Description: Linear algebra is fundamental to numerous areas of applied mathematics and science, and it forms the backbone to several subjects in pure mathematics. This course will cover the foundational topics in linear algebra, including systems of linear equations, matrix algebra, determinants, vector spaces and linear transformations, inner product spaces, eigenvalues and eigenvectors, quadratic forms, and canonical forms. We will place special emphasis on understanding matrices as representations of linear transformations of vector spaces.

In addition to learning the basics of linear algebra, students will gain experience in formulating mathematical arguments, particularly through writing proofs.

Textbook: The required textbook is “Linear Algebra with Applications: Eighth Edition” by Stephen J. Leon. The tentative schedule for covering the material is as follows.

- **Weeks 1–4**: Chapters 1, 2, and the beginning of 3.
- **Weeks 11–15**: Midterm, remainder of Chapter 6, and parts of Chapters 7 and 9.

Homework: I will assign weekly homework sets, typically due at the beginning of class on Fridays; the first is due Friday, August 29. Homework assignments will be posted to the course webpage (see the address above). Most of the exercises will be from Leon’s book, but on occasion I might include others.

Each assignment will include problems to be turned in and problems that you will not turn in. The latter type are still considered part of your homework, and I expect you to do them.

Homework assignments are not pledged, and I encourage you to work together, exchanging ideas on the exercises. However, the write-up that you turn in must be done independently and should reflect your understanding of the material. This also means that use of a solutions manual, calculators, or other mathematical software is not allowed.

Your homework grades will be based on both correctness and clarity of the solutions. To aid in clarity, I suggest the following:

(i) Briefly state the goal of the problem.

(ii) Justify each logical step.

(iii) Present your solution in a neat format that is easy to read. In particular, do not turn in scratch work!

Additionally, please write your name and the assignment number (e.g., “HW #25”) at the top of each page, write your solutions in the order they appear in the textbook or on the class webpage, and staple the pages together. This makes life much easier for the homework grader.
Finally, late homework assignments will not be accepted (if you will not be able to attend lecture the day an assignment is due, please make arrangements to turn it in early). I will, however, drop your lowest homework score.

**Exams:** There will be two 50-minute in-class midterm exams and one 3-hour final comprehensive exam:

- **Midterm 1:** Monday, September 22 (beginning of Week 5)
- **Midterm 2:** Monday, November 3 (beginning of Week 10)
- **Final exam:** TBD

*The final exam has not yet been scheduled. It is the policy of the Rice Mathematics Department that no final may be given early to accommodate student travel plans.*

Exams will be pledged, and the use of books, notes, or calculators is not allowed. Make-up exams will be allowed only in the case of a documented medical emergency (and you must contact me as soon as possible regarding such a situation). If an exam date conflicts with a holiday you observe, you must let me know **before the end of the first week of classes**. Monday Night Football is not considered a holiday for these purposes.

Any complaints or requests concerning the grading of exams must be made within two weeks after receiving the graded exam.

**Evaluation:** Your final grade will be determined as follows:

- 25% Homework + 20% Midterm 1 + 20% Midterm 2 + 35% Final exam

**Expectations:** I expect that you attend every class and arrive on time. It is your responsibility to stay informed of any announcements, syllabus adjustments, or policy changes made during scheduled classes. Not all announcements will be posted on the class webpage.

In lecture, I encourage you to look for the big picture: put the material in a larger context that you can remember. You might not follow every detail, but if you know the proper context, you can fill these in on your own. Along these lines, I expect you to study the material at home and read the relevant sections of the textbook.

I also encourage you to make use of your classmates and my office hours whenever you don’t understand the material well. Of course, you should seek this help as soon as possible to avoid greater confusion later.

**Disability Support:** Any student with a documented disability who is seeking academic adjustments or accommodations must speak with me **during the first two weeks of class**. Such students will also need to contact Disability Support Services in the Allen Center.

**Disclaimer:** I reserve the right to make changes to this syllabus and to course policies during the semester, excluding the section on final grade calculation. Such changes will be announced in lecture.