

# Math 2: General Course Outline

## Catalog Description

**2. Finite Mathematics. (4)** Lecture, three hours; discussion, one hour. Preparation: three years of high school mathematics. Finite mathematics consisting of matrices, Gauss/Jordan method, combinatorics, probability, Bayes theorem, and Markov chains. P/NP or letter grading.

## Textbook

R. Brown, and B. Brown, *Essentials of Finite Mathematics: Matrices, Linear Programming, Probability, Markov Chains*, Ardsley House.

## Reviews & Exams

The following schedule, with textbook sections and topics, is based on 23 lectures. The remaining classroom meetings are for leeway, reviews, and midterm exams. These are scheduled by the individual instructor. Often there are reviews and two midterm exams about the beginning of the fourth and eighth weeks of instruction, plus reviews for the final exam.

## Schedule of Lectures

Lecture	Sections	Topics
1		Introduction
2	1.1	Matrices
3	1.2	Matrix multiplication
4	1.3	Nonsingular two-by-two linear systems
5-6	1.4	Nonsingular n-by-n linear systems
7	1.5	The inverse of a matrix
8-9	1.6	Matrix methods for linear systems
10	1.7-8	Matrix applications; the Leontief model
11	3.1	Probability and odds
12	3.2	Counting
13	3.3	Permutations and factorials
14	3.4	Combinations
15	3.5	Computing probability by counting
16	3.6-7	Union of events, disjoint events
17	3.8	Conditional probability
18	3.9	Intersection of events
19	4.1	Partitions
20	4.2	Bayes' theorem
21	5.1	Matrices and probability
22	5.2	Markov chain processes
23	5.3	Equilibrium

## Comments

The Leontief model in Lecture 10 is an optional topic and may be omitted entirely. A thorough presentation takes at least half a lecture. This outline assumes the instructor will give a brief sketch of the model (Section 1.8) and encourage interested students to read the details.

If there is additional time remaining at the end of the course, after completing Section 5.3 it is easy to pick up Chapter 4 at Section 4.3 and to continue with that chapter, because that material can end after any section. An alternative is to complete Chapter 5, which requires two to three lectures.

Outline update: R. Brown, 9/90

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