POINT 1902 LOMA
NAZARENE UNIVERSITY

Mathematics, Information, and Computer Sciences – School of STEM

MTH2033 – Linear Algebra

Spring 2026

3 units

Monday, Wednesday, Friday 8:30-9:25

Rohr Science (RS) 265

Final Exam: Monday, May 4th, 7:30-10:00am

Instructor information:	Dr. Elizabeth Holmen-Crow, Assistant Professor of Mathematics
Phone:	619-849-2634
Email:	Dr. Holmen-Crow: ecrow@pointloma.edu
Office hours:	Location: Rohr Science 234 (through RS 230) Times posted in Canvas

PLNU Mission:

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Department Mission: The Mathematical, Information, and Computer Sciences department at Point Loma Nazarene University is committed to maintaining a curriculum that provides its students with the tools to be productive, the passion to continue learning, and Christian perspectives to provide a basis for making sound value judgments.

Course Description: A computational introduction to linear algebra with applications. A study of linear equations, matrix algebra, Euclidean spaces and subspaces, vector spaces, linear transformations, eigen values, eigenvectors, and inner products.

Prerequisite(s): MTH 1044 or MTH 1064 with a grade of C- or higher

Program and Course Learning Outcomes:

1. Students will be able to apply their mathematical knowledge to solve problems.
2. Students will be able to demonstrate facility with algebraic structures.
3. Students will be able to speak about their work with precision, clarity and organization.
4. Students will be able to write about their work with precision, clarity and organization.
5. Students will collaborate effectively in teams.
6. Students will be able to identify, locate, evaluate, and effectively and responsibly use and cite information for the task at hand.
7. Students will be able to gather relevant information, examine information and form a conclusion based on that information.
8. Students will be able to understand and create arguments supported by quantitative evidence, and they can clearly communicate those arguments in a variety of formats.

Required Materials:

Students are responsible for having the required course textbooks prior to the first day of class.

All supplemental materials posted on the course side (including articles, book excerpts, or other documents) are provided for your personal academic use. These materials may be protected by copyright law and should not be duplicated or distributed without permission of the copyright owner.

1. Textbook – Linear algebra and Its Applications, 6th Edition by Lay, Lay, and McDonald (ISBN 978-1292351216)
2. Calculator (it will be useful to have a TI-84+ or something similar)

Assessment and Grading

Examinations and the Final Examination

There are two exams and one final exam. The exams will include problems and questions over material assigned in the text, readings, and handouts, as well as material presented in class. If you do not take an exam, you will receive a zero for it. Late exams may be taken only by prior arrangement with me or a well-documented emergency beyond your control. The examination schedule is included in the daily schedule. Please note I do not intend to accept excuses for missed exams—check the dates NOW and resolve any scheduling issues before they arise.

Homework: Homework will be assigned every class meeting. All homework assigned in a week will be due on **Wednesday of the following week by the start of class unless otherwise noted in Canvas**. Each week's assignments will be posted on Canvas. These assignments are to be written up on paper and turned in during class, office hours, or in Dr Holmen-Crow's mailbox. **Late homework will not be accepted without prior consent** or a well-documented emergency beyond your control. Up to a maximum of one homework assignment may be accepted up to 3 days late provided that consent is received from the professor before it due. Written homework that is submitted late without prior written consent will be recorded with a score of zero. The lowest homework score will be dropped prior to computing the final course grade.

Comments on homework:

1. This is the minimum amount of homework that is required but you may need to do several odd numbered problems to make sure you get the answer in the textbook.
2. Please be sure that your homework is legible, and the problems are in order. Issues with readability are your responsibility. If your work cannot be read it will be marked as missing.
3. **Homework will be scored on a combination of completeness and correctness. All work necessary to complete a problem must be shown to earn credit.**
4. Start working on your homework early. These problems are difficult and meant to be done a little at a time over the course of a few days.
5. When doing homework, please note it is normal to not be able to do every problem correct on the first attempt. Do not be discouraged, instead seek help.

Quizzes

There is a fair amount of evidence that regular quizzing (hence recall) is beneficial for the learning of new material. There is a lot of vocabulary, definitions and knowledge of counterexamples that are needed to make progress in this course. The quizzes will focus on these areas. Quiz content will be announced in class ahead of time. This is an opportunity for informal assessment of your progress in the course.

Labs

Throughout the course, we will use a handful of labs designed to explore an application of Linear Algebra. These will be factored into your homework grade and will be primarily graded for completion and engagement. A sincere effort to complete the lab will result in a decent score.

Grading Scale

A passing grade requires getting at least 60% in one of the two tests or on the final exam. Grades are based on the number of points accumulated throughout the course. Approximate minimal percentages required to obtain a given grade are:

Grading Scale in Percentages				
	A	B	C	D
+		(87.5, 90]	(77.5, 80]	(67.5, 70]
	(92.5, 100]	(82.5, 87.5]	(72.5, 77.5]	(62.5, 67.5]
−	(90, 92.5]	(80, 82.5]	(70, 72.5]	[60, 62.5]

Grading Distribution

Grade Distribution	
Two Exams scored at 20% each	40%
Final Exam (Cumulative)	30%
Quizzes	10%
Homework and Labs	20%
Total	100%

FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the Traditional Undergraduate Records: Final Exam Schedules site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted.

INCOMPLETE AND LATE ASSIGNMENTS

All assignments are to be turned in by the appropriate deadline—including assignments posted in Canvas. Late work will not be accepted. Make-up tests will be given only by prior arrangement with the instructor for reasons of documented emergency.

Incomplete grade

Incompletes will only be assigned in extremely unusual circumstances. You may request a grade of I (incomplete) only if you are having a passing grade and at least 70% of the course work is completed.

Artificial Intelligence (AI) Policy

The use of Artificial Intelligence (AI) tools (e.g., ChatGPT, Gemini Pro 1.5, Grammarly Go, Perplexity, etc.) is **prohibited** in this course for any aspect of your work, including idea generation, drafting, editing, or final submissions. This course is designed to assess your independent critical thinking, writing, and research skills without the assistance of AI technologies. Violations of this policy will be treated as breaches of academic integrity.

PLNU Academic Accommodations Policy

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities in accordance with the Americans with Disabilities Act (ADA). Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2533). Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines allowed accommodations. Professors are able to view a student's approved accommodations through Accommodate.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course. Accommodations are not retroactive so clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC. Students cannot assume that because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations at PLNU must go through the EAC process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any accommodations.

PLNU Attendance and Participation Policy: Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university withdrawal date or, after that date, receive an "F" grade.

LomaBooks Instructions for Students: This course is part of our course material delivery program, LomaBooks. The bookstore will provide each student with a convenient package containing all required physical materials; all digitally delivered materials will be integrated into Canvas.

You should have received an email from the bookstore confirming the list of materials that will be provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you have not done so already, please confirm your fulfillment preference so the bookstore can prepare your materials.

For more information about LomaBooks, please go: Here

Additional Course Information:

Additional PLNU policies and practices that apply to this course can be found at the following link:

https://docs.google.com/document/d/11BgAANLOJ9tjt837d24EZ181ukM2qzHF/edit?usp=sharing&ouid=109910715651511117850&rtpof=true&sd=true

Week Of	***Monday***	***Wednesday***	***Friday***
1/12	Course Welcome And Introduction	1.1 & 1.2: Linear Systems and Matrices	1.2: Row Operations And Echelon Forms
1/19	No Class MLKJ Day	1.3: Vector Equations And Applications	1.4: The Matrix Equation $Ax = B$
1/26	1.5: Solution Sets of Linear Systems	1.7: Linear Independence	1.8: Introduction to Linear Transformations
2/2	1.9: The Matrix of a Linear Transformation	1.6 & 1.10: Applications Of Linear Models	Open Day – Extra topics, Homework, Catch Up
2/9	2.1: Matrix Operations And Dr HC's Birthday!	2.2 & 2.3: The Inverse of a Matrix	2.3 & 2.4: Invertibility And Partitioning
2/16	Open Day – Review And Catch Up	***Exam #1***	2.5: Matrix Factorizations
2/23	3.1 & 3.2: Introduction To Determinants	3.2 & 3.3: Cramer's Rule and Volume	Open Day – Extra topics, Homework, Catch Up
3/2	4.1: Vector Spaces And Subspaces	4.2: Null Spaces And Column Spaces	4.3: Linearly Independent Sets and Bases
3/9	Spring Break		
3/16	4.4: Coordinate Systems	4.5: The Dimension Of a Vector Space	4.6: Rank
3/23	5.1: Eigenvectors And Eigenvalues	5.2: The Characteristic Equation	5.3 Diagonalization
3/30	Open Day – Review And Catch Up	***Exam #2***	No Class Easter Break
4/6	No Class Easter Break	5.4 Eigenvectors and Linear Transformations	5.5 Complex Eigenvalues
4/13	6.1 Inner Product, Length, And Orthogonality	6.2 Orthogonal Sets	6.3 Orthogonal Projections
4/20	6.4 The Gram-Schmidt Process	6.5 Least-Squares Problems	Open Day – Extra topics, Homework, Catch Up
4/27	7.1 Diagonalization of Symmetric Matrices	Open Day – Review And Catch Up	Final Exam Review And End of Class Party
5/4	***Final Exam Monday 5/4 @7:30-10am***	***Finals Week***	