

MATH 3110: LINEAR ALGEBRA
SPRING 2014

INSTRUCTOR: Felice Manganiello [manganm@clemsun.edu]

OFFICE: Martin O-2
OFFICE HOURS: TTh 1pm-2pm or
by appointment (use email)

TIME: TTh 11am-12:15pm
ROOM: M301

WEBSITE: <http://www.math.clemson.edu/~manganm/teaching/math3110-s14/math3110-s14.html>

TEXT BOOK: Gilbert Strang, *Introduction to Linear Algebra*, 4th edition, Wellesley-Cambridge Press

PREREQUISITES: Calculus of One Variable II (MATH 1080)

SCOPE OF THE COURSE: This course is an introduction to the theory and applications of Linear Algebra. This subject has infinitely many applications in all areas of Engineering, Computer Science, Economics, only to name a few. The *PageRank* algorithm used in Google's search engine is nothing but an eigenvalue problem (we will see what this means in the course). Vectors and matrices are the fundamental building blocks in Linear Algebra. For this reason, we need to learn to use the main operations on these building blocks. This is the purpose of the course.

LEARNING OUTCOMES: After this course, the student is expected to carry out various operations in any vector space; solve simple linear systems manually through elimination; compute the determinant of small matrices; prove whether specific systems cannot be solved or admit more than one solution; define the column space, row space, and null space of a matrix, as well as the null space of its transposed; compute eigenvalues and eigenvectors of a square matrix; apply properties of linear transformations; carry out simple operations on polynomials.

COURSE TOPICS: This course will cover the following topics:

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| (1) Vectors and operations on vectors; | (6) Eigenvalues and eigenvectors of a square matrix; |
| (2) Matrices and operations on matrices; | (7) Polynomials; |
| (3) Systems of linear equations; | (8) Linear transformations. |
| (4) Vector spaces; | |
| (5) Row/Column space of a matrix; null space of a matrix | |

HOMEWORK: There will be one homework per week, and all must be completed to receive a grade for the course. Homework will be given every Tuesday (starting January 21st) and will have to be turned in on the following Tuesday (or on the earliest following day of class). The modalities of turning in homework will be discussed in class. Note: homework will be penalized 50% for each day they are late. After two days, they will not be accepted. No exception.

GRADING: The final grade will be calculated as follows:

Homeworks: 30% | Midterm 1: 20% | Midterm 2: 20% | Final exam: 30%

The two midterms (to be taken in class) and the final will likely be closed notes, closed books. They will consist of a set of problems on all the material taught up to the lecture preceding the exam.

In the computation of the grade, numbers will be rounded to an integer using the floor operator, e.g. $\text{floor}(79.77)=79$. The grade will follow the scheme

A 90-100	B 89-80	C 79-70	D 69-60	F 59-0
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POLICIES:

- You are expected to come to class regularly. You are also expected to participate in class discussions and ask questions when you are confused. Finally, you are responsible for any material covered in classes you miss.
- Students are responsible to check periodically both the webpage and the Blackboard page of the course.
- 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.

PLAGIARISM: I encourage you to consult with your colleagues when you are working on homework. However, you will not understand the material or do well on the exams unless the work that you turn in is ultimately your own. Therefore, you must write up your answers alone, and without looking at anything you wrote down while working with your group. The work you turn in must be your own.

You must cite everyone with whom you worked or consulted about each problem, as well as any material (books and online resources other than the course books and lecture notes) that you used to solve the problem. You can help another student, but you must not show him your homework.

Any breach of this policy will be considered an act of plagiarism, and will be reported.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES: Student Disability Services coordinates the provision of reasonable accommodations for students with physical, emotional or learning disabilities. Accommodations are individualized, flexible and confidential based on the nature of the disability. Current documentation of a specific disability from a licensed professional is needed. Please consult with the Student Disability Services staff, G-23 Redfern Health Center, 864-656-6848, in regard to these matters. Details on policies and procedures are available at <http://www.clemson.edu/asc>.

ACADEMIC INTEGRITY STATEMENT: 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. See also <http://www.clemson.edu/academics/academic-integrity>.