Math 375-01: Discrete Math   Professor: Dan Singer
Mon-Tue-Thu-Fri 2:00 – 2:50 pm   Webpage: http://mavdisk.mnsu.edu/singed/
Classroom: Wissink Hall 286A   Email: dan.singer@mnsu.edu
My Office: Wissink Hall 263   Office Hours: 12-1, 3-5 Mon-Tue-Thu-Fri

Course Description: The two main topics of this course are Enumerative Combinatorics and Graph Theory. Enumerative Combinatorics is the art counting discrete objects and includes inclusion-exclusion, recurrence relations, generating functions, and Polya's method for counting objects with symmetries. Graphs are used to model a variety of problems in discrete mathematics, and we will develop many of their properties. I will distribute notes on selected topics as needed. Please read these carefully and use them to help you take notes in class.

Prerequisite: Math 247 with a C or better or consent

Textbook: *Introductory Combinatorics, 5th Edition,* Richard A. Brualdi, 2010, Prentice Hall

Course Format: I will develop the material and work out a variety of examples in class. I am relying on students to take careful notes, read the textbook carefully, and write up the homework solutions thoroughly. The more thorough and precise you are in writing up homework solutions, the better you will understand the material.

Exam Policy: You may bring in a single sheet of notes to refer to during each exam. You may use a calculator as directed.

Homework Policy: All homework completed in good faith and turned in will receive full credit. Please indicate at the top of your homework one or two problems you would like me to comment on, if necessary.

Attendance Policy: I don't award points for attendance, but my exams are based on the assumption that students have attended 100% of all classes, have taken careful notes, and have done all the homework.

Student Conduct: Please arrive on time and don't interrupt the class with conversation or electronic devices. Your respectful conduct will be appreciated!

Grade Calculation: 4 Exams (including the Final Exam): 100 points each. Homework: 100 points. The final grade is determined by the scale below:

A: 450 – 500 points   B: 400 – 449 points   C: 350 – 399 points
D: 300 – 349 points   F: 0 – 299 points

Grade Policy: Your grade is based on your performance during the sixteen weeks of the regular semester in accordance with the grade calculation above. I will not change any grades after they have been submitted to the Registrar, and I will not consent to extra-credit opportunities designed for the express purpose of raising the grade of one

individual. All discussions with me regarding your grade should be limited to how you can study and what scores I have currently recorded for you in my records. Consult the handout "Five Tips for Effective Studying in Mathematics Courses"

Lecture Schedule and Reading Assignments:

Weeks 1 and 2: Elementary counting arguments. Read Chapter 2 and the handout.

Week 3: Binomial Coefficients. Read Chapter 5, sections 1, 2, 3, 4.

Week 4: Inclusion-Exclusion. Read Chapter 6, sections 1, 2, 3, 4.

Weeks 5 and 6: Recurrence Relations. Read Chapter 7, sections 1, 4, 5 and the handout.

Weeks 7 and 8: Generating Functions. Read Chapter 7, sections 2, 3, 6, 7.

Weeks 9 and 10: Polya Counting. Read Chapter 14 and the handout.

Weeks 11 and 12: Graph Theory. Read Chapter 11, sections 1, 2, 3, 4, 5, 7.

Weeks 13 and 14: More Graph Theory. Read Chapter 12, sections 1, 2, 3, 6.

Week 15: Introduction to Digraphs. Read Chapter 13, sections 1, 4.

Exam Topics and Schedule:

Exam 1 covers Weeks 1 through 4. Date: Friday, February 15.

Exam 2 covers Weeks 5 through 8. Date: Friday, March 22.

Exam 3 covers Weeks 9 through 12. Date: Friday, April 19.

Final Exam covers Weeks 13 through 15. Date: Monday, May 6, 12:30 p.m. - 2:30 p.m.