

Math 272 Linear Algebra with Applications

Fall 2009

Time: 272.01 MWF 9:00-9:50, 272.02 MWF 10-10:50

Place: Pardee 320A (Labs in Pardee 219, often on Monday)

Text: David C. Lay, *Linear Algebra and its Applications*, 3rd edition

Instructor: Cliff Reiter, *e-mail: reiterc@lafayette.edu*

Office: Pardee 232 Office Hours: MWF 11-11:50, T 10-11:30, Phone: 610-330-5277

Students are welcome to arrange to meet me for help at other times. I am also happy to help students who stop by anytime when I am not busy. I understand that sometimes you need help but aren't ready to ask "good questions". Meeting with me simply to discuss the material is just fine.

Grading:

Exam 1 Wed Sept 30 100 points

Exam 2 Wed Oct 28 100 points

Exam 3 Wed Dec 2 100 points

Final (TBA) _____ 200 points

Quizzes: There will be six 20 point quizzes scheduled for: Sept 9, 21, Oct 9, 23, Nov 9, 20. The lowest scheduled nonzero quiz score will be dropped. I reserve the right to give a 5-20 point quiz or class exercise at any class meeting without previous warning, although I have done this very infrequently in the past.

Labs: We will probably do 8-10 J based labs. Often these will be on Mondays and typically due on Friday. Each lab report will be worth 5-20 points. Feel free to discuss the labs with others, but the standard expectation is that reports are individual. Labs are ordinarily graded on the merit of the lab report, but I reserve the right to deduct a severe penalty for gross misuse of lab time (unexcused absence, gaming/IM for the lab hour).

Calculators: You may use a personal scientific calculator on quizzes and exams **only to do arithmetic**, including trigonometric and similar functions. For example, you may not use a calculator to graph, communicate, access information or do matrix operations; **nor may you share a calculator**. I reserve the right to curtail excessive key-stroking. You should not access cell phones or other electronic devices.

Learning Objectives: I expect you to know how to do linear algebra computations. You should recognize the significance of the computations, and be able to apply those skills to solve problems. You should be able to explain abstract relationships between concepts and you should be able empirically explore those relationships by designing brief computational experiments.

Statement on Academic Honesty: The work you submit for purposes of evaluation in this course should be your own work. You must not seek nor accept help from anyone other than your instructor on exams and quizzes. Solutions that I provide to a quiz or an exam are considered privileged. Thus, you may not share the solution or questions with members of the course until confirming they have completed the quiz or exam. Neither may you access solutions or problems given to others before you have taken the quiz or exam. You may **discuss** your laboratory work with other individuals (you should list them on your written reports) **but any writing of the laboratory report and creation of attachments should be your work.**

Statement on Attendance: I expect you to attend class on a regular basis. You should not miss any graded exercise without discussing it with me ahead of time except in unusual circumstances. Missing an exam is a big deal and ordinarily requires a dean's excuse or the equivalent. Note that you should not attend class if you have a persistent cough or fever but you should contact me.

Suggested homework problems. Additions and deletions are likely as the semester progresses. Ranges indicate "odds" in range unless otherwise noted. This list represents problems that I believe most students will find adequate for exercising their understanding of the material – if you find you are having difficulty, consider doing more problems, rereading notes and the textbook, seeing me for help, and/or talking to classmates about math (studies show that this is strongly related to success!). Please ask for advice if you need help but aren't sure which of those is most appropriate for you.

1. Linear Equations in Linear Algebra

- §1.1 1,7,9,11,17,19
- §1.2 1,7-13,17,19,29,31
- §1.3 1-5,9,11,15,17,27ab,29
- §1.4 1-13,21,23,35
- §1.5 1-11,17-23,27
- §1.6 11
- §1.7 1-11,15-23,37
- §1.8 1-11,19,21,25,31

2. Matrix Algebra (including R^n as a vector space)

- §2.1 1,3,9,11,15,27
- §2.2 1,5,9,13-21,22,29-33,37
- §2.3 1-7,11-21
- §2.4 1,3,5,11,21
- §2.8 1-7,11-29,33,35
- §2.9 1-5,9-13,17-23

3. Determinants

- §3.1 5-9,25-29,39
- §3.2 5-9,15-19,27-31,35,39
- §3.3 19-23

- §1.9 3,7,11,17

4. Vector Spaces

- §4.1 1,5,6,7,21,22

5. Eigenvalues and Eigenvectors

- §5.1 1-25
- §5.2 1,3,9-17
- §5.3 1,2,7-19,23,27
- §5.5 1-15
- §5.7 3 genl soln

- §4.8 13,15, $y_0=0, y_1=1$

6. Orthogonality and least squares

- §6.1 1-19
- §6.2 1-11,15,29
- §6.3 3-9,17
- §6.4 1,5,9
- §6.5 1,3,9,11,19,21
- §6.6 1,9