Math 314 – Section 001
WMF 11:30am–12:20pm
Oldfather Hall 303
Fall Semester 2003

Instructor: Dr. John Meakin
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Office Hours: MWTh 5:00-6:00pm, and by appointment.
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Course Web Page: `http://www.math.unl.edu/~jmeakin/courses/314`
Text: David Lay, *Linear algebra and its applications*, Third Edition, Addison-Wesley, 2003

COURSE GOAL: At its simplest level, linear algebra is just the study of systems of linear equations—that is, systems like

$$3x - 7y = 2$$
$$4x + 2y = 1$$

which ought to be familiar to you from high school. Although this particular system is easy to understand and to solve, in order to contend with very large systems of equations involving many variables and in order to better understand the nature of such systems, a framework is needed. Such a framework is precisely what matrix theory and linear algebra are all about.

MATHLAB: Computers are an important component of this course, since dealing with matrices can involve a lot of arithmetic. Many of the calculations you'll need to do for this class can be done in *Maple*, a computer algebra system. Other computer algebra systems, such as *MATLAB*, *Mathematica*, *Derive*, etc. can also be used. (I am not as familiar with these other languages as I am with *Maple*, and so I might not be able to help you much with these other systems.) Good calculators (such as TI-85's and better) can also do matrix computations, and I think you will find such a calculator helpful for this course.

Maple can be used in the Mathlab, located in Bessey 105. You will each be given an account on the Mathlab system. If you haven't used the lab before, or if you haven't used *Maple* to do matrix arithmetic before, you might consider signing up for an orientation session; a sign-up sheet will be posted outside the lab door (Bessey 105) at the beginning of the semester.

GRADING: Your grade will be based on 4 components: quizzes, mid-term exams, the project, and the final exam. In addition, you will be expected to do homework.

Homework: Homework will be assigned each day and will usually be exactly what is on the syllabus, but sometimes there may be a few changes to that. You are expected to do the homework problems regularly. I recommend you purchase a separate spiral-bound notebook which is used only for your homework for this course. Before the start of class each day, I will write the numbers of some of the assigned homework problems (usually the even-numbered ones) on the board and you will put the solutions on the board. When class begins, we'll take a minute or two to look over the solutions on the board and make corrections if necessary. If there are any questions on the homework and *if a reasonable effort has been made to get the solutions on the board*, we will spend the first part of class discussing questions on the homework — both the problems on the board and those we did not put on the board. If no student is willing to put his or her (attempts at) solutions on the board, we will not spend class time discussing the homework.

Quizzes: Short, in-class quizzes will be given most Fridays. The quiz problems will be similar to problems from the homework. There may also be some definitions or statements of theorems on the quizzes. My intention is to write quizzes so that the student who diligently does all of the homework and keeps up with the class will do well on them. You will be allowed to use calculators on the quizzes. Occasionally, I might assign "take-home quizzes" to be completed on your own outside of class. Each quiz will be graded on a 10 point scale. At the end of the semester, however, I will scale your quiz total so as to be worth 100 points. (There will probably be more than 10 quizzes total.) Additionally, I will drop your lowest quiz score so as to accommodate unavoidable absences, but *absolutely no make-up quizzes will be given.*

Mid-terms: There will be two mid-term exams, given roughly on the dates indicated on the syllabus. You will be allowed to use calculators on the exams.

Project: There will be a project for this class. The project will involve a lengthy, open-ended problem requiring a considerable amount of work to solve and to prepare the project report. Most likely, you will need to use *Maple* or another computer algebra system for some portion of the project. You will work in groups of 3 students on the project with the goal of producing a thorough, well-written solution to the problem. Further details will be given out later.

Final: The final for this class will be comprehensive and will be given 10:00am-noon on Tuesday, December 16 (in OldH 303, the same room as our regular class). Calculators are allowed on the final. Our final will involve only our section of Math 314.

Course Grade: The total points you receive in this course will be computed based on the following table.

Quizzes		100 points
Mid-term Exams	100 points each	200 points
Final Exam		150 points
Project		50 points
Total		500 points

The following table represents a "worst-case" scenario for the assignment of letter grades based on your course total. By this I mean, for example, that if you earn 410 points, you are guaranteed a "B" for the course, but I might actually lower the cut-off for a "B" at the end of the semester.

Letter Grade	Points Needed	Percentage Needed	GPA value
A+	480	96	4.00
A	460	92	4.00
A-	445	89	3.67
B+	430	86	3.33
B	410	82	3.00
B-	395	79	2.67
C+	380	76	2.33
C	360	72	2.00
C-	345	69	1.67
D+	330	66	1.33
D	310	62	1.00
D-	295	59	0.67