

# Math 104: Finite Mathematics

Section 02 MWF 1:55-2:45pm

Fall 2004

Instructor: Allegra Berliner

Office: 253A Hayes-Healy

Office Hours: Monday/Wednesday 3-4pm, or by appointment

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Course web page: <http://www.nd.edu/~aberline/teaching/math104.html>

## Course Goals

Many of the decisions we make rely on some logical reasoning or evaluation of “the odds” in a situation. This course should help you understand how thinking mathematically is actually a useful, obtainable, practical skill that can help in making such decisions. We’ll do so by taking a tour through several aspects of what is formally called “finite” mathematics.

## Course Content

Textbook: L.J. Goldstein, D.I. Schneider, and M.I. Siegel, *Finite Mathematics & Its Applications*, 8ed. Prentice-Hall 2004.

We will start with chapter 5, which introduces set theory, the formal tool that provides sound structure to understand problems of counting. Then in chapters 6 and 7, we’ll add uncertainty into the mix, and instead of determining “how many” of something we have, we’ll concern ourselves with “how likely” events are to happen—this is the world of probability and statistics.

After this, we will look at chapter 2, which covers systems of linear equations and matrices. Matrices and straight lines give us new ways to interpret the information in a problem, which we’ll use as we learn about optimization--“how to” do something in the most profitable way—in chapter 3.

Beyond optimizing problems in which we have full control, we can consider other situations where we want to find the most profitable strategy by using game theory, the subject of chapter 9. The applications of game theory stretch from economics to lotteries to other strategic games.

## Course Activities

Class meets Mondays, Wednesdays, and Fridays, 1:55-2:45pm in Hayes-Healy 117

*Homework (100pts):* There will be homework assigned from the textbook which will be **collected on Wednesdays**. I will announce the problems in class and post them to the link on the course web page. **Homework is due at the beginning of class.** Everyone is expected to turn in individual homework, but I encourage you to work together as you try to solve problems and to come to my office or the help sessions to talk about the problems. Tests will reflect the homework problems and topics stressed in

lecture, so it's important to not only solve the problems, but understand how and why you got your answers.

*Late Homeworks* will be accepted only with an official note from the office of First-Year Studies, your advisor, the Athletic Department, or the Health Service, and will be worth the average score of all your previously graded homeworks. **More than 2 late homeworks will not be accepted.** Unexcused late homework will not be worth any points and will not be graded.

*In-class activities (50pts):* We will do a variety of in-class activities, such as projects or quizzes, which will be designed to help you grasp concepts from lecture and homework. As with the homework, excused absences from quizzes or activities will be accepted only with an official note, and the average of your previous in-class grades will be given as your score for the quiz. You may receive excused credit for an in-class activity no more than twice, and an unexcused absence from a quiz/activity will result in no credit for that particular quiz/activity.

#### *Exams:*

There will be 3 midterm examinations, each worth 100 points towards your final grade. The exams will have both multiple choice and free response (partial credit) problems, some of which will come directly from your homework.

Exam 1	Tuesday, September 21	8:00AM-9:15AM
Exam 2	Tuesday, October 26	8:00AM-9:15AM
Exam 3	Thursday, November 18	8:00AM-9:15AM

**The final exam will be held on Thursday, December 16, 1:45-3:45pm. (150pts)** The final will be cumulative (covers the entire course), and some questions will come from the midterms and homework.

All exams for Math 104 will be departmental. Exams will be given under the honor code.

*Make-up Exams:* If you have a legitimate conflict with a scheduled exam, you should notify me in advance so that we can schedule a make-up. If illness, family emergencies, or other last-minute Acts of God prevent you from attending an exam, you should notify me immediately in writing with a doctor's excuse or other official explanation of your absence. Such cases will be dealt with on an individual basis.

### **Grading**

Homework	100
In-Class	50
Midterm tests (3 @100 pts each)	300
Final Exam	150
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Total	600

### **Learning Resources**

*Student Help Sessions*, run by previous 104 students, will meet weekly.

*Office Hours/Appointments:* During office hours I am expressly available for Math 104 students. If you can't come during office hours or if you feel you need more immediate/individual attention, please contact me about setting up an appointment. Please note, however, that I reserve the right to schedule two student appointments at the same time if the students are interested in going over the same material.