MATH 111 section 001, Fall 2018

Linear Math Modeling

MW, 10:30-11:45 am, Exploratory Hall L003

Instructor: Dr. Sarah Khankan

Email: skhankan@gmu.edu
Office: Exploratory Hall 4219
Office Hours: T 10:30-11:30 and by appointment

Credit Hours: 3

Text(s): Finite Mathematics and Its Applications, Twelfth Edition, by Goldstein, Schneider and Siegel, Pearson 2018

Calculators: You will need a Scientific Calculator for the course.

Course Description: This course meets the quantitative reasoning requirement, one of the Foundation requirements of the Mason Core. The goal of the Foundation requirement is to help ensure that students are equipped with the tools and techniques necessary to succeed in college and throughout their lives and careers. We will cover the following topics:

- Linear Equations

- Linear Systems and Matrices

- Leontiff Input/Output Analysis

- Markov Processes

- Data Fitting - Polynomial Interpolation, Least Squares

- Difference Equations

Disability statement: If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Resources at 703.993.2474. All academic accommodations must be arranged through that office.

Tutoring Center: The Math Tutoring Center is located in the Johnson Center Room 344.

Help is available on a walk-in basis. For hours of operation see http://math.gmu.edu/tutor-center.php University Honor Code: You are expected to follow the GMU Honor Code http://oai.gmu.edu/the-mason-honor-code/.

Exams:

- Exam 1: 10/01/2018

- Exam 2: 10/29/2018

- Final Exam: 12/12/2018, 10:30-1:15

Grade Distribution:

Homework	15%
Exam 1	25%
Exam 2	25%
Final Exam	35%

Letter Grade Distribution:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	below 60%

$+$ or may be attached to the grade for *approximately* the upper or lower 2 points.

Homework: Homework problems will be due by the end of each chapter. Due dates will be announced the day we start a new chapter and will be posted on BlackBoard.
Computers: We will be using Matlab to help with matrix calculations. This software is available for student use either on campus or remotely on mason.gmu.edu. The system requires your PatriotPass. There are computer labs in the Johnson Center in rooms 342.
For open hours see http://doit.gmu.edu/faculty-and-staff/computer-labs/computer-lab-locations/

Course Policies:

- Exams are closed book, closed notes.

- No makeup exams will be given.

- Assignments: Students are expected to work independently. Discussion amongst students is encouraged, but when in doubt, direct your questions to the professor or tutor.

- No late assignments will be accepted under any circumstances.

- Attendance is expected.

- Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee's responsibility to get all missing notes or materials.

Tentative Course Outline:
The weekly coverage might change as it depends on the progress of the class.

Week	Content	Sections covered
1 (08/27-08/29))	• Linear models and graphs • Slope of a line, Writing linear equations • Intersection of lines	1.1, 1.2, 1.3
2 (09/03-09/05))	• Labor Day • Systems of linear equations with unique solutions	2.1
3 (09/10-09/12))	• General systems of linear equations • Arithmetic operations on matrices	2.2, 2.3
4 (09/17-09/19))	• Inverse of a square Matrix • The Gauss-Jordan method for calculating inverses	2.4, 2.5
5 (09/24-09/26))	• Leontiff Input-Output Analysis • Review Session	2.6
6 (10/01-10/03)	• Exam 1 • Markov Processes	8.1
7 (10/08-10/10)	• Fall Break • Processes with Stable Distributions	8.2
8 (10/15-10/17)	• Processes with Stable Distributions • Absorbing States and Absorbing Matrices	8.2, 8.3
9 (10/22-10/24)	• Method of Least Square • Review	1.4
10 (10/29-10/31)	• Exam 2 • Models	Data Fitting
11 (11/05-11/07)	• Polynomial Interpolation • Least squares	Data Fitting
12 (11/12-11/14)	• Exponential model	Data Fitting
13 (11/19-11/21)	• Power Law model • Thanksgiving Break	Data Fitting
14 (11/26-11/28)	• Introduction to Difference Equations • Difference Equations as models	11.1, 11.2
15 (12/03-12/05)	• Review	
12/12, 10:30-1:15	• Final Exam	