Contacts: You can contact me at fl2550@columbia.edu.

Course Web Page: All materials of the class will be available on Coursework.

Prerequisites: Calculus III or the instructor’s permission in writing.

Textbook: Linear Algebra with Applications, 5th edition, by Otto Bretscher. It has been placed on reserve at the Mathematics Library. Reading assignments will be drawn from this text.

Course Content: Systems of linear equations, matrices, linear transformations, subspaces of n-dimensional space, bases and coordinates, orthogonality and least squares, determinants, eigenvalues and eigenvectors, spectral theorem, quadratic forms, discrete dynamical systems. The emphasis in UN2010 will be towards geometric intuition and concrete applications.

While we may cover parts of Chapter 4 and 9 in class for motivation and context, they will not be considered required material. On the other hand, those considering a Mathematics major are urged to study their content on their own. A more detailed list of material which is fair game for homework and exams will be provided as the course proceeds.

Course Organization: There will be two lectures per week covering approximately one section of the text per lecture. The lectures themselves aim at providing an intuition for the main results, usually via examples, instead of focusing on proofs. The course will move quickly, and the burden is on you to keep up with the pace. We recommend that you read the material before it is discussed in class and get started early on each homework assignment. If there is anything that you do not understand or would like to have explained in more detail, please do not hesitate to ask.

Office hours: Tuesdays 10:30AM-12:30PM or by appointment in Mathematics 613.

Help room: The Mathematics department organizes two help rooms as places for students to seek assistance with material that comes up in their mathematics courses. These rooms are staffed by graduate students and undergraduate teaching assistants. You can find the schedule on the website of the Mathematics department.

Homework: There will be twelve weekly assignments. Their contents and deadlines are in the Assignments on the course web page. They will be due on Tuesday at 11 pm in one of the collection boxes on the fourth floor of Mathematics Hall (the first one is due on September 11).

Homeworks that require more than one piece of paper should be stapled. Your solutions should be clearly marked with problem numbers, and they should appear in the same order as the book. Your name (first and last) needs to be written clearly and legibly at the beginning of each set. Write your explanations clearly, and circle or box the final answers where
appropriate. The graders will be instructed to take away points for anything that causes them undue difficulty in grading your homework, including poor presentation, organization, or handwriting. You may check your calculations using a calculator or any other technology while doing homework, but you must include all steps of a calculation (done by hand) to receive full credit.

The course policy is that homework delays are not accepted. This is to promote fairness relative to your classmates. However, your two lowest homework scores will not count towards your grade. Use these for unexpected circumstances such as illnesses when you are unable to do or hand in your assignment on time. Do the problems later, on your own, so that you learn the material.

Homework is the best way to stay up to date with the material. We encourage you to collaborate with your classmates, but to hand in your own copy of the assignment. Identical copies are a violation of the expected standard of academic integrity and will be dealt with according to university policy.

Exams: There will be two in-class midterms:
- Midterm 1, covering Chapters 1, 2 and 3 on Monday October 7th.
- Midterm 2 covering Chapters 5 and 6 on Monday November 11th.

The final exam is schedule by the Registrar, and it will cover the entire course, with some emphasis on Chapters 7 and 8.

You must plan to take the midterm and final exams at the scheduled time, so please make your travel plans accordingly. Besides students with disabilities having prior arrangements with ODS, the only exceptions will be for those with an incapacitating illness, a serious family emergency, or situations of comparable gravity. In the first case you will need a note from a doctor; in the other cases you will need a note from your advising dean. Incompletes can be granted only by your advising dean and only in the circumstances mentioned above. Anyone guilty of academic dishonesty, such as cheating on an exam or helping someone else to cheat, will fail the course and faces further academic discipline.

Books, notes, calculators, and other electronic devices will not be allowed (or needed) on quizzes or exams. Phones and other electronic devices must be silenced and put away during classes and exams.

In class review sessions: On October 2nd, November 6th and December 9th (the last day of class) the lectures will be dedicated to a in-class review problem session.

Grading: Your final score will be computed via the following weights:
- Homework: 10%
- Each midterm: 25%
- Final: 40%

You will receive a letter grade after the midterms, but it is only to give you a sense of how you are doing in the course. It will be based only on the midterm exams.