

18.700 Linear Algebra - Fall 2006

Course information

Lectures:

Tuesday and Thursday, 9:30-11am, room 4-163.

First lecture: Thursday, September 7th.

Textbooks:

Bill Jacob, *Linear Algebra* (copies available at CopyTech)

Serge Lang, *Linear Algebra*, Springer (recommended, available at the Hayden Library)

Lecturer:

Gabriele Mondello, room 2-279, phone (617-25)3-3214, e-mail: gabriele@math.mit.edu

Homework:

Graded homework sets are weekly assigned.

Late homeworks are not allowed.

Midterm Exams:

There are two 90-minute midterm exams, during the lectures, on October 12th and on November 16th.

Midterm exams will be closed book, closed notes and no calculators are allowed.

Final Exam:

There is a three-hour final exam during finals week.

The final exam will be closed book, closed notes and no calculators are allowed.

Grading:

Homework is worth 30% of the final grade.

Each midterm exam is worth 15% of the final grade.

The final exam is worth 40% of the final grade.

Syllabus

1. Thu 9/7 Fields and vector spaces
2. Tue 9/12 Linear independence, generators and bases
3. Thu 9/14 Dimension, subspaces and span **PSet 1**
4. Tue 9/19 Homomorphisms and matrices
5. Thu 9/21 More on matrices
6. Tue 9/26 Dual and transposition **PSet 2**
7. Thu 9/28 Systems of linear equations and Echelon form
8. Tue 10/3 Gauss-Jordan reduction and rank **PSet 3**
9. Thu 10/5 TBA
- Tue 10/10 **Columbus Day - Vacation**
10. Thu 10/12 **First Midterm Exam**
11. Tue 10/17 Trace and determinant
12. Thu 10/19 Determinants and permutations
13. Tue 10/24 Laplace expansion, inverse **PSet 4**
14. Thu 10/26 Similarity, eigenvalues and characteristic polynomial
15. Tue 10/31 Eigenspaces and diagonalizability **PSet 5**
16. Thu 11/2 Triangulability
17. Tue 11/7 Cayley-Hamilton theorem **PSet 6**
18. Thu 11/9 Jordan canonical form I
19. Tue 11/14 Jordan canonical form II
20. Thu 11/16 **Second Midterm Exam**
21. Tue 11/21 Norms, inner products and orthogonal transformations
- Thu 11/23 **Thanksgiving Vacation**
22. Tue 11/28 Congruence, orthogonal bases and signature **PSet 7**
23. Thu 11/30 Adjoint and spectral theorem
24. Tue 12/5 Hermitean products, adjoint and spectral theorem **PSet 8**
25. Thu 12/7 TBA
26. Tue 12/12 TBA
- 12/? **Final Exam**