Linear Algebra

Course prefix: MATH

Course number: 1554

Section: mathematics

CRN (you may add up to five):
87671

Instructor First Name: Philippe

Instructor Last Name: Bonneau

Semester: Fall

Academic year: 2025

Course description:

Math 1554 is an introduction to Linear Algebra. Topics include:

- Solving systems of linear equations (Gauss Elimination Method)
- Algebraic operations on matrices
- Eigenvalues, Eigenvectors, Diagonalization
- Orthogonality, Least Squares, QR factorization, Singular Value Decomposition (SVD)

Course learning outcomes:

The primary goal of Math 1554 is preparing students to succeed in upper-level courses that require this course as a pre-requisite. Upon successful completion of the course, students will be able to:

- Understand and demonstrate the basic theory of linear algebra.
- Solve systems of linear equations. Understand, manipulate and use matrices.
- Apply the power of linear algebra to modelized and solve problems occurring in many other areas of mathematics and other sciences.

Required course materials:

None

Grading policy:

Grading consists of

- 5 Quizzes (15 minutes),

- 2 Tests (50 minutes),
- a comprehensive Final Exam (2 hours 50 minutes) and
- a "participation and homework grade" (based on various activities proposed in lectures and studio sessions).

The lowest quiz grade is replaced by the average of all the quizzes.

The course average is the highest of the following two numbers:

- #1 : 8% participation + 22% Quizzes + 40 % Tests + 30% Final Exam
- #2 : 8% participation + 22% Quizzes + 30 % Highest Test + 40% Final Exam

Then the final grade is assigned as a letter grade according to the following scale: A for an average in [90% , 100%], B if in [80% , 90%), C if in [70% , 80%), D if in [60% , 70%) and F if in [0% , 60%).

Attendance policy:

In GT-Europe, ATTENDANCE is MANDATORY for undergraduate students. In the event of an absence, you are responsible for all missed materials, assignments, and any additional announcements or schedule changes given in class. Class disruptions of any kind will not be tolerated and may result in your removal from the classroom. Please show courtesy to your fellow classmates and instructor by adhering to the following class rules. Come to class on time and stay for the entire class period. Refrain from conversing with your fellow students while the instructor is lecturing. Put away any reading materials unrelated to the course. Cell phones should be silent and put away during classes. Devices like tablets or laptops can be used for the only purpose of taking notes, as long as this is not distracting to the other students. Please do not bring food to eat during lectures, eating is a distraction to others.

Academic honesty/integrity statement:

Students are expected to maintain the highest standards of academic integrity. All work submitted must be original and properly cited. Plagiarism, cheating, or any form of academic dishonesty will result in immediate consequences as outlined in the university's academic integrity policy.

Core IMPACTS statement(s) (if applicable):

This is a Core IMPACTS course that is part of the STEM area.

Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help master course content, and support students' broad academic and career goals.

This course should direct students toward a broad Orienting Question:

- How do I ask scientific questions or use data, mathematics or technology to understand the universe?

Completion of this course should enable students to meet the following Learning Outcomes:

- Students will use the scientific method and laboratory procedures or mathematical and computational methods to analyze data, solve problems and explain natural phenomena.

Course content, activities and exercises in this course should help students develop the following Career-Ready Competencies:

- Inquiry and Analysis
- Problem-Solving
- Teamwork