# **General Information**

Instructor: Derrick Wigglesworth Office: JWB 307 Office Phone: 801-581-8338 Email: derrick.wigglesworth@gmail.com or dwiggles@math.utah.edu Website: http://math.utah.edu/~dwiggles/

**Course Website:** The course website can be accessed through my homepage (listed above). Homework assignments and all course materials will be posted to the website weekly. Additional resources can also be found on the course website.

Office Hours: Mondays 5:00-6:00 PM & Wednesdays 5:00-6:00 PM OR by appointment.

Textbook: Linear Algebra, by David Lay. ISBN: 13-9780321982384.

**Prerequisites:** A "C" or better in one of the following: MATH 2210, MATH 1260, MATH 1280, MATH 1321, or MATH 1320.

**Course Overview:** This course covers matrix theory and linear algebra, emphasizing topics useful in other disciplines. Linear algebra is a branch of mathematics that studies systems of linear equations and the properties of matrices. The concepts of linear algebra are extremely useful in physics, economics and social sciences, natural sciences, and engineering. Due to its broad range of applications, linear algebra is one of the most widely taught subjects in college-level mathematics (and increasingly in high school).

Learning Outcomes: Upon successful completion of this course, students will:

- 1. Solve systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion.
- 2. Carry out matrix operations, including inverses and determinants.
- 3. Demonstrate understanding of the concepts of vector space and subspace.
- 4. Demonstrate understanding of linear independence, span, and basis.
- 5. Determine eigenvalues and eigenvectors and solve eigenvalue problems.
- 6. Apply principles of matrix algebra to linear transformations.
- 7. Demonstrate understanding of inner products and associated norms.

## Teaching and Learning Methods

This class may be structured differently than your previous math courses. I have constructed this course around research-based practices to best help you learn and grow in your mathematical thinking. I would like to be transparent with you about my teaching methods in order to make this course as productive for you as possible.

**Growth Mindset, Making Mistakes, and Failure:** The best mathematicians fail big and fail often. I strive to challenge you to engage with difficult problems in this class. Sometimes you will solve them, and sometimes you will not. In-class assignments are based on effort, not correctness, to encourage problem solving and help you become comfortable with the struggle of growing mathematically. Additionally, I encourage you to focus on growth and improvement. *Mathematics is not an innate ability; it is a skill we learn and refine through hard work and persistence.* For this reason, I will replace a low midterm score with a higher final exam score when the final exam reflects an improved understanding of the material.

Active Learning: Research shows that we retain only around 5% of what we hear in a lecture, compared to 70% of what we practice by doing, and over 90% of what we teach others. In this class we will use a combination of learning strategies, including lecture, discussion, and group problem sessions. The more actively engaged you are in your own learning process, the more information you are likely to retain. I encourage you to help others understand the material, whether by working together on homework or during in-class assignments. This process benefits everyone, but it's especially helpful when you're the one who is teaching.

# **Course Structure & Information**

Grade Policy: The grades will be calculated as follows:

Homework	20%
In-class Assignments	10%
Midterm 1	15%
Midterm 2	15%
Midterm 3	15%
Final Exam	25%

Letter grades will be distributed according to the following scheme: A (100-93), A- (92.99-90), B+ (89.99-87), B (86.99-83), B- (82.99-80), C+ (79.99-77), C (76.99-73), C- (72.99-70), D+ (69.99-67), D (66.99-63), D- (62.99-60), E (59.99-0). I reserve the right to change the grade scheme as I see fit. Any other grade schemes will only be beneficial to your grade as compared to the above standard. You should keep track of your scores on assignments and check that my records agree. I will post grades sheet to Canvas.

#### **Important Dates:**

Last Day to Add	
Last Day to Drop	September 1
First Midterm	September 12
Second Midterm	October 3
Last Day to Withdraw	October 20
Third Midterm	November 10
Final Exam	December 11 6:00-8:00

**Homework:** THE HOMEWORK EXERCISES WILL BE POSTED ON THE COURSE WEBSITE. DO NOT DO THE EXERCISES IN YOUR BOOK UNLESS YOU ARE ABSOLUTELY CERTAIN THEY ARE THE SAME AS THE ONES I HAVE POSTED. There will be one approximately homework assignment per week. Homework assignments will be posted to the course website and will be due in class on the date specified (usually either Monday or Friday). I will not accept late homework. Homewok must be stapled. Homework held together with paper clips, folded edges, tape, etc. will not be graded.

**Food for Thought:** Roughly one day each week, we will spend most of the class time working on a collection of thought provoking problems. These problems will lend themselves naturally to discussion, and students will work in groups to discuss, debate, and ponder. Students will turn in their Food for Thought responses the following class period, and these will be graded for completion. Due dates are posted with the homework due dates. The dates of each Food for Thought are posted in the course schedule, which is available on the course website. Solutions to Food for Thoughts will be posted on the course website after you turn them in. Your lowest Food for Thought score will be dropped. (In other words, you can miss one Food for Thought without penalty.)

### Other Policies & Resources

**Calculators:** I will NOT allow calculators on exams. Calculators or computers may be appropriate for certain homework problems, but be carful not to become dependent on them.

Academic (Dis)Honesty: Academic dishonesty will not be tolerated. If you cheat on a homework, quiz, exam or other assignment, I will give you a zero for that grade. Depending on the severity, I may decide to fail you from the class. In all cases, I will report the incident to the Dean of Students.

Math Tutoring Center: Please don't hesitate to come to my office during office hours or by appointment to discuss a homework problem or any aspect of the course. You also may want to consider the Math Department Tutoring Center located in LCB 155. Information is available at: http://www.math.utah.edu/ugrad/tutoring.html. If you want to hire a private tutor, you can contact University Tutoring Services in 330 SSB. There is also a list of tutors in the Math Department Office (JWB 233).

Veteran's Center: If you are a student veteran, the University of Utah has a Veterans Support Center located in Room 161 in the Olpin Union Building. Hours: M-F 8-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources: http://veteranscenter.utah.edu/. Please also let me know if you need any additional support in this class.

LGBT Resource Center: If you are a member of the LGBT+ community, I want you to know that my classroom is a safe zone. Additionally, the University of Utah has an LGBT Resource Center on campus. They are located in Room 409 in the Olpin Union Building. Hours: M-F 8-5pm. You can visit their website to find more information about the support they can offer, a list of events through the center and links to additional resources: http://lgbt.utah.edu/. Please also let me know if there is any additional support you need in this class.

Addressing Sexual Misconduct: Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

**University Attendance Policy:** Students are expected to attend classes regularly. An excessive number of absences may result in failing my course.

**Students with Disabilities:** The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Access, 162 Olpin Union Building, 581-5020 (V/TDD). CDA will work with you and the instructor to make arrangements for accommodations.

All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.

#### **Other Policies:**

- 1. I do not allow the use of computers in my classroom.
- 2. There will be no retakes of exams. Ever.
- 3. You may take an alternate exam if you talk to me about it first and explain the extenuating circumstances. It is your responsibility to communicate with me as soon as possible, *before* the exam occurs. I reserve the right to make the alternate exam more difficult than the scheduled exam.
- 4. If you have circumstances which require flexibility, it is *your* responsibility to communicate with me as soon as possible. The longer you wait, the less willing I am to be accomodating.
- 5. If you have questions about or problems with an exam grade, you must bring them to my attention within one week of recieving your exam.
- 6. I will not offer any extra credit at the end of the semester or any other means for you to improve your grade at that time.

**Disclaimer:** I reserve the right to alter these policies at any time as I see fit. If such changes are made, I will notify the class via email and post the updated syllabus to the course webpage.