In this lab we will be looking at how waves effect different kinds of objects. We will be looking at strings and a tube of cork dust. The sting will help us look at velocity of waves, linear density and the speed of sound on a solid. We will be looking at longitudinal vibrations in a tube with cork dust and a metal rod. First linear density () can be found by using where m is the mass of the string and L is the length of the string. Depending on the mass of the string the linear density will change. The linear density is closely related to the velocity of the wave. If there is a larger linear density, then the wave will be slower and have a longer period. If the linear density of the string is lower, then it will have a much faster period and shorter taller waves. We can find the velocity of the string when we know the linear density, with . For this formula T is the tension force on the string and is the linear density. Again, we see how the linear density effects the velocity, because T=mg we know that if there is something hanging from the string it will directly affect the wave size and period length. We can also use this formula if we know the frequency of the wave or the wavelength. Where is the frequency of the wave and is the wavelength of the wave. Young’s Modulus is for solids or gasses, and it basically is checking the stiffness of a solid and or how much tension or compression it takes the material to change.

In experiment one we will be using the Pasco Capstone machine to generate a signal on a string to visually show waves. In the second activity we will be using a paper towel with rubbing alcohol on it to stroke a metal rod pressed into a washer in a tube to generate waves to move the cork dust in the tube. Both of these activities allow us to look at how waves affect different materials.