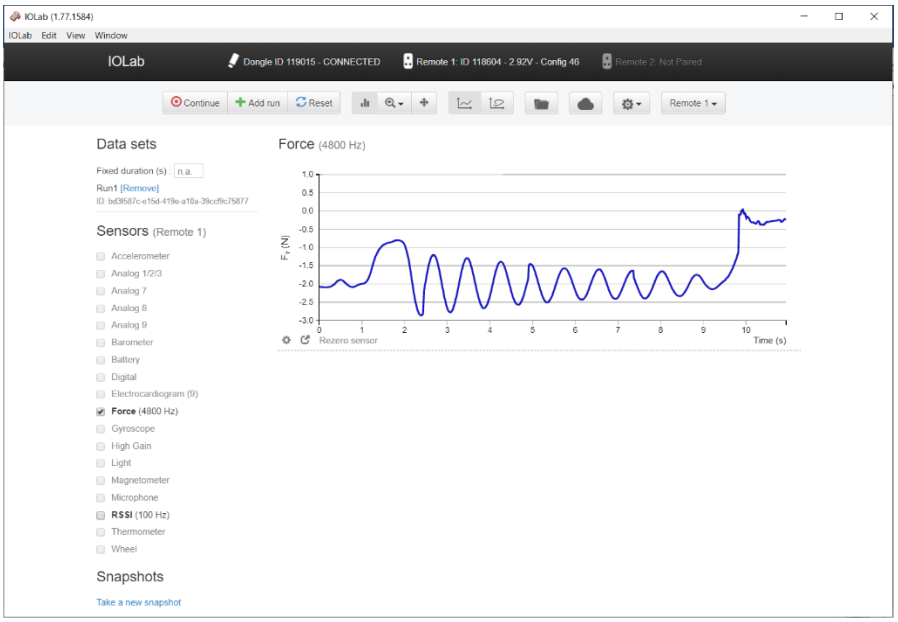
iOLab Spring Oscillations

Purpose: To illustrate the relationship between spring constant, mass and period of oscillations.

Screw the screw eye in your iOLab kit into the force sensor, and then calibrate your force sensor. If you have your spring constant from the "iOLab Spring Force" lab, you will use it here. If not, repeat that measurement using the directions from that lab.

Then measure the mass of your iOLab device by measuring the force on the force sensor while hanging the device from the spring as shown below:

With the force display on in the iOLab app, start recording data and pull the iOLab down so it begins to oscillate. Let it oscillate until the amplitude of the oscillations has gotten considerably smaller, and then stop recording. If your hand-eye coordination is no better than mine (and that is a very low level) then you might get a plot that looks like this:



Determine the period of the oscillations by measuring the time over which a series of reasonable-looking oscillations take place.

Open a Word file and paste a screen shot of your force vs. time plot into it. Then calculate the period you expect from the spring constant and mass you measured and compare it to the period you measured. Type that result into your Word file, and submit the file via Canvas.