MATH 240   Introduction to Linear Algebra
MWF10-10:50, ARM 0135   Fall 1995
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Introduction

Welcome to Linear Algebra! Since most of you are not mathematics majors, the focus of this course will be on the *applications* of linear algebra, rather than the *theory* behind it (except when explaining the theory will enhance your understanding of the concepts). I will be passing around a sheet today asking each of you what your major is. Then I will try to present examples from those subjects so that you can see how linear algebra is applied to your area of interest.

The text for this course is *Linear Algebra and Its Applications*, by David C. Lay. **The text is required**, since you will be assigned both reading and homework problems from the book. You may also wish to purchase the study guide for the text. Though we will be covering most of the material in the book, I will be presenting some of the material in a different order, especially the first week. In addition, I will also be lecturing from various other sources, so class attendance and participation is necessary for successful mastery of the material. If you find that Lay's book is unclear on some point, you may wish to consult the following texts from the other linear algebra courses:

Linear Algebra and Its Applications, 2nd ed., by Strang (required for 401).
Linear Algebra with Applications, 4th ed., by Leon (required for 461).
Linear Algebra, 3rd ed., by Fraleigh and Beauregarde (required for 240U).

You should address most questions to your recitation section leader. However, if you are continuing to have difficulty, or have a question, problem, or interesting application you would like me to address in class, you may contact me during my office hours or make an appointment. **Extra copies of handouts are available outside MTH 4305.**

You may bring a tape recorder with you to class, if you wish; however, unattended tape recorders will not be permitted. There will be no makeup classes for snow days.

Exams

There will be four exams in the course. The first three will be 45 minutes long and will take place during a regular lecture hour. The final exam will be 110 minutes long. If you need to make special arrangements through the Disabled Support Service, please let me know as soon as possible. Attached to each examination will be a course evaluation form, so that I may receive your suggestions for how the course could be improved. These forms will be seen only by me, so if you have comments that you wish the department to hear, please contact them directly.

Quizzes

Quizzes will be given on Tuesdays in recitation section. **NO MAKEUPQUIZZES WILL BE GIVEN!** They will take fifteen minutes each, and you will need to bring your own paper. They will cover any material presented in lecture up to the week before the quiz. Before computing your quiz average, I will drop your lowest quiz score.

Recitation Sections

In addition to the lectures, you are also registered for two recitation sections meeting on Tuesday and Thursday in the mathematics building. In these sections the TAs will present solutions to problems which parallel closely the ones assigned for homework. They may also answer any questions you might have about the material covered in lecture that week. TAs can **NOT** address specific questions about any homework problems not already turned in. TAs should also be holding at least two office hours per week.

Assessment

Your grade for the course will be determined in two stages. First your *raw score* will be calculated from your exam scores, with the final counting as the equivalent of two exams. However, if including your homework and/or quiz scores will improve your score, I will let each count for 10% of your grade. Therefore, doing the homework, attending recitation sections, and taking the quizzes *can only help* your grade.

Then each of the raw scores will be scaled to determine final grades, if necessary. During this scaling process I will consult the TAs to see if they think that anyone's raw score does not adequately reflect their knowledge of the material. Therefore, it is beneficial for you to attend recitation sections regularly and get to know your TA.

Homework

In most cases, homework will be distributed every Friday during lecture and it will be due in your recitation section the following Thursday. **ABSOLUTELY NO LATE HOMEWORK WILL BE ACCEPTED!** If you must miss a due date because of University business, it is your responsibility to make sure the homework gets to the TA *before* the due date. Since linear algebra is a subject where the material for one section builds on the section before, it is critical that you keep up to date on the homework: hence the stringent policy. However, to calculate your semester-long homework average, I will drop your two lowest homework scores. Therefore, low scores for assignments where you were pressed for time can be erased as long as you don't have too many of them.

Though you may not copy directly from another's paper or use someone else's ideas as your own, I encourage you to discuss the homework problems with your classmates. Any scientific endeavor is rarely done in a vacuum; therefore it is to your advantage to learn the benefits of collaborating. Model homework solutions will be placed on reserve in the Engineering and Physical Sciences Library after the assignment is due. Hopefully these will assist you in learning the material.

Homework assignments should be folded like a book with the following information on the "front cover:"

<div align="center">

Name
Section Number and TAName
Assignment Number
Date

</div>

You will turn in your assignments this way so that the TA can put your grade on the inside,

thus ensuring your privacy. I will make every effort to ensure that your graded homework is returned in a timely manner.

Each homework assignment will consist of ten questions and be worth 25 points. Of those, five randomly selected problems will *not* be graded. For these questions, you will receive one point if you attempted the problem. For the five problems that will be graded, you may receive up to four points each, depending on the completeness and accuracy of your solution.

Obviously, I can assign only a select few homework problems to be turned in. Therefore, I choose ones which, if mastered, show adequate understanding of the material. The examinations will largely be based on the material covered in the homework assignments. However, you are encouraged to try other problems in the book for practice.

<u>Tentative Schedule</u>

Note: This is only a tentative schedule; there may be small deviations from it. However, the dates of exams and quizzes will not change.

September 6-11: Geometry review (parts of sections 2.1, 2.4, 5.3, 5.5, 7.1)
      September 6: Homework 1 distributed
September 13-15: Algebra review (chapter 1, section 2.1)
      September 14: Homework 1 due
      September 15: Homework 2 distributed
week of September 18: Sections 2.2-2.5
      September 19: Quiz 1 (covers the geometry review and chapter 1)
      September 21: Homework 2 due
      September 22: Homework 3 distributed
week of September 25: Sections 2.6-2.7
      September 27: Exam I (covers the geometry review, sections 1.1-2.5)
week of October 2: Sections 3.1-3.3
      October 5: Homework 3 due
      October 6: Homework 4 distributed
week of October 9: Sections 3.5, 3.8-4.2
      October 10: Quiz 2 (covers sections 2.6-3.3)
      October 12: Homework 4 due
      October 13: Homework 5 distributed
week of October 16: Sections 4.3, 5.1-5.4
      October 19: Homework 5 due
      October 20: Homework 6 distributed
week of October 23: Sections 5.5-5.7
      October 25: Exam II (covers sections 2.6-3.5, 3.8-5.3)
week of October 30: Sections 5.8, 6.1, 6.2
      November 2: Homework 6 due
      November 3: Homework 7 distributed
week of November 6: Sections 5.9, 6.3, 6.5
      November 7: Quiz 3 (covers sections 5.4-5.8, 6.1-6.2)
      November 9: Homework 7 due
      November 10: Homework 8 distributed
week of November 13: Sections 6.6-7.1
      November 16: Homework 8 due

November 17: Homework 9 distributed
November 20: Exam III (covers sections 5.4-6.6, ODEs)
November 22: Section 7.2
week of November 27: Sections 7.3-7.6
November 30: Homework 9 due
December 1: Homework 10 distributed
week of December 4: Sections 8.1-8.3
December 5: Quiz 4 (covers sections 6.7-7.6)
December 7: Homework 10 due
December 11: Formal Review Session
December 13: Informal Review Session
December 14, 1:30-3:30 pm: Final Exam (covers entire course, but especially Chapters 7-8; alternate snow day is December 17)