

Lab 11 Instructions

Lab 11 has a lot of parts and it is unlikely you will have time to get to all of them. Here is the order I would like you to do the lab to get the most benefit from it.

Please try to get through the following experiments:

11L.1.1 – 11L.3 I recommend taking Option A, the normal NPN pass transistor regulator because it is easier to get working. If you want a challenge, feel free to do Option B, the low dropout regulator. If you want to use the MOSFET in Option B instead of the BJT, speak to me so I can explain how this device works.

11L.1.5 The LM317 adjustable three-terminal regulator is a wonderful part, useful anytime you need to build a linear voltage regulator. It is worthwhile to try it out.

11L.2.1 - 11L.2.2 step up switching regulator – it is worth seeing the magic of getting a regulated 5V from a 1.5V battery.

You will need to use a lab power supply to provide the adjustable “unregulated” input voltage to test your regulators.

If you have time, you may want to try:

11L.1.4 This is an opportunity to see how easy it is to use a three terminal fixed voltage regulator and to see how the thermal protection in integrated circuit voltage regulators works.

You can chose to do the following in any order depending on what interests you:

11L.1.6 Crowbar overvoltage protection

11L.2.3 Step-down switching regulator

11L.2.4 Negative from positive switching regulator