



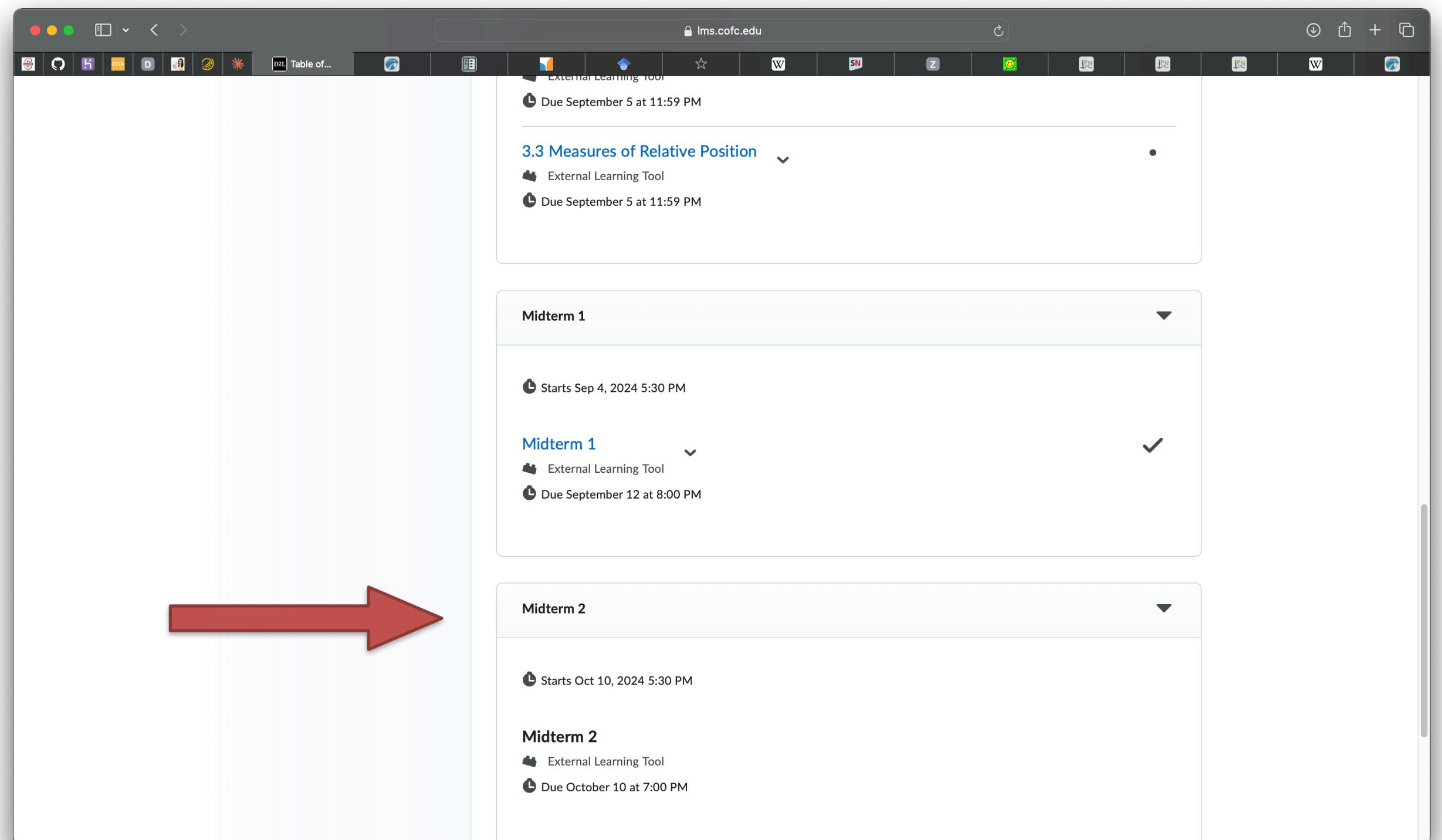
COLLEGE OF CHARLESTON

# Midterm 2 Review

**Math 104-03: Elementary Statistics**

# Thursday October 10th

- ▶ Midterm 2 is take-home
- ▶ No collaborating
- ▶ Opens at 5:30pm, Closes 7pm
- ▶ 1 hour to answer questions



# Thursday October 10th

- ▶ Midterm 1 is take-home
- ▶ No collaborating
- ▶ Opens at 5:30pm, Closes 7pm
- ▶ 1 hour to answer questions

A screenshot of a web browser displaying the Hawkes Learning platform. The URL in the address bar is learn.hawkeslearning.com. The page shows an assignment titled "Assignment: Midterm 1". The assignment details are as follows:

| Details             |                        |
|---------------------|------------------------|
| Due:                | Sep 12, 2024 7:00PM ET |
| Attempts Remaining: | 1                      |
| Time Limit:         | 60 minutes             |
| Description:        | (empty)                |

A large red arrow points from the text "Due in Weeks" in the top right corner towards the due date field. A blue "Start" button is located in the top right corner of the details table.

# Chapter 5

- ▶ Know how to count the number of combinations, i.e. number of ways to choose  $r$  objects from a group of  $n$  objects
  - Example: a person tosses a coin 8 times. How many ways can she get 3 heads?
- ▶ Understand the difference between a discrete and a continuous random variable
- ▶ From a table describing the values and related probabilities of a discrete random variable, calculate the expected value, variance, standard deviation, and probabilities such as  $\mathbb{P}(X \geq 8)$ .
- ▶ Apply the concept of expected value and variance to compare financial plans
  - Which plan has the higher payout?
  - Which plan has the higher risk?
- ▶ Calculate a probability  $\mathbb{P}(X = x)$  for a binomial random variable for given  $n$  and  $p$ <sup>4</sup>
- ▶ Also calculate  $\mathbb{P}(X \geq x)$  or  $\mathbb{P}(X \leq x)$

# Chapter 6

- ▶ Understand the defining properties of the normal distribution
- ▶ From two normal curves, be able to identify which has the larger/smaller/equal mean and which has the larger/smaller/equal standard deviation
- ▶ Calculate areas under the standard normal curve:
  - To the left of a z-value (left tail)
  - To the right of a z-value (right tail)
  - Between two z-values (shoulder)
  - Outside of a range of z-values (both tails)
- ▶ By calculating standard scores (z-values), calculate the probability  $\mathbb{P}(X \leq x)$  where  $X$  is a (not standard) normal distribution.

# Chapter 7

- ▶ Understand the difference between a distribution and its sampling distribution
- ▶ Calculate the mean and standard deviation of a sampling distribution from population mean, population standard deviation, and sample size
- ▶ Calculate probabilities by computing the z-score of the sample mean
- ▶ Calculate probabilities by computing the z-score for a sample proportion