EE 230 design - Two-channel headphone amplifier

Design a circuit that will take the output from a line-level stereo source (phone, mp3 player, computer) and provide an amplified output that can be sent to a set of ear-phones.

Specific requirements:

- You should have separate volume adjustments for each channel. Use potentiometers at the inputs — set up as voltage dividers — to implement the volume control.
- You can use two supplies, up ±15 V, to power the circuit. Note that you aren't required to use the supplies at those levels. You can use one supply, if you prefer, and you should choose the level appropriate with whatever components you are using.
- The gain in the pass-band for each channel should be fixed at G = 20 (±1).
- The gain function for each channel should be in the form of a passband response with a lower corner at 100 Hz and an upper corner at 15 kHz. (The actual corner frequencies must be within 5% of these values.)

Testing / Reporting

- Your lab supervisor will test your circuit. First, you should use the oscilloscope to show that a sine wave is amplified cleanly and the amplitude of the output can be adjusted with your volume control Then show that the passband gain is correct and that the corners are at right frequencies. The instructor will also want to hear how it works – hook it to up to some music and listen to the output.
- 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.