

Lab – Hooke’s Law

Purpose: To find the value of the spring constant of the spring in the Hooke’s Law Apparatus.

Materials:

- Hooke’s Law Apparatus
- Slotted Mass Set

Instructions:

1. Be careful not to stretch the spring past its elastic limit.
2. Be sure the apparatus is zeroed before starting. If it isn’t, adjust the ruler so that it is zeroed.
3. Add different masses to the apparatus and take note of the elongation. Do this for at least six different mass values.
4. Complete the following data table:

Mass (g)	Mass (kg)	Force (N)	Δx (cm)	Δx (m)

5. Graph the force (y-axis) versus the elongation in meters (x-axis). Draw the best-fit line. This should result in a direct relationship. Calculate the slope of the best-fit line, which represents the spring constant.
6. Calculate the area under the curve, which represents the work done on the spring.
7. Calculate the PE of the spring using the calculated spring constant and the greatest value of the elongation in meters.
8. The conclusion should include:
 - A discussion of the relationship between force and elongation
 - A discussion of the calculation of work and potential energy
 - A description of the lab experience