

**Text** We will be using *A First Course in Linear Algebra*, Sucia Edition (version 1.00) by Robert A. Beezer as our textbook. You may purchase a copy at [www.lulu.com/linearalgebra](http://www.lulu.com/linearalgebra). Electronic copies of the textbook will be updated weekly at the book's website ([linear.ups.edu](http://linear.ups.edu)), usually on Thursday evenings.

The Bookstore also has a *highly* recommended optional text: *The Nuts and Bolts of Proofs* by Antonella Cupillari (Third Edition). The course WWW page has some recommendations for similar books about proof techniques.

**Home Page** Start at <http://buzzard.ups.edu/courses.html> to locate the WWW page for this course.

**Office Hours** My office is in the north half of Trailer E, the office number is E9; the telephone number is 879-3564. Making appointments or simple, non-mathematical questions can be handled via electronic mail — my address is [beezer@ups.edu](mailto:beezer@ups.edu). Office hours are Monday, Wednesday and Friday mornings (when we are not in class!). I will always be available during these times on a first-come, first-served basis. If these times are not convenient, please do not hesitate to make an appointment with me for another time. You are also welcome to drop by my office without an appointment at any time that I am in (roughly 2:15 P.M. – 4:30 P.M. MWF are good times to try). Office hours are your opportunity to receive extra help or clarification on material from class, or to discuss any other aspect of the course.

**Calculators** This course requires the use of a calculator. It should be capable of doing matrix operations — specifically “reduced row echelon form,” “determinants” and “eigenvalues and eigenvectors.” I am most familiar with the Texas Instruments series. If you no longer have a manual for your calculator, there is a good chance you can locate one on the Internet.

You may also opt to use the program *Mathematica* on a laptop computer during exams. Limited-time student copies of *Mathematica* are available at good prices — see the course web page for links.

Being unfamiliar with your calculator, using an insufficient model, forgetting to install fresh batteries, or forgetting your calculator all together are not excuses for poor performance on examinations. In particular, I have seen students have trouble making the TI-83 perform all the functions required for this course.

**Homework** There is a fairly complete collection of exercises in the text. Any (or all) of the problems will be good practice as you learn this material. Many of these problems have complete solutions in the text to further aid your understanding. Of course, you are not limited to working *just* these problems.

None of these problems will be collected, but instead they will form the basis for the classes where we will have problem sessions and for discussions in office hours. It is your responsibility to be certain that you are learning from these exercises. The best ways to do this are to work the problems diligently as we work through the sections (see attached schedule) and to participate in the classroom discussions. If you are unsure about a problem, then a visit to my office is in order. Making a consistent effort outside of the classroom is the easiest way to do well in this course.

Mathematics not only demands straight thinking, it grants the student the satisfaction of knowing when he [or she] is thinking straight.

— D. Jackson

Mathematics is not a spectator sport.

— Anonymous

I hear, I forget.

I see, I remember.

I do, I understand.

— Chinese Proverb

An education is not received. It is achieved.

— Anonymous

**Quizzes** There will be seven 50-minute timed quizzes — they are all listed on the *tentative* schedule. The lowest of your seven quiz scores will be dropped. The comprehensive final exam will be given on Wednesday, May 9 at 8 AM. The final exam cannot be given at any other time and also be aware that I will allow you to work longer on the final exam than just the two-hour scheduled block of time. In other words, plan your travel arrangements accordingly.

As a study aid, I have posted copies of old quizzes on the course web site. These are offered with no guarantees, since techniques, approaches, emphases and even notation will change slightly or radically from semester to semester. In other words, they are not officially part of this semester's course. In particular I do not advocate working old exams as a primary, or exclusive, technique for learning the material in this course. Use at your own risk, they have not been reviewed for inconsistencies with this semester's course.

**Writing** This course has been designated as part of the University's Writing in the Major requirement. Thus, there will be two days of discussion about the peculiarities of writing mathematics, and there will be two written assignments. These assignments will be discussed further in class, see the attached schedule for due dates.

**Reading Questions** Each section of the textbook contains reading questions at the end. Once you have read the section *prior* to our in-class discussion, submit your responses to the reading questions via electronic mail as follows. Do **not** send your responses to my regular email address ([beezer@ups.edu](mailto:beezer@ups.edu)), but instead use the address [linear@beezer.privacyport.com](mailto:linear@beezer.privacyport.com). Your responses are due at 9 PM of the day prior to the day we discuss the section in class, and will not be accepted late, i.e. 9 PM is a firm deadline. Use a subject that is **only** the acronym for the section. So for example, your first response will be simply titled: WILA. Do not include anything else in the subject line. In the first line of your response, please put your real name, then answer the questions in order.

If a question asks for a computation, you can just give the numerical answer, no need to show your work in the email. If the question requests a yes/no answer, or asks "Why?" then give an explanation. Do your best with mathematical notation, but do not fret if it is a bit sloppy or weird, I can usually decipher any reasonable attempt. Please send *only straight text* — no attachments, no Word files, no graphics, no HTML if you can help it. Please pay careful attention to these procedures and deadlines.

**Grades** Grades will be based on the following breakdown: Quizzes — 60%; Reading Questions — 10%; Writing — 10%; Final — 20%. Attendance and improvement will be considered for borderline grades. Scores will be posted on the Internet at <http://buzzard.ups.edu/courses.html>. A reminder about withdrawals — a Withdrawal Passing grade (W) can only be given during the third

through sixth weeks of the semester, after that time (barring unusual circumstances), the appropriate grade is a Withdrawal Failing (WF), *even if your work has been of passing quality*. See the attached schedule for the last day to drop with an automatic ‘W’ and please read *Academic Handbook* at <http://www.ups.edu/x4727.xml#withdrawal> about these often misunderstood grades.

**Attendance** Daily attendance is required, expected, and overall a pretty good idea.

**Purpose** This course is much different from most any mathematics course you have had recently, in particular it is much different than calculus courses. We will begin with a simple idea — a linear function — and build up an impressive, beautiful, abstract theory. We will begin computationally, but soon shift to concentrating on theorems and their proofs. By the end of the course you will be at ease reading and understanding complicated proofs. You will also be very good at writing routine proofs and will have begun the process of learning how to create complicated proofs yourself.

You will see this material applied in subsequent courses in mathematics, computer science, chemistry, physics, economics and other disciplines (though we will not have much time for applications this semester). You will gain a “mathematical maturity” that will be helpful as you pursue upper-division coursework and in any logical, rational, or argumentative activity you might engage in throughout your lifetime. It is not easy material, but your attention and hard work will be amply repaid with an in-depth knowledge of some very interesting and fundamental ideas, in addition to beginning to learn to think like a mathematician.

# Tentative Daily Schedule

Monday	Tuesday	Wednesday	Friday
Jan 15 MLK Day	Jan 16 Section WILA	Jan 17 Section SSLE	Jan 19 Section RREF
Jan 22 Section TSS	Jan 23 Problem Session	Jan 24 Section HSE	Jan 26 Section NM
Jan 29 Problem Session	Jan 30 Quiz SLE	Jan 31 Section VO	Feb 2 Section LC
Feb 5 Section SS	Feb 6 Problem Session	Feb 7 Section LI	Feb 9 Section LDS
Feb 12 Section O	Feb 13 Writing Discussion	Feb 14 Problem Session	Feb 16 Quiz V
Feb 19 Section MO	Feb 20 Section MM	Feb 21 Section MISLE	Feb 23 Section MINM
Feb 26 Problem Session Last day to drop	Feb 27 Section CRS	Feb 28 Section FS	Mar 2 Writing Prep No class
Mar 5 Problem Session Writing #1 Due	Mar 6 Quiz M	Mar 7 Section VS	Mar 9 Section S

Spring Break

Monday	Tuesday	Wednesday	Friday
Mar 19 Section LISS	Mar 20 Problem Session	Mar 21 Section B	Mar 23 Section D
Mar 26 Section PD	Mar 27 Writing Discussion	Mar 28 Problem Session	Mar 30 Quiz VS
Apr 2 Section DM	Apr 3 Section PDM	Apr 4 Section EE	Apr 6 Section PEE
Apr 9 Section SD	Apr 10 Problem Session	Apr 11 Quiz D & E	Apr 13 Writing Prep No class
Apr 16 Section LT Writing #1 Due	Apr 17 Section ILT	Apr 18 Section SLT	Apr 20 Section IVLT
Apr 23 Problem Session	Apr 24 Quiz LT	Apr 25 Section VR	Apr 27 Section MR
Apr 30 Section CB	May 1 Problem Session	May 2 Quiz R	

Final Examination  
Wednesday, May 9 at 8 AM