

Course Description: Systems of Linear Equations, Gaussian Elimination, Gauss-Jordan Elimination, Operations with Matrices, Elementary Matrices, Row and Column Operations, Inverse, Determinants, Vector spaces, Subspaces, Basis, Coordinates, Change Basis, Linear Transformations, Inner Product, Orthogonal (Orthonormal) Bases, Gram-Schmidt Process, Kernel and Range of Linear Transformations, Matrices for Linear Transformations, Eigenvalues, Eigenvectors, Eigenspaces, Diagonalization.

Prerequisites: [Math 2110](#), or [Math 1920](#) and either [Math 2702](#) or Comp 2700 with a minimum grade of C- or permission of instructor.

Method of Instruction: This course is taught as a guided lecture, which means notes will be given in lecture format while examples will be worked with the help of the students in the class. Questions will be asked and are expected to be answered by the students in the class.

Textbook: *Elementary Linear Algebra*, 8th edition, by Ron Larson.

Graphing calculator (if required by instructor): TI 83 Plus or TI 84 Plus or Silver Edition for classroom use. TI 89s and TI 92s are prohibited. Cell phones **cannot** be used as calculators.

Tutoring: Free tutoring is available through the University's Education Support Programs. They offer a drop-in tutoring service in the [Math Learning Center](#) in DH 341 and [online assistance](#).

Disabilities: Any student who anticipates physical or academic barriers based on the impact of a disability should contact [Disability Resources for Students \(DRS\)](#) at 110 Wilder Tower, 901.678.2880 at the earliest opportunity. DRS coordinates access and accommodations for students with disabilities. You must give your instructor a copy of any accommodation memos provided by the DRS **within the first week of class**.

Attendance: Class attendance is important, every student is required to be in class, on time, and stay for the entire class period for each class session. If you miss a class, you are responsible for finding out what topics were covered and for completing any missed work.

Drop / Withdraw: Students who need to drop this class must report to the Office of the Registrar to initiate withdrawal procedures. Check <http://www.memphis.edu/registrar/calendars/> for deadlines.

Email Rules: All email correspondence must be made through your [University of Memphis](#) email account. Check your email daily, and make sure that your "inbox" isn't so full that no new messages will get through.

Grading Policy: Grades will be calculated based on homework, quizzes, tests, and final exam. Grading scale is determined by the instructor.

Homework: Homework will be assigned for each section of the text, and must be finished before the due date for you to get credit.

Quizzes & Tests: There will be a number of quizzes/ tests for this course. You must be present in class to take each quiz and each test. Please check the schedule of your final exam.

No Make-ups for a missed homework, quiz, test, or final exam. If you must miss a test because of an official school function you may schedule to take the test at a time prior to the original test date. No other rescheduling will be allowed.

Final Schedule: see <http://www.memphis.edu/registrar/calendars/>

Academic Integrity: I encourage you to work with your classmates on homework or to have study groups for tests; however, letting someone else do all the work while you just sit back and copy will not help you on your tests. Copying the work of others is not going to help you understand the material or pass the course.

Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly, through participation or assistance will receive a zero, in addition to other possible disciplinary sanction which may be imposed through the regular institutional disciplinary procedures.

Classroom Rule: Silence cell phones and remove headphones when in the classroom. No eating or individual breaks will be allowed during the class period.

Course schedule: Any changes of this schedule will be announced in class, and in writing.

Chapter 1: Systems of Linear Equations (4 Hours)

- System of Linear Equations, Augmented Matrix.
- Gaussian Elimination with Back-Substitution.
- Gaussian-Jordan Elimination.
- Solve a homogeneous System of Linear Equations.

Chapter 2: Matrices (5 Hours)

- Operations with Matrices-Addition, Scalar Multiplication, Matrix Multiplication, Identity, Transposes. (In test or quiz, you must show your work.)
- Row operators.
- Find the Inverse of a Matrix by Row Operators.

Chapter 3: Determinants (6 Hours)

- Determinant of 2x2 and 3x3 Matrices.
- Minors and Cofactors of a Square Matrix.
- Definition of the Determinant of a Square Matrix (Cofactor Theorem).
- Properties of Determinants.
- Cramer's Rule

Chapter 4: Vector Spaces (6 Hours)

- Vector Space, Subspace
- Linear Combination, Linear Independence.
- Basis, Dimension, Find a Basis of a Vector Space.
- Coordinates, Change of Basis

Chapter 5: Inner Product Spaces (4 Hours)

- Inner Product, Length, Orthogonal Vectors, Triangle Inequality, Cauchy-Schwarz Inequality.
- Orthonormal (Orthogonal) Basis, Gram-Schmidt Process.

Chapter 6: Linear Transformations (6 Hours)

- Linear Transformations and Matrices for Linear Transformation.
- Kernel and Range of a Linear Transformations.
- Change of Basis

Chapter 7: Eigenvalues and Eigenvectors (4 Hours)

- Definition of Eigenvalue and Eigenvector.
- Diagonalization.
- Symmetric Matrices and Orthogonal diagonalization.

