

# Math 446 - Combinatorics

Fall 2004 at Lehigh University

**Class Meets:** MW 1:10 - 2:25 probably in XS 336

**Instructor:** Garth Isaak

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**Office Hours:** To be announced.

**Text:** Manuscript of a text by Douglas B. West

**Content:** The course will be divided into 3 parts:

- Combinatorial optimization: duality and polyhedral results, integrality conditions and unimodularity, combinatorial duality and min/max results, matching
- Set systems: matroid basics, matroid union and intersection and applications, basic ordered sets, basic extremal set theory
- Enumeration: basic counting/combinatorial bijections, recursion, generating functions, inclusion-exclusion

**Exercises:** Homework exercises will be assigned weekly. You should attempt to do the exercises on your own first, but you are encouraged to discuss problems with other students and in class. Final written solutions should be your own work. If there is significant consultation with another student please indicate this.

**Tests:** There will be three in class tests corresponding to the three parts. You will be expected to know major theorems and techniques for these exams.

**Grading:** I will have a good idea of for grades from participation, homework and exams. More or less I will use 35% for homework, 20% for each test and 5% for participation.