

COURSE INFORMATION

MATH 250 – Linear Algebra

Williams College

Course homepage:

<http://web.williams.edu/Mathematics/lg5/250/>

Instructor: Leo Goldmakher (I prefer to be addressed by first name)

Office: Bronfman 215B

Phone: (413) 597-2361

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Office hours: Mondays at Goodrich 9pm–10:30pm, Wednesdays in my office 2:30–4pm.

You are also welcome to come in any time my door is open, but if my door is shut I ask you not to knock.

To arrange to meet at another time, please email me.

Lectures:

SECTION 1: MWF 10:00am – 10:50am, Physics 114

SECTION 2: MWF 11:00am – 11:50am, Chemistry 123 (Wege Auditorium)

Textbook: None; I will post detailed notes after each lecture. However, in the second half of the semester we will start using the book *Linear Algebra Done Wrong*, by Sergei Treuil. It is available as a free pdf download from the author's homepage: <http://www.math.brown.edu/~treil/papers/LADW/book.pdf>

Syllabus: Linear algebra is an area of math which plays a fundamental role in many fields, from physics to computer graphics to data analysis (e.g. Google's search algorithm). In this course we will develop some of the basic tools (linear transformations and their matrices, determinants, spectral theory, singular values) as well as some applications (both to the fields mentioned above, and to other areas of math). The goal is not only to teach you about linear algebra itself, but to use it as a prototype of mathematical thinking.

Teaching Assistants: There will be four TAs for this course:

- Alyssa Epstein <ale2@williams.edu>
- Anna Neufeld <acn2@williams.edu>
- Ashwin Narayan <an5@williams.edu>
- Ziqi Lu <zl1@williams.edu>

TAs will meet with four students at a time to give feedback on homework. Student attendance at these sessions is not mandatory, but your homework score will potentially be raised by attending. More details below.

Student discussion sessions: Physics 207 has been reserved Sundays and Tuesdays, 8pm–10pm, for students to meet and discuss material in an informal setting. You do not need to let anyone know in advance that you're coming – just show up with your work! (Worst case scenario, this will force you to sit and work on linear algebra for a bit.) In addition to helping one another understand the material, these sessions are a good time to collaborate on problem sets. However, **you may not copy anything down at these sessions**. To be clear: it's OK to write things down, but it is **not OK** to copy verbatim from the board, or from someone else's paper, or from someone else's speech. It is also your responsibility not to let anyone copy down from you. Any verbatim copying will be considered cheating, and both parties will be treated as equally culpable.

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Assessment: Your grade will be calculated based on several components:

1. Problem sets – 15% total

This course will have weekly problem sets. These will require substantial effort, and you will spend a considerable amount of time being frustrated. This is both natural and expected – just as with physical exercise, to grow mentally you must push yourself beyond where you feel comfortable. However, if you find yourself spending more than seven hours on an assignment, please come talk to me.

Problem sets will receive one of four grades: no credit (if fewer than half of the problems are seriously attempted), $\checkmark$ -, $\checkmark$, or $\checkmark$ +. Once per week, you will have the opportunity to meet with a TA as part of a group of four students to discuss the previous week's problem set. These meetings are not mandatory. However, if you do attend the full session, your problem set grade will be bumped up to the next available level (e.g., $\checkmark$ would become $\checkmark$ +) . Note that neither a 0 nor a $\checkmark$ + will be affected by attending a TA session.

Problem sets are due on Thursdays by 9pm. They are to be turned in to the appropriate mailbox just outside (to the left of) my office. Late assignments will be accepted until Friday at 5pm, but the grade will be lowered by one notch (e.g., $\checkmark$ + would become $\checkmark$). *Assignments will not be accepted after 5pm on Friday under any circumstances.* However, your lowest score will be dropped before calculating the contribution to your final grade.

2. Two midterm exams – 20% each

The first midterm will probably take place during the week of March 7th. The second midterm will probably take place during the week of April 18th.

3. Final exam – 40%

To do well on the final exam, it is essential that you understand all the material from the problem sets. Although I encourage you to collaborate on the problem sets, copying someone's solutions will not help you understand the material. (It's also considered cheating and subject to serious penalties; see below.) **If you do not struggle with a problem on your own for a significant amount of time, you will never fully understand its solution.**

4. Best of your three exam scores – 5%

Team work and plagiarism:

- The problem sets in this course will be challenging, and I encourage you to brainstorm with other students. However, you must work out and write up the solutions on your own, without copying verbatim from any text (written or spoken). To avoid a slippery slope, I encourage you to write up your problems sets in physical isolation from any other student in the course.
- Although the internet is a great resource, I urge you to use it wisely. In particular, I request that you do not search for the problems appearing on the assignments. **Looking up definitions is OK, looking up (or asking about) problems online is not.**
- When using ideas which are not your own, please indicate your source. You will *not* be penalized for collaborating with another student unless:
 - (1) your work is identical to that appearing elsewhere; or
 - (2) you explicitly use an idea without attributing the source.

Both (1) and (2) may have serious consequences. For more information, see

<http://sites.williams.edu/honor-system/>