

Math 265: Linear Algebra

Instructor: Danny Lara

Winter 2019

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Class Hours: M-F 1:00pm-1:50pm
Class Room: Samuelson 102

Office Hours: M-Th 2:00pm - 3:00pm
Office: 218A

Course Description

Linear algebra is the study of multivariate linear systems and transformations. This is a fundamental course that is important in pure mathematics, applied mathematics, the sciences, and computing. It is a necessary course for any STEM student. The learning outcomes of the course are as follows.

- Formulate, solve, and apply properties of linear systems.
- Understand what equivalent forms are and be able to apply them to solve linear systems.
- Recognize and be apply statements regarding invertible matrices, pivot positions, and solutions of homogeneous systems.
- Perform fundamental matrix operations and row/column operations in terms of matrix operations.
- Know and apply the axioms of a vector space (over \mathbb{R}) to determine whether or not a set with a given operation is an \mathbb{R} vector space.
- Determine a basis and the dimension of an \mathbb{R} vector space.
- Translate information between the context of a system of linear equations, coefficient of matrices, and the domain and range of a linear transformation.
- Find eigenvalues and eigenvectors of a matrix.
- Find a basis for the Null Space of a given matrix.

- Find a basis for the Eigenspace for a given value of a given matrix.
- Solve problems that require the use of eigenvalues and eigenvectors.

Textbook

- Alayont, F. & Schlicker, S. (2019). *Linear Algebra and Applications: An Inquiry-Based Approach*. This free and open-source book is available for download on the course Canvas page
- You can find supplementary books [here](#) as well as other open textbook for other courses such as abstract algebra, topology, analysis, and so on.

Mastery Based Grading

Part of this course is graded by a methodology called Standard Based Grading. There are 8 Required Standards and 8 Optional Standards. Each standard will be measured by a short quiz called an evaluation. Rather than receiving a numerical score, you will receive a rating.

- (E) Excellent. You have mastered this topic. Congratulations!
- (M) Meets Standards. You have a strong potential to master the topic.
- (NY) Not yet. You have not performed well enough to receive credit for this standard.

One key aspect of this system is constant reassessment. You will have multiple opportunities to re take these assessments. This system rewards **growth**.

Required Standards

1. We will take at least 6 days during the semesters to take evaluations. You can take multiple evaluations during any given day. Most of the questions will be homework inspired.
2. You may retake any Required Standard during office hours or on another eval day as many times as you wish.
3. You may retake any evaluations during the final exam period. This is the last day to retake any evaluation of any kind.

Graded CourseWork

You must at least pass 4 standards with an E rating to obtain a C in the course. These 8 topics are fundamental and should be mastered by all students. You have multiple opportunities to grow and meet these standards! Now you have to earn your A.

Optional Standards (1 point each)

There are 8 Optional Standard quizzes. Each Optional Standard is worth 1 point for an (E) rating and .50 points for a (M) rating. They may be taken in class or at home. They will be posted on canvas.

Homework (2 points)

Homework is assigned daily. Keep all of your homework and turn it in at the end of the semester.

Presentations (3 points)

As future teachers, professors, scientist, workers in industry, communicating your ideas effectively is an important tool. You can present a challenging problem from your homework, a topic we didn't cover in class, an application of a topic to your field of interest, or anything that is related to the course. They should be around 20 mins. We will take time during the last week of classes for presentations.

Participation and Professionalism (1 points)

As a member of a peer learning community, a high degree of professionalism is necessary. That is, be present, prepared, and ready to learn. Participation is graded based upon attendance, group work participation, mini presentations, discussing your ideas with your peers, and so on.

Challenge Problems (4 points)

There will be 4 proofy based questions due during finals week. Each is worth a point.

Grading Policy

Below is the grading chart. Note that there are multiple ways to build your points.

Letter Grade	# of Required Eval	Points
A	8 at E	≥ 7
A -	8 at E	≥ 6
B+	8 at E	≥ 5
B	8 at E	≥ 4
B -	8 at E	≥ 3
C +	6 at E and 2 at M	≥ 2
C	4 at E and 4 at M	≥ 1

Grade	# of Standards (any) at M
C -	7
D+	6
D	5
D-	4

Accommodations

I am understanding of the need to set up academic adjustments due to disabilities. Bring a copy of your *Confirmation of Eligibility for Academic Adjustments* to set up proper accommodations. If you need testing accommodations, let me know ahead of time (at least 48 hours prior to the exam date). Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.

Student Expectations

As a student, you have certain expectations of me. These expectations include coming prepared for lectures, showing up to class on time, be knowledgeable in the course material, be respectful, listen to your concerns, receive timely feedback on your work, and to be understanding of your academic life outside our class. In exchange, I expect you

- show up to class on time
- show mutual respect between your peers
- turn in your homework and quizzes on time

I understand that life happens. You may turn in one late assignment, no questions asked, during the semester.

Excused absences will not lower your overall grade in this class and are determined on a case-by-case basis. Excused absences are those that are both valid and verifiable, e.g. illness, bereavement, and school-related activities. Documentation is required. Excused

absences do not include travel for holiday breaks, work, or non-emergency travel delays.

In compliance with RCW 28B.137.010, Central Washington University makes every effort to deal reasonably and fairly with students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Students must present written notice to their instructor within the first two weeks of class listing the specific dates on which accommodations are required. Contact the Dean of Student Success at (509) 963-1515 for further information or questions.

Professionalism

As a member of a peer learning community, a high degree of professionalism is necessary. CWU expects every member of the university community to contribute to an inclusive and respectful classroom culture.

Academic Honesty

Consult university policies (CWUP 5-90-040(22), CWUR 2-90-040(22), and WAC 106-125-020) for student conduct, cheating, plagiarism, and other academic expectations. CWU's policies and recommendations for academic misconduct will be followed, leading to disciplinary action up to and including failing the course.