Math 2310 syllabus, Spring 2011

Class meets from 1:25-2:15 pm in Malott 224 on Mondays, Wednesdays, and Fridays. The textbook is Elementary Linear Algebra with Applications, Ninth Edition by Bernard Kolman and David R. Hill.

The easiest way to contact me outside of class is via e-mail: adf55@cornell.edu. I also have a math department e-mail: froh@math.cornell.edu. The latter is forwarded to the former, so I’ll get any e-mail sent to either address.

My office hours will be from 2:25-3:25 pm on Wednesdays and 12:15-1:15 pm on Fridays. Both will be in my office, in Malott 581.

There will be eleven homework assignments, with one due most Fridays. The homework problems are taken from the book. Many of the odd-numbered problems have answers in the back of the book.

Each student in this course is expected to abide by the Cornell University Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student’s own work. You may work on homework individually or in groups. Regardless of how you solve the problems, however, each student must write-up his own solutions in his own words, rather than copying off of someone else.

Late homework will not be accepted for credit. A homework assignment is considered late if I don’t have it by the time I leave for the day on the day it is due. Homework is intended to be turned in during class, and if you skip class on a day that homework is due and try to turn it in later that day, you take a serious risk of being unable to do so and having the homework count as late.

Your lowest two homework scores will be dropped. A completed late homework will be eligible to be dropped. If a homework is late, then it does not matter how late it is, except that no further late homeworks will be accepted after the final. A homework assignment that is never turned in will not be dropped, but will count as a 0 in your final homework grade while two other homeworks are dropped.

If you must be absent on a day when homework is due, you can turn it in early or give it to someone else to bring to class. In case of unexpected reasons to miss class that could not be planned ahead of time, you can turn in the assignment later and use a drop.

There will be three exams. This includes two mid-terms and a final. Exams will not be cumulative in the sense that all problems will include material dealt with after the previous exam, though it is the nature of mathematics that material covered later in the course will often require you to understand material covered earlier.

Calculators and other electronic devices are not allowed on exams. You may use such electronic devices for help with homework if you like, but they will never be necessary. Some of the homework problems can theoretically be done by computer, where you enter the problem and it tells you the answer. You must give scratch work to justify your answer, however, which means doing the problem yourself rather than merely asking a computer for the answer.

If you have to miss an exam, let me know as soon as possible, ideally before
the exam. If you have a legitimate reason to be absent, we can work something out.

If you want something regraded, you must turn it back in and ask for a regrade within a week of the first time I attempted to return it graded. Write a note on a separate sheet of paper explaining what you did and why you think you deserve more points than you were given. Points will only be added in case of grader error.

You must show your work on homework and exams. The correct answer with no justification may not get much credit.

The final course grades will be curved, after adding everything together. Homeworks will count for 16% of your grade, each mid-term exam will count for 24%, and the final exam will count for 36%.

Below is the current schedule of homework problems. Some sections could have the problems on that section moved by a week to a different homework, depending on how quickly the lectures go. Any changes will be announced in class and by e-mail by the weekend before the homework is due.

Schedule and homework assignments:

Homework #1: (Due February 4)
Section 1.1: 3, 4, 16, 18, 23
Section 1.2: 2, 6, 11, 13, 14
Section 1.3: 2, 9, 12(a-c), 23, 34

Homework #2: (Due February 11)
Section 1.4: 3, 8(a-c), 14, 22, 25
Section 1.5: 3, 10, 14, 17, 20
Section 1.6: 2, 3, 6, 16, 19

Homework #3: (Due February 18)
Section 2.1: 5, 6, 8
Section 2.2: 3, 8, 10, 15
Section 2.3: 7, 10, 25

Homework #4: (Due February 25)
Section 3.1: 2, 3, 8, 12, 15
Section 3.2: 4, 7, 8, 17, 18
Section 3.3: 1, 4, 12, 15, 16

Homework #5: (Due March 11)
Section 3.4: 2, 11, 14
Section 4.1: 1, 2, 8, 11, 22
Section 4.2: 2, 7, 10, 14, 17

Doing section 3.4 before the first prelim is strongly recommended, even though the assignment isn’t due until later.
First prelim: March 4
The first prelim will cover chapters 1-3.

Homework #6: (Due March 18)
Section 4.3: 1, 4, 6, 13, 36
Section 4.4: 1, 2, 5, 10
Section 4.5: 11, 12, 22

Homework #7: (Due April 1)
Section 4.6: 1, 2, 16, 33, 42
Section 4.7: 3, 8, 11, 22

Homework #8: (Due April 8)
Section 4.8: 6, 8, 11, 32
Section 4.9: 3, 10, 34, 35
Section 5.1: 2, 10, 16, 25, 31

Homework #9: (Due April 22)
Section 5.3: 8, 13, 21, 30
Section 5.4: 4, 9, 12, 33
Section 5.6: 2, 6, 11
Doing this assignment before the second prelim is strongly recommended, even though the assignment isn’t due until later.

Second prelim: April 15
The second prelim will cover chapters 4 and 5.

Homework #10: (due April 29)
Section 6.1: 1, 4, 7, 22
Section 6.2: 2, 5, 12, 19
Section 6.3: 3, 8
Section 6.5: 1, 6, 11

Homework #11: (due May 6)
Section 7.1: 5, 8, 23
Section 7.2: 6, 11, 23
Section 7.3: 2, 3, 16, 19
Extra problem: Let $A = \begin{bmatrix} -2 & 5 \\ -2 & 4 \end{bmatrix}$.

a) Find all (complex) eigenvalues of $A$, and a (complex) eigenvector for each.
b) Find a rotation matrix $B$ that is similar to $A$. That is, find $B$ of the form $B = \begin{bmatrix} a & -b \\ b & a \end{bmatrix}$ for $a, b \in \mathbb{R}$ and a matrix $P$ such that $A = P^{-1}BP$.

c) Find the smallest positive integer value of $n$ such that $A^n$ is a scalar matrix with positive numbers on the diagonal.
Final exam: May 17

The final exam will be comprehensive and cover chapters 1-7. It will be in the normal final exam time slot for the scheduled class meeting time. This is Tuesday, May 17 from 2-4:30 pm in Malott 406.