Phys 5053 -- Assignment 1.

Due Wednesday, September 15th, before class.
Hardcopy or electronic copy is acceptable.

1. Generate a sample X of size 100 from normal distribution (μ =5, σ= 4). Plot it as a histogram. Compute the mean and standard deviation of this sample using Matlab functions 'mean(X)' and 'std(X)' or 'std(X,1)'. What is the difference between 'std' and 'std(,1)' (read Matlab help)? On the same graph, plot an empirical cumulative distribution function (c.d.f.) of your data using the 'cdfplot' function and a normal c.d.f. with your estimated mean and standard deviation. Print the graph and list all Matlab commands that you used in this exercise. Compare your histogram for sample X with a histogram for a sample Y of size 1000 drawn from the same distribution.

2. Generate a random sample of size 25 of integer numbers, drawn from a uniform distribution between 0 and 10 (like simulating rolling a dice with 10 faces). Calculate the mean, median, most probable value, and standard deviation.

3. Measure the three dimensions of your favorite book in cm. Estimate the uncertainty and explain your reasoning. Don't forget to mention which instrument you used. Calculate the volume of the book. Quote both the original measurements and the calculated result with uncertainties.