

MATH 216: Introduction to Linear Algebra With Applications in Statistics, part 2

This is a first course in linear algebra, aimed at students with diverse backgrounds. It covers the content of a standard textbook: linear systems, vectors and matrices, dimensions and bases of vector spaces, eigenvalues and eigenvectors, and singular value decomposition. It is also dedicated to explaining applications of these linear algebra concepts in classic analysis methods as well as state-of-the-art statistical inference and machine learning approaches. In the application portion of the course, we will strive to tailor the content to the interests and research needs of the students.

This is the second part of a two-part course. The completion of the first part (MATH 215) OR an equivalent course OR the knowledge of vectors, matrix operations, orthogonality, and determinants is highly recommended before taking the second part. Registration is required separately for each part of the course.

Learning Objectives

- Understand systems linear equations and their matrix representation
- Learn the concept of vector spaces, subspaces, and linear dependence
- Learn spectral methods for analyzing matrices
- Understand statistical methods based on linear models

Credits: 2

Class Type: Graduate Course

Prerequisites:

MATH 215

The above course OR an equivalent course OR the knowledge of vectors, matrix operations, orthogonality, and determinants is highly recommended before taking MATH 216. One semester of analytic geometry or calculus is recommended, but not required.

Program: Bioinformatics and Data Science

Availability Fall 2021

Session Session B