CSE 2400

**Applied Statistics**

**Spring 2017**

# Python Assignment 1

## Submit to Canvas before midnight Friday, February 17, 2017

The purpose of this assignment is to familiarize you with some of the data analysis features of Python. We will start with a simple Monte Carlo exercise that many of you tell me that you have already done in Java, i.e., the estimation of Pi. Then I am going to have you redo 9 problems from Homeworks 2 and 3, using distributions available in SciPy (rather than using hand calculations and tables).

Part 1:

1. Perform the Monte Carlo simulation to estimate Pi as found in Section 2.6 (Listing 2.5) of *Python Programming in Context* posted in the Canvas Python Material Module. Try out various values of n. If you are uneasy with Python, read the entire chapter (and Chapter 1).
2. Perform the Monte Carlo simulation using SciPy also posted in the Canvas Python Material Module. Notice the sophistication of this algorithm compared to the brute force code in the previous solution.

Part 2:

Redo the following homework problems using the statistical distributions in SciPy rather than hand calculations and tables.

**Baron Chapter 3:**

3.20, 3.24, 3.31, 3.33

**Baron Chapter 4:**

4.16, 4.18, 4.21, 4.24, 4.25\*

Solve 4.25 twice: once using the binomial directly and once using the normal approximation to the binomial (don’t forget the continuity correction). Compare the results.

Use one of the Python shells (idle, iPython, etc.) to do your work.

* Include the Assignment number and your name as comments.
* Identify each textbook problem with a beginning comment and please do them in order.
* Submit your work to Canvas, e.g., screen shots, .py, .pdf. Submit only one document integrating your work.