MATH 201 A: Linear Algebra
TREX 362, MWF 2:20 - 3:20, Spring 2022

Instructor: Michael Weselcouch
Office: Trex #175
Office Hours: MW 1:00 - 2:00, Th 1:00 - 3:00, or by appointment.
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Course Description. Linear algebra is a course that mixes basic equation-solving, abstract theory and deep applications. The main objects of study are matrices, vectors and vector spaces, and we will focus on the interplay between computational and theoretical aspects. This material is used in many higher level math courses as well as in many related fields.

Attendance Policy. Class attendance is a very important aspect of a student's success in this course. The student is expected to attend every class and is accountable for missed content and assignments. If you have a temperature of 100.4 or higher or other COVID symptoms, don't come to class. Call Health Services IMMEDIATELY. Do not come to class or go to any public area on campus. In order for your absence to be excused, you must give Health Services permission to notify me that you have consulted them about COVID symptoms. If Health Services informs you that you should isolate and not attend class for multiple days, inform me so that we can make a plan to keep you current in the course. All absences caused by consultation with Health Services about coronavirus symptoms or isolation ordered by Health Services will be excused but you will need to do the work and graded assignments even if we extend a deadline for you.

Masks. The College has issued a mask mandate for the start of the semester that requires masks to be worn properly in indoor common spaces such as our classroom. While the mandate is in effect, you must wear a mask in this class. Once the mandate has expired, you're welcome to continue to wear your mask if you prefer. If you arrive without a mask, you will not be allowed to stay and may lose credit for attendance or in-class work. The Bookstore sells masks if you need to make a quick purchase. If the mandate is extended, you will be required to continue to wear a mask.

Learning Outcomes. By the end of this course, successful students will be able to:

- State and apply each of the equivalent parts of the Invertible Matrix Theorem

- Graphically analyze linear transforms
- Identify vector spaces and their dimensions
- In the context of various applications, set up systems of equations and determine solutions and the implications of the form of the solution set.

Course Materials.

(1) *Textbook: Functional Linear Algebra* Robbins
(2) *Calculator:* A scientific or graphing calculator is recommended but not required.
(3) *Loom:* A screen recording app.
(4) *Computer:* A laptop computer with Mathematica installed, or access to Mathematica.
(5) *YouTube:* I will be posting supplementary videos to my YouTube channel.

Structure and Grading. A grade scale will be determined after final grades are computed, but will be no worse than the scale given below. Attendance and class participation will be considered when determining marginal grades.

Grading Scale

	93-100 A	90-92.99 A-
87-89.99 B+	83-86.99 B	80-82.99 B-
77-79.99 C+	73-76.99 C	70-72.99 C-
67-69.99 D+	63-66.99 D	60-62.99 D-

The final course grade is determined in the following way:

Homework	15%	Tests	45%
Loom Homework	10%	Final Exam	15%
Projects	15%		

Homework. Homework will be assigned after nearly every class. This work will be collected at the start of our next class period. If you miss class, you can submit your work to Inquire before the start of class. No late papers will be accepted without arrangements approved prior to absence OR without written documentation from a college official.

Loom Homework. Some homework assignments will be submitted to Inquire as Loom videos. I will let you know in advance which homework problems will be submitted in this format. These assignments will be graded for both correctness and clarity of explanation. No late videos will be accepted without arrangements approved prior to absence OR without written documentation from a college official.

MCSP Conversations. The MCSP department offers a series of talks designed to appeal to a broad audience. Members of this class are encouraged to attend many of these meetings, however attending at least two sessions is mandatory. After attending, you will submit

within one week of the presentation a one page paper reflecting on the discussion. This should not simply be a regurgitation of the content, but rather a personal response to the experience. These reaction papers will be each be counted as homework assignments.

Projects. We will have three projects, each on an application of linear algebra. They will be extended problems written up as a paper, with emphasis placed not only on mathematical correctness but on the quality of the explanation.

Tests. We will have three in-class tests and a final exam. Each test will focus on the material learned since the last test, but will (necessarily) contain previous material. The final will be cumulative, but focus more heavily on material after the third test.

Test #1: Wednesday, February 9
Test #2: Wednesday, March 2
Test #3: Friday, April 1
Final Exam: Thursday, April 28 2:00 PM

Test Make-up Policy. Test make-ups are administered in accordance with College policy. Anticipated, excused absences must be reported to the instructor with appropriate certification *well before* the scheduled test date. Legitimate emergency absences must be reported with appropriate documentation within one week of returning to class. No other make-ups will be given.

Corrections to Grading. If you think an error may have been made in the grading of your test, carefully review the answer key posted on Inquire and then contact the instructor **within 1 week of the test's return** with your question. **Do NOT alter the original work**. The entire test may be re-graded and the test grade is *subject to remain the same, increase or decrease* at the discretion of the instructor.

Expected Work Policy. This course expects you to spend at least 12 hours of work each week inside and outside of class.

Electronic Devices. You can use only your calculator during class. (This means no cell phones - please set them on silent and leave them in your bag.)

Inquire Policy. Students are required to be knowledgeable of all postings on Inquire. It is each student's responsibility to consistently monitor Inquire for course information. This means every day! Any assignment that requires an Inquire upload will not be accepted in any other form. Also, to receive credit for uploads, the file must be a PDF and readable on the instructor's college computer. It is the student's responsibility to make successful submissions. It is the student's responsibility to resolve technology problems through the college's IT department.

Academic Integrity. I expect all of you to follow the Academic Integrity policies of Roanoke College. All graded work should be your own work! This means that you cannot use any websites or apps that give step-by-step solutions to the problems. If you ever have questions about how these policies apply to our class please contact me. Any violations of our AI policies will automatically be turned over to the Academic Integrity Council.

Accommodations. If you may require an accommodation in this course, please provide me with your documentation within the first 2 weeks of the semester. I must have your documentation at least 48 hours prior to any accommodation made. (Check with the Center for Learning and Teaching for their scheduling guidelines.)

Subject Tutoring. Subject Tutoring, located on the lower level of Fintel Library (Room 5), is open 4 pm – 9 pm, Sunday – Thursday. We are a Level II Internationally Certified Training Center through the College Reading and Learning Association (CRLA). Subject Tutors are friendly, highly-trained Roanoke College students who offer free, one-on-one tutorials in a variety of general education and major courses such as: Business, Economics, Mathematics, INQ 240, Modern Languages, Lab Sciences, INQ 250, and Social Sciences (see all available subjects at www.roanoke.edu/tutoring). Tutoring sessions are available in 30 or 60-minute appointments. Schedule an appointment at www.roanoke.edu/tutoring, or contact us at (540)375-2590 or subject tutoring@roanoke.edu. We hope to see you soon!

Writing Center. The Writing Center @ Roanoke College offers tutorials focused on writing projects and oral presentations for students working in any field. Writers and presenters at all levels of experience may consult the Writing Center at any point in their process—including brainstorming, drafting, organizing, editing, or polishing presentation skills—to talk with trained peer tutors in informal, one-on-one sessions. Schedule an appointment at www.roanoke.edu/writingcenter, where our staff members and workshops are also posted. Questions? Email writingcenter@roanoke.edu.

AES. Accessible Education Services (AES) is located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. AES provides reasonable accommodations to students with documented disabilities. To register for services, students must self-identify to AES, complete the registration process, and provide current documentation of a disability along with recommendations from the qualified specialist. To schedule an appointment, call (540)375-2247 or e-mail aes@roanoke.edu. If you have registered with AES in the past and would like to receive academic accommodations for this semester, please contact the AES at your earliest convenience to schedule an appointment and/or obtain your accommodation letter for the current semester.

Tentative Course Schedule. The following schedule is approximate and subject to change except for the test dates. It should give you an idea of the timing of the topics covered and assignments.

Week	Dates	Lecture Material	Assignments
1	1/19, 1/21	Section 1.1	
2	1/24, 1/26, 1/28	Section 1.2, 1.3, 2.1	
3	1/31, 2/2, 2/4	Section 2.2, 2.3	
4	2/7, 2/9, 2/11		Test 1 (2/9)
5	2/14, 2/16, 2/18	Section 2.4, 2.5	Project 1 (2/18)
6	2/21, 2/23, 2/25	Section 2.6, 2.7	
7	2/28, 3/2, 3/4		Test 2 (3/2)
8	3/7, 3/9, 3/11	Section 2.8, 2.10	Project 2 (3/11)
9		Spring Break	
10	3/21, 3/23, 3/25	Section 3.1, 3.2	
11	3/28, 3/30, 4/1	Section 3.3	Test 3 (4/1)
12	4/4, 4/6, 4/8	Section 4.1, 4.2, 4.3	
13	4/11, 4/13	Section 4.4	
14	4/18, 4/20, 4/22	Section 4.5, 5.1, 5.2	Project 3 (4/18)
15	4/25, 4/26	Section 5.3	
	4/28	2:00-5:00	Final Exam