Math 454: Syllabus and Course Outline

Week 1: The pigeonhole principle; Mathematical Induction; Permutations and combinations; Discrete probability; The principle of inclusion and exclusion.

Week 2: Recurrence relations; Generating Functions; Partitions.

Week 3: Coding Theory; Latin squares; Hall's marriage theorem.

Week 4: Graphical degree sequences; Spanning trees; Cycles in graphs; Directed graphs.

Week 5: Extremal combinatorics; Ramsey theory; The probabilistic method; Combinatorial games.

Week 6: Review.