Math 1180 Linear Algebra (Section 1030)

Fall 2012, University of Pittsburgh

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Lectures: M.W.F. 9:00-9:50 pm in 704 Thackeray Hall.
Office Hours: in 404 Thackeray Hall or by appointment.

About the course
This is a core undergraduate course in linear algebra and matrix analysis. The emphasis will be placed on the understanding of concepts and their application in further development of the theory. The grade will be based on evaluation of both problem solving and theorem proving skills.

Prerequisites
- Multi-variable Calculus (Math 0240 or equivalent).
- Introduction to Theoretical Mathematics (Math 0413 or equivalent)

Text
David Poole, Linear Algebra: A Modern Introduction, Third Edition.

Grades
Your final letter grade will be determined according to the following weights:

Quizzes	30%
Midterm Exams	30%
Final Exam	40%

1. After each class, I will assign some practice problems from the textbook. Although no homework will be collected and graded, you are responsible to do ALL of them by yourself. This is the best way to prepare for quizzes and exams which are similar to these problems.

2. We will have a weekly quiz on each Wednesday's class (except 8/29 and 12/5). There is no make-up quiz, instead we will drop your lowest quiz grade when calculating your final letter grade.

3. An on-class midterm exam will be given on Wednesday 10/17 . The date of the final exam will be announced. All exams are closed-book and closed-notes, no formula sheets or graphic calculators are allowed.

Tutoring
Walk-in tutoring is available in the Math Assistance Center (MAC) in Room 215 of the O'Hara Student Center. Tutoring hours will be posted outside the lab and the MAC, as well as on the web at http://calculus.math.pitt.edu

Academic Integrity
Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity will incur a minimum sanction of a zero score for the quiz, exam or paper in question. Additional sanctions may be imposed, depending on the severity of the infraction.

Disability Resource Services
If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 216 William Pitt Union (412) 624-7890 as early as possible in the semester.

Advices

1. You are expected to browse the new material before each class: which parts seem easy to you and which require more attention during the class.
2. You are not allowed to leave the class earlier unless you have a certified reason.
3. Make a solid progress in the course: Whenever you encounter difficulties, please visit my office hours as soon as possible. Do not wait until the exams are coming.

Tentative schedule

Week	Contents	Week	Contents
1	Sec. 1.1 Geometry and algebra of vectors Sec. 1.2 Length and angle: the dot product	9	Sec. 3.6 Introduction to linear transformations Sec. 4.1 Introduction to eigenvalues and eigenvectors
2	Sec.1.3 Lines and planes Sec.2.1 Introduction to systems of linear equations	10	Sec. 4.2 Determinants
3	Sec. 2.2 Direct methods for solving linear systems Sec. 2.3 Spanning sets and linear independence	11	Sec. 4.3 Eigenvalues and eigenvectors Sec. 4.4 Similarity and diagonalization
4	Sec. 3.1 Matrix operations Sec. 3.2 Matrix algebra	12	Sec. 5.1 Orthogonality in R^n Sec. 5.2 Orthogonal complements and orthogonal projections
5	Sec. 3.3 The inverse of a matrix	13	Thanksgiving
6	Sec. 6.1 Vector spaces and subspaces Sec. 6.2 Linear independence, basis, dimension	14	Sec. 5.3 The Gramm-Schmidt process and the QR factorization Sec. 5.4 Orthogonal diagonalization of symmetric matrices
7	Sec. 3.5 Subspaces, basis, dimension, and rank	15	Sec. 7.3 least squares approximation Review for Final exam
8	Mon. 10/15 Review for midterm exam Wed. 10/17 Midterm exam Fri. 10/19 Sec. 3.6 Introduction to linear transformations		