Lab 2. (37 points total)

Where the rubric says "input + output", make sure both input and output are on the same screenshot. Make sure to either label the channels or indicate in your lab report which channel corresponds to the input and output.

2-1 RC (3 points)

1 point for screenshot with time constant drop measurement
1 point for screenshot with time constant rise measurement
1 point for showing that the measured time constant is RC

2-2 Differentiator (5 points)

1 point for 3 screenshots (square, triangle, and sine)
3 points for detailed explanations of the output based on the input (square, triangle, and sine)
1 point for answering questions about worst-case impedance calculations

2-3 Integrator (5 points)

1 point for screenshot of 10V 100kHz square wave input + output
1 point for input impedance (both DC and infinite frequency)
1 point for screenshot of 10V 100kHz triangle wave input + output
1 point for screenshot of 10V 1kHz triangle wave input
1 point for explanation of the integrator and "are we violating stated condition?"

2-4 Low-pass Filter (8 points)

1 point for calculating f(3dB)
1 point for low frequency (~1 kHz) screenshot
1 point for high frequency (~10 kHz) screenshot
1 point for screenshot with f(3dB) measurement on screen
1 point for table of ~20 data points used for Bode Plot
1 point for Bode (magnitude) plot
1 point for phase plot
1 point for calculation of Bode plot and phase plot

2-5 High-pass Filter (8 points)

1 point for calculating f(3dB)
1 point for low frequency (~1 kHz) screenshot
1 point for high frequency (~10 kHz) screenshot
1 point for screenshot with f(3dB) measurement on screen
1 point for table of ~20 data points used for Bode Plot
1 point for Bode (magnitude) plot
1 point for phase plot

1 point for calculation of Bode plot and phase plot

2–6 High–pass Filter for AC power line (2 points)

1 point for screenshot of pure AC input and filtered output
1 point for calculating attenuation

2–7 Filter Application: Selecting a signal (3 points)

1 point for calculating f(3dB)
1 point for screenshot that illustrates your filtering worked (both inputs + output)
1 point for explanation for why your filtering worked

2–8 LRC low–pass Filter (3 points)

1 point for screenshot with f(3dB) measurement on screen
1 point for (~20) data points used for Bode Plot
1 point for Bode (magnitude) plot plus comparison to RC low–pass filter

3 bonus points for the optional screenshot