# MATH 111 SECTION B02 SUMMER 2021 SYLLABUS

**Instructor:** Shahryar Sarkani
**EMAIL:** ssarkani@gmu.edu
**Meeting Time:** **Tuesday and Thursday** 1:30-4:10
**Location:** Online using Zoom
**Office Hours Online:** Tuesday 4:30 – 5:30 and also available at other times by appointment

**Text and Materials:**

- Finite Mathematics and Its Applications, *12th Edition*, by Goldstein,
  - Schneider and Siegel, Pearson 2018
- Math 111 Data Fitting Notes – available on Blackboard

**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

**Student Expectations**

- Attendance: you are expected to attend the classes online via zoom.
- The course Blackboard will contain information about the course. Please check Blackboard regularly for announcements and materials.

**Exams:**

- Test 1 - June 15
- Test 2 - June 29
- Test 3- July 13
- Final Exam: July 22 1:30am-4:10pm

Please note you are expected to take the exams during the class time. Make up exam are only administered in exceptional cases such as medical emergencies with proper documentation. If you miss an exam, contact me ASAP.

**Grading:**

Your grade will be weighted as depicted in the table below

| **Assignment** | **Weight** |
|---|---|
| HWs | 20% |
| Test 1 | 20% |
| Test 2 | 20% |
| Test 3 | 20% |
| Final Exam | 20% |

Course grades are assigned according to the scale:

A: 90-100 B: 80-**89.9** C:70-**79.9** D:65-**69.9** F: below 65
+ or – may be attached to the grade for the upper or lower 2 points in each range

HomeWorks may not be submitted after the deadline.

**Calculators:** You will need a calculator for class work, homework, and exams. Any calculator that does arithmetic and exponential calculations is acceptable. Matrix computations on exams and worksheets are to be **done by hand**.

**Honor Code** : Sharing information of any kind about exams is an Honor Code violation. The assigned Matlab problems are NOT GROUP PROJECTS. Each student is to work independently and turn in their own Matlab calculations. Some kinds of participation in online study sites violate the Mason Honor code: these include accessing exam or quiz questions for this class; accessing exam, quiz, or assignment answers for this class; uploading of any of the instructor's materials or exams; and uploading any of your own answers or finished work. Always consult your syllabus and your professor before using these sites. Any violations will be referred to the Office of Academic Integrity.

**Disability statement:** If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services at 703-993-2474. All academic accommodations must be arranged through that office.

**General Remarks:** I am here to help. If there is anything that you have trouble with just let me know. I can try to help over email or I can meet with you in the Collaborate room. I will structure and organize the course with weekly units on Blackboard to make it easier for you to follow. Be aware of deadlines. Keep on top of the class and try not to get behind.

**Mason's Nondiscrimination Policy**: George Mason University is committed to providing equal opportunity and an educational and work environment free from any discrimination on the basis of race, color, religion, national origin, sex, disability, veteran status, sexual orientation, or age. Mason shall adhere to all applicable state and federal equal opportunity/affirmative action statutes and regulations. Moreover, in this class we seek to create a learning environment that fosters respect for people across the entire range of human identities. We encourage all members of the learning environment to engage with the material personally, but to also be open to exploring and learning from experiences different than their own.

## CLASS SCHEDULE

The following is a tentative schedule for the semester:

| Date | Sections | Topic |
|---|---|---|
| June 1 | 1.1, 1.2 | • Linear Models and Graphs<br>• Slope of a line<br>• Writing Linear Equations |
| June 3 | 1.3, 2.1 | • Intro to Matrix method of solving systems.<br>• Matrix Method of solving systems of Equations.<br>• Row Operations |
| June 8 | 2.2, 2.3 | • Gaussian Elimination |

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|---|---|---|
| | | • Matrix Operations: Scalar, Matrix Multiplication, Addition |
| June 10 | 2.4 | • Inverse of a Matrix<br>• Matrix Equations |
| **June 15** | 2.5 | • **Test 1**<br>• Gauss-Jordan Method of Finding Inverses |
| June 17 | 2.5, 2.6 | • Gauss-Jordan Method of Finding Inverses<br>• Leontiff Input-Output Analysis |
| June 22 | 8.1, 8.2 | • Markov Processes<br>• Processes with Stable Distributions |
| June 24 | 8.3 | • Absorbing States and Absorbing Matrices<br>• Absorbing Markov Processes |
| **June 29** | 1.4 | • **Test 2**<br>• Least Squares Formulas |
| July 1 | 1.4 | • Least Squares Error<br>• Data Fitting Introduction |
| July 6 | Data Fitting | • Polynomial Interpolation<br>• Least Squares |
| July 8 | Data Fitting | • Least Squares vs. Polynomial Interpolation<br>• Exponents Review |
| **July 13** | Data Fitting | • **Test 3**<br>• Exponential model |
| July 15 | Data Fitting | • Power Law Model |
| July 20 | Final Review | • Final Review |
| **July 22** | | • **Final Exam** |