Course Guidelines   Math 232B
Dr. R. Beezer   Fall 2004

Text   We will be using *A First Course in Linear Algebra*, version 0.10, as our primary textbook. This text is about half-complete, and will be finished as the course progresses. I would suggest keeping your copy in a 3-ring binder, especially as new pages become available. The text *Introduction to Linear Algebra* by Lee W. Johnson, R. Dean Riess, Jimmy T. Arnold (Fourth or Fifth Edition) will be used as a source of homework exercises. The Bookstore also has a *highly* recommended text: *The Nuts and Bolts of Proofs* by Antonella Cupillari. The course WWW page has some recommendations for similar books about proof techniques. The textbook will be updated weekly on the course WWW page.

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

Office Hours   My office is Thompson 321G; 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`. Office hours will be 11:00–11:50 on Monday, Wednesday and Friday and 10:30–12:20 on Tuesday. 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 P.M. – 4 P.M. is a good time 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 highly recommend the Texas Instruments TI-86, which is what I will be using, since this is the model currently used in our calculus courses. These are available at the bookstore, though you must ask for them at the checkout counter. It is not required that you use this exact model, but whatever you use should have the capabilities listed above. If you no longer have a manual for the TI-86, check the course WWW page for a link to an electronic version (you will especially want Chapter 13, and possibly Chapter 12).

Homework   Suggested exercises from Johnson/Riess/Arnold will be posted on the course WWW page. It is expected that you will work these problems, but they will not be collected. Of course, you are not limited to working *just* these problems. These exercises will form the basis for the classes where we will have problem sessions and for discussions in office hours (group or otherwise). 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 when assigned 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

Quizzes   There will be seven 50-minute timed quizzes — they are all listed on the *very tentative* schedule. The lowest of your seven quiz scores will be dropped. The comprehensive final exam will be given at 4 PM on Wednesday, December 15. 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.

Writing   This course has been designated as part of the University's Writing in the Major requirement. Thus, there will be an emphasis on the quality of the mathematical exposition in your written work, and there will be two assignments that will be primarily graded on the basis of the exposition. These assignments will not be accepted late.

Reading Questions   On the WWW course page you will find reading questions for each section of the book. Once you have read the section *prior* to our in-class discussion, submit your responses to the reading question via electronic mail, as described on the course page, paying careful attention to all deadlines and procedures. Note that I will announce in class an email address for submitting your answers. Reading questions will not be accepted late.

Grades   Grades will be based on the following breakdown: Quizzes — 60%; Reading Questions — 5%, Writing — 15%; Final — 20%. Attendance and improvement will be considered for borderline grades. Scores will be posted on the World Wide Web at `http://buzzard.ups.edu/courses.html`. A reminder about withdrawals — a Withdrawal Passing grade (W) can only be given during the third or fourth 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 *The Logger* 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 quickly 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. 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.

Tentative Daily Schedule

Monday	Tuesday	Wednesday	Friday
Aug 30 Chapter SLE Section WILA	Aug 31 Section SSSLE	Sep 1 Section RREF	Sep 3 Problem Session
Sep 6 Labor Day	Sep 7 Section TSS	Sep 8 Section HSE	Sep 10 Section NSM
Sep 13 Problem Session	Sep 14 Quiz SLE	Sep 15 Chapter V Section VO	Sep 17 Section LC
Sep 20 Section SS	Sep 21 Problem Session	Sep 22 Section LI	Sep 24 Problem Session
Sep 27 Quiz V Last day to drop	Sep 28 Writing #1	Sep 29 Chapter M Section MO	Oct 1 Section ROM
Oct 4 Section RSOM	Oct 5 Problem Session	Oct 6 Section MOM	Oct 8 Section MISLE
Oct 11 Section MINSM Writing #1 Due	Oct 12 Problem Session	Oct 13 Quiz M	Oct 15 Chapter VS

Mid-Term

Monday	Tuesday	Wednesday	Friday
Oct 18 Fall Break	Oct 19	Oct 20	Oct 22 Problem Session
Oct 25	Oct 26	Oct 27 Problem Session	Oct 29 Quiz VS
Nov 1 Writing #2	Nov 2 Chapters D&E	Nov 3	Nov 5
Nov 8	Nov 9 Problem Session	Nov 10 Quiz D&E	Nov 12 Chapter LT
Nov 15	Nov 16	Nov 17 Problem Session	Nov 19
Nov 22 Writing #2 Due	Nov 23 Problem Session	Nov 24 Quiz LT	Nov 26 Thanksgiving
Nov 29 Chapter R	Nov 30	Dec 1 Problem Session	Dec 3
Dec 6	Dec 7 Problem Session	Dec 8 Quiz R	

Final Examinations
4 PM, Wednesday, December 15