MATH 1554 Syllabus

Linear Algebra, Sections RCH/RCL, 4 credits
Summer 2026

Instructor Information

Instructor: Jiaxi Nie
Email: jnie47@gatech.edu

Course Description

MATH 1554 introduces the core ideas of linear algebra and prepares students for later courses that use these tools. The course emphasizes both computation and mathematical reasoning. This is a Core IMPACTS course in the Technology, Mathematics, and Sciences area.

Learning Objectives

By the end of the course, students should be able to:

- construct and interpret expressions involving vectors, matrices, and systems of linear equations;
- compute quantities related to linear systems, matrix operations, eigenvalues, and decompositions;
- analyze mathematical statements for correctness and explain existence or uniqueness of solutions;
- write clear logical arguments using linear algebra concepts;
- apply linear algebra to model and study real-world problems;
- identify important course policies, procedures, and resources.

Topics Explored

- Methods for solving systems of linear equations, including row reduction.
- Matrix decompositions used to solve systems and study structure, including LU decomposition and singular value decomposition (SVD).
- Geometry of linear transformations.
- Characterizations of invertible matrices and determinants.
- Eigenvalues and eigenvectors, together with their uses.
- Structure of linear transformations, including decompositions such as LU, spectral, and singular value decompositions.
- Orthogonal projections.
- Applications of orthogonal projections to determine best-fit solutions to over-determined systems of linear equations.

Course Materials

- **Optional textbook:** *Linear Algebra and its Applications*, 6th ed., Lay.
- **Homework platforms:** MyMathLab or WeBWorK.
- **Course websites:** Canvas and associated course pages.

Grading

Final grades are computed as follows:

- MQEW Score: 25%
- Best Midterm: 20%
- Middle Midterm: 20%
- Worst Midterm: 15%
- Final Exam: 20%

Letter grades follow the standard scale: A [90,100], B [80,90), C [70,80), D [60,70), F [0,60). Percentage grades are not rounded before conversion.

Assignments and Exams

MQEW points are earned through homework, in-studio quizzes, exploration assignments, and exam wrappers. Students may use either MyMathLab or WeBWorK for homework, and the higher total counts. Midterms are in-person, 75-minute exams given during the regular lecture period. The final exam is cumulative and also given in person.

Attendance and Expectations

Students are expected to attend all lectures and studios, come prepared, participate actively, and keep up with announcements on Canvas and Piazza. Students are responsible for missed material, schedule updates, and assignments after any absence.

Academic Integrity

Students must follow the Georgia Tech Honor Code. Unauthorized collaboration, plagiarism, use of calculators or notes on quizzes or exams, and use of phones or other devices during assessments are prohibited.

Accommodations

Students who need accommodations should contact the Office of Disability Services as early as possible and also notify the instructor.

Disclaimer

The instructor will make every effort to follow this syllabus, but policies, schedules, and details may be adjusted as needed. Any changes will be announced in class and on Canvas.