



PHYSICS – APPLIANCE DISSECTION

An extension activity for **SPH3U** or **SPH4C**.

A: Activity Description

As an end of unit task groups of students complete a research report on electronic components and then 'dissect' a common household appliance (cell phone, VCR, toaster). Technology is used for web based research, design layout of the report with labeled pictures and also the dissection of common technology in their lives.

Safety concerns include building a tool to discharge capacitors or let the appliances sit unplugged for multiple days, allowing the capacitor to discharge. Students brought in small tools and appliances.

B: Class Assignment

In pairs select an appliance to dissect. You will be given 1 class period to dismantle the appliance and identify some of the basic electronic components, developing an understanding of how they allow the appliance to perform specific goals. In the form of a report no longer than 500 words you are expected to select either the whole appliance (if it is small), or a portion of it (if it is a large appliance), and describe the electronic components. A digital camera will be available to add graphics to your report. If time allows you may also choose to troubleshoot the appliance and discover why it has been donated.

You should discuss most of the following components, as well as adding ones that may not be present in the list dependant on your appliance. You are expected to complete research on the components in advance of the dissection to aid in identification.

- Capacitors
- Resistors

- Diodes (LEDs, ILEDs, photodiodes)
- Transistors
- Amplifiers
- Integrated circuits
- Semiconductors
- Transformers
- Motors
- Relays
- Cathode Ray Tube
- Loudspeaker
- Rectifiers
- Printed circuit boards
- Differentiator
- Inductors
- Power Source
- Fuse

Report: The report is designed to give a quick look at electronic components if common appliances, as a practical activity to aid the theoretical concepts. You should aim to identify and explain 5-7 components very well. Use as many graphics as possible and reference all sources. A circuit diagram should be attempted for a portion of the appliance using proper schematic diagrams.

Safety: Capacitors are an energy storage device and should be located immediately to avoid accidental discharge. Over time a capacitor will likely discharge slowly but before the dissection begins all capacitors should be discharged and extreme care taken. Mr. Day will assist you in discharging capacitors using a circuit with a resistor. Safety goggles will also be issued for the investigation. **Any students with heart conditions should use extreme caution while performing the lab or just observe.**

There are many forms of capacitors which look like:

