

Electrical Testing

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Some key points:

- Planning
- Documentation
- Safety issues

Personnel

Equipment

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Planning

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Much lab time is lost because of searches for equipment, tools, and the right setup. Much time is saved by spending extra time setting up and preparing.

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Documentation

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An effective engineering notebook is still probably the most powerful tool in our arsenal.

A properly maintained notebook avoids duplication, supports patent applications, and facilitates reports.

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Documentation

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Some important details:

An understanding of measurement accuracy and precision (Hint – it isn't 102% efficient)

Intellectual property issues

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Electrical Safety

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Safety protocol

Safety issues

Personnel

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Safety Protocol

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Suggested Policy Points:

Students to work at least *in pairs*.

When full ac wall potential is in use, a faculty member or TA must be present.

At least two people must be present.

No food or drink at lab benches.



Safety Protocol

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If a problem occurs or is suspected:

Shut off power.

If accident or emergency occurs, contact emergency assistance.



Safety Issues - Personnel

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Shock hazards exist in any labs.

Most likely problems are with spilled drinks or careless wiring.

Loose clothing and neckties are a problem when motors are used.

It only takes a watt to make small parts hot.

Often metal cases are live.



Safety Issues - Personnel

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Serious power electronics work –

Safety glasses

Fire extinguishers

A safety plan, to include circuit protection



Safety Issues - Personnel

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Some good advice:

Turn power off when making circuit changes.

Keep a tight, neat setup. (It is safer, easier to debug, and just plain works better.)

Treat part cases as live or hot.

When in doubt, shut power off.

If it doesn't work, it probably isn't the instrument.



Safety Issues - Equipment

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Equipment damage is a common safety issue.

Problem areas:

Grounding. Students often don't understand limitations of grounded probes or sources.

Ratings. Do instrument ratings match the signal?

