

# CS 206 - Introduction to Discrete Structures II

October 14, 2016

Homework: 2

Due Date: Friday, October 21 (3:00 pm)

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## Assignment 1:

A communications channel transmits the digits 0 and 1. However, due to static, the digit transmitted is incorrectly received with probability 0.2. Suppose that we want to transmit an important message consisting of one binary digit. To reduce the chance of error, we transmit 00000 instead of 0 and 11111 instead of 1. If the receiver of the message uses "majority" decoding, what is the probability that the message will be wrong when decoded? What independence assumptions are you making?

## Assignment 2:

The probability of being dealt a full house in a hand of poker is approximately .0014. Find an approximation for the probability that, in 1000 hands of poker, you will be dealt at least 2 full houses.

## Assignment 3:

Suppose that a batch of 100 items contains 6 that are defective and 94 that are not defective. If  $X$  is the number of defective items in a randomly drawn sample of 10 items from the batch, find

1.  $\Pr[X = 0]$
2.  $\Pr[X > 2]$ .

## Assignment 4:

A certain typing agency employs 2 typists. The average number of errors per article is 3 when typed by the first typist and 4.2 when typed by the second. If your article is equally likely to be typed by either typist, approximate the probability that it will have no errors.