

LINEAR ALGEBRA SYLLABUS (TENTATIVE)

Instructor: Qing Zhang,

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Classroom: Room N202, W12.

Class time: 8:00-9:50, MWF

Office: E32, Room 215,

Office hours: TBD

Class Webpage: <https://qingzhang-math.github.io/teaching/linalg2023.html>

Textbook: TBA

Main reference: **Linear Algebra** (2nd edition) by K. Hoffman and R. Kunze. This is our main reference.

Algebra (1st or 2nd edition), by M. Artin. This is a more advanced book and certain chapters of this book will be useful references for this course. (Other chapters of this book will be used for an advanced course). It is better to have this book at hand.

Course contents and objectives:

This is the undergraduate course in Linear Algebra. The goal of this course is to study vector spaces, linear transformations, and inner product spaces. Emphasis will be placed on learning how to write rigorous mathematical arguments and understanding mathematical concepts.

We will basically cover the book by Hoffman-Kunze with some (sub)sections skipped. The first part of the course studies the basic concepts (linear equations, matrix algebra, vector spaces, linear transformations, determinants...). The focus is more on abstract definitions and formal proofs. The second part will cover the basics for the analysis of a linear transformation on a finite dimensional vector space as well as classification theorems such as rational canonical forms and Jordan canonical forms. The last part of the course treats inner product spaces in detail, including the spectral theorem for normal operators. We will also learn some non-traditional topics on linear algebra, such as multi-linear maps, tensor product, exterior product...

If this is the first time you ever read an English book on math, please read the book ahead.

TAs: TBA

Assignments:

There will be a written homework assignment every week (except those weeks with exams). Homework assignments will be posted in our course webpage every Monday.

You are encouraged to type your homework solutions using **LaTeX**. If you have never used latex before, you can download it here <https://www.latex-project.org/get/> or you can use the online version here <https://www.overleaf.com>

Each assignment will be weighted equally towards the final grade.
To learn the material you need to do homework.
No late assignments will be accepted.

Exams:

There will be one midterm and one final exam.

There are no notes or textbooks allowed at the exams. No calculators will be permitted (or needed) on any test.

Grading:

Tentative Course Calendar: TBA