**PHYS 391 Lab 5 Response Template Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Please use this document to record your responses to the (bold-faced) questions asked and tasks assigned in Lab 5 (Fourier Transform). ***We’ve left it to you to add space as necessary below each question (specified below)***. If you need to, you’re welcome to leave space and draw neat, well-labeled figures or graphs that support your answers. Please do upload a PDF of this document (including figures, graphs) as your submission for Lab 5.

**Note:** at this juncture, we may assign, also, a coding assignment. We’ll be in communication about this as term evolves.

**Section 5.3:**

1. (N value)
2. (verify period)
3. (predict frequency step)
4. (verify frequency step)
5. (amplitude of coeff.)
6. (describe Vernier bug)
7. (max. frequency of plot, why)

**Section 5.4.1:**

1. (describe FFT plot)
2. (frequency to get ‘single bar’)
3. (describe after adjustment)
4. (speculate about adjacent bars)
5. (method for reconstructing true frequency from FCs)

**Section 5.4.2:**

1. (calc. change in frequency resolution)
2. (verify change)
3. (TD plots)
4. (effect of doubling N)
5. (verify change)
6. (why not double N?)

**Section 5.5:**

1. (description of frequency scan)
2. (freq. approaches Nyquist)
3. (above Nyquist, ‘400 Hz’ signal?)
4. (freq. above sampling freq?)
5. (what is pattern?)

**Section 5.6:**

1. (fidelity of sine wave, audio)
2. ( “ of triangle wave)
3. ( “ of square wave)
4. (square wave from voltage probe)
5. (expected overtones, triangle wave)
6. ( “ “ square wave)
7. (*overtones* of freq > Nyquist?)
8. (a ‘good idea?’)
9. (why use a low-pass filter?)

**Section 5.7:**

Describe harmonic components of a few waveforms.