

**MATRIX ALGEBRA**  
**MATH 322-01**  
**FALL 2008**

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Classroom: CB 347                      Meeting Times: MWF 8:00am – 8:50am  
Instructor: Katharine Ott              Phone: 257-6815  
Office: 733 POT                          email: kott@ms.uky.edu  
Office Hours: MWF 9:00am – 10:00am, and by appointment  
Course webpage: [http://www.math.uky.edu/~kott/MA322\\_F08](http://www.math.uky.edu/~kott/MA322_F08)

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

**Grading:**

Quizzes	20%	A	90-100%
Exam 1	20%	B	80-89%
Exam 2	20%	C	70-79%
Final Exam	40%	D	60-69%

**Homework:** Practicing problems is essential to learning and understanding mathematics. You will find a list of homework problems for each section at the end of this syllabus. While I will not regularly collect or grade these assignments, you are responsible for all of the homework problems. I may, on occasion, collect homework in lieu of a quiz but I will announce this at least one class in advance. You may ask questions about any homework problems in class or during office hours. I encourage you to work together on homework problems, however you must write up your own solutions.

**Quizzes:** There will be a short quiz given in class every **Wednesday**. These quizzes will consist of 1 – 3 questions and you will have roughly 10 minutes to complete it. The questions will be very similar to the homework problems discussed above. I will not allow any make-ups, except for approved absences (see 5.2.4.2 found at <http://www.uky.edu/StudentAffairs/Code>), but I will automatically drop your lowest two quiz grades at the end of the semester. Please include all of your work and make your final answer clear to me on the page. No calculators will be allowed.

**Exams:** Two mid-term exams and a final exam are scheduled for this course. The mid-term exams will be given in class. Tentative dates can be found on the last page of this syllabus. I will announce the firm date of each exam at least a week in advance. Each of the mid-term exams will focus primarily on the material covered since the

last examination, however you will be responsible for all of the course material up to that point. The final exam will be comprehensive. Note that **the final exam is scheduled for Wednesday, December 17, 1:00pm – 3:00pm**. As with quizzes, I expect you to include all of your work and make your final answer clear.

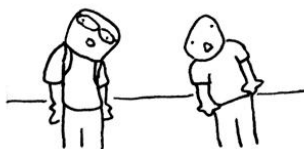
**Office Hours:** I hold office hours for your benefit and I encourage you to take advantage of them. If you cannot make my posted hours I will be happy to make an appointment that is convenient for the both of us.

### Class Conduct:

- I encourage and expect you to be vocal in class. Please ask questions as soon as they arise.
- Please be respectful of me and your classmates while in class or office hours. This includes turning off your cell phone and listening when others are speaking.
- Cheating on homework, quizzes or exams will not be tolerated. You are expected to follow the academic integrity standards stated in the University Senate Rules (see Chapter 6, <http://www.uky.edu/USC/New/SenateRules.htm>).

### Important Dates:

Wednesday	August 27	First day of classes
Monday	September 1	Labor Day – Academic Holiday
Wednesday	September 3	Last day to add a class
Wednesday	September 17	Last day to drop a class
Friday	October 30	Midterm of semester
Friday	December 12	Last day of classes
Wednesday	December 17	Final Exam



hey, kid... come  
here. you ever  
heard of math?

are you sure?  
i got a  
calculator you  
can use

uh... i gotta  
go, i don't  
want any  
math

no thanks  
man

## Course Schedule and Homework Problems:

§	Section	Problems
1.1	Systems of Linear Equations	1,3,4,5,7,11,13,15,23,24,25
1.2	Row Reduction and Echelon Forms	1,3,7,9,11,17,19,21,23,25,27
1.3	Vector Equations	1,3,5,9,11,13,15,17,21,23,24
1.4	The Matrix Equation $Ax = b$	1,3,5,7,9,12,14,15,21,23,24,25
1.5	Solution Sets of Linear Systems	1,3,5,9,15,16,19,23,24,25,26
1.7	Linear Independence	1,3,5,7,9,11,13,15,17,21,22
1.8	Introduction to Linear Transformations	1,3,5,9,11,13,17,19,20,21,22,24,29
1.9	The Matrix of a Linear Transformation	1,3,5,7,9,17,23,24,29,30,35
2.1	Matrix Operations	1,2,3,4,5,6,9,10,11,13,15,16,23,27,30
2.2	The Inverse of a Matrix	1,3,5,7,9,10,11,13,22,29,31,33
2.3	Characterizations of Invertible Matrices	1,3,5,6,7,11,12,13,17,24,36,37
	<b>EXAM 1</b>	<b>Wednesday, October 1 (tentative)</b>
2.5	Matrix Factorizations	1,3,5,6,7,9,11,15,17,24
2.8	Subspaces of $\mathbf{R}^n$	1,2,5,6,7,9,10,15,16,21,23,24,25,27
2.9	Dimension and Rank	1,2,3,5,7,9,11,13,15,17,18,19
3.1	Introduction to Determinants	1,3,5,7,9,11,15,19,21,22,23,25,27
3.2	Properties of Determinants	1,3,4,5,7,11,15,17,21,24,25,29,31,32
5.1	Eigenvectors and Eigenvalues	1,2,3,5,7,9,11,13,17,19,21,22,25,27
5.2	The Characteristic Equation	1,3,5,9,11,19,21,22,25
5.3	Diagonalization	1,2,3,5,7,11,17,21,22,24,27,28
6.1	Inner Product, Length, and Orthogonality	1–8,9,10,11,13,16,17,19,21,23,24,25,27,28
6.2	Orthogonal Sets	1,3,5,7–11,13,15,16,17– 20,21,23,24,26,27,29,32,33
	<b>EXAM 2</b>	<b>Wednesday, October 29 (tentative)</b>
6.3	Orthogonal Projections	1,3,5,7,9,11,12,15,17,19,21,22,23
6.4	The Gram-Schmidt Process	1–4,7,9,11,13,15,17,19,20
6.5	Least-Squares Problems	1–5,7,9,11,13,15,17,19
4.1	Vector Spaces and Subspaces	1,3,5,6,7,8,9,10,13,14,23,24,35,36
4.2	Null Spaces, Column Spaces and Linear Transformations	1,3,5,7,13,15,17,23,25,26,29,30,31,33,34,35
4.3	Linearly Independent Sets; Bases	1,3,5,9,10,12,13,15,19,21,22,23,29,31,32,33
4.4	Coordinate Systems	1,3,4,5,7,9,10,11,13,14,15,16,17,18,21,22,27,29
4.5	The Dimension of a Vector Space	1,3,7,10,11,13,15,16,17,19,20,21,25,29
4.6	Rank	1,2,3,4,5,7,9,13,17,18
	<b>FINAL EXAM</b>	<b>Wednesday, December 17 (fixed)</b>