FOR 373: Assignment 1 – Review of Fundamental Statistics [60 points]

Notes: 2-pages of notes can be attached to this assignment and you are encouraged to use your calculator or Excel where necessary. You must show your work to receive any credit (e.g., the equation you use and any assumptions you make). Doing so also indicates whether you understand the method and help you receive partial credit, even if your final answer is incorrect.

Answer questions 1-4 with the following table of data:

Tree #	Species code	DBH (in)	Height (ft)
1	PIPO	20	112
2	PIPO	18	98
3	PIPO	22	108
4	PIPO	18	102
5	PIPO	13	67
6	PIPO	22	89
7	PIPO	13	65
8	PIPO	13	56
9	PIPO	19	102
10	PIPO	14	64

1. In this space draw a bar chart of the DBH and height distributions and state whether the distributions are normal or skewed. NOTE: you will have to select appropriate bin sizes.

2. Calculate the mean, mode, range, variance, and standard deviation of the tree heights:

3. Calculate the mean and 95% confidence interval of the DBH assuming a t value of 2:

4. Calculate to what extent the DBH and height are correlated and discuss whether given this data it is appropriate for a relationship to be produced to predict tree height from a measure of the DBH?

5. Define the following terms:
   a. Precision

   b. Accuracy

6. Does a sample provide you an estimate of accuracy or precision?

7. What is the difference between a sample and a census, what are the benefits of both?

8. What does the Central Limit Theorem state and why is it important to sampling?

9. Describe and give an example of when the sigma function is used.

10. What is the board foot and cubic foot volume of a plank whose dimensions are:
    a. 6 in. x 4 in. x 12 feet

    b. 2 in. x 4 in. x 20 feet

11. If you have 200 of both of the boards in question #10 and know that they have a density of 27.84 lbs/ft^3, what is their value if you can get $225 MBF?

12. What is the objective in designing a sampling strategy for forest management?

13. What is the difference between "n" and "N" when inventorying a stand of 80 acres with 20 1/10 acre plots, using sampling without replacement?

14. What are the minimum stand and tree level data required to run the Forest Vegetation Simulator?

Extra Credit: Pick and defend one of the five characteristics of a good inventory discussed in "Listen to your Customers." There is no set length, but you must support your argument with at least two reasons. Grammar and writing clarity will be considered in grading; typing your thoughts in a word processor is encouraged. (10 points)