

## SYLLABUS FOR MA 103, FINITE MATHEMATICS

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11:00 – 11:50 A.M., Monday, Wednesday, Thursday;  
and by appointment.

Text: Finite Mathematics by Frank C. Wilson

### Course Description and Overview:

This course is designed primarily for students in business and the social sciences and psychology. MA 103 builds on algebraic skills learned in MA 100 or equivalent courses. There are three main components to the course: linear programming (Chapter 4); theory of interest (Chapter 6); and probability (Chapters 7 and 8). We do not have time in this course to cover each of these topics in depth. Therefore, the course consists of a brief introduction to each of these subjects. More advanced courses cover each of these topics in greater detail.

Systems of linear equations and matrix algebra are important topics for linear programming. Students who take courses in linear programming beyond MA 103 would be expected to know a little about matrix algebra. Matrices are used in a variety of other places as well, including Section 8.3 in the last week of this course. Therefore, in our unit on linear programming, we will study matrix algebra. Here is our unit on linear programming.

#### Linear Programming:

Chapter 1. (brief coverage; this material is covered in MA 100).

Chapter 2, Sections 2.1 and 2.2.

Chapter 4, Sections 4.1 – 4.3.

Chapter 5 is a prerequisite for Chapter 6. Chapter 6 is a brief introduction to the theory of interest, which theory is important in the mathematics of finance. And so, Chapters 5 and 6 together constitute our unit on the theory of interest.

#### Theory of Interest:

Chapter 5, Sections 5.1 – 5.4.

Chapter 6, Sections 6.1 – 6.4.

Many students in MA 103 will eventually take a course in statistics. An understanding of statistics is founded upon an understanding of probability. Chapters 7 and 8 constitute a brief introduction to the theory of probability.

#### Theory of Probability:

Chapter 7, Sections 7.1 – 7.5.

Chapter 8, Sections 8.1 – 8.3, plus Bernoulli Trials.

### Tentative Exam Schedule, (Fairly definite, but subject to change):

Exam 1, Thursday, 01/25/07, Sections 1.2, 1.3, 2.1, 2.2.

Exam 2, Thursday, 02/08/07, Sections 4.1 – 4.3.

Exam 3, Monday, 02/26/07, Sections 5.1 – 5.4, 6.1.  
Exam 4, Wednesday, 03/21/07, Sections 6.2 – 6.4.  
Exam 5, Thursday, 04/05/07, Sections 7.1 – 7.4.  
Exam 6, Thursday, 04/26/07, Sections 7.5, 8.1 – 8.3, Bernoulli Trials.

#### Grading:

The course is viewed as consisting of three mini courses, Linear Programming, Theory of Interest, and Probability. Exams 1 and 2 cover Linear Programming. Exams 3 and 4 cover the Theory of Interest. Exams 5 and 6 cover Probability. A letter grade will be given for each of these three mini courses, and a letter grade for the course then computed by taking the average of these three letter grades.

A second grading system will also be used. In the second system, the lowest of the six exam grades will be dropped and a numerical average taken of the remaining five exam scores. The usual grading scheme will be followed: 93 – 100 is an A; 90 – 92 an A-; 87 – 89 is a B+; 83 – 86 a B; 80 – 82 a B-; 77 – 79 a C+; 73 – 76 a C; 70 – 72 a C-; 67 – 69 a D+; 63 – 66 a D; 60 – 62 a D-; less than 60, an F. This scheme of grading is a minimum guarantee. Normally some kind of a curve is applied so that in practice the grading is a little more liberal than indicated above.

Since there are two grading schemes being employed, you wind up at the end having two letter grades. The higher of these two letter grades will be the final grade for the course.

Since the course consists of three mini courses, there will be no comprehensive final. The final exam period will be used to hand back Exam 6 and to allow students to confer with the instructor regarding the final grade for the course.

**Laptop Policy: The use of laptops and other electronic devices, except for hand held calculators, will not be permitted during exams. When you are in class, I expect your undivided attention. Therefore, the use of laptops during class periods is not permitted.**

#### Note:

This course satisfies the Foundation of Natural Science/Mathematics requirement. Students who complete this course should be able to demonstrate a basic understanding of mathematical logic; use mathematics to solve scientific or mathematical problems in college classes; express relationships in the symbolic language of mathematics; and appreciate the role of probability and statistics in analyzing natural phenomena.

#### Disability Services:

If you have a need for disability related accommodations or services, please inform the Coordinator of Disability Services in the Disability Services Office at 2001 C.B. Hedgcock (227-1700; TTY 227-1543). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state and university guidelines.

## Schedule and Assignments

### WEEK 1.

Tuesday, January 16. Section 1.2, Linear Functions and Equations of Lines.

Exercises. Page 27: # 3,5,9,11,13,15,17,19,23,27,28,29,35,37,39–51.

Wednesday, January 17. Comments on Section 1.3.

Exercises. Page 49: #1,2,3,8,9,13,15,17,19,21,23.

Thursday, January 18. Section 2.1. Systems of Linear Equations.

Exercises. Page 73: # 11 – 19, 31 – 35.

### WEEK 2.

Monday, January 22. Section 2.2. Solving Systems with Elementary Row Operations.

Exercises. Page 89: # 7–9, 21–25.

Tuesday, Wednesday, January 23,24. Review and Problem Solving Sessions.

Thursday, January 25. Exam 1. Sections 1.2, 1.3, 2.1, 2.2.

### WEEK 3.

Monday, January 29. Return Exam 1. Section 4.1. Graphing Linear Inequalities.

Exercises. Pages 183 and 184: # 11,15,19,21,23,25,27,29,31,33,35,37.

Tuesday, January 30. Continue Section 4.1.

Wednesday, January 31. Section 4.2. Examples 1, 2, and 3.

Exercises. Pages 199 – 202, # 1 – 29, odds.

Thursday, February 1. Continue Section 4.2. Examples 4 and 5.

### WEEK 4.

Monday, February 5. Section 4.3. Remarks on the Simplex Algorithm.

Tuesday, February 6. Review and Problem Solving Session.

Wednesday, February 7. Review and Problem Solving Session.

Thursday, February 8. Exam 2. Sections 4.1 – 4.3.

### WEEK 5.

Monday, February 12. Return Exam 2. Start Section 5.1.

Exercises: Page 299, # 1,3,5,7,9.

Tuesday, February 13. Remarks on Polynomial Equations.

Start Section 5.3. Exponential Functions.

Exercises: Pages 343 – 344, # 1 – 20.

Wednesday, February 14. Continuation of Section 5.3.

Thursday, February 15. Section 5.4. Logarithmic Functions.

Exercises: Page 357, # 1 – 40.

### WEEK 6.

Monday, February 19. Continuation of Section 5.4.

Tuesday, February 20. Section 6.1. Solving Exponential Equations.

Exercises: Pages 389 – 392, # 1 – 39, odds.

Wednesday, February 21. Review and Problem Solving Session.

Thursday, February 22. More Review and Problem Solving.

### WEEK 7.

Monday, February 26. Exam 3. Sections 5.1, 5.3, 5.4, 6.1.

Tuesday, February 27. Return Exam 3. Start Section 6.2, Page 394.

Exercises: Pages 402 – 405, # 5,7,11,13,17,19,23,25,37,39,45,46.

Wednesday, Thursday, February 28, March 1. Continue Section 6.2, start Section 6.3.

Exercises: Pages 414 – 417, # 1,3,15,17,21,25,33,37.

WEEK 8.

Monday, March 12. Continue Section 6.3.

Tuesday, March 13. Section 6.4. Present Value of a Decreasing Annuity.

Exercises: Pages 433 – 436, # 5,17,27,29,37,39.

Wednesday, March 14. Continue Section 6.4.

Thursday, March 15. Review Sections 6.2, 6.3, and 6.4.

WEEK 9.

Monday, March 19. Problems in the Theory of Interest.

Tuesday, March 20. More Problems in the Theory of Interest.

Wednesday, March 21. Exam 4, Sections 6.2, 6.3, 6.4.

Thursday, March 22. Return Exam 4. Start Section 7.1.

Exercises: Pages 447 – 448, # 1 – 35, odds.

WEEK 10.

Monday, March 26. Continue Section 7.1.

Tuesday, March 27. Section 7.2.

Exercises: Pages 456 – 458, # 1 – 39, odds.

Wednesday, March 28. Section 7.3.

Exercises: Pages 467 – 469, # 1 – 39, odds.

Thursday, March 29. Continue Section 7.3.

WEEK 11.

Monday, April 2. Section 7.4.

Exercises: Pages 477 – 479, # 3,7,11 – 35, odds.

Tuesday, April 3. Continue Section 7.4.

Wednesday, April 4. Review.

Thursday, April 5. Exam 5. Sections 7.1, 7.2, 7.3, and 7.4.

WEEK 12.

Monday, April 9. Return Exam 5. Start Section 7.5.

Exercises: Pages 489 – 491, # 1 – 35, odds.

Tuesday, April 10. Continue Section 7.5.

Wednesday, April 11. Section 8.1.

Exercises: Pages 504 – 506, # 1 – 35, odds; 36,37,38.

Thursday, April 12. Continue Section 8.1.

WEEK 13.

Monday, April 16. Section 8.2.

Exercises: Pages 521 – 525, # 1 – 35, odds; 36 – 40.

Tuesday, April 17. Continue Section 8.2.

Wednesday, April 18. The Binomial Theorem and Bernoulli Trials.

Exercises: To be handed out.

Thursday, April 19. Section 8.3. Markov Chains.

Exercises: Pages 538 – 541, # 1 – 47, odds.

WEEK 14.

Monday, April 23. Continue Section 8.3.

Tuesday, April 24. Continue Section 8.3.

Wednesday, April 25. Review.

Thursday, April 26. Exam 6. Sections 7.4, 7.5, 8.1, 8.2, 8.3, Bernoulli Trials.

WEEK of Monday, April 30. FINAL EXAM WEEK.

