

# ECE 341 - Homework #4

Binomial and Uniform Distributions. Due Tuesday, May 26th

Please make the subject "ECE 341 HW#4" if submitting homework electronically to Jacob\_Glower@yahoo.com (or on blackboard)

## Binomial Distribution

Assume you toss a coin with a probability of a heads being 0.8

$$X(z) = \left( \frac{0.2z+0.8}{z} \right)$$

- 1) Determine the probability of tossing 6 heads in 8 tosses
- 2) Determine the probability distribution when tossing this same coin 8 times
  - pdf
  - mean
  - standard deviation

NOAA has been keeping track of world weather for the past 137 years. 9 of the last 10 years have been the hottest on record.

- 3a) What is the probability of any given year being one of the 10 hottest on record (i.e. what is p?)
- 3b) What is the probability of 9 of the last 10 years being the hottest on record? (i.e. toss a coin and get 9 heads out of 10 tosses)

## Uniform Distribution

Assume a fair six-sided die:

$$Y(z) = \left( \frac{1}{6} \right) \left( \frac{z^5+z^4+z^3+z^2+z+1}{z^5} \right)$$

- 4) Assume you sum four dice (4d6). Determine the
  - pdf
  - mean, and
  - standard deviation
  
- 4) Assume you sum sixteen dice (16d6). Determine the
  - pdf
  - mean, and
  - standard deviation