Key points from Lecture 1 of ASTR 350

1. Black holes make the news a lot... but often in misleading ways. For example, no, they are not cosmic vacuum cleaners! You're perfectly safe as long as you're far enough away.
2. Black holes come in at least two major size groupings: stellar-mass (from a few to a few tens of times the mass of the Sun) and supermassive ($\sim 10^5 - \text{few} \times 10^{10}$ times the mass of the Sun).
3. By itself, a black hole is nearly invisible. But when they are near enough gas or other stars, we can infer their existence using all forms of electromagnetic radiation (radio waves, optical light, X-rays, and many more) and, within the last several years, by gravitational waves.
4. To describe black holes fully we need Einstein's theory of gravity, general relativity; we'll get to that during the course.