<div align="center">

Math 250 – Linear Algebra – Section C2
Fall 2013 – Instructor: Pat Devlin
Updated September 4, 2013

</div>

Linear algebra is arguably the most applicable and ubiquitous concept in all of mathematics; the only concept possibly more useful is addition.

General Information

Class Meetings: Class meets every Monday and Wednesday. Class meets from 3:20 to 4:40 in SEC 206 on Busch Campus. **The final is on Friday December 20 from noon to 3.**

Instructor Information: Pat Devlin (mathematics PhD student) [please, call me Pat!]
Office hours: Wednesday 2–3 and Thursday 3–5 in Hill 618, also by appointment
Email: `prd41@math.rutgers.edu` (best way to reach me)
Section webpage: Use sakai to view grades, assignments, resources, and announcements
Personal webpage: `http://www.math.rutgers.edu/~prd41/` (this may not be useful)

Text: Spence, Insel & Friedberg *Elementary Linear Algebra: A Matrix Approach, 2nd Edition* ISBN # 978-0-13-187141-0, Prentice-Hall, Upper Saddle River, NJ 07458

Departmental Information: For more information on the course as a whole including Matlab, material covered, suggested homework problems from the book, and study resources see `http://www.math.rutgers.edu/courses/250/250C-f13/index.html`

Academic Integrity: Do not violate the academic integrity policy (i.e., *don't you dare cheat!*). The university takes that sort of thing very seriously, and cheating can get you into a lot of trouble! See `http://academicintegrity.rutgers.edu/policy-on-academic-integrity`

Resources: In addition to office hours, there are many wonderful resources for this subject including free tutoring through Rutgers `http://lrc.rutgers.edu/tutoring.shtml`

My Policies and What to Expect

Learning Goals for Students: I expect students to acquire a firm understanding of the material, particularly the concepts and ideas of the course and how they fit together in a 'big picture' sort of way. By the end of the course, I expect each of you:

 (i) to know **what** each concept is [e.g., definitions, geometric interpretations, et cetera];

 (ii) to know **how** to do each technique discussed [i.e., how to solve 'mundane' book problems (e.g., 'alogrithms' to solve problems)];

 (iii) to know **when** each technique is applicable [e.g., to develop intuition for when one viewpoint might be more effective than another, to know when a certain result applies, to know applications of techniques discussed, et cetera];

 (iv) to have a feeling for **why** things work out [e.g., why does the rank-nullity theorem make sense, why do all bases for a given space have the same number of vectors, et cetera]; and

 (v) to use material we discussed and ask yourself **why not** [i.e., to be so comfortable with the material we learned that you can use it in new (and perhaps unexpected) ways to make connections (and mathematical discoveries) all on your own].

These learning goals are stated in order from 'shallowest' to 'deepest' levels of understanding. Most of your math courses up to this point have likely been only concerned with items (i) and (ii) [with particular emphasis on the 'turn the crank' problems of (ii)]. However, in this class, we will be building up to and focusing on learning goals (iv) and (v).

Focusing on a conceptual mathematical understanding may be a new academic experience for you, and as such it may require some practice to get used to. For this reason, all of the quizzes, assignments, and exams will be geared along these lines, training you towards these deepest (and most mature) levels of understanding. This is what I expect from you by the end of this course, and these are the skills that the final exam will test you on.

Goals for the Instructor: My goals as your instructor are:

1. for each student to learn and master the material of this course;
2. for each student to practice creative, abstract, and mathematical thinking whenever possible;
3. for each student to earn an A (strong emphasis on *earn* not *receive*);
4. to structure each class session in an effective and engaging manner;
5. to cultivate a safe environment for students to learn and make errors (both in the classroom and in office hours); and
6. to improve as an instuctor.

Pedagogy: The format of this course will be strongly influenced by the instructor's pedagogical beliefs (i.e., his views of how learning takes place). In short, the most fundamental of my views is the simple statement that *an instructor cannot possibly learn <u>at</u> you; instead, learning is an extraordinarily personal process that must occur within each student as a result of what she or he does.* If you ever have any questions or criticisms about the way this course is structured, I would sincerely love to hear from you.

Classroom Expectations: While in the class, I as the instructor expect each of you:

(a) to pay attention and ask lots and lots of questions (you're all here to learn, not to pretend that you don't have any questions);
(b) to engage your mind with the material and participate in group discussions about it;
(c) to be bold enough to express an idea even if you're not positive that you're correct;
(d) to be honest with yourself about what you do and do not know (the pace is so fast that you really need to see me as soon as you fall behind on any concept whatsoever);
(e) never to hinder any fellow student's ability to learn (e.g., don't be a distraction to everyone by texting or talking in class, and don't make anyone feel 'stupid'); and
(f) to try to enjoy the learning process!

Similarly, you can expect that:

(a) the instructor will be ready and willing to address any questions you have;
(b) the instructor will challenge you to think and reason in ways that encourage your academic and intellectual growth;
(c) the instructor will always be respectful, considerate, and patient with you;
(d) the instructor will make himself available in office hours and by appointment to provide any additional help or clarification you'd like;
(e) the instructor will present the material in multiple ways so that each student might be personally engaged in a manner and at a level by which he or she learns best; and
(f) the instructor will try his best to make the learning process enjoyable!

Attendance: Students are to attend every class and to be on time. Material in this course is necessarily very dependent on that which was previously introduced, therefore missing even a single class can lead to substantial gaps in your understanding. In extenuating circumstances students should email me in advance, and we will try to work something out.

Homework: Homework is given so that a student is *forced* to practice new material, and the nautre of this course makes regular practicing and internalizing of the material absolutely vital. Your *graded* 'homework' will include Matlab-based assignments to be collected about every other week. However, since the overwhelming majority of you would *greatly* benefit from more practice, I strongly suggest that every day you work on the recommended homework problems here `http://www.math.rutgers.edu/courses/250/250C-f13/index.html` (although these would not be graded). If I feel that students are not self-motivated to regularly practice and internalize the material, then I will begin to assign official graded homework. On the whole, I *very highly* encourage you to work together in groups on homework and studying (clearly indicating with whom you worked on any collected assignment). However, the Matlab assignments are to be done individually.

Quizzes: Short in-class quizzes will be given very frequently to ensure continual understanding. Think of these quizzes as helpful little indicators of how well you are internalizing the material. If on any quiz you get a lower grade than the one you want for the course, then you simply **need** to practice by doing more homework, and you should probably see me.

Matlab: This course includes a Matlab component, which manifests itself in six special Matlab assignments. They are to be done individually, although you can of course work in groups to learn about the software. No programming background is required, as the assignments guide you through the learning process. Matlab is extremely well documented, so you should be able to find the answer to any question you have simply by searching the help files (or Google). That said, ask if you have any questions about Matlab or any of these assignments. However, Matlab will not be used on any quizzes, exams, or other assessments, so **you must learn (and practice!) how to do the material by hand**.

Exams: There will be two 'midterm' exams (Wednesday October 9 and Wednesday November 13) and one final exam (Friday December 20). These exams will be cumulative (especially the final). The midterms will be given in class at our usual class time; but the final is three hours, and it will likely be in a different room. For these exams, you will *not* be allowed to have notes, book, calculators, formula sheets, or Matlab.

Late Work and Absences: Exams simply may *not* be taken late unless there is an overwhelmingly valid and documented excuse. Quizzes and homeworks may be taken or turned in up to a week late by seeing me in office hours [or by appointment], but your grade on the assignment drops 10% for every day it is late (including a 10% drop for work turned in late on the same day).

Grades: My goal as your instructor is for literally every single student to earn an A in this course (emphasis on *earn* not *receive*). For this reason, you are always welcome to see me in office hours [or by appointment], where I can provide the opportunity for you to improve any grade you got in my class (including quizzes and exams). However, the degree to which your grade could be improved and the corresponding amount of extra learning and work that you would need to put in would of course depend heavily on the assignment in question. To clarify: *I am by no means saying it will be 'easy' to get a good grade in this course; but I am saying it will be easy to find [potentially difficult] opportunities to do so.*

Your grade will be broken into four categories. Namely:

	Portion of Total Grade
Assignments and Quizzes	1/3
Midterm Exam 1	1/6
Midterm Exam 2	1/6
Final Exam	1/3

The category of 'Assignments and Quizzes' will be graded based on total points.

I never curve grades, because I spend a great deal of effort and time planning that what I ask of you is exactly in line with what I want from you. I expect the best from you, and I intend to bring that out.