M349-Elementary Linear Algebra **Fall 2009**

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Time & Place: TuTh(9:30–10:45) Ewing Hall 207
Instructor: Dr. Qing Xiang
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Office Hours: W, F, 1:40–2:40.

Text: *Linear Algebra, A Modern Introduction*, 2nd Edition, David Poole.

Tentative Course Outline for Fall 2009

Sept. 1–Oct. 15, Vector Review (Ch 1.1-1.3), Systems of linear equations (Ch 2.1–2.3), Matrices (Ch 3.1-3.6). Midterm 1 will be given in the week of Oct. 11–17.
Oct. 20–Nov. 24, Eigenvalues and Eigenvectors (Ch 4.1-4.4), Orthogonality (Ch 5.1-5.4). Midterm 2 will be given in the week of Nov. 22–28.
Dec. 1–last day of class. Vector Spaces (Ch 6.1–6.6). Inner product spaces (Ch 7.1, 7.3, 7.4).
Final exam will be scheduled by the university.

Homework: 7 @ 15 pts each (will drop your two lowest homework scores), giving 75 points. I will assign and collect homework almost every week (except exam weeks, or the weeks you have a computer project due). You are strongly encouraged to start doing the problems when they are assigned. Otherwise you may not have enough time to finish the problems. Late homework will NOT be accepted. Collected problems should be worked on independently.

Computer Projects: 2 @ 25 points each, giving 50 points. A couple of projects will be collected and graded. The computer package used will be "MAGMA". The projects will require computing outside class on the composers.

Midterms: 2 @ 100 pts each, giving 200 points.

Comprehensive Final: 150 points.

Your final grades will be based on the total number of points accumulated out of the 475 points. Approximate scale: A 88–100%; B 75–87%; C 65–74%, D 55–64%. (Scale may need to be reconsidered.)

Honors Students: If you are a student in the honors section, then you will be required to do extra work (i.e., extra homework, computer projects).

General Remarks: This course is different from the typical student's previous math courses. The material is more abstract than what is usually encountered in the "standard" calculus/differential equations courses taken in the first two years. While computations also play an important role in linear algebra, the fundamental concepts must be understood before the material makes any sense. This may be the first course you take

where you will be expected to write a logical mathematical argument ("proof"). This may cause some discomfort at the beginning, but it is representative of future courses you will take in mathematics.