T S I N G H U A U N I V E R S I T Y
Department of Mathematics
Linear Algebra (English)
Fall 2023
4 hours credit

Room: Teaching Building No. 6, 6C201 Time: Tue 19:20 - 20:55
    Fri 19:20 - 20:55

Instructor: Robert McRae Office: Shuangqing Comprehensive Building B622
Email: rhmcrae@tsinghua.edu.cn Office hours: Tue 11:00 - 12:00 and Fri 15:00 - 16:00,
    or by appointment

Teaching Assistants: Kehuan Chen ckh22@mails.tsinghua.edu.cn
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Text: Introduction to Linear Algebra, 5th edition, by Gilbert Strang

English Description: Linear Algebra covers the theory of systems of linear equations, Gaussian elimination, the theory of matrices and their computations, vector spaces and linear transformations, Euclidean spaces, Gram-Schmidt orthogonalization, eigenvalues and eigenvectors, diagonalization, symmetric matrices and positive-definite matrices, and singular value decomposition.

Course Content and Approximate Schedule:
    Chapter 1: Introduction to Vectors, 1.5 weeks
    Chapter 2: Solving Linear Equations, 3.5 weeks
    Chapter 3: Vector Spaces and Subspaces, 3 weeks

    Midterm Exam: In class on Tuesday, 14 November

    Chapter 4: Orthogonality, 1.5 weeks
    Chapter 5: Determinants, 1.5 weeks
    Chapter 6: Eigenvalues and Eigenvectors, 2.5 weeks
    Selected sections from Chapter 7 (Singular Value Decomposition) and Chapter 8 (Linear Transformations), 1 - 2 weeks

    Final Exam: Time to be decided by the university later

Course Format: Students are expected to attend class lectures in person. For students who cannot attend lectures due to illness or some other legitimate reason, the class lectures will also be live-streamed on Rain Classroom and lecture notes will be posted on the Tsinghua Web Learning course site at learn.tsinghua.edu.cn. It may be possible to live-stream lectures on Tencent Meeting as well. Students who cannot attend a class for a legitimate reason and who prefer to attend online using Tencent Meeting should inform the instructor before the class.

Office Hours: In-person office hours will be held at the instructor's office. Depending on student interest, online office hours may also be held through Tencent Meeting.

Problem-Solving Session: The teaching assistants will lead weekly problem-solving sessions beginning after the first few weeks of class. Time and location to be decided later.

Homework: Homework problems will be posted on Wednesday every week on the Web Learning course site. They should be submitted on the Web Learning site no later than Thursday of the next week.

Exams: There will be one midterm exam and one final exam.

Grades: Grades will be based on homework (20%), the midterm exam (30%), and the final exam (50%).