Linear Algebra I
Spring 2015
MATH 322.01/502.01 (4 credits), MTu_ThF, 10:00A-10:50A, Wickersham 219

Prerequisite: A grade of C- or better in MATH 311 (*Calculus III*) is the prerequisite for this course. This course may also be taken concurrently with MATH 311. MATH 310 (*Introduction to Proofs*) is recommended as well.

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Textbook: *Elementary Linear Algebra: Applications Version*, Howard Anton and Chris Rorres, (11th edition), New York: John Wiley & Sons, Inc., (2013), ISBN: 978-1118434413

Description: An introduction to linear algebra: matrices, row reduction, inverses of matrices, determinants, solution theory for systems of equations, Euclidean vector spaces, Gram-Schmidt orthogonalization, inner product spaces, eigenvalues, eigenvectors, and diagonalization, abstract vector spaces and linear transformations.

Objectives:

- Learn the basic algorithms for matrix computation.
- Understand the solution theory for systems of linear equations, and its connection with matrix algebra.
- Learn about the major structures and techniques of linear algebra, such as determinants, inner products, and eigenvectors.
- Learn about abstract vector spaces and linear transformations.
- Improve ability to read and compose proofs in abstract mathematical symbolism in the context of a specific area of mathematics.

Topic Coverage:

- Systems of Linear Equations and Matrices
- Determinants
- Euclidean Vector Spaces
- General Vector Spaces
- Inner Product Spaces

- Eigenvalues, Eigenvectors
- Linear Transformations

Other topics may be covered as time or interest permit.

The topic of "Vectors in 2-space and 3-space," will not be covered since that material is part of MATH 311 (*Calculus III*). Students should review this material on their own as necessary.

Attendance: Students are expected to attend all class meetings. There is an inverse correlation between a student's number of absences and final grade. This is due to the fact that daily contact with the material is essential to understanding Linear Algebra. Getting the material second hand from someone else's notes is simply not the same as hearing it for yourself. If you must be absent from class you are expected to complete class requirements (tests and/or homework assignments) prior to the absence. Students who miss a test should provide a valid excuse, otherwise you will not be allowed to make up the test. Tests should be made up within one week of their scheduled date. No final exam exemptions.

Homework: Students are expected to do their homework and participate in class. Specially marked homework problems will be collected frequently and graded. **Late homework will not be accepted.**

Students should expect to spend a *minimum* of twelve hours per week reviewing notes taken during class and working assigned homework exercises. Preparation for the tests and final exam will require additional hours of study. Students will find it beneficial to review all lecture notes and other relevant material collected from the beginning of the semester until the present time at least once per week.

Tests: There will be three 50-minute in-class tests and a comprehensive final examination. The tests are tentatively scheduled for

1. Thursday, February 12, 2015
2. Monday, March 23, 2015
3. Tuesday, April 21, 2015

The final exam is scheduled for Thursday, May 7, 2015, 08:00A–10:00A. I will not "curve" test or exam grades.

Grades: Course grade will be calculated as follows.

Tests	50%
Exam	30%
Homework	20%

Tests and the final examination will be graded individually on a 100-point scale. If a student believes that an error was made in the grading of an assignment or test, the student should explain *in writing* why they believe an error exists and submit the graded material and the explanation of the possible error to me within 3 class periods of the graded test or homework being returned to the student. In no cases will adjustments to grades of less than 3 points be made. I keep a record of students' test and exam scores. Students should also keep a record of graded assignments, tests, and other materials. As an example of the calculation of the numerical course grade, suppose a student's four test grades were 87, 78, 65, and 70 (out of a maximum of 100 points on each test), the student's final examination grade was 71 (again, out of a maximum of 100). Suppose seven homework assignment were collected and the student's grades were 32/40, 38/50, 50/60, 20/40, 27/50, 40/40, and 23/40. This hypothetical student's numerical course grade would be calculated according to the formula

$$\begin{aligned} & \frac{87+78+65+70}{4} \cdot 0.50 + 71 \cdot 0.30 + \\ & \qquad \frac{32/40 + 38/50 + 50/60 + 20/40 + 27/50 + 40/40 + 23/40}{7} \cdot 20 \\ = \; & 37.5 + 21.3 + 14.4 \\ = \; & 73.2 \end{aligned}$$

The course letter grades will be calculated as follows. I will not "curve" course grades.

90-92	A−	93-100	A		
80-82	B−	83-86	B	87-89	B+
70-72	C−	73-76	C	77-79	C+
60-62	D−	63-66	D	67-69	D+
		0-59	F		

Course Repeat Policy An undergraduate student may not take an undergraduate course of record more than three times. A course of record is defined as a course in which a student receives a grade of A, B, C, D, (including + and −) F, U, Z or W. The academic department offering a course may drop a student from a course if the student attempts to take a course more than three times.[1]

The last day to withdraw from a course (and receive the W grade) is April 3, 2015.

Inclement Weather Policy: If we should miss a class day due to a school closing because of weather, any activities planned for that missed day will take place the next time the class meets. For example, if a test is scheduled for a day that class is canceled on account of snow, the test will be given the next time the class meets.

[1]Memorandum to mathematics faculty from Dr. Charles G. Denlinger, Assistant Chair, Department of Mathematics, August 30, 2004.

Final Word: Math is not a spectator sport. What you learn from this course and your final grade depend mainly on the amount of work you put forth. Daily contact with the material through homework assignments and review of notes taken during lectures is extremely important.

No one can guarantee you success in this course. Your responsibilities and the instructor's expectation are outlined above. There will be no second chances or "do-overs".