

MTH 314 - 001: Matrix Algebra I

Fall 2016 Syllabus

Instructor:	Aditya Viswanathan
Class Meetings:	MWF 11:30am - 12:20pm in Wells Hall A 316
Instructor's Office:	Wells Hall, C 331
Office Hours:	Monday, Friday: 2:00 - 3:00pm, Tuesday: 11:00am - 12:00pm and by appointment
Instructor's Email:	aditya@math.msu.edu
Course Page:	https://math.msu.edu/~aditya/teaching/mth314_f16.html
Piazza Page:	https://piazza.com/msu/fall2016/mth314/home

Course Materials

- *Required:* Introduction to Linear Algebra, Fourth Edition by Gilbert Strang, Wellesley-Cambridge Press, ISBN: 978-0980232714

Associated with this book are a complete set of video lectures, sample exercises and exams. You can find these and much more at the MIT OCW website.

Video: <http://ocw.mit.edu/courses/mathematics/18-06-linear-algebra-spring-2010/video-lectures/>
MIT OCW: <http://ocw.mit.edu/courses/mathematics/18-06-linear-algebra-spring-2010/index.htm>

Prerequisites

The prerequisites for the class are MTH 133 or MTH 153H or LB 119

Course Description and Topics

This is a course on problem-solving and applications in matrix algebra for scientists and engineers. The course will cover most of Chapters 1–7 of the text, including (but not limited to)

- vectors and matrices (linear combinations, lengths, dot products),
- solving linear equations (elimination, inverse matrices, matrix operations, LU factorization),
- vector spaces and subspaces (the four fundamental subspaces, independence, basis, dimension),
- orthogonality (projections, least-squares, Gram-Schmidt),
- determinants (properties of determinants, cofactors, Cramer's rule),
- eigenvalues and eigenvectors (diagonalization, symmetric/positive definite matrices),
- singular value decomposition (SVD), and
- selected applications in science, engineering and geometry.

Attendance

Students are expected to attend all class meetings and are responsible for all of the material covered in class and in the homework. Any changes in this syllabus or in the scheduling of exams, quizzes, etc. will be announced during class meetings (usually at the beginning of class).

Homework

Homework will be assigned on the course website for each section we cover. It will neither be collected nor graded. However, quiz and exam questions will be modified versions of the assigned homework problems. If you do not do the homework, you will fail the associated quizzes and exams. If you fail too many quizzes and/or exams, you will fail the class.

Quizzes

You will be given a total of 13 surprise, in-class, closed notes/book quizzes during the semester. The quizzes will be given at the beginning of class on randomly chosen days. Each quiz will consist of two or three homework problems which will have been assigned at least 36 hours prior to the quiz. Your lowest three quiz grades will be dropped.

Exams

- You will be given two in-class (in Wells Hall A 316) midterm exams:
 - Midterm Exam I: Friday, October 7th
 - Midterm Exam II: Friday, November 18th
- There will also be a cumulative final exam on Friday, December 16th, from 10:00am – 12:00pm in Wells Hall A 316.

No exams at a time other than the designated ones will be allowed (exceptions for illness with **documentary proof**, or emergency). Both the midterm and final exams are closed book/closed notes and no calculators will be permitted during exams.

Evaluation

Your final course percentage will be determined by averaging your quiz, midterm exams, and final exam percentages with the following weights:

Quizzes: 30% Midterm Exam I: 20% Midterm Exam II: 20% Final Exam: 30%

The result of this weighted average will then be rounded to the nearest integer. Your final grade will be assigned using your final course percentage as follows:

4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.0
90%–100%	85%–89%	80%–84%	75%–79%	70%–74%	65%–69%	60%–64%	0%–59%

In addition, you must take the final examination in order to pass the course. The instructor also reserves the right to alter this grading scale in favor of the students when necessary.

Exams and Other Important Dates

Last day to drop the class with tuition refund	Monday, September 26
Midterm Exam I (in-class)	Friday, October 7
Last day to drop the class with no grade reported	Wednesday, October 19
Midterm Exam II (in-class)	Friday, November 18
Final Exam (in Wells Hall, A 316)	Friday, December 16, 10:00am - 12:00pm

Students with Disabilities

If you have a disability that requires some kind of accommodation, you should contact the Resource Center for Persons with Disabilities (RCPD) as soon as possible and then schedule an appointment to meet with your instructor.

- To make an appointment with a specialist at RCPD, contact: (517) 353-9642 or Tele-TYPewriter (TTY): (517) 355-1293
- Web site for RCPD: <https://www.rcpd.msu.edu/>

Academic Honesty

You are expected to complete quizzes and exams on your own, without collaboration or the use of outside resources. Any violation of this rule will be treated according to the MSU policies on academic integrity. Please familiarize yourself with these policies if you have not already. MSU's policy on academic integrity can be found at the following web page:

<https://www.msu.edu/~ombud/academic-integrity/index.html>

Also consider familiarizing yourself with the **Spartan Code of Honor Academic Pledge** at

<http://splife.studentlife.msu.edu/spartan-code-of-honor-academic-pledge>

“As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor in ownership is worth more than grades. I will carry these values beyond my time as a student at Michigan State University, continuing the endeavor to build personal integrity in all that I do.”

Some Final Thoughts...

Class Participation: Please ask questions and make constructive comments during lecture. This course is for you – get the most out of it. Take careful notes on those topics which are unfamiliar and work with your classmates during class exercises, especially those adjacent to your seat.

Utilize Office Hours: Office hours are times set aside specifically as an opportunity for you to get additional help. If your schedule conflicts with the scheduled office hours, please make an appointment by sending a request by e-mail.

Use Piazza to ask Questions: Piazza is a question-and-answer platform for asking questions about class material and assignments. When posting, express yourself clearly and in a mathematically rigorous way.