

MTH 233 (3 units) Linear Algebra
T, Th 8:00-9:15 am RLC 108

Instructor: Robert Compton, Ph.D.
Office Hours: T, Th 9:30-10:30, 12:30-1:30
Others by arrangement

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Required Materials

Linear Algebra, 5th ed. Lay, David C. 2011. ISBN: 978-0321836144

Point Loma Nazarene University Mission:

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 becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

MICS 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, eigenvalues, eigenvectors, and inner products.

Prerequisite: Mathematics 144 or 164

Course Learning Outcomes

Students will be able to apply their mathematical knowledge to solve problems.

Students will be able to demonstrate facility with algebraic structures.

Students will be able to speak about their work with precision, clarity and organization.

Students will be able to write about their work with precision, clarity and organization.

Students will collaborate effectively in teams.

Students will be able to identify, locate, evaluate, and effectively and responsibly use and cite information for the task at hand.

Students will be able to gather relevant information, examine information and form a conclusion based on that information.

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.

Course Philosophy

Mathematics is learned by doing. You will be given many problems to solve both in and out of class. You are encouraged to work with each other and consult the internet, but be sure that the solutions you write up are yours. Exam problems will be similar to these and it will be essential that you know how to do all of the problems from the homework.

Grading Policies

Grading Distribution	Percent
Two Examinations at 20% each	40
Final Exam	30
Homework and Activities	25
Literature Review	5
Total	100

Grading scale

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)

Grade components:

The grade components are homework (text exercises), tests, and the final examination.

- **Late work.** A written assignment or computer assignment is late if it is not received at the beginning of class on the due date. Late work need not be accepted. Work accepted late may be assessed a penalty. Make-up tests will only be given by arrangement with the instructor for reasons of documented emergency.
- **Accuracy of solutions.** Written assignments and examination questions and problems must be formulated carefully in terms of words and symbols used in the course. Credit is determined by the degree to which answers and solutions respond to the specific question or problem stated. Maximize your credit by learning the language and symbols of the course.
- **Written Assignments.** Collected assignments must be prepared in a style suitable for grading. The following guidelines are used to determine credit:
 - the organization must be easy to follow
 - the work must be legible
 - complete solutions must be written for problems (not just answers); answers must be clearly marked
 - use complete sentences to answer questions
- **Literature Reviews:** You will be responsible for finding two journal article applying tools from linear algebra and then writing a brief summary to present to the class. Grading details and dates will be provided in class.
- **Examinations and the Final Examination.** Examinations and the Final Examination will include problems and questions over material assigned in the text, readings and handouts, as well as material presented in class.

No examination shall be missed without prior consent or a well documented emergency beyond your control. A score of zero will be assigned for an examination that is missed without prior consent or a well documented emergency beyond your control.

The examination schedule is included in the daily schedule. This instructor does not intend to accept excuses such as poor communication with parents, benefactors, surf team sponsors and/or travel agents.

Attendance:

Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See [Attendance Policy](#) in the Undergraduate Academic Catalog.

Class Enrollment:

It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

Academic Accommodations:

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See [Disability Resource Center](#) for additional information. For more details see the PLNU catalog under [Academic Accommodations](#). Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

Academic Honesty:

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See [the catalog](#) for definitions of kinds of academic dishonesty and for further policy information.

Final Exam: Date and Time:

The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. This schedule can be found on the university website and in the course calendar. No requests for early examinations will be approved. Only in the case that a student is required to take three exams during the same day of finals week, is an instructor authorized to consider changing the exam date and time for that particular student.

Copyright Protected Materials:

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

Credit Hour:

In the interest of providing sufficient time to accomplish the stated course learning outcomes, this class meets the PLNU credit hour policy for a 3 unit class delivered over 15 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

Cell Phones: Turn off any cell phone, pager or things that make noise while you are in class. Also, do not text or work on other classes while in class -to do so is disrespectful to me and your classmates.

General Advice: The key to success in this class is to attend lectures regularly and do your homework. You learn mathematics by doing it yourself. You should expect to spend approximately two hours outside of class

working on homework and going over concepts for every one hour in class. When doing your homework, please note it is normal to not be able to do every problem correctly on the first attempt. Do not be discouraged, instead, seek help.

Sources of Help:

1. Me. If you have questions, ask me. See office hours.
2. FREE TUTORING- Math Learning Center, RS-230. Hours are posted on the door.
3. Other classmates. Form study groups! Work together!

The Final Exam is 7:30-10:00 Thursday May 3, 2016 and it is a Comprehensive Examination.

Week	Tuesday	Thursday
1	1/9 No Class	1/11 1.1-1.2 Systems and Row Reduction
2	1/16 1.3-1.4 Vector and Matrix Equations	1/18 1.5 Solution Sets
3	1/23 1.6 Applications	1/25 1.7 Linear Independence
4	1/30 1.8 -1.9 Intro to Linear Transformations	2/1 1.10 Linear Models
5	2/6 2.1 Matrix Ops.	2/8 2.2 The INVERSE...
6	2/13 Review	2/15 Exam 1
7	2/20 2.3 Characteristics Of Inverse Matrices	2/25 2.4 Partitioned Matrices
8	2/27 2.5 Matrix Factorization	3/1 3.1 and 3.2 Determinants
9	3/13 4.1 Vector spaces	3/15 Lit. Review
10	3/20 4.2 More spaces	3/22 4.3 Bases
11	3/27 4.4 Coordinate Systems	3/29 Easter Recess - No Class
12	4/3 Review	4/5 Exam 2
13	4/10 4.5 Dim of a Space	4/12 4.6 Rank
14	4/17 5.1 and 5.2 Eigenvalues	4/19 Lit Review
15	4/24 5.3 Diagonalization	4/26 Review
Finals Week		5/5 Final 7:30-10:00