

## Linear Algebra, Math 3328, Spring 2013

**Disclaimer:** Dates, number of tests, and other information are subject to change. Attend all classes and update/check your emails to get the latest information.

### Resources:

**Text:** Elementary Linear Algebra with Applications, Richard Hill, Third Edition, ISBN 0030103479.

**Online:** <http://www.math.lamnar.edu/faculty/maesumi/MathExpo.pdf> video lectures, apps, texts, etc.

**Prerequisites/Audience:** Calculus I / Mathematics, Engineering, Computer science, Math Education.

**Coordinates:** MATH 3328-02, TR 12:45-2:05, L117.

Exams: Thursdays Feb 7, 28, March 28, April 18, Tuesday May 7.

Instructor Office hours : Dr. Maesumi, PhD, Lucas 206, MWF 12:40–1:40, TR 2:10–3:10, 409-880-8766, maesumi@gmail.com (this email is the only regularly monitored contact point).

**How to prepare for office visit:** Mark the problems you want to ask in your notebooks and bring other supporting material if applicable. If you are sending e-mail include your full name and course name, and use a heading that makes your e-mail stand out, e.g. LINEAR. Keep a copy and e-mail it again if you do not get a reply within one business day. The preferred contact form is through email given above, however if you want to leave a message on phone make it brief, speak clearly, and resend same information by email.

**Exams and Grading:** Subject to change

Exams are sectional and count equally. Even though we do not have a cumulative exam some basic concepts do show up throughout semester. Students need to be able to perform Gaussian elimination method on all tests. Grade scale:  $A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60$  .

**How are the grades curved? How does homework and participation improve my grade?**

- 1- Open notebook tests: You are allowed to have your handwritten lecture/homework notebook on tests. (If you attend lectures regularly, take careful notes, make your notes searchable with a complete index cross-listed with numbered pages, write the complete statement of homework problems and their solutions carefully, and give yourself timed practice tests to reach optimal speed then your grades will be quite high.)
- 2- Exams are sectional. Focusing on a smaller set of topics will increase your grades.
- 3- There are five exams so you have multiple chances of making a good grade.
- 4- For every problem you do at the board you get up to 2 points added to your next test.
- 5- You get 5 points added to your final test for completing the course evaluation.

**Calculator Policy:** You are allowed to use a basic scientific calculator on all tests. Basic calculators cost about \$20 new, and are not capable of drawing graphs, solving equations, differentiating, integrating, storing text, or wireless communication. You do need to purchase and practice your calculator early on. Do keep the manual or find its web site. No advanced calculator (e.g. TI 80, etc) or phone calculators are allowed.

**Absence and Exam Make Up Policy:**

If you are absent from an exam let me know as soon as possible and be prepared to show written proof of emergency. An individual decision will be made in each case.

**Catalog Course Description:** Introductory course in linear algebra, matrix arithmetic, linear systems, vector spaces, fundamental subspaces, orthogonal projections, least square method, QR factorization, eigen-

values and eigenspaces, introduction to linear differential equations, exponential of a matrix, and singular value decomposition, utilizing a computer algebra or numeric system for performing linear algebra. Prerequisites: Grade of C or better in MATH 2413 or its equivalent Prepares for: MATH 3301, 3321, 4315, 4318, 4330 Offered: Fall, Spring, Summer

**Course Objectives:** Successful completion of this course means the students will be able to

1. Work with matrices, do basic arithmetic, find inverse, determinant, LU decomposition of a matrix and solve systems of equations.
2. Identify vector spaces and subspaces and find the basis of a vector space, the column, row and null space of a matrix.
3. Understand linear transformation and find the matrix associated with a linear transformation.
4. Understand matrix multiplication as composition of linear transformations.
5. Use the Gram-Schmidt process to find an orthonormal basis for a vector space.
6. Find the eigenvalues and eigenvectors of a matrix and use them to diagonalize a matrix.
7. Find the eigen decomposition of a matrix.
8. Find the exponential of matrix, and solve the associated system of differential equations.

**Prerequisites / Audience:** Calculus / Mathematics, Engineering, Physics, Computer Science.

**Graduating seniors:** If you are graduating this semester and you are just taking this course it means something was not right. You need to double your effort and come to see me early in the semester.

**Students with Disabilities:** Please register with the office of Services For Students With Disabilities (SFSWD) and come to see me or inform me by the second class day.

**Course Evaluation/Extra Point:** Students who complete the course evaluation and return the completion form by the assigned deadline will get 5 point added to their lowest score. When you finish evaluating a course a page comes up declaring that you are done. Print just that page when it appears first and give it to me. Do not print your private answers! Do put your full name and course name on the page.

**No:** Noise, food, chips, ice, drinks, gum, coffee, chewables, edrugs (ipod, texting, surfing, etc).

**Test Code:** Your face is visible to the instructor. Your papers are not visible to your neighbors. You do not look at your neighbors' papers. No loose papers. No exchange of papers. Write on your own exam papers only. One person per table if possible. Bring your own basic calculator.

**Academic Honesty Policy:** Students are expected to engage in academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in their academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. Full policy description is given at <http://students.lamar.edu/academic-support/academic-policies.html>