MCE484 Lab 1 Activity
Design and Implementation of a 3rd-order LP Butterworth Filter

1 Filter Design Requirements

- Corner frequency: 35Hz
- Order: 3
- Type: Low-pass Butterworth

2 Filter Design and Implementation

We calculated all component values in class and built the filter. We tested the filter by applying a sinewave with a frequency within the passband. Then we applied a sinewave with a frequency beyond the corner frequency. The oscilloscope traces were saved to two comma-separated text files:
  - F0028CH1.CSV: Input, high frequency
  - F0028CH2.CSV: Output, high frequency
  - F0029CH1.CSV: Input, low frequency
  - F0029CH2.CSV: Output, low frequency

These files have been uploaded to the course web page as butter3.zip

3 What to include in the lab journal

These are minimum guidelines, you may decide to include additional calculations/graphs that you find useful.

- Circuit schematic.
- Calculations leading to nominal R and C values.
- Actual values of R and C and averages. Actual $f_c$.
- Circuit transfer function using R and C averages.
- Bode plot of circuit transfer function.
- Plots of captured traces.
- Amplitude ratios in dB from the plots.
- Amplitude ratios predicted from Bode plot.
- Comments on the agreement of the predicted and actual amplitude ratios.