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 the following sections from the Whitman College Calculus text: `https://www.whitman.edu/mathematics/calculus_online/`
  - Section 11.8: Power Series
  - Section 11.9: Calculus with Power Series
  - Section 11.10: Taylor Series

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

- There aren't any lecture videos covering Taylor Series. Instead, read the textbook sections listed in the **Sections to Read** above.

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

- State the general definition of a power series.
- Express derivatives and integrals of power series as power series.
- Compute power series representations for several common functions: logarithms, exponentials, and rational functions
- State the definition of the Taylor Series for a function centered at a given value.
- Find the Taylor Series representations for several common functions

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

1) Let $f(x) = x^2 + 3x - 1$ and let $g(x) = \sum_{k=20}^{\infty} x^k$. Explain why both f and g are power series (even if they differ superficially from the form in Definition 11.8.1).
2) Suppose $f(x)$ is the following power series:

$$f(x) = \sum_{k=1}^{\infty} kx^k$$

Find a power series formula for $f'(x)$.

3) Consider the function $g(x)$ given by the following power series:

$$g(x) = \sum_{k=0}^{\infty} \frac{2^k}{k!} x^k$$

Use facts about Taylor Series to find $g'(0)$ and $g''(0)$ without actually taking any derivatives.

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.*