Physics 1114 - General Physics I
Lab 1 - 2012.06.06

Overview: We will attempt to calculate the strength of gravity here on the surface of planet Earth.

Details: Since we already know that gravity is approximately 32 ft/sec^2, dropping a ball from a 3 story building would still take only about 1 second. This means that a ball would have to be dropped from a significant height for any meaningful time measurements to be taken, at which point height measurements lose accuracy. To increase time without increasing height, an incline plane can be used instead. More mathematics must be used, and as well as certain physical forces, but it is a more tractable approach in regards to data acquisition.

The lab has an air slide that can approximate a frictionless incline, as well as sled which fit the slide. The slide can be elevated at one end to the any level desired, so the elevation of the incline can be adjusted as desired. Once your theoretical framework has been set up, you should be able to measure the length of the slide, angle of elevation, and time of transit for the sled along slide, to help calculate gravity.

In a similar approach, steel bearings can be used and rolled down a ramp. A short meter long ramp will be available in the lab, while you are also allowed to roll the steel bearings down other ramps around campus, as long as the angle of elevation of the ramp can be calculated.

Each of the air slide and ramp experiments should be run numerous times so that enough data can be tabulated to allow for rigorous analysis. Once data has been collected, be sure to write up your report on the experiments in accordance with the guidelines found in the document *LabNotes.pdf*.