

**Assigned: 29 August 2019**

## **Project #1 – Coin flips**

EE 511: Fall 2019

**Due: Thursday, 05 September 2019 at 16:00.** Late penalty: 15% per day before 07 September at 16:00.

1. Simulate tossing a fair coin (a Bernoulli trial) 50 times. Count the number of heads. Record the longest run of heads. Generate a histogram for the Bernoulli outcomes.
  - a. Repeat the above experiment 20, 100, 200, and 1000 times. Generate a histogram for each showing the number of heads in 50 flips. Comment on the limit of the histogram.
2. Simulate tossing a biased coin 200 times where  $P[\text{HEAD}] = 0.80$ . Count the number of heads. Record the longest run of heads. Generate a histogram for the Bernoulli outcomes.
3. Simulate tossing a fair coin 100 times. Generate a histogram showing the heads run lengths.
4. Simulate tossing a fair coin and count the number of tosses until reaching a user-specified positive number of heads.