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Math 312 (Linear algebra)
Spring 2017
TR 9:00-10:20 a.m., DRL A8
University of Pennsylvania

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Welcome! I'm looking forward to exploring with you the theory and applications of linear systems this semester.

Instructor: Dr. William Simmons, DRL 4C3, `wsimmo@sas.upenn.edu`

(I will try to respond to email in a timely fashion, but we are a large class so please contact me in advance if an issue arises. Also, before writing please read the syllabus and class announcements on Canvas carefully; many questions are already answered there.)

Office Hours (held in DRL 4C3): Tuesdays 10:30-11:30 a.m. and Wednesdays 1-2 p.m.; others, time permitting, by appointment.

Grading TA: Logan Crew, DRL 3N2B, `crewl@math.upenn.edu`; office hours (held in DRL 3N2B): Tuesdays 12-1:30 p.m. and Thursdays 1-1:30 p.m.

Canvas: We will use the Canvas system (`https://canvas.upenn.edu`) as our homepage. Look there for assignments, announcements, and grades. Be sure to check the announcements regularly for changes to assignment due dates and other information. (It is helpful to receive automatic email notifications from Canvas about such things.)

Textbook: Gilbert Strang, *Introduction to Linear Algebra*, 5th ed., Wellesley Cambridge Press.

Exam and other important dates:

- Add deadline: Monday, Jan. 30

- First midterm: Thursday, Feb. 2, in class

- Drop deadline: Friday, Feb. 17

- Second midterm: Thursday, Mar. 16, in class

- Withdrawal deadline: Friday, Mar. 24

- Last day of classes: Wednesday, Apr. 26

- Final exam: Thursday, May 4, 12-2 p.m., location TBA

Homework: To learn mathematics, you need to think hard about the material over an extended period of time. In order to do this you will need to do a lot of problems, but there's an immediate

payoff: all exams (including the final) will be homework problems and examples given in lecture (possibly with slight modifications, such as changing the numbers or which data are given and which are to be found).

The author has generously provided a solutions manual (as well as lots of other great resources for learning linear algebra) on the text's website: `http://math.mit.edu/~gs/linearalgebra/`. *Do not misuse the solutions manual!* First of all, if you simply copy the answers (see the section on **Academic Honesty** below), you will run afoul of the grader and lose points. Secondly, you will be unprepared for the exams (which comprise 90% of your grade) and consequently experience severe difficulties. The honest and effective way to use the solutions manual is:

- Attempt a problem after having first studied the basic material corresponding to it. You don't have to feel completely confident; the point of the exercise is to increase your mastery. Give it a reasonable shot but move on if you get stuck.

- Come back later and try it again; if it still doesn't yield, then a quick look at the manual for a hint would be appropriate.

- See if you can now solve it (without having the solution in front of you) and write up your own solution. You can test that you have actually learned how to do it by coming back later and seeing if you can still do it without consulting your own or the manual's solutions.

Weekly homework is generally due at the beginning of class on Thursdays; any changes will be announced through Canvas. *Late work will not generally be accepted, so please talk to me ahead of time if you face a legitimate extenuating circumstance.* The lowest homework score will be dropped.

Exams: The midterms are held in class on the dates indicated above. *You may not use notes or electronic devices on any of the exams.* As explained, the problems will come from homework and lecture examples. The objective is not to memorize particular problems, but rather to be sure that you master the theory as developed through the assigned problems and examples. The lower of the two midterm scores will be dropped.

Grades:
Your grade will be determined by the following breakdown:

- 10% homework, 50% midterms, 40% final

Actual letter grades are calculated as follows:

- A: Earned 85% or more of available points

- A-: Earned between 80 and 84% of available points

- B+: Earned between 75 and 79% of available points

- B: Earned between 70 and 74% of available points

- B-: Earned between 65 and 69% of available points

- C+: Earned between 60 and 64% of available points

- C: Earned between 55 and 59% of available points

- C-: Earned between 50 and 54% of available points

- D: Earned between 45 and 49% of available points

- F: Below 45% of available points

Errors in recording and/or grading must be brought up within a week of the assignment being returned. *Grades are fully determined by the numbers, so please don't request exceptions.*

Academic Honesty:

- You must write up your own work so that it represents your own understanding. You are encouraged to study together, talk about problems with others, look at math resources online, etc., but you need to write your final solution on your own (i.e., no copying, whether it be another student's solution, the solution manual, or something else online). See the previous discussion on homework for guidance. You should also not allow your own work to be copied.

- Infractions will result in loss of credit for the exam or assignment and, depending on the situation, university discipline. For more details, see `www.upenn.edu/academicintegrity`.

You and Your Work

- (Homework) Write neatly and show all relevant work needed to understand your thought process. Incomprehensible and/or messy answers may not receive credit. Be sure to use complete sentences and correct grammar in your work.

- (Background knowledge) You should be familiar with the basics of matrices and vector spaces as covered in Math 240. Some examples will also draw on your calculus knowledge. We will review the necessary results and definitions as we go along, but we will move somewhat briskly at first. You should also have some experience with reading and writing basic mathematical arguments. (Your prior experience up through Math 240 is enough to get started; you will get plenty of practice throughout the semester.) Most of all, you need to be curious about mathematics and be willing to think through the material we discuss.

- (Getting help) Study the assigned material before class. Find out what you don't understand, and bring questions! Beyond that, be sure to take full advantage of office hours (both mine and the TA's). Talk to me early when challenges arise so that we can discuss how you will achieve success with the material.

- (Accommodations) Please talk to me as soon as possible about accommodations through Student Disabilities Services (Stouffer Commons, 3702 Spruce Street, Suite 300, `http://www.vpul.upenn.edu/lrc/sds/`), scheduling conflicts with religious holidays, athletic events, etc., or working around health issues and other situations.