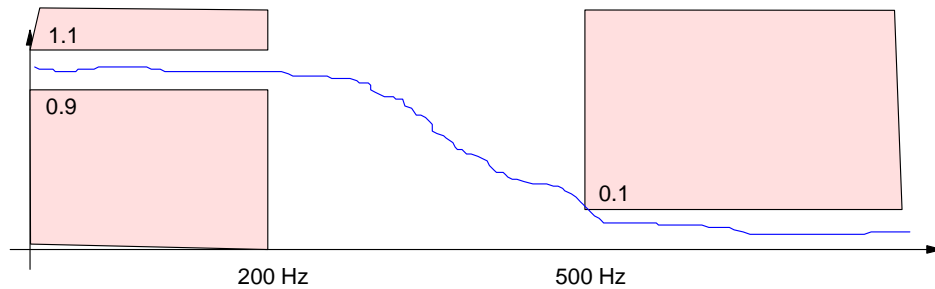


# ECE 311 - Homework #25

## Filter Design

Problem 1-3) Design a low-pass filter to meet the following requirements:

- Input: +/- 10V, capable of 20mA
- Output: +/- 10V capable of 20mA
- Relationship:
  - $1.1 < \text{Gain} < 0.9$        $f < 200 \text{ Hz}$
  - $\text{Gain} < 0.1$                $f > 500 \text{ Hz}$



- 1) Give a filter,  $G(s)$ , which meets these requirements. Plot the gain vs. frequency for your  $G(s)$  in Matlab.
- 2) Design a circuit to implement this circuit
- 3) Test your design in PartSim: Assume a load of 1k Ohms is added (should be part of the requirements: capable of driving a 1k Ohm load)
- 4) Build your circuit and check the gain vs. frequency against your calculations and simulation results.