Welcome.

- why study this course:
  - theoretical elegance, insight on hardness of problems
  - ability to research in any area of algorithms
  - ability to recognize problems that arise, apply past techniques, and develop new ones
  - broad sense of "what is algorithms". Not deep—other courses follow.
- Varieties of problems and algorithms
  - numerical analysis/linear algebra
  - number theoretic. drives cryptography
  - combinatorial—focus of this course.
    - things involving permutations (sorting), graphs (shortest paths) and subsets (linear programming).
    - many *optimization problems*—find the best possible solution
    - almost always, finitely many solutions. brute force always works. we want something better.
    - combinatorial optimzation: major subarea, but not all we cover (vempala course)
  - aspects of all will arise in others
  - some problems/algorithms draw from multiple areas—eg comp. geom.
- For those who've done randomized...
- course summary sheet
- I will teach fast. Slow me down with questions.