

# Fall 2014 - Math 401 Section 0401

## Applications of Linear Algebra

**Lectures:** MWF 10:00am-10:50am MTH 0405

**Instructor:** Enrique Otarola

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Office hours: W 12:00-13:00

**Webpage:** <http://www.math.umd.edu/~eotarol1/>

## References

- [1] Peter J. Olver and Chehrzad Shakiban. *Applied linear algebra*. Pearson Prentice Hall, Upper Saddle River, NJ, 2006.
- [2] Gilbert Strang. *Linear algebra and its applications*. Academic Press [Harcourt Brace Jovanovich, Publishers], New York-London, second edition, 1980.

## Course description:

1. Gaussian Elimination, Matrix Factorization and Determinants (Chapter 1 of [1])  $\approx$  3 weeks.
2. Vector Spaces and Bases (Chapter 2 of [1])  $\approx$  2 weeks.
3. Orthogonality and Least Squares (Chapter 3, 4, 5 of [1])  $\approx$  3 weeks.
4. Eigenvalues and Eigenvectors (Chapter 8 of [1])  $\approx$  2 weeks.
5. Computations with Matrices (Chapter 10 of [1] and Chapter 7 of [2])  $\approx$  2 weeks.
6. Linear Programming and Game Theory (Chapter 8 of [2])  $\approx$  1-2 weeks.

**Grading scheme:** Final grades will be a joint effort:

Quizzes	10 %
Homework and Matlab	20 %
Midterms (2 exams x 20 % each)	40 %
Final	30 %

**Exams (70%):** There will be two midterm exams each worth 20% of the final grade and a cumulative final exam worth 30%. The mid term exams will be held during class on the following days (tentative):

Midterm 1	October 24
Midterm 2	November 26

Final exam: Saturday, December 20: 8:00-10:00am.

**Quizzes (10%):** There will be a 10-minute quiz about every two weeks, unless stated otherwise, which will cover the material developed since the previous quiz. Quizzes will be announced the class before.

**Homework and Matlab (20%):** Homework problems will be assigned each class and some of them graded. Quizzes will be slight modifications of homework problems. A list of homework assignments will be posted on the webpage of the course and updated frequently. There will be several Matlab assignments. Students are encouraged to work in groups of up to three students but must hand in an individual project report.

**Make-up Quiz/Midterm Policy:** Make-up examinations will be given *only* in the case of an absence caused by illness, religious observance, participation in a University activity at the request of the University authorities, or compelling circumstances beyond the students' control. Convincing documentation such as a doctor's note will be required. For further information visit:

<http://www.testudo.umd.edu/soc/atedasse.html>

The reason for absence must to unavoidable, documented, and reported to me at least 48 hours before the exam date.

**Academic Integrity:** You are expected to abide by the University's policy on academic integrity:

<http://studenthonorcouncil.umd.edu/SHC/>

All cases of academic dishonesty will be referred to the Office of Student Conduct. Academic dishonesty includes cheating on quizzes and exams. Students are encouraged to work in groups of up to three students but must hand in an individual project report.