

COURSE SYLLABUS

FINITE MATH: ELEMENTARY MATHEMATICAL MODELS (MATH 155-002)

AMERICAN UNIVERSITY, DEPARTMENT OF MATHEMATICS

FALL 2000

Contact Information

Instructor: Bahattin Buyuksahin

Office :

Office Hours: W 11:00 am-12:30 pm

TTh 11:15am- 1:00 pm

Tutoring Hours and Strategy for Success

Free walk-in tutoring is available in the Math Lab, located in Roper 122, Monday through Thursday from 12:00 until 8:00 pm and Friday from 11:00 am to 3:00 pm. Please use these services as well as my office hours at any time that you are having difficulty with a topic or a problem. Don't Wait!!

Many students have found that an excellent way to succeed in math classes is to work on homework problems in or near this time so that there is help available as questions arises. This same strategy can work effectively simply by forming study groups and setting times to meet and do problems. Therefore you are strongly encouraged to work in groups of 2 or 3 on homework, but you should not submit work on which you have no input. In particular, the mere copying of another's homework is considered dishonest and results in a failing grade for the course.

Don't reserve your studying for the weekends or last week of the semester. Regular exposure is much better than cramming. I suggest an hour per day. Attend class and take good notes. Good notes will be crucial to your performance on the examinations.

Course Overview

This course is application oriented. That is we develop mathematical tools, as we needed to solve specific problems. In this process, we will address many of the tools from algebra like modeling with functions, solving linear and quadratic equation, solving difference equation, logarithm and graphing. We will cover most of the textbook, at a rate approximately one chapter per week. Every topic will be presented geometrically, numerically, algebraically and verbally. After introducing new material, I allow class time for students to work sample problems. This ensures that student leaves class with a working knowledge of the topic, and is prepared for the homework assignment. Since we are going to work real data sets, like population, income statistics, a graphing calculator is required for the course. I suggest Texas Instrument TI-83 graphing calculator. Any other graphing calculator is also permissible, but I may not be able to help you if you have trouble using it.











For your homework and group projects, you are welcome to use any spreadsheet such as Excel. And also there is easy to use computer program, which is developed by Kalman for this course. You can download this program from [Mathwright](#). To access this program first you need to install Mathwright Library Player 2.1 from the same internet address and then install Elementary Mathematical Models Mathwright Modula. We will discuss in class how to use this program. Don't be afraid, it is very easy to learn.

Textbook

DK: Elementary Mathematical Models: Order Aplenty and a Glimpse of Chaos by Dan Kalman, The Mathematical Association of America, 1997

Worksheets distributed in class

Tentative Course Schedule

Week	Topics	Lecture Notes	Additional Readings
1	Introduction		DK Ch,1
2	Sequences and Difference Equations		DK Ch. 2
3	Arithmetic Growth Models		DK Ch. 3
4	Linear Growth Models		DK Ch. 4 and 8
5	Review of Ch. 1-4 and 8, Exam 1		DK Ch 1-4 and 8
6	Quadratic Growth Models		DK Ch. 5
7	Quadratic Models and Equations		DK Ch. 6
8	Polynomials and Rational Functions		DK Ch. 7
9	Review of Ch. 5-7, Exam 2		DK Ch 5-7
10,11	Geometric Growth Models		DK Ch 9
12	Exponential Functions		DK Ch 10
13	Logarithmic Functions		DK Ch 11,12
14	Review of Ch. 1-12, Final Exam		DK Ch 1-12

Evaluation

There will be two midterm exams (1 hour and 15 minutes each) and a comprehensive final exam (2 hours and 30 minutes). The first midterm exam will be held in class on Thursday September 28 and the second midterm exam in class on Thursday November 2. The Final Exam will be held in class on Thursday December 14th (8:30- 11:00 am). The format of midterm and final exam will be same but expect more questions in final exam. Each exam consists of four parts: Definitions, multiple choices, short problems and long problems. Each midterm grade constitutes 15% of the course grade, and the final exam constitutes 30% of your course grade.

Short quizzes will be given roughly on a weekly basis and constitutes 5% of your final grade. Homework will be regularly assigned (every two weeks, total of six homeworks), collected and scored for completeness, accuracy, and clarity of the expression. Late assignments will not be accepted. Homework is worth 10% of the course grade.

Homework Assignments	
To be Assigned	Due Date
7 September 2000	14 September 2000
14 September 2000	21 September 2000
5 October 2000	12 October 2000
19 October 2000	26 October 2000
9 November 2000	16 November 2000
30 November 2000	7 December 2000

During the semester four group projects will be distributed. In the first week of classes, please form a group of 4 or 5 and let me know your group members. After forming your group, you should remain in the same group during the semester. The purpose of these group projects is to bring different ideas together and work together to solve more challenging problem. Every group will submit only one completed answer and if necessary group members are asked to present their result in the class for about 20 minutes. Group projects constitute 25% of your final grade.

Group Projects	
To be assigned	Due Date
18 September 2000	5 October 2000
16 October 2000	30 October 2000
6 November 2000	20 November 2000
27 November 2000	11 December 2000

Based on these quizzes, homework, group projects, midterm exams and final exam we will use following scale to determine your final grade.

Homework (Total 6) 60 points Exam 1 90 points Exam 2 90 points Quizzes 30 points Group Projects (Total 4) 150 points Final Exam 180 points Total 600 points

Contributions to Final Grade	
Homework (Total 6)	60 points
Exam 1	90 points
Exam 2	90 points
Quizzes	30 points
Group Projects (Total 4)	150 points
Final Exam	180 points
Total	600 points

Letter Grades for this course will be determined using the following scale

Possible points (600)	Letter
570-600	A
540-569	A-
522-539	B+
498-521	B
480-497	B-
462-479	C+
432-461	C
390-431	C-
360-389	D
0-359	F