floor or on a surface which doesn't properly support it. The base of equipment shall not overhang the surface which supports it.
- c. IR cameras shall be stored in their cases when not in use to prevent damage. The IR cameras have lens caps, these shall be put on the lens whenever the camera is not in use to protect the lens.
- d. Personnel shall check equipment and accessories for damage before use. If you notice damage or think there is damage to tools or equipment, don't use it and

let the Lab Committee or lab manager know immediately. Don't put it back on the shelf for someone else to deal with. In most cases, equipment cannot be repaired without details of what is wrong with its operation.

- e. Safety shields, grounds or safety devices on equipment shall not be removed or disabled without prior approval by the lab manager and your advisor.
- f. UT owned tools, equipment and property, including supplies, shall not be removed from the Min Kao Building without prior approval of the lab manager and your advisor.
- g. Proper equipment safety, care and maintenance is the responsibility of the person it is assigned to.
- h. Personnel shall not remove or use equipment from another person's bench without prior approval from the bench owner.

## 5. Personnel safety

- a. Always have someone perform periodic safety checks when you are working in the labs alone (below 50 V testing or just doing soldering, wiring, etc.). Have someone call you or physically check on you every hour.
- b. Experimental circuits and lab equipment shall use power wires and cables which are rated for the maximum voltage and current which can be supplied. Undersized wire which cannot handle the maximum short circuit current shall not be used.
- c. Know where emergency power shutoff buttons in each laboratory are located and which circuits they control.
- d. Know where fire extinguishers are located and how to use them.
- e. Personnel shall plan an exit strategy of the laboratory in case of an emergency. In general, it is best to have two means of egress from a room in case one is blocked. Keep work areas clean and aisles open. Know the location of all emergency exits.
- f. Insulated cable shall be used when power connections are made which lay unprotected on the floor. Single insulation wire shall not to be used for this purpose without further protection from damage. Before use, visually inspect equipment and cords for obvious defects such as cuts or cracks or other damage or for missing or loose covers or screws. If damaged or defective, do not use the cables or equipment, but seek to repair or replace them first.
- g. Electrical conductors shall not be run across aisles or walkways except when active testing is being performed. These conductors must be removed immediately on conclusion of an active experiment. If necessary, talk to the lab manager for longer term solutions.
- h. All electrical conductors, cables, communication wiring, etc., which is on the floor shall be organized to minimize trip hazards.
- i. A person shall always be present when experimental circuits are powered up.
- j. Personnel shall not work on a circuit above 50 V without someone else (Designated Safety Back-up) in the same room. The Designated Safety Back-up

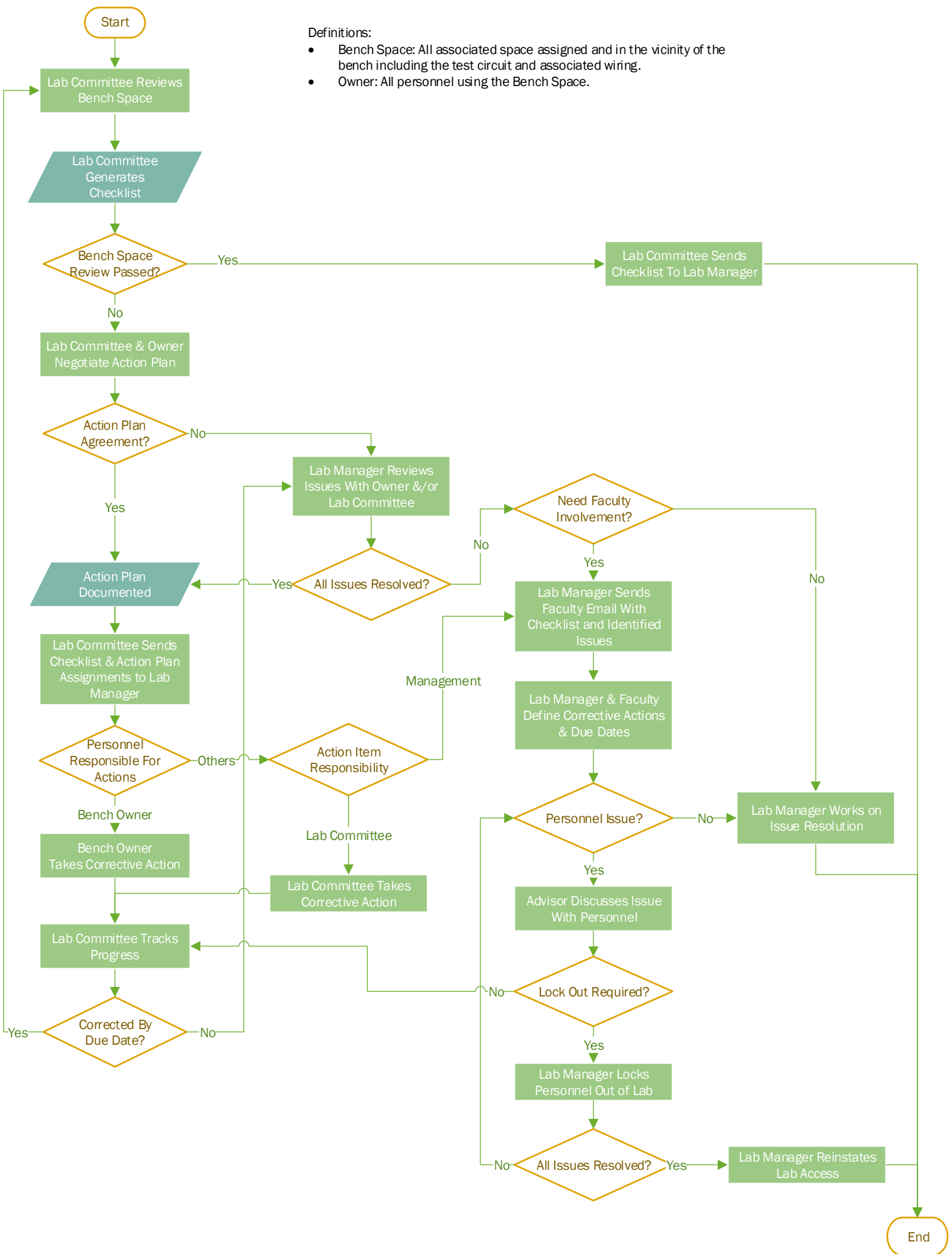
shall read any test procedures for the persons experiment, know what to do in an emergency and, have a line of sight to where you are working.

- k. Changes to electrical connections, including probes, shall not be made when power is on a circuit. After turning off the power to a circuit, always use a multimeter to verify that there is no voltage present in the circuit.
- l. Doors to the labs shall remain closed and locked except for tours or moving materials in and out. Doors shall not be propped open because you forgot your key or because there is a visitor using the room.
- m. If anyone does not have swipe access, they must be escorted by whoever lets them in the lab. The person letting them in shall be responsible for that person's safety at all times, while they are in the lab.
- n. A test procedure shall be generated, reviewed and approved, by the lab manager and your advisor for every experimental set-up running above 50 V or in excess of 10 A. Four copies shall be made, one for the lab manager, one for your advisor, one for yourself, and one to be given to the Designated Safety Back-up. Keep one at your bench and use it, do not ignore it or try to run your experiments just from memory. In other words, personnel shall methodically follow the written test procedure step-by-step. All personnel, including your Designated Safety Back-up person shall read and understand the procedure. If you find that your test procedure needs to be amended or changed because it does not cover a new test that you want to do, then get approval of your new procedure before continuing your testing.
- o. Patience and caution shall be used for all testing. Take time to be safe. Safety is everyone's responsibility.
- p. Personnel shall immediately report any safety concerns to the Lab Committee, Lab Manager, and advisor. Make suggestions to improve safety in the labs – these suggestions are always welcome.
- q. Proper PPE shall be used at all times. This includes protective suits, gloves, safety glasses, face masks, face shields, hearing and respiratory protection when required by the situation. If you are unsure of what is required, ask the Lab Manager or your Advisor.
- r. Safety glasses shall be worn while running experiments if you are not using the plexiglass barrier on the bench.
- s. Safety glasses shall be worn when doing soldering, cutting wire or other similar actions.
- t. Appropriate clothing and footwear shall be worn when in the laboratory. Generally, long pants and closed toe shoes are required. Do not wear jewelry (necklaces, rings, bracelets) when there is a chance that they could contact conducting materials.
- u. Personnel working on circuits with ARC Flash hazards shall not wear synthetic material (nylon, rayon, etc.) clothing.
- v. Personnel shall not modify in any manner (including moving test leads), a circuit while it is energized. Power circuit off, check for no voltage, and relocate leads and then resume testing.

- w. Access to the circuit breaker panels, emergency off buttons, or safety switches shall not be blocked or hampered. These items are required to have 36 inches clear in front of them.

## 6. Chemical Safety

- a. For every chemical you purchase or use, you shall have a Safety Data Sheet (SDS used to be called MSDS) available. Two copies shall be made, one for your bench and one to put in the SDS/MSDS three ring binder which is in room 124.
- b. Appropriate PPE shall be used as defined by the SDS.
- c. All chemicals used in the lab shall be properly labelled for identification. Do not put chemicals into unmarked containers making them unidentifiable.
- d. Those chemicals which have significant safety issues of flammability, health risks, environmental risks shall be discussed with the Lab Manager prior to being purchased and used.
- e. All chemicals purchased, which are no longer needed or have expired, shall be disposed of properly by the user, not thrown in the trash or dumped down the sink. There is a chemical disposal office by the loading dock of SERF (Open 2-3pm on Wednesdays). If you need help, ask the Lab Committee or Lab Manager.
- f. Any spills (including water) shall be cleaned up and disposed of immediately. If you don't know what this means, talk to the Lab Committee or Lab Manager.
- g. Chemical residue, like thermal grease, potting material, voltage isolation chemicals, oils, etc., shall be cleaned off of anything that other personnel can touch. This is especially true of equipment, tools, benches, heat sinks and cold plates.



Definitions:

- Bench Space: All associated space assigned and in the vicinity of the bench including the test circuit and associated wiring.
- Owner: All personnel using the Bench Space.

