

Math 221: Linear Algebra

MWF 9:30 - 10:20

Mars Science Center 1141

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Office Hours: M 1:30 – 2:20
T 12:00 – 12:50
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Prerequisites Self-Discipline and Mathematical Maturity, a sense of humor, and a willingness to work hard. The text for the course is *Linear Algebra and its Applications*, 5th edition by David Lay. We will use the generally excellent computer algebra system *Mathematica* for many non-trivial calculations: Wheaton's license allows free use on campus, or you may purchase your own copy at a discounted rate. (Download instructions are available on the class webpage.) However, wolframalpha.com will also do everything that we want, and it is free, unlicensed, and available anywhere with an internet connection.

Course Objectives There are many reasons for taking the class. This course will dive first into classical ways of thinking about *linear equations*, then generalize those notions to *linear maps* from n -dimensional space to m -dimensional space, and finish with *linear differential equations*. (Linear maps are important because any function of general interest can be well approximated by them.) There are also many nifty applications, including Google's page rank algorithm and chains of events with transitional probabilities; we will explore these in differing degrees. Finally, we may look at least a little bit at the ways linear algebra is used to model solutions to differential equations: surely this was the most important use of linear algebra for many decades before computer capabilities became so powerful.

Homework, Quizzes, etc. There will be a total of 12 homework assignments over the course of the semester, and your two lowest scores will be dropped. You may work together and even hand them in jointly! (Unless I change my mind.) The homework is normally due at 11:59pm, Eastern Time Zone, on days marked on the schedule. (I won't check until the next morning.) **There is no such thing as 'late homework.'** If people straggling in late begins to annoy me, there will be quizzes. Also: no phones. Really.

Exams There will be a midterm and a final. The midterm will be take-home. If I detect cheating, or if I even suspect cheating, the final will be in-class during the finals week. **Make-up exams require documentation of extraordinary circumstances.**

Grading Policy Each homework will be graded 0–10, for a total of 100 possible points. Each exam will be graded 0–100. At the end of the term, your total number of points (out of 300) will be added together to give your final grade.

It's important to note that this does not mean that, for example, 270 points and above guarantees an A: I often curve the grades either UP or DOWN, but the past does not predict the future. Extra points can be earned in the following fashion: 3 points for catching me in a mathematical or spelling error while I'm at the blackboard, and 5 points for coming to office hours (points given only on first visit). Also, attendance and classroom participation will only raise my opinion of you, which can affect your grade, so ask and answer questions. If you wish to argue about points assigned, you must do it within a week of the return of the work in question. Furthermore, I reserve the right to lower your points if I think you are merely haggling.

Honor Code Violations Over the years, I have caught many violations of the Honor Code. The punishment tends to be much worse than the grade received for handing in a bad assignment or test. Your first assignment is reading the Wheaton Honor Code and related materials, and then sending me a note acknowledging having read them. Finally, as per student initiative, for all course work, students must write and sign the following: "I have abided by the Wheaton College Honor Code in this work."

Your first homework assignment involves the Honor Code.