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 9.5

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

- Give the definition of the t test procedures, including all necessary modeling assumptions.
- State and prove the level and unbiasedness properties of the t test procedures.
- Specify the p-values and power function for the t test
- Explain how to modify the t test procedures for two-sided alternative hypotheses

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

1) Explain why each of properties (iv) and (v) in Theorem 9.5.1 are desirable properties for a test procedure of the hypotheses $H_0 : \mu \leq \mu_0$ vs $H_1 : \mu > \mu_0$.
2) Suppose you are a medical researcher performing a significance test to determine the effectiveness of a new drug therapy compared to an existing treatment. Give one reason why it might be helpful to have an explicit formula for the power function for your particular significance test.
3) True or False? If we are testing $H_0 : \mu = \mu_0$ against $H_1 : \mu \neq \mu_0$ for samples from $N(\mu, \sigma^2)$ with both μ and σ^2 unknown, using a test of size $\alpha = 0.05$, we can explicitly identify the power of the test when $\mu = 1$.

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.*