

# Math 354: Honors Linear Algebra

**MWF 2PM, HB 227**

Professor Tim Cochran  
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<http://www.math.rice.edu/~cochran>

**Office hours:** Tentatively Monday 3-3:40, Tuesday 3:00-4pm, Wednesday 3:30-4:30, and by appointment

**(Optional) Recitation Section:** Tuesdays 4-5 pm Hermann Brown 427, not required, Teaching assistant (PhD candidate) will do example problems and examples of proofs; students will do proofs at the board and TA will answer questions.

**Teaching Assistant:** TBA, TA 's Office: TBA HB (in basement); Office Hour: TBA ,

**[For Homework Assignments Click here](#)** or login to OWLSPACE

**Course Description** [Course Announcement](#) This course is primarily for students who might want to major in math or a math-intensive field or for persons who need or desire to study linear algebra in a more theoretical setting (for example computer scientists, electrical engineers, math economists or physicists).

**Course Web Page:** <http://math.rice.edu/~cochran/teaching/Math354Fall2013/354F2013webpage.html> .

**OWLSPACE:** [Owlspace login](#)

**Prerequisites:** Math 101, Math 102 or equivalent. Taking this class at the same time as Math 221 is fine. Otherwise I would prefer that students have taken at least one of Math 211 or Math 212 in order that they have had experience with vectors and matrices to the extent that they believe that these objects are useful, so useful that they might merit studying in a theoretical setting. This experience could equally have been obtained in a high school math or physics class.

**Required Textbook:** Linear Algebra, Fourth Edition, by S. Friedberg, A. Insel and L. Spence, Publisher: Prentice Hall

**Overall course objectives and expected learning outcomes:** How to write a mathematical proof in English sentences; very basic logic; how to solve a system of linear equations using matrices, how to transform a square matrix to diagonal form if possible; learn a theoretical framework that encompasses many important but apparently different problems such as: rotating vectors in three dimensional space, solving systems of linear equations, approximating a function by a sum of sines and cosines, approximating a function by a polynomial, the asymptotic result of iterating a simple process repeatedly. What is the distance between vectors, between functions or between matrices and when are two of these orthogonal? What is a linear transformation and why are they useful?

**Assessment:** Attendance will not be part of the grade, but the student is responsible for ALL information conveyed in class and all material assigned in the book. Some material, such as homework solutions, are available in class, but NOT on Owlspace. The student is also responsible for reading email messages from

the professor via Owlspace and logging in to Owlspace sometimes for assignments. The student is advised to make sure that the scores entered on Owlspace correspond to the actual scores received on homeworks and tests.

**Homework:** worth 25% of grade. Homework assignments will be assigned via Announcements at Owlspace and an email notice will be sent. Homework assignments are not pledged. You are strongly encouraged to work together in groups of 2-4. However, you are not allowed to use solutions from the internet, nor any solutions you might find in any written form. Moreover each student must write up her/his own homework without copying anyone else's. Homework is due AT THE START of CLASS on the assigned day. Late homework will be accepted occasionally with good reason, but usually will be uncorrected and assigned a score equal to 60% of the average of the student's previous HW scores

**Midterm exams:** There will be 2 IN-CLASS CLOSED BOOK midterm exams. **FIRST MIDTERM worth 15% Friday OCTOBER 4 , SECOND MIDTERM worth 25% Friday NOVEMBER 8**

**Final exam:** worth 35%. There will be a 3-hour CLOSED BOOK final exam **TIME SLOT ANNOUNCED BY REGISTRAR**

Any student with a documented disability needing academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All discussions will remain confidential. Students with disabilities will need to also contact Disability Support Services in the Ley Student Center.

Information on this syllabus (except attendance policy) may change with reasonable notice given via email from Owlspace.