Phy335, Unit 3
Diode circuits and DC Power

Mini-lecture topics planned:

- **Metals and semiconductors**
- **p-n junctions**
- **DC power supply, ripple**

1. Measure the diode I-V from –15 V to about +0.6 V (apply forward voltage with caution).

2. Design and test a diode-based asymmetrical clamp (also called "clipping circuit") to limit the upper value of the input voltage to + 5.6 V. Use the output from the signal generator (SG). [Typically, one clamps all non-zero voltages in a circuit for protection.] How would you add to this circuit to also clamp the lower value of the input at -5 V? Draw the circuit in your lab report (assume you have an additional power supply of any voltage you choose).

3. Design and build a full-wave rectifier to deliver 20 V DC with less than 0.5 V ripple using a 165 V AC transformer output. Choose the capacitor and the "bleeder" resistor. Test this rectifier on the scope.