

MAT 272: Linear Algebra, Section 001
Spring 2020, MWF 10:20–11:10 PM, Corey 301

Contact Information:

Instructor: Nick Packauskas
Email: nicholas.packauskas@cortland.edu
Office: 29 Broadway Trailer
Office Hours: Wed. 3:00 - 5:00
Thurs. 1:00 - 4:00 PM

Textbook *Linear Algebra and Its Applications*, Lay, Lay, & Macdonald,
5th Edition, ISBN: 978-0-321-98238-4

Prerequisites MAT 122 or MAT 236 with a grade of C- or better

You are welcome to drop by my office anytime or schedule an appointment outside of office hours. The best way to schedule an appointment is via e-mail. I will do my best to respond to e-mails in a timely fashion, however **I am not guaranteed to respond to any e-mails sent after 5:00 PM on weekdays or on the weekends until the next business day.**

Course Goals and Description: This course will cover an overview of basic linear algebra, with both computation and proofs. Major topics include linear systems, matrix algebra, vector spaces, with emphasis on Euclidean n -spaces, linear transformations, eigenvalues and eigenvectors, orthogonality, and selected applications.

Course Website: This course will be using Blackboard. Useful links, announcements, and other files and information will be posted there. Students' grades will also be updated periodically via Blackboard. In addition, this course will use MyMathLab for part of the homework assignments. Instructions for using MyMathLab will be posted on Blackboard.

Participation and Attendance: A major part of the learning experience is interacting with the material and fellow classmates. Students will frequently be doing work in-class in small groups, and as such **attendance is required. Use of any mobile device during class work or group activities is neither appropriate nor acceptable.**

Reading Reflections: To ensure proper preparation for class each day, short readings will be assigned. To encourage comprehension, a short reading reflection will be assigned before most classes, to be completed on BlackBoard by 10:00am the day of class. **To earn full points, students will provide earnest responses in their own words.** The three lowest reflection scores will be dropped.

Definition and Theorem checks: Understanding of advanced mathematics requires intimate acquaintance with the definitions of the major objects and properties to be studied, as well as fundamental theorems and results. To facilitate foundational knowledge, there will be weekly "Definition and Theorem Check" at the beginning of class on Wednesdays. Each week, a major term or theorem will be selected from a short list that will be provided, and students will produce the definition or statement. The three lowest checks will be dropped.

Homework: In order to gain a deep understanding of mathematics, it is necessary to practice working with the ideas and concepts. There will be weekly homework assignments due most Fridays. Each assignment will consist of a two parts: a written component to be turned in during class and an online component to be completed via MyMathlab by 8:00am. One of the more important aspects of mathematics is being able to convey ideas, methods, and conclusions in an efficient and coherent manner. To earn full points on the written component, students must submit organized responses which show all work and use complete sentences where appropriate. **Please staple your assignment if it contains multiple pages. No late homework will be accepted under any circumstances.**

Exams: There will be three in-class exams and a cumulative final exam. The *tentative* dates for the exams are **February 28th, April 3rd, and May 1st**. The date of the final will be announced closer to the end of the semester and posted on Blackboard. Students may use scientific calculators on the exams, however **no mobile devices, graphing calculators, or calculators with a computer algebra system (CAS)** are allowed. Make-up exams will be given only in extreme circumstances (e.g. medical emergencies), with proper documentation required.

Grading:

	Reading Reflections		50
	Definition and Theorem Checks		50
	Homework		200
	Three in-class Exams	100 each	300
+	Final Exam		150
	Total		750

Grade Scale Here are the cutoff point totals and corresponding percentages to guarantee various final grades.

A	698	93%	B+	653	87%	C+	578	77%	D+	503	67%
			B	623	83%	C	548	70%	D	473	63%
A-	675	90%	B-	600	80%	C-	525	68%	D-	450	60%

Students with final grades below 450 points can expect to receive an E in the course.

How To Succeed: In order to do well in the course, one should come to each class period ready to engage in class discussions and participate in group work with their peers. Reading the textbook to get a cursory knowledge of the topic for the day is crucial. A typical class will consist of a brief lecture where the basic ideas of the day's concepts are presented, as well as an example or two. Then, students will interact with material in small groups to deepen their understanding and get some practice with the material in an environment where they can ask each other or the instructor questions. Learning is then solidified while completing the homework assignments for the week.

Getting Help: First and foremost, **ask questions!** If you are confused in class, then others will be too and will likely have the same questions as you. Asking questions is a crucial part of the learning process. If you find yourself struggling with a concept or need individual assistance, the best way to do this is by talking to the instructor during their office hours. Study groups are also strongly encouraged. Consider creating an email thread or group chat with other students in your class.

Cell Phones and Mobile Devices: Learning mathematics requires active engagement, and as such, you should not be using cell phones during class for any reason. If you have to take an emergency call, please leave the room as to not distract others. **You may not use your cell phone or any other device with an internet connection for a calculator**, and smart watches should be removed during exams. You may take notes on a tablet or laptop if you wish, but make sure it is not a distraction to others. **Using a mobile device during class for non-academic purposes is not allowed.**

Makeups: Makeup exams may **only** be given in extreme circumstances or for university sanctioned reasons. Be prepared to provide supporting documentation. If your conflict involves an issue that you knew about ahead of time, then you are required to discuss it with the instructor before the scheduled exam. If a solution has not been discussed ahead of time, receiving a makeup will be unlikely.

Academic Integrity Statement: All students are expected to uphold academic integrity standards. Plagiarism is defined as taking the ideas of others and using them as one's own without due credit. Students who cheat in examinations, course assignments, or plagiarize in this course may be disciplined in accordance with university rules and regulations. (College Handbook, Chapter 340)

Disability Statement: As part of SUNY Cortland's commitment to a diverse, equitable, and inclusive environment, we strive to provide students with equal access to all courses. If you believe you will require accommodations in this course, please place a request with the Disability Resources Office at disability.resources@cortland.edu or call 607-753-2967. Please note that accommodations are generally not provided retroactively so timely contact with the Disability Resources Office is important. All students should consider meeting with their course instructor who may be helpful in other ways. (College Handbook, Chapter 745)

Diversity Statement: SUNY Cortland is dedicated to the premise that every individual is important in a unique way and contributes to the overall quality of the institution. We define diversity broadly to include all aspects of human difference. The College is committed to inclusion, equity, and access and thus committed to creating and sustaining a climate that is equitable, respectful and free from prejudice for students, faculty and staff. We value diversity in the learning environment and know that it enhances our ability to inspire students to learn, lead and serve in a changing world. We are committed to promoting a diverse and inclusive campus through the recruitment and retention of faculty, staff and students. As a community, we hold important the democracy of ideas, tempered by a commitment to free speech and the standards of inquiry and debate. To this end, we are dedicated to developing and sustaining a learning environment where it is safe to explore our differences and celebrate the richness inherent in our pluralistic society. (College Handbook, Chapter 130)

Inclusive Learning Environment Statement: SUNY Cortland is committed to a diverse, equitable and inclusive environment. The course instructor honors this commitment and respects and values differences. All students enrolled in this course are expected to be considerate of others, promote a collaborative and supportive educational environment, and demonstrate respect for individuals with regard to ability or disability, age, ethnicity, gender, gender identity/expression, race, religion, sex, sexual orientation, socio-economic status or other aspects of identity. In an environment that fosters inclusion, students have the opportunity to bring their various identities into conversation as they find helpful, but are not expected to represent or speak for an entire group of people who share aspects of an identity. If you have any questions or concerns about this statement, contact the Institutional Equity and Inclusion Office at 607-753-2263.

Title IX Statement: Title IX, when combined with New York Human Rights Law and the New York Education Law 129-B, prohibits discrimination, harassment and violence based on sex, gender, gender identity/expression, and/or sexual orientation in the education setting. The federal Clery Act and NY Education Law 129-B provide certain rights and responsibilities after an incident of sexual or interpersonal violence. When a violation occurs, victims and survivors are eligible for campus and community resources. Where the College has jurisdiction, it may investigate and take action in accordance with College policy. If you or someone you know wishes to report discrimination based in sex, gender, gender identity/expression, and/or sexual orientation, or wishes to report sexual harassment, sexual violence, stalking or relationship violence, please contact the Title IX Coordinator at 607-753-4550, or visit cortland.edu/titleix to learn about all reporting options and resources. (Updated by SUNY Legal Feb. 1, 2018).

Course Schedule:

This is a tentative schedule, and subject to change.

Week	Dates	Topics	Assignments Due
1	1/27 1/29 1/31	1.1 Systems of Linear Equations 1.2 Row Reduction and Echelon Forms	Homework #1
2	2/3 2/5 2/7	1.3 Vector Equations 1.4 The Matrix Equation $A\mathbf{x} = \mathbf{b}$ 1.5, 1.6 Solution Sets of Linear Equations and Applications	Homework #2
3	2/10 2/12 2/14	1.7 Linear Independence 1.7 Continued 1.8 Introduction to Linear Transformations	Homework #3
4	2/17 2/19 2/21	1.9 The Matrix of Linear Transformations 1.9 Continued 2.1 Matrix Operations	Homework #4
5	2/24 2/26 2/28	Catch-up/Review Review Exam 1	
6	3/2 3/4 3/6	2.2 The Inverse of a Matrix 2.2 Continued 2.3 Characterizations of Invertible Matrices	Homework #5
7	3/9 3/11 3/13	3.1 Introduction to Determinants 3.2 Properties of Determinants 3.2 Continued	Homework #6
	3/16-3/20	Spring Break	
8	3/23 3/25 3/27	3.3 Cramer's Rule 4.1 Vector Spaces and Subspaces 4.2 Null Spaces, Column Spaces, and Linear Transformations	Homework #7
9	3/30 4/1 4/3	Catch-up/Review Review Exam 2	Homework # 8
10	4/6 4/8 4/10	4.3 Linearly Independent Sets, Bases 4.3 Continued 4.4 Coordinate Systems	Homework #9
11	4/13 4/15 4/17	4.5 The Dimension of a Vector Space 4.6 Rank 4.7 Change of Basis	Homework #10
12	4/20 4/22 4/24	5.1 Eigenvectors and Eigenvalues 5.2 The Characteristic Equation 5.3 Diagonalization	Homework #11
13	4/27 4/29 5/1	Catch-up/Review Review Exam 3	
14	5/4 5/6 5/8	6.1 Inner Products, Length, and Orthogonality 6.1 Continued Review	Homework #12
15	5/11 – 5/15	Finals Week Final Exam Friday at 8:30 AM	