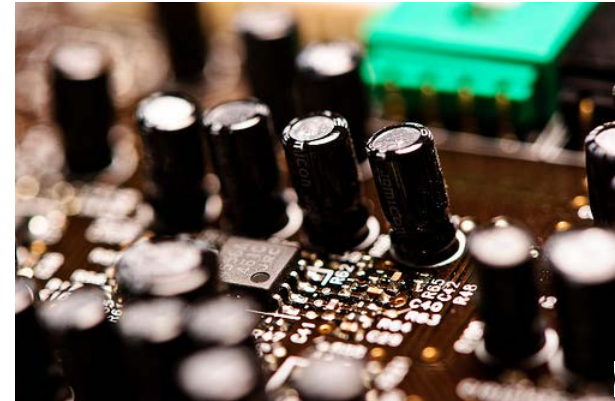


Instruction on the Electrical Engineering Laboratory



© Randy Pertiet, flickr

Prof. Dr.-Ing. Christian Ressel
Ambient Intelligent Systems

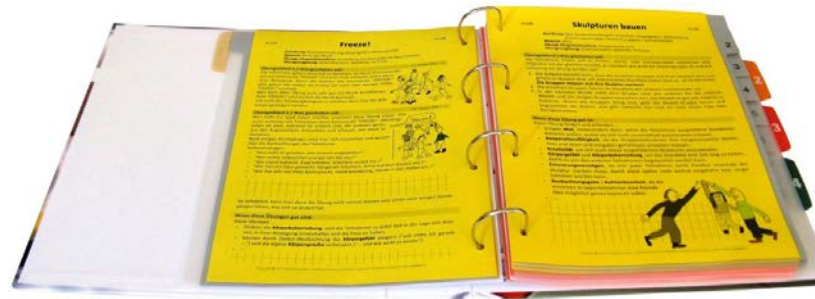
Laboratory rules

The following rules must be followed

- House rules
- „Brandschutzordnung Teil B“ (fire protection)
- Lab Rules
- Safety data sheets
- Operating instructions
- Risk assessment

Disregarding of these rules
results in
Exclusion from practical
class!

The rules can be found in the safety file of the laboratory.



<http://www.lehmanns.de>

Presentation of house rules and rules for fire protection



Guidelines for this laboratory



<http://4.bp.blogspot.com>

Disregarding of these rules
results in
Exclusion from practical
class!

Laboratory Electrical Engineering - Room 02 01 505

Who uses the laboratory

The laboratory can be used by:

- Students, who are taking part in practical classes
- Students, who are working in study program related projects or thesis
- Employees (employed students or scientific staff) of the university to fulfil work related tasks. As long as these task are related to electrical development, maintenance or measurements.
- Main purpose: teachings
- People without having this safety instructions are not allowed to work in the laboratory

Basic rules I



- It is forbidden to install any electrical or mechanical device in the laboratory without the explicit permission of the person in charge. You are not allowed to install private devices in the laboratory or to connect them to the power supplies.
- You are not allowed to use the electrical or mechanical devices of the laboratory without getting basic instructions and the explicit permission before.
- You have to follow the instructions of the person in charge. Only built up circuits and perform actions that are related to the job/task given to you.

Basic rules II



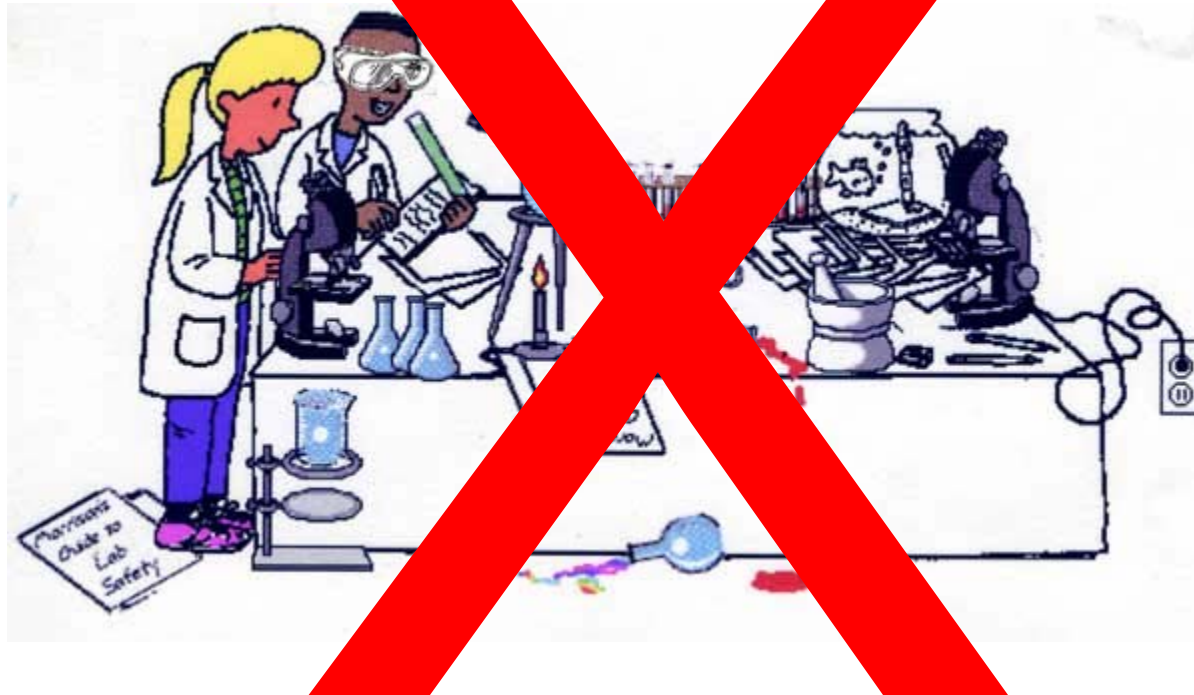
- Become familiar with the safety installations: Escape routes, fire extinguisher, emergency stop switch/circuit breaker, first aid box and first aid methods, the list of first aiders of the university
- Check the safety installations before starting a task. Safety installation must not be blocked by stuff. If you recognize damages inform the person in charge directly.
- Tidy up your workplace before you leave the laboratory and be sure that you have switched off all the device and shutdown the computer

Basic rules III



Eating, Drinking and Smoking is not allowed!

Basic rules IV



Keep your working place dry and clean!
Tidy up before you leave the lab!



**Handle the existing equipment and facilities carefully
and use material sparingly!**

Read the user manuals carefully!

Basic rules VI



- You have to get this safety instruction in each semester
- You and the person responsible for teaching have to check if your safety instructions are still valid.
- Without valid safety instructions for this laboratory you are not allowed to work in the laboratory

The computers in the laboratory

- Safe files only in your personal directory on the network. If you have to save files locally use a directory that has the following name: “YOUR SURNAME”-”YOUR FIRST NAME”
- You are not allowed to use own storage medium or to plug it into the computer
- If you connect the USB-Port of the computer to an own build-up circuit via USB, use a USB hub in between.

Working with the devices of the laboratory



<http://www.youtube.com/watch?v=tRwaT9s6ZHM>

Working with the devices of the laboratory I

- Check the devices and installations of the laboratory before using them. Look for damages (especially cables), loose junctions etc.



Working with the devices of the laboratory II

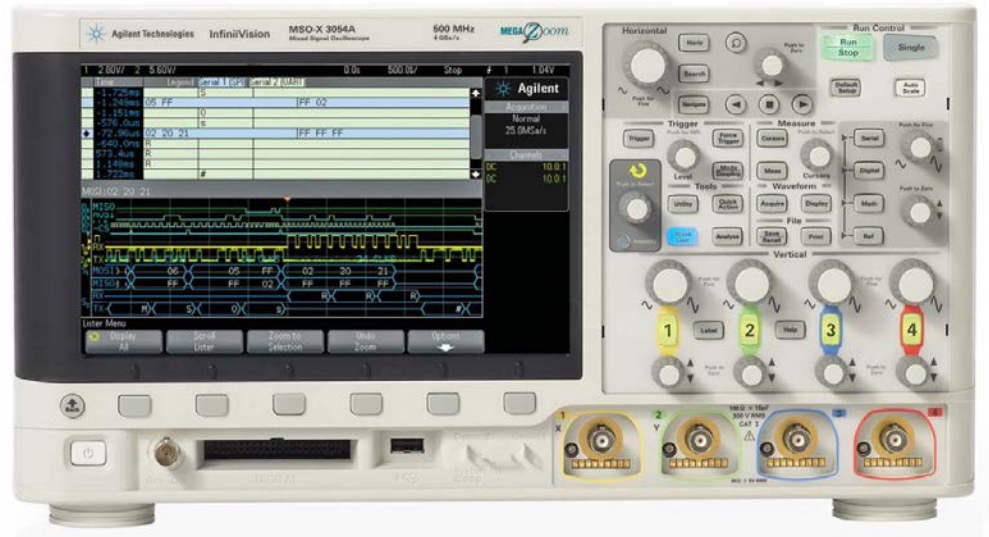


<http://www.voelkner.de>

Select the highest measurement range before measuring!

Be careful during current measurement!

Working with the devices of the laboratory III



<http://piph.com.br>

Select the highest measurement range before measuring!

Do not forget to calibrate the probes!

-
- The person in charge should check and verify the electrical circuits you build up before you “wake” them alive.

Emergency

- PRESS THE EMERGENCY STOP ONLY IF DANGER EXISTS. NOT FOR FUN !!!
- If there is an accident involving electricity press the emergency stop switch before helping the injured ones.
- Any emergency stop switch will break the main circuit of the laboratory !!
Not only your working place.
- It is forbidden to sabotage the safety installations of the laboratory or to work around or without them



Soldering

- Be careful you can burn your skin.
- Do not touch the front end !



Soldering



**Do not inhale soldering vapour!
Always use the exhaustion!**

Soldering



**Always wear your goggles when
serious damage to the eyes is possible!**

Working with Electricity and Electrical circuits

- You are not allowed to work on circuits or electrical installations or machines which are alive – meaning which are connected to voltage differences.

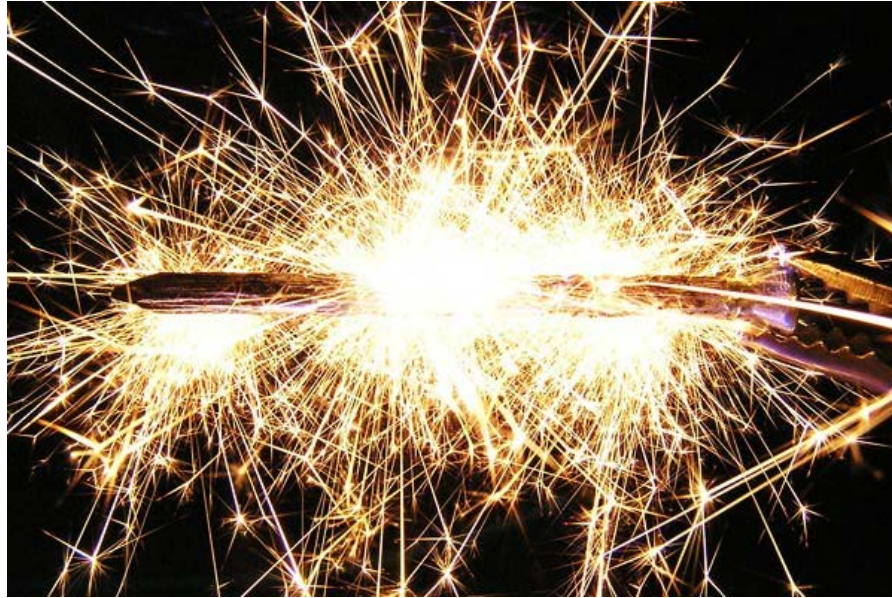
- You are NOT allowed to work on electrical circuits or systems, which
 - Effective AC Voltage is more than 25 V
 - DC voltage is more than 60 V
 - Discharge Energy is more than 350 mJ

Lab Safety Rules



Working under voltage is generally prohibited!

Lab Safety Rules



<http://completeelectrical.biz>

Avoid short circuits!

Lab Safety Rules



<http://www.vijaypatel.synthasite.com>

**When handling static sensitive components
use ESD protection equipment!**

Lab Safety Rules



Open measurement cables are only permitted during the structure and rebuilding phases and when there is a current and power-free state!

Lab Safety Rules

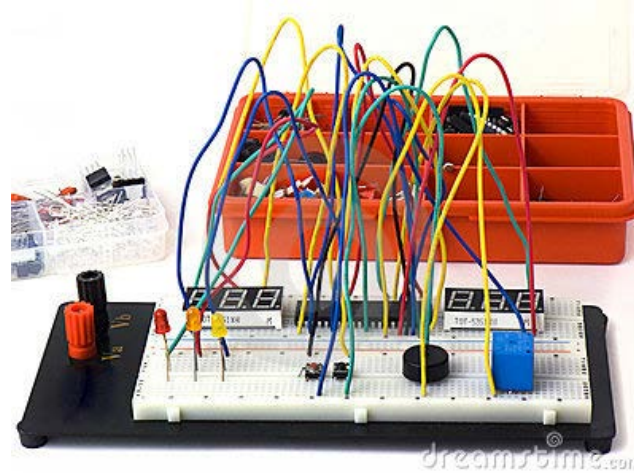


Before the construction and rebuilding phases switch off the respective power supply and wait for the discharge of capacitors!

Lab Safety Rules



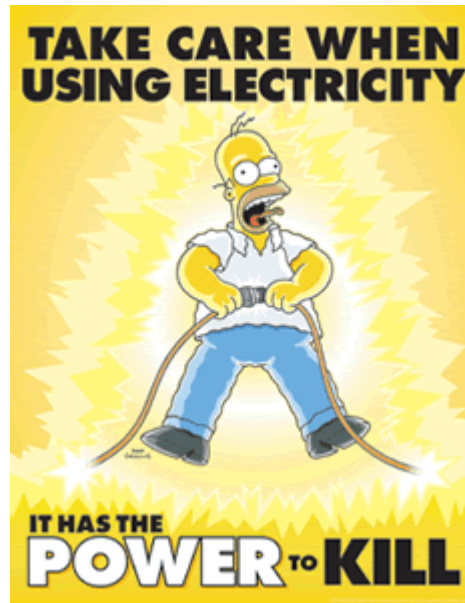
<http://theviewfromhere.ca>



<http://thumbs.dreamstime.com>

Voltage-carrying experimental arrangement should not be left to themselves!

Basic rules VII



- Do not work alone in the lab!
- Never poke anything directly into electrical outlets!
- Unplug cords by pulling the plug and not the cord!
- Lay electrical cords where no one can trip on them or get caught in them!