I. **Pre-class material** Either read the indicated textbook sections OR watch the indicated video.

(a) **Sections to Read** (All content from Blitzstein and Hwang's *Introduction to Probability* unless otherwise noted). A digital copy of the textbook is available for free via the authors' website.

- Read sections 3.4, 3.5, 3.6

(b) **Videos to Watch** (All videos from Blitzstein's Math 110 YouTube channel, unless otherwise noted)

- Lecture 8: Random Variables and Their Distributions (from 8:00 to 18:00, 32:00 to end)
- Lecture 9: Expectation, Indicator Random Variables, Linearity (from start to 11:00)
- Read Section 3.5 (the discrete uniform isn't discussed in any of the videos)

II. **Objectives** (By the end of the day's class, students should be able to do the following:)

- Give explicit descriptions of the probability mass function for Hypergeometric and Uniform random variables.
- Identify quantities which have the Hypergeometric and Uniform distributions in a variety of probability models.
- State the definition of the cumulative distribution function; given the pmf for a random variable, determine the cdf and vice verse.
- Determine the pdf and cdf for functions of a particular random variable in terms of that original random variable.

III. **Reflection Questions** (Submit answers on Gradescope `https://www.gradescope.com/courses/425901`)

1) Explain why, in the definition of the **Discrete Uniform Distribution**, the assumption that C is a finite set is a necessary assumption. That is, what would go wrong if C were allowed to be an infinite set?
2) A standard deck of 52 playing cards contains 26 red and 26 black cards. After thoroughly shuffling the deck, 5 cards are drawn without replacement. Let X denote the number of red cards drawn. What is the name (as well as specific parameter values) for the distribution of X? How would your answer change if the cards were instead drawn with replacement?
3) Suppose F is the cdf for a discrete random variable with **finite** support. Is it ever possible for F to be a continuous function? Briefly explain.

IV. **Additional Feedback** Are there any topics you would like further clarification about? Do you have any additional questions based on the readings / videos? *If not, you may leave this section blank.*