LCR lab

Objective:
To determine if data support, within error, the standard model of damped oscillation in an LCR circuit.

Model:
The model is found in the following link
https://en.wikipedia.org/wiki/RLC_circuit
The oscillation you will study is underdamped so please refer to this section in the link.

Method:
Rather than record the decay waveform (see the plot found on the above link), as you did with the RC decay, and fit it with a model, you will measure the time interval between zero-level crossings. From the equation in the underdamped section of this link, determine the model prediction for this time interval.

Procedure:
Use the scope to view the decay in your circuit. If your circuit has any electrical component other than an R, C, and L then you cannot be sure that the model is appropriate. Design your circuit to satisfy this requirement. You need to trigger the scope the see the oscillations. Have the TA check that you have the appropriate circuit, signal, trigger setup, and voltage levels. Then connect, in parallel to your scope probes, the Agilent time interval counter
http://www.keysight.com/en/pd-1893411-pn-53220A/350-mhz-universal-frequency-counter-timer-12-digits-s-100-ps?cc=US&lc=eng
Have the TA explain how to use the meter. Then search for the word "time interval" in the users guide found here
https://d3fdwrtpsinh7j.cloudfront.net/Docs/document/53220-90001.pdf
See if you can make sense of this section of the document. It's good to practice learning to reading technical writing.
Have the TA explain how to record data and answer any of your questions.

Questions:
-how can you check the results from the time interval instrument to see if they make sense?
-how do you determine the error in your measurement?

Second week team projects:

-move the inductor near the power supply and near your circuit but don't have the power supply connected to your circuit. Don't generate any transients. Set the scope to the most sensitive setting. Do you see any effect? What might they be caused by?