ECE 321 - Homework #5

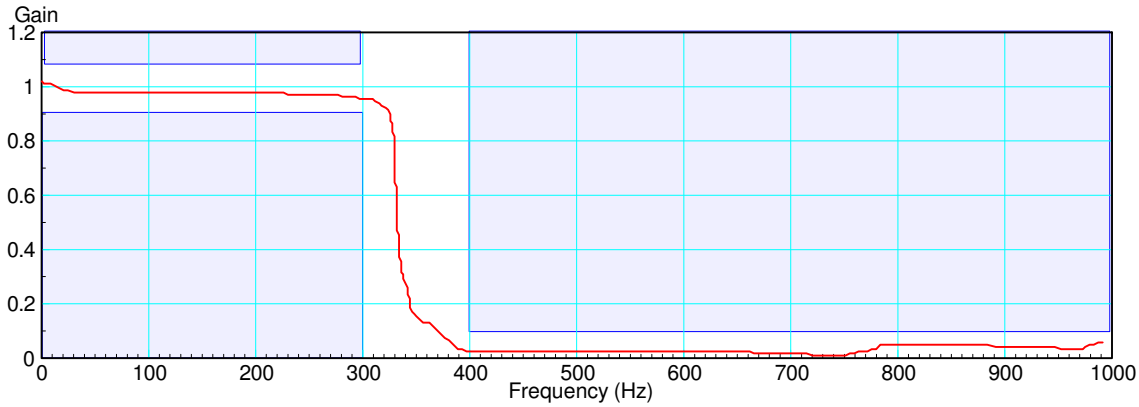
Project part (c). Due Monday, December 3rd, 2018

Project (part c):

Problem 1: Requirements Specify the requirements for the filter. You can use the following or change them if you like.

Bass Boost:

- Input: +/- 5V AC signal from 0 to 1000Hz capable of driving 10mA
- Output: +/- 5V AC signal capable of driving 10mA
- Relationship:
  - Pass-band (ex: 0.9 < gain < 1.1 for frequencies from 0 to 300Hz)
  - Reject band (ex: gain < 0.1 for frequencies above 400Hz)



Problem 2: Analysis: Design filter to meet these requirements. Give

- The resulting transfer function
- A plot of the theoretical gain vs. frequecy
- A circuit to implement this transfer function

Problem 3: Simulation Check your circuit design by simulating your circuit. Include

- The gain at the edge of the pass-band (500Hz?)
- The gain at the edge of the reject band (500Hz?)
- Compare the simulated results vs. theoretical results from problem 2

Problem 4: Hardware Build your circuit in lab and verify it operates correctly. Check

- The gain at the edge of the pass-band (500Hz?)
- The gain at the edge of the reject band (500Hz?)
- Compare the simulated results vs. theoretical and simulation results from problem 2 and 3

Problem 5) Demo. Demonstrate your filter works with part (a) and part (b) (video or in person).