Material: Metric spaces, as covered in Sally chapter 4, pps. 125-154.
   Recommended studying: Text, exercises in the text, homework problems. Think about the implications and equivalences between the major ideas.

Pre-exam office hours: Monday 4-5:30pm in E 312.

Major topics:

- Metric space: basic definitions. Distance between points, distance between sets.
- Topology of metric spaces: open and closed sets, interior, closure, boundary, exterior, isolated point, accumulation point, dense set.
- Continuity: various equivalent definitions ($\epsilon - \delta$, limits, open sets). What is preserved by continuous functions. Uniform continuity.
- Convergence and completeness: Cauchy sequences, complete metric space, completion of a metric space.
- Compactness: Heine-Borel and Bolzano-Weierstrass properties, compactness, sequential compactness.
- Separability, connectedness.
- Maps between metric spaces: homeomorphism, isometry.
- Applications to $\mathbb{R}^n$. 