

Tufts University  
Department of Mathematics  
Math 6 (Finite Mathematics)

Spring 2005

**Text:** *Finite Mathematics and Its Applications, 8th Edition* by Goldstein, et al.

This course will cover linear equations and linear programming (Chapters 1-3), enumeration (Chapter 5), probability and statistics (Chapters 6-7), Markov processes and game theory (Chapters 8-9). There will be three in-term exams and a final:

**Exam 1** : Monday, February 14, 12:00-1:20.

**Exam 2** : Monday, March 7, 12:00-1:20.

**Exam 3** : Monday, April 4, 12:00-1:20.

**Final Exam:** Monday, May 9, 8:30-10:30 a.m.

No calculators will be allowed in the exams. You must show your work to receive full credit for an answer. You are required to sign your exam book. With your signature you are pledging that you have neither given nor received assistance on the exam. Students found violating this pledge will receive an **F** for the course and will be reported to the Dean of Students.

*There will be no make-ups for the three in-term exams.*

If you miss one for whatever reason, its score will be the one dropped in determining your final grade (see below).

**Homework:** The only way to learn mathematics is by solving problems! There is a homework assignment for each lesson of the course. You will receive one point if the homework you hand in contains a bona fide attempt to solve each exercise (showing your work) and the correct answer to at least  $2/3$  of the exercises. You may talk with friends and/or your instructor and you may check your answers using the back of the book and the solutions manual when doing your homework. The solutions that you hand in must, however, be written in your own words. If you have  $n \geq 22$  homework points at the end of the semester, then  $(n - 22)/10$  points will be added to your final average (see below). Homework is due at the class following the lesson to which it corresponds except when the class following is a review for an in-term exam; these assignments are due the first class after the exam. We will begin collecting homework beginning with the second assignment. Note that the graders might not read your solutions as carefully as we will read your exams; expect us to be more demanding on the exams.

**Attendance:** Many of the topics in this course will be new to you. Attendance and class participation are essential!

**Your Grade:** We will make a list of five numbers. The first three will be your scores on the three hour exams and the last two will both equal your score on the final. We will then delete the lowest of these five numbers. Your grade will be the average of the four remaining numbers to which we will then add the bonus you have earned from doing homework problems.

**Tufts University**  
**Department of Mathematics**  
**Syllabus**

Math 6 (Finite Mathematics)

Spring 2005

No.	Sec.	Topic	Assignment
1	1.1, 1.3	Equations and inequalities	p. 8: 23,25,27,31,35; p. 17: 37,39,41; p. 23: 1,3,5,9,11, 13
2	2.1	Systems of linear equations, I	p.63: 17,19,21,23,27,29,35,37,39,49
3	2.2	Systems of linear equations, II	p. 72: 9,11,13,15,19,21,23,29
4	2.3	Matrix arithmetic	p. 84: 7, 9, 11, 21, 23-26, 28, 33, 35, 37, 43, 47
5	2.4	Inverse of a matrix	p. 97: 2,5,7,8,11,15,20
6	2.5	Gauss-Jordan method	p. 103: 1,5,7,8,13,15
7	3.1	A linear programming problem	p. 122: 5-8
8	3.2	Linear programming, I	p. 133: 2,3,5,6,10,13-16
9	3.3	Linear programming, II	p. 146: 21,23,25,27,29

**First Exam (Lectures 1-9): Monday, February 14, 12:00-1:20**

10	5.1, 5.2	Sets, Inclusion-Exclusion Principle	p. 214: 27, 30, 49, 52; p. 220: 2, 4, 11, 15, 17, 20, 37, 50
11	5.3	Venn diagrams and counting	p. 226: 1, 5, 11, 14, 15, 19, 33-40, 50-54
12	5.4	Multiplication principle	p. 232: 2-5, 8, 10, 13-14, 20, 23, 32, 35
13	5.5	Permutations and combinations	p. 239: 3-4, 7-10, 13,21, 28, 35-37, 42, 54, 57, 66-67
14	5.6	Further counting problems	p. 245: 1-4, 7-9, 12, 16, 24, 26, 36, 43-44
15	5.7	Binomial theorem	p. 252: 1, 8-10, 17, 19, 25, 27, 33, 40, 44, 47
16		Counting Review	p. 260: 3-5, 7-8, 11-16, 21,25-27, 33, 37, 45, 47-49, 59, 63

**Second Exam (Lectures 10-16): Monday, March 7, 12:00-1:20**

17	6.1, 6.2	Experiments, outcomes, events	p. 275: 1, 3, 5-6, 11, 13, 16, 19-20
18	6.3	Assignment of probabilities	p. 286: 2-4, 7(a), 8-10, 16(a-c), 17-19,21-22
19	6.4	Calculating probability	p. 294: 1-5, 7, 9, 15, 17, 19, 24-25, 27, 30-31, 36
20	6.5	Conditional probability	p. 305: 1-4, 6-7, 9, 12-13, 15, 17-18, 22, 45,47
21	6.6, 6.7	Trees and Bayes' Theorem	p. 314: 1, 3, 5, 15, 18-20; p. 320: 1, 6, 12, 14, 19
22	7.2	Probability distribution	p. 352: 1, 3, 5-7, 11-13, 19
23	7.3	Binomial trials	p. 360: 1, 5-7, 10-11, 17, 19
24	7.4	Mean	p. 369: 2, 5-6, 9-11, 13

**Third Exam (Lectures 17-24): Monday, April 4, 12:00-1:20**

25	7.5	Variance, standard deviation	p. 379: 1, 5, 15(a-b)
26	7.6	Normal distribution	p. 395: 1-5, 9, 11, 13, 15-17, 19, 21, 23, 26, 30
27	7.7	Normal approximation	p. 401: 1, 3-5, 7, 9, 11, 13
28	8.1	Markov Processes	p. 415: 1-8, 13, 15, 17-19
29	8.2	Regular Stochastic Matrices	p. 425: 1-5, 7, 9, 11, 15, 17
30	8.3	Absorbing Stochastic Matrices	p. 435: 1-5, 7, 13
31	9.1	Games and Strategies	p. 449: 1-3, 5, 7-13
32	9.2	Mixed Strategies	p. 456: 1-3, 5-6
33	9.3	Optimal mixed strategies	p. 465: 1-6, 11-12

**Final Exam (All Material): Monday, May 9, 8:30-10:30 AM**

Math 6 Calendar, Spring 2005

	Comments	C, I	D
Jan. 20			1
Jan. 21		1	
Monday, Jan. 24			2
Jan. 25		2	3
Jan. 26		3	
Jan. 27			4
Jan. 28		4	
Monday, Jan. 31			5
Feb. 1		5	6
Feb. 2		6	
Feb. 3	<b>Add date</b>		7
Feb. 4		7	
Monday, Feb. 7			8
Feb. 8		8	9
Feb. 9		9	
Feb. 10			Review
Feb. 11		Review	
Monday, Feb. 14	<b>Exam 1 12:00-1:20</b>		
"			10
Feb. 15		10	11
Feb. 16		11	
Feb. 17	<b>Drop(Soph-Sr), P/F</b>		12
Feb. 18		12	
Monday, Feb. 21	<b>President's Day---No Classes</b>		
Feb. 22		13	
Feb. 23		14	13
Feb. 24	<b>Monday Schedule</b>		14
Feb. 25		15	
Monday, Feb. 28			15
March 1		16	
March 2		16	16
March 3			Review
March 4		Review	
Monday, March 7	<b>Exam 2 12:00-1:20</b>		
"			17
March 8		17	
March 9		18	18
March 10			19
March 11		19	
Monday, March 14			20
March 15		20	
March 16		21	21
March 17			22
March 18		22	
March 19-27	<b>Spring Break</b>		



### Math 6 Calendar, Spring 2005

	Comments	C,I	D
Monday, March 28			23
March 29		23	24
March 30		24	
March 31			Review
April 1		Review	
Monday, April 4	<b>Exam 3 12:00-1:20</b>		
"			25
April 5		25	26
April 6		26	
April 7	<b>Drop (Fr)</b>		27
April 8		27	
Monday, April 11			28
April 12		28	29
April 13		29	
April 14			30
April 15		30	
Monday, April 18	<b>Patriot's Day--No Classes</b>		
April 19		Review	Review
April 20		31	
April 21			31
April 22		32	
Monday, April 25			32
April 26		33	33
April 27		Review	
April 28			Review
April 29		Review	
Monday, May 2	<b>Drop(W)</b>		Review
<b>Monday, May 9</b>	<b>Final Exam, 8:30-10:30 am</b>		
<b>Deadlines:</b>	For each of the following, you must have signatures of your instructor and advisor on the appropriate form.		
Thur., Feb. 3:	Last day to add		
Thur., Feb. 17:	Pass/Fail deadline; Soph., Jr., Sr. drop without W		
Thur., April 7:	Freshman drop without W		
Mon., May 2:	Drop with W		

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Review

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Review
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