
Math 3110: Linear Algebra

SPRING 2014

Martin Hall M-203, TTh 8:00-9:15

Instructor Dr. Matt Macauley (macaule@clemsun.edu)
OFFICE: Martin Hall O-325
PHONE: (864) 656-1838
OFFICE HOURS: After class, or by appointment
WEBSITE: http://www.math.clemson.edu/~macaule/classes/s14_math3110/

Textbook *Introduction to Linear Algebra*, 4th edition, by Gilbert Strang.

Prerequisites Math 1080 (Calculus II).

Learning Outcomes Linear algebra is one of the most important and central areas in all of mathematics, arguably as much or more so than calculus. It arises in every mathematical, scientific and engineering discipline and should be learned by every student of these fields. This course will be an introduction to linear algebra at the undergraduate level. It will not be a low-level course simply on the methodology and computational aspects of matrices, nor will it be a purely theoretical proof-based course devoid of applications. Rather, students will learn about matrices, vectors, and linear transformations – what they are, how to use them, and how to apply them – while understanding the concepts they represent and learning the big picture.

In particular, students of Math 3110 will master the following skills:

- Manipulating vectors and matrices using basic linear algebraic techniques, with understanding of how they represent linear transformations.
- Performing matrix elimination and LU factorization.
- Applying the fundamental theorem of linear algebra to relate a matrix to its associated subspaces: column space, row space, nullspace, and left nullspace.
- Connecting the concepts of independence, basis, dimension, etc.
- Evaluating various properties of a matrix by calculating its determinant.
- Finding eigenvalues and eigenvectors, and diagonalizing a matrix.
- Applying all of the above skills to realistic problems in mathematics, computer science, engineering, and other fields.

Policies

- **Class structure:** This will be a “half-flipped” course. Students will be required to watch roughly one video lecture a week on their own time. To make up for this, roughly one in-class period a week will be allocated as an interactive problem solving session, with a special focus on homework problems.
- **Attendance:** I will take attendance. If you miss a class for some reason, it is your responsibility to get notes, etc. from someone in class. I will not repeat lectures during my office hours. I prefer to know in advance if you cannot make a lecture, and may give you an excused absence if you inform me at least 12 hours before class. Attendance will not count as part of your grade, but it will be used to decide grades in borderline cases (e.g., whether to round up an 89.7% to an A).

- Quizzes will be given regularly and unannounced at the beginning of class. There will no make-up quizzes, even with an excused absense. However, I will drop several of your lowest quiz grades.
- If you get an A or B on the final exam, then your final grade in the course will be AT LEAST the grade you earned on the final exam, as long as you (*i*) attend class very regularly, AND (*ii*) maintain a passing grade on the homework.
- If you want to know your grade at any point during the semester, consult the grading rubric below.
- All drop/add procedures are your responsibility.
- Absent Professor Policy: If the instructor has not arrived within 15 minutes of the scheduled class time, you may assume that class has been canceled.
- All use of cell phones, laptops, and PDAs is prohibited during lecture. Calculators, cell phones, laptops, and PDAs will not allowed during exams.
- Cell phone policy: http://www.youtube.com/watch?v=FYwpxU_G4Z0
- I will NOT post homework solutions. However, I will gladly help you with any of the problems during office hours or whenever I'm around.
- No whining.

Grading

The final grade will be calculated as follows:

HOMEWORK:	25%
QUIZZES:	10%
PARTICIPATION:	5%
MIDTERM 1:	20%
MIDTERM 2:	20%
FINAL EXAM:	40%

Your lowest midterm grade OR half the weight of your final exam will be dropped. Make-up exams will be given ONLY with an official written excuse in advance, and will not necessarily be the same as the regular exam.

GRADING SCALE: $A \geq 90\% > B \geq 80\% > C \geq 70\% > D \geq 60\% > F$

Homework

Homework assignments will accumulate from lecture to lecture and will be due several times a week. I will post the assignments on my website, as I like to make all materials freely available to everybody (Warning: Websites such as *Course Hero* are a SCAM!). Students can collaborate on their homework problems, but they *must* write up and submit their homeworks separately, and reference collaborators. Late homeworks will **not** be accepted. You should keep all the graded homeworks in case of missing grades due to missing name or typo errors.

Key Dates

January 8 (Wed)	Classes begin; late enrollment fee applies
January 14 (Tue)	Last day to register or add a class
January 22 (Tue)	Last day to drop a class or withdraw from the University without a W grade
March 14 (Tue)	Last day to drop a class or withdraw from the University without final grades
March 17–21 (M–F)	Spring break
April 25 (Fri)	Last day of classes
May 2 (Fri)	Math 3110 Final Exam (7:00–9:30pm)

The official statement on Academic Integrity

As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a *high seminary of learning*. Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.

When in the opinion of a faculty member, there is evidence that a student has committed an act of academic dishonesty, the faculty member shall make a formal written charge of academic dishonesty including a description of the misconduct, to the Dean of the Graduate School. At the same time, the faculty member may, but is not required to, inform each involved student privately of the nature of the alleged charge.
