

**Text** We will be using *Combinatorics* by H. Joseph Straight and *Introduction to Graph Theory* (Fourth Edition) by Robin J. Wilson.

**Home Page** Start at <http://buzzard.ups.edu/courses.html> to locate the WWW page for this course.

**Office Hours** My office is Thompson 321G; the telephone number is 879–3564. Making appointments or simple, non-mathematical questions can be handled via electronic mail — my address is [beezer@ups.edu](mailto:beezer@ups.edu). Office hours will be 1:00–1:50 on Monday, Tuesday, Wednesday and Friday. I will always be available during these times on a first-come, first-served basis. If these times are not convenient, please do not hesitate to make an appointment with me for another time. You are also welcome to drop by my office without an appointment at any time that I am in (roughly 3 P.M. – 4:30 P.M. is a good time to try). Office hours are your opportunity to receive extra help or clarification on material from class, or to discuss any other aspect of the course.

**Homework** Problems will be suggested throughout the lectures. Of course, you are not limited to working *just* these problems. It will be your responsibility to work these problems and seek out my feedback as you desire. You may turn in written solutions for my comments at any time, or you may come by my office to discuss your solutions.

These exercises will form the basis for the classes where we will have problem sessions and for discussions in office hours. It is your responsibility to be certain that you are learning from these exercises. The best ways to do this are to work the problems diligently when assigned and to participate in the classroom discussions. If you are unsure about a problem, then a visit to my office is in order. Making a consistent effort outside of the classroom is the easiest way to do well in this course.

Mathematics not only demands straight thinking, it grants the student the satisfaction of knowing when he [or she] is thinking straight.

— D. Jackson

Mathematics is not a spectator sport.

— Anonymous

I hear, I forget.

I see, I remember.

I do, I understand.

— Chinese Proverb

An education is achieved, not received.

— Anonymous

**Exams** There will be five 50-minute timed exams — they are all listed on the *very tentative* schedule. The lowest of your five exam scores will be dropped. The comprehensive final exam will be given at 8 AM on Wednesday, May 11 at 8 AM. The final exam cannot be given at any other time and also be aware that I will allow you to work longer on the final exam than just the two-hour scheduled block of time. In other words, plan your travel arrangements accordingly.

**Grades** Grades will be based on the following breakdown: Exams — Two-thirds; Final — One-third. Attendance and improvement will be considered for borderline grades. Scores will be posted on the World Wide Web at <http://buzzard.ups.edu/courses.html>. A reminder about withdrawals — a Withdrawal Passing grade (W) can only be given during the third or fourth weeks of the semester, after that time (barring unusual circumstances), the appropriate grade is a Withdrawal Failing (WF), *even if your work has been of passing quality*. See the attached schedule for the last day to drop with an automatic ‘W’ and please read *The Logger* about these often misunderstood grades.

**Attendance** Daily attendance is required, expected, and overall a pretty good idea.

**Purpose** Combinatorics is important for many problems in computer science and allied fields (like cryptology), is fundamentally the main part of simple probability questions, and is useful in other fields of mathematics, such as abstract algebra. Many optimization questions (scheduling, vehicle routing, etc.) rely heavily on ideas from combinatorics. Its also a major component of problems classified as recreational mathematics (puzzles and games).

We will have occasion to work with many theorems and develop some theories fully, especially in the later part of the course. The principal thrust of this course early on will be on problem-solving.

## Homework Exercises

(Straight, Chapters 0, 1, 2)

Section	Page	Problem
1.1	103	1, 2, 3, 4
0.1	14	6c, 7, 13, 20c, 21, 25
1.2	112	2, 3, 5, 7, 10, 13, 16, 18
0.2	35	1, 7, 9, 11, 13, 15, 18, 21, 24, 28, 31
1.3	127	2, 3, 5, 8, 9, 10, 13, 16, 19, 22, 27
1.4	136	1, 4, 5, 8, 13
1.5	147	1, 3, 6, 7, 12, 15, 17, 19
1.6	159	3a, 5, 8, 10, 11, 16
0.4	81	5, 9, 13a, 16, 23
2.1	185	4, 8, 11, 13, 21, 22–24
2.2	204	3, 4, 7, 10, 15, 21, 22
2.3	227	2a, 3, 5g, 7cd, 9
2.4	239	5, 6, 9, 11, 13, 16, 19

# Tentative Daily Schedule

Monday	Tuesday	Wednesday	Friday
Jan 17 MLK Day	Jan 18 Straight, Chapter 1 (11 lectures)	Jan 19	Jan 21 Problem Session
Jan 24	Jan 25	Jan 26	Jan 28 Problem Session
Jan 31	Feb 1	Feb 2	Feb 4 Problem Session
Feb 7	Feb 8	Feb 9	Feb 11 Problem Session
Feb 14 Exam #1 Last day to drop	Feb 15 Straight, Chapter 2 (10 lectures)	Feb 16	Feb 18 Problem Session
Feb 21	Feb 22	Feb 23	Feb 25 Problem Session
Feb 28	Mar 1	Mar 2	Mar 4 Problem Session
Mar 7	Mar 8	Mar 9 Problem Session	Mar 11 Exam #2

Mid-Term

Monday	Tuesday	Wednesday	Friday
Mar 21 Wilson, Part I (7 days)	Mar 22	Mar 23	Mar 25
Mar 28	Mar 29	Mar 30	Apr 1 Devlin Lecture MAA Meeting
Apr 4 Exam #3	Apr 5 Wilson, Part II (7 days)	Apr 6	Apr 8
Apr 11	Apr 12	Apr 13	Apr 15
Apr 18 Exam #4	Apr 19 Designs (6 lectures)	Apr 20	Apr 22
Apr 25 Problem Session	Apr 26	Apr 27	Apr 29
May 2 Problem Session	May 3 Exam #5	May 4 Housekeeping	

Final Examinations  
Wednesday, May 11, 8 AM