Math 322–001 (Advanced Linear Algebra)
Spring 2021

Instructor: David Walnut
Office: Exploratory Hall , room 4402
Phone: 703 993 1478 (voice); 703 993 1491 (fax)
email: dwalnut@gmu.edu
Office hours: TR 1:30–2:15pm and by appointment.
Text: Friedberg, Insel, and Spence, *Linear Algebra, Fifth Edition*, Prentice-Hall, 2019, ISBN 978-0-13-486024-4
Topics: The course will cover portions of Chapters 1–7 of the textbook. Other topics will be covered if time permits.

General Comments:

In this course, you will develop an understanding and facility with the theory of abstract vector spaces with an emphasis on finite-dimensional vector spaces. This will include the study of bases, dimension, linear independence, and many aspects of linear transformations. Some but not all of the topics covered in this class were touched on in Math 203 (Linear Algebra), but in this class these topics will be given a mathematically rigorous foundation.

The prerequisite for this course is C or better in Math 203 and in Math 290 (or a sufficient non-standard grade).

A BlackBoard page will be set up for this course. This page will contain announcements, handouts, solutions to exams, class notes, links to videos, and other important information. You should check BlackBoard regularly to avail yourself of these helpful resources.

You are required to be familiar with the mathematical typesetting software LaTeX though any other flavor of TeX that you are familiar with is also fine. Advice and details on obtaining and using LaTeX will be available on the BlackBoard page for this course. All written assignments are to be prepared in LaTeX. More details on this are below.

This course is offered in an entirely online format. The basic format of the course is that lectures will be recorded in advance and posted on blackboard. You are responsible for viewing the lectures and working the assigned exercises. Class will meet *synchronously* at the scheduled time for the course via **Zoom**. Links to the Zoom meetings are posted on Blackboard. Class time is a time to get your questions about the material answered. There will also be work assigned in class to do in class (see below). Office hours will also be held via **Zoom**.

Assignments will be collected and returned via **Gradescope**, an online grading platform. The link to **Gradescope** is provided in Blackboard. More information on this will be posted on Blackboard.

Hardware requirements.

- You are required to have a webcam and a microphone available for exams and for any one-on-one appointments that you may have with me. Using your phone as a webcam is accpetable for this.

- You are required to have a means of scanning written work on paper into .pdf format. This can be an actual scanner or a phone app that allows you to do this.

Grading:

- Graded Homework Sets: Written homework assignments will be made throughout the semester, approximatley weekly. Precise assignments and due dates will given on BlackBoard.

  The student should be aware of the following regarding homework sets:

  - No late assignments will be accepted for any reason.
  - All assignments are to be typed using TeX or LaTeX and submitted to me electronically through BlackBoard as a .pdf file. Homeworks prepared in any other way or submitted in any other file format will not be accepted.
  - The name of the .pdf file that you submit will follow the following format: `LastName-HWnumber.pdf`. So for example: `Jones-HW04.pdf`.
  - Your name must appear in the text of the homework assignment write-up. A template for what I want the homework write-ups to look like will be posted on Blackboard.

  If any of the above requirements are not met, your homework assignment will not be accepted.

  What follows is useful advice for the written assignments.

  - Collaboration is permitted on the writing assignments, but the final write up must be your own. You must demonstrate to me in your written proofs that you substantially understand the problem and what you are writing. If you are just copying someone else's solution, I will know.
  - It is wise to start any homework assignment early. If you try to solve a problem and get stuck, please come to my office hours or contact me by email to ask for a hint. I am very liberal with hints.
  - If a problem has resisted all your attempts to solve it, please do not try to bluff your way through in your homework writeup. It is much better to give a partial solution and describe where you got stuck. Even better is to contact me as above.

  The average of your written homework assignment scores will count **50% of your final grade**.

- In-class Mini-Projects: I will be introducing certain topics during the synchronous portion of the class. This will take on an active learning format in which you will be asked to solve certain problems related to the lecture in class working in small

groups. These assignments will be written up using LaTeX and submitted **individually** through **Gradescope** and are subject to the same rules as the Graded Homework Sets (see above). Your grade on these assignments will count for **15% of your final grade**.

- MIDTERM EXAMS: Two midterm exams will be given on **Thursday March 4, 2021** and on **Thursday April 8, 2021**. The exams will be limited to the class time, and proctored remotely. Details on how this will work will be posted on Blackboard well in advance of the first exam. Each midterm exam will count for **10% of your final grade**. Makeup exams will be given only in cases of extreme hardship and then only when the student has *contacted me in advance.* If I am not contacted in advance, no makeup will be given.

- FINAL EXAM: There will be a **cumulative final exam** given on **Thursday, May 6, 2021, 10:30am–1:15pm**. The exam will be limited time and proctored remotely. The final exam will count for **15% of your final grade**.

The grading scale is as follows, and is based on your correctly rounded semester average. There will be no curve.

A+:	**99 +;**	**A:**	**92 - 98;**	**A-:**	**90 - 91;**
B+:	**88 - 89;**	**B:**	**82 - 87;**	**B-:**	**80 - 81;**
C+:	**78 - 79;**	**C:**	**72 - 77;**	**C-:**	**70 - 71;**
		D:	**60 - 69;**		
		F:	**0 - 59.**		