I. **Sections to Read** (All content from DeGroot and Schervish's *Probability and Statistics* unless otherwise noted) A digital copy of the textbook is available for on our class PWeb site, under the Day One Access tab.

(a) Section 10.6 (just pages 657 - 660; the section titled **The Sample Distribution Function**)

(b) Section 12.6 (just pages 839 - 840; the section titled **Introduction**)

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

- State the definition of the Sample (or Empirical) Distribution Function and explain how it relates to the CDF.
- State the Glivenko-Cantelli Lemma and interpret it in everyday language.
- Summarize the general principle of bootstrap analysis.
- Explain the difference between *parametric* and *nonparametric* bootstraps.

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

1) Suppose n is a large number. Let $x_1, \ldots, x_n$ be the observed values of a random sample $X_1, \ldots, X_n$, where the X_i are ii with common CDF F. Let F_n be the Sample Distribution Function built from this sample. Briefly describe how the shape of the graph of $F_n(x)$ compares to the graph of $F(x)$.

2) Suppose X_1, X_2, X_3, X_4 are an iid sample, where the CDF of each X_i is $F(x)$. Suppose we observe $X_1 = 5, X_2 = 3, X_3 = 0, X_4 = 7$. Let F_4 be the Sample Distribution Function built from these observed values. Give step-by-step instructions for how to simulate a sample of iid variables $X_1^*, X_2^*, X_3^*, X_4^*$, where the CDF of each X_i^* is F_4.

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.*