Math 68: Algebraic Combinatorics
Fall 2003

Dartmouth College

Instructor: David Little
Lecture: MWF 11:15-12:20, Bradley 103
X-period: Tu 12:00-12:50, Bradley 103
Website: www.math.dartmouth.edu/~m68f03

Office: Bradley 411
Office Hours: MWF 3:00-4:00, or by appointment
E-mail: dlittle@dartmouth.edu
Phone: 646-2960

Course Description:
This course serves as an introduction to the algebraic methods of enumeration. Topics will include but are not limited to Inclusion-Exclusion, Polya Enumeration, Ordinary and Exponential Generating Functions, and Möbius Inversion. Other topics will be covered as time and interest permits. The course will be taught using the technique known as Guided Discovery. That is to say, students will work from a set of questions that will lead them through the material. These questions will allow students to discover the main techniques and theorems of algebraic combinatorics for themselves.

Course Goals:
In addition to the topics listed above, students will come away from this course with a deeper understanding of what it is to be a mathematician. During class, working well with other students and exchanging ideas is essential. On homework, students will be expected to write up well-organized and rigorous solutions where nothing is left to the reader. Students are encouraged to learn the TEXtypesetting language. Not only will your solutions look professional, but using TEXmakes resubmitting solutions that much easier. And lastly, students will become proficient at using the "Mathematic" Method, that is, how to attack any problem with confidence!

Grading Policy:
The overall grade will be based on written homework (40%), 2 take-home midterms (20% each) and a take-home final exam (20%).

Homework Policy:
There are over 120 problems that the students are encouraged to work through. However, it is by no means expected that everyone (or anyone, for that matter) will complete every problem. In fact, the successful student will complete between 80 and 90 of the problems. Keep in mind that some problems you will get immediately, while other problems are designed to challenge you for an extended period of time. It's possible that some problems will keep you thinking throughout the entire quarter. Do not get discouraged if you can not solve a particular problem. It's very likely that problems appearing later in the notes will help you solve a problem you encountered earlier.

When writing up your solutions, make every effort to explain each step. Proofs should be easy to read and well-organized. Each problem should be written on a separate sheet of paper and stored in a 3-ring binder. Students will be allowed to resubmit (as many as 4 times) any problem that is not completed in a satisfactory manner. All solutions, whether they are correct or not, are to be kept in your binder. If a problem is resubmitted, please insert it immediately following your last solution for that same problem. Each student will receive a gradesheet to keep track of which problems have been graded and which problems have been submitted for grading.

Homework will be collected every friday and returned to students the following monday. Each problem will be graded on the following scale:

0	Little to no progress has been made in solving problem.
5	Significant progress has been made, however solution is still incomplete and/or incorrect.
9	Solution is essentially correct, however minor improvements can still be made.
10	Excellent, well-written solution!

Academic Integrity:
Dartmouth students are expected to adhere to the honor principle. For this course, while collaboration on homework is encouraged, each person must hand in their own work. Students may not copy solutions from *any* source. The midterm and final examinations will be open notes, however collaboration of any kind other than with the instructor is prohibited.

Students with Disabilities:
Students with disabilities who will be taking this course and may need disability-related classroom accommodations are encouraged to make an appointment to see their instructor as soon as possible. Also, they should stop by the Academic Skills Center in Collis Center to register for support services.

Important Dates:

Wed. Sept. 24	First Day of Class
Nov 26-28	Thanksgiving Holiday, No Class
Wed. Dec 3	Last Day of Class
Dec 6-10	Final Exam Period