Math 331 - Linear Algebra, Fall 2011

Meeting times: MWF 1:45-2:50 **Office:** MCLT 256

Room: MCLT 214 **Phone:** 538-6198

Professor: Tom Edgar **email:** edgartj@plu.edu

Office Hours: MWF 10:20-11:30; W 2:50-3:40; by appointment, or drop by when I am not busy.

Webpage: www.plu.edu/∼edgartj

The website will be done in a wiki format. All announcements, homework assignments, solutions, exam guides, and syllabus changes will be posted on the wiki. You are responsible for checking the website regularly, and I recommend using the RSS feature to do so. If you have questions about this, please ask. Additionally, you will be required to contribute content to the wiki. This will be discussed below.

Textbook: *Linear Algebra: A Geometric Approach (second edition)*, by Malcolm Adams and Ted Shifrin

The book is necessary for the course; you will be required to read the text and most of the homework assignments will come directly from the book. The book is available for purchase at the Garfield Book Company or online. We will cover most of chapters 1-4 and a few topics from chapters 5 and 6. We may also utilize a free online textbook from time to time.

Technology: Sometimes we may use computers in class. Please do not use any other technology during class hours (this includes, but is not limited to, cell phones, iPods, and other hand-held devices). I reserve the right to confiscate any devices not used for the class.

Objectives

Linear algebra in general, and matrices, vectors and vector spaces in particular, play a central role in many areas of both pure and applied mathematics. The ideas of linear algebra often provide the conceptual framework from which more sophisticated techniques are developed in more advanced courses. Matrix theory is a fundamental tool in numerical analysis and statistics, as well as in many subjects that require the organized modeling of data: econometrics, physics, engineering, sociology, etc. This course is devoted to developing both the computational and theoretical ideas at the heart of linear algebra, including matrix and vector arithmetic and the fundamental concepts associated with vector spaces. Definitions, theorems and proofs are a fundamental aspect of this material. We will also learn how to use the computer software to implement the theorems and algorithms we encounter.

Grades

Grades will be assigned at the end of the semester distributed in the following way:

Two Exams	40%
Final Exam	25%
Quizzes	5%
Homework	20%
Sage Projects and Online Participation	10%

Exams

There will be two in-class exams (with a possible take-home portion) and a final exam. The (*tentative*) dates for the exams are as follows.

Exam 1: Wednesday, October 12
Exam 2: Monday, November 16
Final: Tuesday, December 13 at 11:00am-12:50pm

Any take-home portions of exams will be given prior to the exams and due on the day of the in-class portion.

Homework and Reading

Homework will be assigned daily and collected weekly. I may assign more homework questions than I collect; in this case, problems I plan on grading will be specially marked. All of your homework should include clear, grammatically correct answers. You should include justifications of calculations when necessary. As this is an upper-division course, there may be material on the homework that was not covered in class. You should be reading the textbook to gain this extra knowledge. Homework will be graded on correctness and clarity. If you cannot fully explain your work, you do not fully understand your work. When writing your solutions, make sure your writing is understandable to your peers and not just the instructor.

Definitions and Quizzes

Some days there will be a quiz. These quizzes will almost always be announced and will be restatements of definitions along with a small application of the definition. All of the definitions that need to be memorized will be added (by you) to the course wiki.

Class Attendance and the Wiki

Attendance is mandatory for success in a math class. I expect you to make it to class every day. I will not formally take attendance. However, this class is small, and I will realize if you are missing too many classes. When you are in class, I expect you to participate. I may require you to present at the board or have discussions. In addition, during your time away from class, I expect you to have discussions about homework, projects and reading in the forum on the website. I will require each student to help build the definitions page on the course wiki.

Sage Projects

During this class, we will be using the (free) mathematics software called Sage. Most of the work with Sage will be outside of classroom time. There will be short video tutorials online to introduce you to using Sage, and then there will be projects that require you to use Sage. These will take some time, but they will provide you with a good background in using cutting-edge technology. Due to the nature of this project, I will be designating an extra office hour (probably on Thursday) during which I will be primarily available for helping with Sage. Please contact me with any problems you encounter when using Sage. In addition to these projects, I will conduct anonymous feedback surveys about the projects and the benefits you see with using Sage.

Collaboration

I encourage you to work with others when reading, doing homework and working on projects. Discussing math helps you solidify your understanding of the material. The course wiki also contains a forum for your to actively engage in collaboration. I hope you utilize this feature of the website. Although I hope you work with others, each student must hand in his or her own assignments; do not simply copy another student's work.

Handing in work and Late Assignments

All assignments and projects are due by the beginning of class on the scheduled due date. Your work should be written legibly and stapled if you have multiple pages. Please include relevant computer code from Sage. I realize you have other responsibilities in addition to this class; therefore, I will all you to have a total of 5 "Late Days." An assignment will be considered one day late if it is not ready at the appropriate day and time. The assignment remains one day late until the beginning of the next class meeting, etc. An assignment that is never turned in uses no late days. In addition, I will drop your single worst homework score, and I may allow you to weight certain projects higher than others.

Participation and Feedback

I enjoy active participation in class: helping me through problems, asking questions, correcting me when necessary, and volunteering to present. I hope that you feel comfortable enough to ask any questions you have during the lectures. Always let me know if you are confused with what I am doing or how I am

presenting the material. I cannot remedy the situation if you do not let me know that something is wrong. Additionally, I want parts of this class to be more discussion-based, but this requires a good deal of effort from each of the students.

Success in this Class

It is common to have a "me vs. the professor" attitude in a class. I want you to know that I am here to help you succeed, and I want you to succeed. You will need to read the textbook, keep up with homework, and ask lots of questions. I am here as a guide to get everyone to their destination. If we work together, we can all succeed in this class. Finally, remember that doing mathematics is learning mathematics, and so you must continue to push through tough problems. I am available to help you outside of class, and I hope you will take this opportunity if you are struggling. If you have a medically recognized disability, please contact the Office of Disability Support Services (x7206) as soon as possible.

Academic Dishonesty

PLU has an expectation that students will not cheat or plagiarize. Academic misconduct will not be treated lightly. Please do all of your own work (even when collaborating with others on homework) and do not consult any sources other than those allowed on exams. For questions about academic integrity, consult http://www.plu.edu/academics/integ.html.

Grading Scale

Course grades will be determined using the following scale.

Course Grade	Lower cut-off for grade
A	93%
A-	90%
B+	87%
B	83%
B-	80%
C+	77%
C	72%
C-	70%
D+	67%
D	60%

If necessary, I may curve grades up. I will never curve down.

Disclaimer

Please contact me with any other questions. I reserve the right to change this syllabus at any time throughout the semester. Any changes will be formally announced on the blog, so please stay updated with the course blog.