

Instructor: Niloufer Mackey (nil.mackey@wmich.edu)
Office: 6618 Everett, 269.387.4594.
Office Hours: MTWR 11am – noon. Other times by appointment.
Classroom: 3455 Schneider, MW: 2 – 3:40 pm.
Class URL: <http://homepages.wmich.edu/~mackey/Teaching/230/>
Please check this page regularly for announcements and updates.
Prerequisite: Math 1220 or Math 1700 (Math 1230 or Math 1710 is recommended)

Text: Steven Leon, *Linear Algebra with Applications*, **8th edition (2010)**, Prentice–Hall.

Recommended: Steven Leon, *Student Study Guide*, Prentice Hall.

(In the bookstore the study guide is bundled together with the text at no extra cost.)

Bring the Leon text to each class, as we will refer to it frequently. It is essential to read the text regularly, and read material before we cover it in class.

Course Rationale: Motivated by the geometry of two and three dimensions, linear algebra is the simplest context in which a theory of great beauty and utility can be developed. A clear understanding of the concepts of linear algebra is central to the understanding of all mathematical and physical phenomena in higher dimensions; and the algorithms of linear algebra are at the heart of much of scientific computing. Finally, a first course in linear algebra also serves as an introduction to the development of logical structure, deductive reasoning, and *mathematics as a language*. For many students, the tools of linear algebra will be as fundamental in their professional work as the tools of calculus.

Course Description: We begin with a study of systems of linear equations, and techniques for solving them. Formulating such systems as matrix equations leads to the study of matrix algebra, and the more abstract concepts of vector spaces and linear transformations. The important concepts of orthogonality, eigenvalues and eigenvectors will also be studied. *We will also learn how to do simple proofs.*

Attendance: Regular, on-time attendance is expected. Should you miss class, your first step should be to get notes from a fellow student and try to understand the material on your own. Only then approach me during office hours if you have questions.

Homework will be regularly assigned, but not collected. Do it promptly. Solutions on homework, quizzes and exams **must include reasoning expressed in complete sentences**, regardless of whether this is made explicit or not. At the end of each chapter in the textbook is a ‘Chapter Test’, consisting of true-false statements pertaining to the basic concepts covered in the chapter. You are strongly advised to work out detailed solutions to all Chapter Tests – prove statements that are true, and construct a counter-example for those statements that are false.

Occasionally, optional extra-credit problems may be assigned. Points earned will be added to your cumulative quiz total. *The work you submit must be your own.* (Please read the section on Academic Integrity included in this handout.) Be advised that these problems will be

more challenging than the average homework problem, and will often cover topics we did not have time to cover in class. Grading will be strict — illegible solutions or solutions without statements and reasoning will be returned ungraded. Spending time on extra-credit problems before you have successfully finished the assigned homework problems is counterproductive, and will hurt rather than help your grade.

General Advice: In linear algebra, the *concepts* are as important as the *computations*. To master the concepts, you will have to read and reread the text carefully. You will quickly realize that linear algebra is a *language* — new terms and definitions will be introduced in practically every class. You are expected to learn to use this language with precision, and that requires daily practice on your part. It will be difficult to keep up unless you put in extra effort outside of class. A general rule of thumb is to put in two extra hours for each hour of class, but you may require more than that, because of the nature of the abstract mathematical concepts you will need to understand.

A clear understanding of the definitions and theorems is essential to success in this course. For each section, make a list of the definitions and theorems in the section. Then study the list till you are thoroughly familiar with it. The study guide will help you to do this. It also provides *partial* solutions and hints to selected exercises from the Leon text.

You are encouraged to form study groups. Talking about mathematics, and critiquing each other's solutions is a very effective way to learn the subject.

Quizzes, Exams and Grading: There will be ten minute quizzes usually held every Wednesday, two 50 minute in-class exams (tentative dates Sept 28, Oct 26), and a comprehensive final exam held on during Finals Week on Monday Dec 12, 2:45pm – 4:45pm.

Makeup exams will be permitted only in those cases when a student documents a genuine medical or personal emergency. The lowest quiz score will be dropped, and so **no make-up quizzes** will be given for any reason.

Quizzes: 20% Exam I: 20% Exam II: 25% Final Exam: 35%

Your grade will be determined by the scale:

A	94 – 100	B	82 – 87	C	70 – 76	D	55 – 64
BA	88 – 93	CB	77 – 81	DC	65 – 69	E	Less than 55

Important Dates:

Last Day to Drop/Add: Sept 12

Last day to drop with “W”: Nov 7

Thanksgiving Recess : Nov23(noon) through Nov 27

Last day of instruction (for this class): Dec 7

Incompletes: Departmental rules will be followed regarding “I” (Incomplete) grades. An “I” grade may be assigned only when circumstances beyond the student’s control prevent completion of a small segment of the course. Incompletes may not be granted under any circumstances when a student is doing unsatisfactory work; such students are advised to withdraw from the course.

Academic Integrity: You are responsible for making yourself aware of and understanding the policies and procedures in the Undergraduate Catalog that pertain to Academic Honesty. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. These policies can be found at

<http://catalog.wmich.edu>

under Academic Policies, Student Rights and Responsibilities. If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Conduct. You should consult with me if you are uncertain about an issue of academic honesty prior to the submission of an assignment or test. Violations of the academic honesty policies can result in failing grades for the assignment and the course. Additional penalties can be imposed by the University.

University e-mail policy: The only email address that should be used for communication between WMU students and WMU faculty and staff is the email address associated with a BroncoNet ID. This email address typically takes the form

firstname.middleinitial.lastname@wmich.edu.

An example is *buster.h.bronco@wmich.edu*. Students cannot automatically forward email from this address to other addresses. Students can access this email account or get instructions for obtaining a BroncoNet ID at GoWMU.wmich.edu.