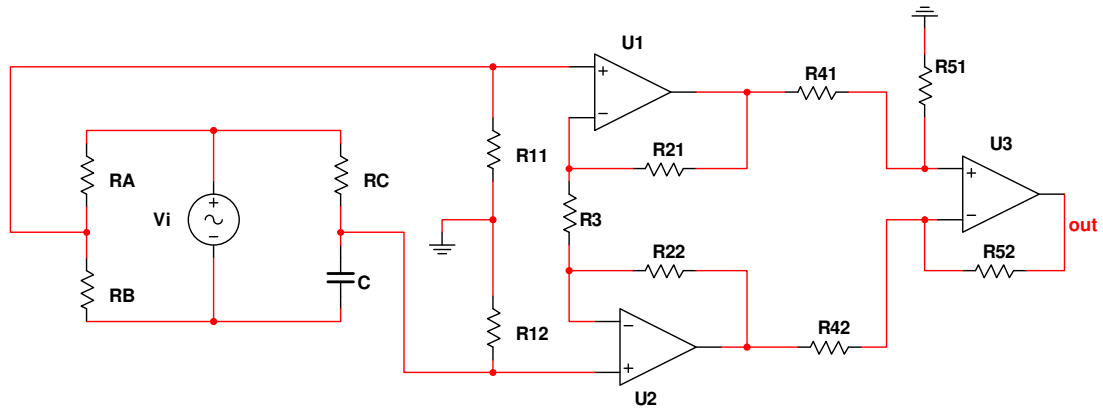# ECE 3042
Homework Assignment No. 4

Spring 2013 Homework for Experiment No. 4

Due Week of February 11

    1. Shown above is a first order all pass filter. Design the filter so that the phase shift is $90°$ when $f = 7.3\,\mathrm{kHz}$ and magnitude of the ratio of the output voltage to the input voltage is 30 for all frequencies when v_i is a sine wave. Pick the differential input impedance of the instrumentation amplifier to be $660\,\mathrm{k\Omega}$.

    Use National Instruments SPICE to plot the magnitude and phase of $T(s) = V_o/V_i$ as the frequency varies from $100\,\mathrm{Hz}$ to $100\,\mathrm{kHz}$.

    2. Use National Instruments SPICE to plot the output versus time when the input is a square wave with a dc level of 0, a peak-to-peak value of $2\,\mathrm{V}$, and a frequency of $1\,\mathrm{kHz}$. Make the plot for two cycles of the input.