

Introduction to Linear Algebra (M14087)

Instructors:

Midori Zhou and Jessica Shi, who can be reached at M14087-teachers@esp.mit.edu.

Logistics:

This class will meet weekly on Saturdays from 12:05–1:25 p.m.

Course Objectives:

Our goal is to present a subset of the topics typically taught in an undergraduate-level linear algebra course. Our goal is *not* to have you master these concepts, but rather to help you develop exposure, intuition, and comfort in interacting with abstract mathematical ideas, so that when you encounter them again some years down the road, they feel familiar. This course will cover vector spaces, linear transformations, fundamental subspaces, and eigenvalues.

Prerequisites:

Algebra II, or an equivalently strong algebra background, is most likely necessary to enjoy this class.

Materials:

All lectures will be self-contained (i.e., we will define everything we need), but we will borrow ideas from Sheldon Axler's *Linear Algebra Done Right* and Gilbert Strang's *Introduction to Linear Algebra*. Strang also has a series of OpenCourseWare [videos](#) you might find useful.

Course Outline:

- Lecture 1: Vectors, Vector Spaces, Subspaces
- Lecture 2: Span, Linear Independence, Bases, Dimension
- Lecture 3: Linear Transformations, Matrices
- Lecture 4: Ranges, Null Spaces, Rank-Nullity Theorem
- Lecture 5: Eigenvalues, Eigenvectors
- Lecture 6: TBD, possibly Abstract Algebra Blitz