Math 591: Graduate Combinatorics Fall 2009

Instructor: Prof. Patricia Hersh
plhersh@ncsu.edu, 515-2385
Office: 3122 SAS Hall
Office Hours: by appointment

Class Meeting Time and Location: TuTh 1:30-2:45pm, SAS Hall 1218.

Text: Enumerative Combinatorics, Volume I (second edition), by Richard Stanley

Prerequisites: None

Course Topics: Enumerative Combinatorics. More specifically: overview of methods of counting; sets and multisets; the twelve-fold way; overview of inclusion-exclusion; sign-reversing involutions and application to counting via determinants; partially ordered sets; lattices; distributive lattices; Möbius inversion and Möbius functions; R-labelings and EL-shellability; rational generating functions; reciprocity theorems for generating functions; P-partitions. The continuation course next semester will be on geometric and topological combinatorics, using the book "Lectures on Polytopes" by Günter Ziegler..

Homework: There will be recommended problems, some of which will be collected. While the book includes solutions, these are much more terse than what I will expect from you and should be regarded as hints, only to be used if necessary. If you look at these solutions, please indicate that you have done so when handing in homework. The first homework is: Chapter 1, problems 1, 2a, 2b, 3, 4a, 5a, 7, 9a, 14a, 14b, 19a, 23a

Grading: Course grades will be determined by homework, one take-home midterm exam, and one take-home final exam. Each will count for 1/3 of your grade.

Class Participation: Please do not hesitate to ask questions in class. It helps everyone!

I hope you enjoy this course and learn a lot!