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 optimization: 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.