

## EE 230 design - color organ filter section

Build a circuit that takes a single audio frequency input and produces three separate outputs. Each section will have a fairly high-Q bandpass filter that will select out a specific frequency.

- The first section should have a center frequency at 100 Hz and  $Q_P = 10$ .
- The second section should have a center frequency at 1 kHz and  $Q_P = 10$ .
- The third should have a center frequency at 5 kHz and  $Q_P = 10$ .
- Each channel should have a variable gain, so that  $G_o$  can be adjusted between 1 and 10.
- You can use two DC power supplies (up to +/- 15 V) to power the circuits.

### Testing / Reporting

- You will need to demonstrate your circuit to the lab instructors. For each filter, you will need to show that it has the correct center frequency  $Q_P$  and that the gain is adjustable.
- Record a frequency response for each channel of the circuit.
- Write a short report that includes: (One report for the group.)
  1. a circuit diagram,
  2. a photo of your circuit
  3. a written description of the design of the circuit,
  4. the measured frequency response plots, and
  5. any additional comments about the performance (or lack thereof) of your circuit.