

## Nanocourse Technologies for Data Analysis for Experimental Biologists – Day 1 Homework

Due Thursday, May 15 at the start of class (please be prepared to demonstrate the steps you have taken or quickly summarise a point for your fellow students)

From the nanocourse website on

<https://nanosandothercourses.hms.harvard.edu/node/306>

download the files

- bunnies.xls
- dragons.xls

These are the files you will be working on for this assignment

1. The file bunnies.xls contains a list of weights of 500 rabbits. Select the parameters that best describe your dataset, and plot them.
2. The file dragons.xls contains a list of wingspans of 500 dragons. Select the parameters that best describe your dataset, and plot them.
3. How do the means of both datasets compare? How do their standard deviations compare?
4. Are your datasets normal? For each one, give three reasons as to why or why not.
5. Read up on sample distributions online, and see if you can figure out a way of repeatedly drawing a sample of a particular size from a population and computing the mean in JMP.
6. Using exercise 5 (or otherwise) draw 100 random samples of size 50 from your rabbit population and record the sample means. What does the distribution of sample means look like?
7. Using exercise 5 (or otherwise) draw 100 random samples of size 50 from your dragon population and record the sample means. What does the distribution of sample means look like? In this distribution, how many values lie within one standard deviation from the mean?