Electronics 101

SLQ Wiki Fabrication Lab 2024/07/23 04:22

Electronics 101

This is an adaptation of the basics circuits component of the 2022Christmas Tree works and also covers some content that could be covered in an Electronics bench induction.

Developed by Mick, March 2023.

Promotional Copy

Simple circuitry 101 Keen to learn the basics of how electronics work? Join us for an introduction to how circuits flow and what basics components do. Learn how to use breadboards to create solderless circuits.

About 101 workshops 101 skills development workshops give you the basic skills you need to start your new creative journey. Each workshop is delivered by an experienced facilitator and no prior experience required, just basic computer skills, a willingness to learn and a bit of patience.

Acknowledgement

We acknowledge Aboriginal and Torres Strait Islander peoples and their continuing connection to land and as custodians of stories for millennia. We respectfully acknowledge the land on which we all meet today, and pay our respects to elders past, present and emerging.

Summary

Skills and Understandings Introduced

As such, the workshop will focus on the following basic skills and understanding:

- Feeling confident we know how to be safe around electricity
- Key concepts of Current flow and Voltage in a circuit, Resistance and the basic application of Ohms Law
- How to use a breadboard to test a circuit
- how to identify basic components and how to use them
- how to read a basic circuit diagram
- How to use a multimeter to test a circuit
- understanding of the use of a transistor in a basic circuit
- where to find more information

Materials

If your workshop does not require any materials (maybe digital only) delete this section or change to something more appropriate.

Material/ equipment	**Quantity per kit**	**equip to share**	**Cost**	**Supplier**	SOP/SDS
Electric Circuits 101 kits					
2032 Coin Cell	10				SOP
2032 Coin Cell carrier	10				
breadboard	10				
LED	20				
Resistor 330R	10				
9 Volt Battery	10				
9V battery clip	10				
BC547b NPN Bipolar Transistor	10				
AA Battery	20				
2xAA Battery holder	10				
Jumper Leads (m-m)	50				

~~Capacitor~~	5		
Equipment Required			
PC laptop/desktop with IDE	5		
Soldering iron	2		SOP
Wire strippers	2		
Helping Hands	2		
Magnifier	2		
Light	2		
Multimeter	2		
Laser Cutter	1		SOP
Laser Computer (Ruby machine)	1		
Solder			SDS
USB Microscope	Projector	Soldering Iron & Bench Tools	

Workshop Session Plan

Detailed Powerpoint and facilitation notes are linked below

Zipped powerpoint file

Powerpoint including facilitator notes

zipped Fritzing file for Tranistor contolled LED project

References

Electricity

Physics Videos by Eugene Khutoryansky's animated visualisations of "Electric Circuit Components"

Steve Mould's video on Spintronics "Mechanical circuits: electronics without electricity"

youtube.com/ElectroBOOM on youtube

Electricity Basics, youtube.com/@EngineeringMindset

Engineering Mindset's tutorial for using a multimeter properly

Engineering Mindset's Ohms Law Calculator

Electronics Turtorials - Bipolar Transistors

Downloads

3-easy-transistor-projects-for-beginners.pdf