Week 2 Lab:

1. Make a coplanar waveguide resonator with:
    a. Characteristic impedance of 50 Ohms.
        i. **What center conductor width, gap width, dielectric thickness and dielectric constant did you use?**
    b. Frequency of 7 GHz
        i. **What length do you need?**
    c. External quality factor of 1000
2. Given a Josephson inductance of 10 nH, make a qubit with:
    a. Frequency of 5 GHz.
        i. **What Ec does this give?**
        ii. **Is this a transmon?**
3. Make a coupled resonator-qubit system with:
    a. Coupling strength g/2pi = 100 MHz.
        i. **How close do the resonator and qubit need to be?**
        ii. **What dispersive shift would you get?**
4. Make an external drive line with:
    a. Coupling strength k/2pi = 100 kHz