

University of Delaware
Department of Mathematical Sciences

M688-Combinatorics and Graph Theory

Fall 2011

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Office Hours: M, W 1:00–2:00pm, or simply stop by my office, or send me emails.

This is the first course in the 688–888 sequence. This sequence is essential for students who want to do research in discrete mathematics. In this course, we will cover enumeration, basic graph theory, basic Ramsey theory, extremal set theory, and linear algebraic methods in combinatorics. In the second course, we will cover designs, codes and finite geometries, the probabilistic method in combinatorics.

The text is **A Course in Combinatorics**, Van Lint and Wilson (Cambridge University Press), 2nd edition. Two useful reference books are **Combinatorics: Topics, Techniques, Algorithms** by Peter J. Cameron (Cambridge University Press) and **Generatingfunctionology**, by H. Wilf (you can download this book from Wilf's homepage at UPenn).

Syllabus: I plan to cover Chapters 1,2,3,4,5,6,10,13,14,15,16,17 of the textbook. I will start by covering some very basic material on counting.

Grading:

In-class Midterm: 50 points

Comprehensive take-home Final: 100 points

Homework: 150 points

Total: 300 points

Your final grades will be based on the total number of points accumulated.

Remarks:

I will give a set of homework problems almost every week. I will collect the homework on the due date. Late homework will not be accepted unless you talk to me first and give me convincing excuses. You may discuss the homework problems with your classmates; in fact I encourage you to do so. But you have to write down the solutions by yourself.

The textbook was written by two top experts in combinatorics. Their writing is terse and to the point (i.e., they do not waste their words). You may feel uncomfortable with their writing style at the beginning since it puts a lot of pressure on the reader. I suggest that you work hard from the very beginning. Hopefully you will appreciate the book by the end of the semester.