

# Paper Design

## ECE 401 - Homework #3 - Due Week #5

Design a circuit for your ECE 401 Senior Design project.

### ECE 401 Circuit Requirements

- Must operate off of 5VDC
- Must include at least one integrated circuit
- Must include at least one LED with  $I_d = 20\text{mA} \pm 5\text{mA}$
- Must include at least one NPN and one PNP transistor
  - Base current allows 100mA
- Power supply = 9V battery (mark +/- polarity)
  - use a LM7805 regulator to drop 9V to 5V
- Must have a reverse-polarity protection diode
- Must have a 1/4 Watt 1-Ohm resistor in series with the power supply

Update your OneNote document to include

- Your circuit schematics
- Calculations for R's and C's
- Calculations for voltages you expect to see.

Note: If you're using a microprocessor, assume the output pins are either 0V or 5V.