**MTH 314-002: Matrix Algebra I**

Spring 2017 Syllabus

Instructor: Rachael Lund

Class Meetings: MWF 12:40-13:30 A224 WH

Office Hours: Mon 2-3 pm, Tues 10-11am, Thurs 4-5 pm

Office Location: C134 WH

Instructor Email: [lundrach@math.msu.edu](mailto:lundrach@math.msu.edu)

Course Page: https://sites.google.com/a/msu.edu/ss17-mth-314/

**Course Materials**

         Required: Introduction to Linear Algebra, Fourth or Fifth Edition by Gilbert Strang, Wellesley-Cambridge Press

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 1–6 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, homework checks, 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, homework checks and exam questions will be modified versions of the assigned homework problems. If you do not do the homework, you will fail the associated homework checks and exams. If you fail too many homework checks and/or exams, you will fail the class.

**Homework Checks:**

You will be given a total of 11 surprise, in-class, closed notes/book homework checks during the semester. The homework checks will be given at the beginning of class on randomly chosen days. Each homework check will consist of two or three homework problems which will have been assigned at least 36 hours prior to the homework check. Your lowest homework check grade will be dropped.

**Exams**

• You will be given four in-class (in Wells Hall A 224) exams:  
–Exam I: Wednesday, February 8  
–Exam II: Friday, March 3  
–Exam III: Monday, April 3  
–Exam IV: Wednesday, April 26

• There will also be a cumulative final exam on Thursday May 4, 2017 12:45pm-2:45pm   
in Wells Hall A 224. Your final exam score will replace your lowest exam score (if this helps you).

No exams at a time other than the designated ones will be allowed (exceptions for illness with  
documented proof, or emergency). All 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 homework checks, midterm exams, and final exam percentages with the following weights:

Homework Checks: 30% Exams: 10% each (40% total) 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.

**Other Important Dates**

Friday – 02/03/2017 – End of 100% Tuition Refund  
Wednesday – 03/01/2017 – Middle of Semester. Last day to drop a course without a grade being reported.  
Monday 03/06/2017 to Friday 03/10/2017 – Spring Break  
Friday – 04/28/2017 – Last day of classes

**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-TYprewriter (TTY): (517) 355-1293

• Web site for RCPD: https://www.rcpd.msu.edu/

**Academic Honesty**

You are expected to complete homework checks 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 hese 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.