This is a four credit course. It meets June 30th–August 4th, for a total of 5 weeks, 4 days per week, MTWTh, 6pm-9pm.


**Prerequisites.** Calculus I or Calculus II.

**Course Objectives and Lectures.** In this course we take a geometric and visual approach to understanding some fundamental concepts of linear algebra—properties of vector spaces and linear transformations and their applications. This course provides essential background for most upper level math courses and has a wide range of applications in many disciplines.

The topics we will study include:

- Vectors and Dot Product.
- Systems of Linear Equations and Gaussian Elimination, the theory of Linear Systems of Equations.
- Matrix Operations, Inverse Matrices, the Transpose, Elementary Matrices and Linear Transformations.
- Subspace of \( \mathbb{R}^n \), Linear Independence, Bases, Dimension and Abstract Vector Spaces.
- Inconsistent Systems, Orthogonal Bases, Change of Base Formula, Applications.
- Determinants, Cofactors and Cramer’s Rule, Signed Area and Volume.
- The Characteristic Polynomial, Diagonalizability, and Applications.
- The Spectral Theorem.

**Reading/Preparation.** You should spend studying on average at least 8 hours per week, in addition to the class time. Read the textbook, solve the assigned homework/additional problems, review course notes and participate in class discussions.

**Course materials and Blackboard.** The syllabus, handouts, solutions, and other course materials and announcements can be found on Blackboard. Check Blackboard or your Fordham e-mail regularly.

**Quizzes, Tests and Final Exam.** There will be short quizzes throughout the session, and one to two Midterm Tests. The final exam is on the last day of class.
**Homework.** Besides WebWork there will be handouts with assigned problems. The homework counts as 25%. Extra credit assignments may be provided for the total of at most 3 points.

**Attendance.** It is important that you attend all classes and ask questions.

**Meeting with the instructors.** You could stop by my office, JMH 417 before or after class or make an appointment.

**Calculators.** You need to have at least a scientific calculator. A TI Graphing Calculator (TI 83 or higher) is recommended. Its use may be restricted on tests.

**Grade distribution.** 40%—test and quizzes, the lowest quizzes will be dropped, 25% homework (written and on-line), the Final Exam counts 35%. Percentages of at least 90, 80, 70, 60 guarantee grades of at least A-, B-, C-, D, respectively.

**Disclaimer.** The course syllabus is a general plan. The instructor may slightly deviate from the syllabus but all such deviations will be announced.

**College Policy on Academic Integrity.** I would also like to draw your attention to the College Policy on Academic Integrity. It explains the College’s expectations and procedures.

A university, by its nature, strives to foster and recognize originality of thought, thus expecting that one produce work that is their’s alone, properly acknowledging information and ideas that are obtained from the work of others. It is therefore important that students must maintain the highest standards with regard to honesty, effort, and performance.

In particular ”Academic integrity is honest, thoughtful, and responsible scholarship. Fordham students are expected to maintain the highest standards with regard to honesty, effort and performance in their academic work.”

*Best wishes for a successful Summer Session.*