G63.2120 Linear Algebra II
R 8:00-9:50, 801 WWH Spring 1995
Dr. D. A. Edwards Office Hours: T 1-2 R 9-10 or by appointment
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Introduction

Welcome to Linear Algebra II! In this course we shall complete the material begun in Linear Algebra I and cover any additional material tested on the preliminary written examinations. However, we should have extra time, and I would like during that time frame to cover topics of interest to you. I will be passing around a sheet today asking each of you your major and field of interest. Then I will try to present examples from those subjects so that you can see how linear algebra is useful to your area of interest. On the sheet, please also indicate whether you will be officially registered for the course so that I may determine whether I need a grader.

The text for this course *Linear Algebra and its Applications*, 2nd ed., by Gilbert Strang. The text is required, since you will be assigned both reading and homework problems from the book. In addition, I will try to more or less follow the sequence of topics in Strang. However, I will try to cover the material in greater depth than is presented in your text. Therefore, I will also be lecturing from various other sources, so class attendance and participation is necessary for successful mastery of the material. I have put the following books on reserve in the library:

1) *Matrix Analysis* by Horn and Johnson
2) *Applied Linear Algebra* by Noble and Daniel
3) *Methods of Mathematical Economics* by J. N. Franklin (linear programming and game theory)
4) *Mathematical Methods in Physics and Engineering* by Dettman (linear operator theory)
5) *Elementary Differential Equations with Boundary Value Problems* by Edwards and Penney (the phase plane)

These books should cover any material not in Strang.

It is possible that for some of the homework sets access to a computer will be helpful. I understand that Prof. Tabak provided you with access to the ACF computers in order to use Matlab. ACF will continue access to that account for this class.

If you 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.

Exams

There will be two exams in the course. Each will be a take-home examination where you will be responsible for following the rules outlined on the front cover. Attached to each examination will be a course evaluation form, so that I may receive your suggestions for how the course could be improved.

Assessment

Your grade for the course will be determined in two stages. First your *raw score* will be calculated from your exam scores, with each counting equally. However, if including your homework scores will improve your score, I will let the homework count for 20% of your grade. Therefore, doing the homework *can only help* your grade. Then each of the raw scores will be scaled to determine final grades.

Homework

Homework will be assigned approximately every class period, and it will be due in lecture the following class period. You will find your first homework assignment attached to this sheet. **ABSOLUTELY NO LATE HOMEWORK WILL BE ACCEPTED!** (Subject to the university calendar policy on religious holidays. Prior arrangements must be made with me.) Since mathematics 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.

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. For certain homework problems which I will assign, solutions are given in the back of the book. Please use these solutions for verification purposes only. Model homework solutions will be placed on reserve in the library after the assignment is due. Hopefully this will assist you in learning the material.

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

Name
G63.2120 - D. A. Edwards
Assignment Number
Date

You will turn in your assignments this way so that the grader can put your score on the inside, thus ensuring your privacy. I will make every effort to ensure that your graded homework is returned in a timely manner. Point values for each question will be listed.

Schedule

January 26:	introduction, Sections 5.1-5.2
February 2:	Sections 5.5-5.6
February 9:	Appendix B, Section 5.3
February 16:	Sections 5.3-5.4
February 23:	the phase plane; Section 6.2
March 2:	Sections 6.1-4
March 9:	Appendix A, variational principles; midterm distributed
March 16:	Spring Recess
March 23:	Midterm due; variational principles, Sections 7.1-7.2
March 30:	Sections7.3, 8.1
April 6:	Sections 8.2-8.3
April 13:	Sections 8.3-8.4; quadratic programming
April 20:	Section 8.5; discretization, operators
April 27:	the Dirac delta function, the adjoint, eigenvalues, eigenfunctions, norms
May 4:	spectral theory, Green's functions, Fourier series, partial differential equations; final distributed
May 11:	Final due; discuss writing assignments