Instructor: Paul Goerss
Lunt 206
Email: pgoerss@math.northwestern.edu
Office hours: MWF at 3PM afternoon or by appointment
Course Time: MWF Lunt Hall 101 at 2PM; Th Tech L150 at 2PM

This is a one-quarter mathematics course covering the basics of fields, vector spaces, and linear transformations. The topics include but are not limited to:

1. Fields and vector spaces
2. Subspaces; quotient spaces
3. Linear independence, bases, change of basis
4. Linear transformations; connection to matrices
5. Kernels; images; isomorphisms
6. Eigenvalues; eigenvectors; eigenspaces
7. Characteristic polynomials; minimal polynomials; Cayley-Hamilton Theorem
8. Diagonalizable transformations; canonical forms
9. Applications

Homework: Homework will be collected every week on Mondays, except the week of the midterm. The first assignment will be due January 13.

The Evaluation Component – Grades: In addition to the homework there will be examinations

  • January 31
  • February 21

The final examination is currently scheduled for Friday, March 20 at 3PM. The grade breakdown is 30% for the homework, 20% for each of the in-term tests, and 30% for the final.

What this course is: Math 344 is a junior/senior level mathematics course devoted to the study of fields, vector spaces, and especially linear transformations. As such, we will use the narrative forms and conventions of modern mathematics, including definitions and proofs. Students are required to understand, develop, and present mathematical arguments. Math 300 “Foundations of Higher Mathematics” (or equivalent) is a prerequisite. If you have not taken Math 300, or did not do well in that class, you are strongly advised to speak to the instructor at the very onset of the quarter.
University Statements and Policies

Accessibility
Any student requesting accommodations related to a disability or other condition must register with AccessibleNU and provide the instructor with an accommodation notification from AccessibleNU preferably within the first two weeks of class. All information will remain confidential. For more information, visit AccessibleNU, or call (847) 467-5530.

Discrimination and Sexual Harassment
Northwestern University’s Policies on Discrimination, Harassment, and Sexual Harassment apply to all members of the University community, including students, staff, and faculty. Any student, staff, or faculty member who believes that he or she has been discriminated against or harassed on the basis of his or her race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, parental status, marital status, age, disability, citizenship, veteran status, genetic information or any other classification protected by law, should contact the Office of Equal Opportunity and Access at (847) 491-7458 or the Sexual Harassment Prevention Office at (847) 467-6571. Additional information about the University’s discrimination and harassment policies, including the campus resources available to assist individuals with discrimination or harassment concerns, is available online on the Human Resources Equal Opportunity and Access website.

Sexual Misconduct and Reporting
Northwestern University is committed to fostering an environment where students are safe and free from sexual misconduct. Confidential resources are available to those who have experienced sexual misconduct. Faculty and instructors are not confidential resources and are required to report incidents of sexual misconduct, whether discussed in your assignments or in person, to the Title IX Coordinator, who can provide information about resources and options. Students who have experienced sexual misconduct are strongly encouraged to talk with someone to get support. For more information, including how to request interim protective measures and academic accommodations or file a complaint, see the Get Help page.

Academic Integrity
Academic integrity is taken very seriously at Northwestern. Students are responsible for reading and understanding Northwestern’s academic integrity policies. All suspected violations of academic integrity will be reported to The Graduate School. These include: cheating, plagiarism, fabrication, unfair advantage, unauthorized collaboration, and aiding and abetting of academic dishonesty. Students found in violation of academic integrity may receive a zero on the assignment or a failing grade for the course, and may be suspended or permanently expelled from the University. See the WCAS website on academic integrity and Academic Integrity: A Basic Guide for more information.

Resources
Students can find useful resources for safety and security, academic support, and mental and physical health and well-being at the NUhelp website and app.