Math 221 – Linear Algebra – Course Policies

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OFFICE HOURS: Posted on webpage
And by appointment (Really!)

TEXT: *Linear Algebra and Its Applications, 4th Edition*, by David Lay

Overview

At the very basic level, Linear Algebra is concerned with solving systems of linear equations like

$$\begin{aligned} 2x + 3y + 2z &= 10 \\ x - 6y + 2z &= 2 \end{aligned}$$

The beauty of Linear Algebra is that these seemingly mundane algebraic questions have very deep geometric interpretations. We will be able to play off the algebraic and geometric viewpoints against each other to gain insights and build intuition about both. Fundamental to developing this intuition is an understanding of the relationship between matrices and linear transformations, which are special types of maps from n-space to m-space.

The interconnections among systems of linear equations, matrices, and linear transformations provide a framework for applications to vastly different areas. Some of the uses of Linear Algebra that we will look at this semester include applications to computer graphics, the long-term behavior of dynamical systems, finding the polynomial that best fits a set of data points, and Google's PageRank algorithm.

This is going to be a really fun semester.

Course Goals and Expectations

Two of the goals of this course are that you learn to read a math text and that you learn to communicate mathematics with other students. Mathematics is a very personal discipline that is best learned by *doing* rather than by observing.

Therefore, the class will be structured with some lectures to emphasize particular topics, but much of the time will be spent on in-class work. You will have a reading assignment for nearly every Monday, Wednesday, and Friday class meeting, and it is **extremely** important that you complete the reading before class.

One of the features that makes your Wheaton education so special is that we have face-to-face time in small classes to explore material together. The purpose of the pre-class assignments is to shift some of the delivery of content outside the class meetings so that you can build your understanding more deeply during the interactions in class. The class meetings are not intended to be a complete encapsulation of the course material, but instead will focus on the major concepts from the reading and clarifying the more subtle ideas in the course.

You should expect to put in at least 2–3 hours outside of class for each hour in class.
In other words, expect to spend about 9 hours per week on Linear Algebra outside of class. There will be some weeks where you spend more time (e.g. preparing for exams), and there may be some weeks where you spend slightly less.

The Honor Code

We operate under the Wheaton Honor Code for all of your academic work at Wheaton. This carries certain freedoms and responsibilities for both you as a student and me as a professor. I take this quite seriously.

Most likely, no Honor Code issues will arise this semester. If you are uncertain about whether a particular situation falls under the Honor Code, then please consult with me. However, if an Honor Code issue does come up, I will assume that you are prepared for the full consequences. Remember that you should write out, and sign, the following statement on all course work:

> "I have abided by the Wheaton College Honor Code in this work."

Working with Other Students

I strongly encourage you to work with other students outside of class because I believe mathematics is best learned through collaboration. However, you should not turn in identical work to your partner(s); the answers that you give to the homework assignments should represent your own thinking about solutions.

Evaluation

The assignments for the semester fall into two broad groups: Exams and Daily/Weekly Homework Assignments. Your final grade will be determined by

Three In-Class Exams	50%
Comprehensive Final Exam	25%
Reading Assignments	5%
Problem Sets	10%
WebWork Assignments	10%

Exams

- **In-Class Exams:** The purpose of the exams is for you to demonstrate your understanding of the course material and, just as importantly, to give you feedback on where your understanding is strong and where you may need more work.

  I will give you a set of sample problems before each exam, and we will have a question and answer session before each exam. For each exam, you will be allowed to bring an 8.5"×11" piece of paper, handwritten on one side, which you will turn in with the exam.

  Because our class meetings are scheduled for only 50 minutes, the In-Class exams will be given during the evening. See the schedule on the course webpage for the specific dates.

- **Final Exam:** The purpose of the Final Exam is for you to review the entire semester's content and reinforce the connections among the topics from throughout the semester. The Final Exam will be comprehensive and will be based on the three In-Class Exams and the material covered at the end of the semester after the third In-Class Exam.

Daily/Weekly Assignments

- **Reading Assignments:** The purpose of reading the text *before* class is that if you are familiar with the basic concepts and definitions, then the class meetings can be devoted to the major ideas and subtleties of the material. Mathematical understanding is built in stages, and you will absorb the material more quickly if the class meetings are your *second* exposure to the fundamental ideas.

  The reading assignments are posted on the course webpage and include two or three basic questions that you should be able to answer after you have read the section. You will submit your responses through Wheaton onCourse. See the *Suggestions for Reading a Math Book* on the course web page for more information.

- **WebWork Assignments:** WebWork is an online system that gives you immediate feedback on whether or not you have answered the problem correctly. The WebWork problems will be primarily computational in nature and will give you some practice before doing the more conceptual exercises in the Problem Sets.

  WebWork, like any online system, can sometimes be a little frustrating since it needs your answers in a certain format. The purpose of the WebWork assignments is to help you learn the course material, so I will be fairly lenient with the grading: If you make a sincere effort on the assignments, I will add 10% to your WebWork grade, up to a maximum of 100%. The WebWork assignments will be due on Monday evenings.

- **Problem Sets:** You will also have a Problem Set due Fridays that consists of problems from the textbook that are more conceptual and require more explanation. These problems should be well-written and well-justified and will be graded by an advanced math student. You will be allowed to drop ***one*** Written Homework assignment at the end of the semester.

  The WebWork Assignments and Problem Sets will be the most beneficial to you if you work on them throughout the week, not just on the few days before they are due. I strongly encourage you to discuss the homework with other students, but the answers you turn in should represent your own work.

Class Attendance

Although class attendance is not a specified percentage of your grade, I will keep a class roll to help me determine borderline grades at the end of the semester. If you do miss class, you are responsible for the material that was covered.

Accommodations for Disabilities

In compliance with the Wheaton College policy and equal access laws, Dean Wilhelm, Assistant Dean of Academic Resources and Disability Services, ADA/504 Coordinator, is available to discuss appropriate accommodations that may be recommended for students with disabilities. Requests for accommodations are to be made during the first two weeks of the semester so that timely and appropriate arrangements can be made.

Students are required to register with Dean Wilhelm, whose office is located in Kollett Hall, first floor at the Filene Center for Academic Advising and Career Services. Contact ext. 8215 to schedule an appointment, or email Dean Wilhelm at wilhelm_denyse@wheatoncollege.edu.

Getting Help

Please come see me during my office hours! If you have a conflict and cannot make my office hours, please call or email me and we can set up an appointment for another time. You should also take advantage of the tutoring hours in the Kollett Center.