

Math 331 — Linear Algebra §2
Syllabus
Fall 1997

<u>Text:</u>	“Linear Algebra” by Fraleigh and Bearegard, 3 rd edition.
<u>Time/Place:</u>	TTh 4 to 5:50 p.m. at JB 387.
<u>Instructor:</u>	Dr. Chetan Prakash.
<u>Instructor’s Office</u>	JB 327 Phone: 880-5390 e-mail: cprakash@wiley.csusb.edu
<u>Office Hours:</u>	MW 3 to 3:50 p.m; TTh 1 to 1:50 p.m. and by appointment.
<u>Material to be covered:</u>	Chapters 1, 2, 3, §4.4, chapters 5 and 6 and §7.1 (except §§1.1–1.5, 5.3, and the remaining optional sections).

The Course: Linear Algebra is the study of the structures called “linear spaces” or “vector spaces” and of the morphisms, or structure-preserving functions, between them. Much of what you have learned of vectors on the line, the plane and in space, and of matrices, can be generalized to a vast variety of mathematical situations. Linear Algebra is a course of fundamental importance, both to higher mathematics as well as in applications to subjects such as physics, computer science, engineering, cognitive science, economics and the social sciences. This course also plays a central rôle in the mathematics core: along with Math 345 and 355, it provides an introduction to abstraction in Mathematics. We will first acquaint ourselves with the basic ideas of linear algebra in the context of familiar spaces such as lines, planes, 3-space and n -dimensional real spaces; the generalization to other situations will then be easy to follow. We will endeavor to cover a little more than a section each week, on average. We will study §§4.4, 5.2 and 6.3–6.5 only if time permits.

Prerequisite: You are expected to have a working knowledge of those parts of Multivariable Calculus I, Math 251, relating to vectors, matrices and determinants, as covered in §§1.1–1.5 and 4.1–4.3 of the text (or in your multivariable text). It will ease your way in this course if you allow some time for reviewing that material, especially at the beginning of term.

Recommended Homework: It is recommended that you do as many relevant exercises as you can (answers to the odd-numbered ones are given in the text). Worked solutions to every third problem may be found in students’ solution manual for this text; however you are strongly encouraged to look at the manual, if you have it, only *after* having worked the exercises yourself. Note the True-False questions in many sections, as well as the interesting historical notes.

Solutions to the above-mentioned exercises are not to be handed in or graded, but we will discuss any questions you have regarding them at the beginning of each class. Please keep in mind that these discussions will be of use to you only if you have at least attempted them beforehand. Do not spend more than 30 minutes on any exercise; most exercises will take considerably less time. *Do please discuss the exercises with each other or with me.*

Note also the LINTEK software included with the text. You may use MATLAB or MAPLE (which can be used in the department’s computer lab) or any other mathematical software as an adjunct.

Doing homework exercises after reading the text and notes is the single best way to do well in this course. At the end of each class you will know what section(s) are to be covered at the next meeting. It will help you a great deal if you can also study the text *before* coming to class.

Graded Homework: Homework for grading will be assigned every few days in class, but will be collected on Thursdays, starting in the second week of term. You may discuss the exercises with each other or with a tutor, but are on your honor to write solutions independently.

Readings: As soon as we have covered §3.4, you may start reading §7.1 on your own. Exercises from that section will be assigned as homework; feel free to ask questions on it in class. You will also be asked to pick one of the optional applications sections in Chapters 1–3 and will be given an exercise, to be submitted at the end of term, on that topic.

Feedback Exercises: We will have two 2-hour, non-cumulative, in-class midterm tests. The first will be on Thursday October 30; the second on Tuesday December 2. You will be informed of the material

to be covered at least 2 days prior to the test. The non-cumulative final will be on Thursday December 11 from 4-5:50 p.m.

Tests will contain true-false and multiple choice questions, as well as show-your-work questions for partial credit.

Grading: The midterms and final will each be worth 100 points. Your collected homeworks will be worth 50 points and your combined work on §7.1 and the optional section will also be worth 50 points, for a total weight of 400. The final grade will be calculated from:

A	90-100%	A-	86-89%	B+	82-85%	B	78-81%
B-	74-77%	C+	70-73%	C	66-69%		
C-	62-65%	D+	58-61%	D	54-57%	D-	50-53
						F	below 50%

Notes:

1. The responsibility for learning the material is yours. Please expect to spend, on average, 2 hours of home work for each hour in class. *Read the sections we are to cover before coming to class.* It is my responsibility to facilitate your learning by pointing the way, helping you with specific problems you bring to class or to my office hours, and giving you feedback on your progress. However, watching me work exercises or reading someone else's solutions is not enough — you must do it yourself. Sincerity of effort will lead you to the joy of doing mathematics. This is a fast-paced course, so it will not be possible to discuss all questions during class time. Do please utilize as many resources as you can, e.g., my office hours, the Learning Center (whose tutors are free of charge), and study groups with other students. By all means look up other texts if they seem more readable to you.
2. Please keep up to date with the material, and try not to miss any midterms or home assignments. You are responsible for bringing calculators (*no graphing calculators please*) to the exams. **Late homework will not be accepted, and makeups for midterms will not be given without compelling and documented reasons for your lateness/absence.** *If you are forced to be absent, I will need to have made prior arrangements with you regarding makeups.*
3. You can always get in touch with me by leaving a message, either by phone or e-mail. I should get back to you within a working day. If you live outside the local calling area, expect me to ask you to call me back.
4. Do make chapter summaries for yourself and use the review questions and miscellaneous exercises at the end of each chapter as practice tests. At the end of class on the day before the midterm we will discuss any questions you have.
5. Graded work (quizzes, midterms, homework) will generally be returned, along with solutions, within **one week** after being handed in.
6. Final grades will not be posted at the end of term. If you desire to know your grade before the start of the next term, please leave a stamped, self-addressed envelope with me.

Midterms on Thursday, October 30 and Tuesday, December 2

Final on Thursday December 11 from 4-5:50 p.m.

Departmental web page: <http://www.math.csusb.edu>