
Professor: Dr. Chris Black
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Required *Linear Algebra and Applications: An Inquiry-Based Approach*, Alayont & Schlicker, 2019.
Text: Available as a free pdf download from the course canvas page.

GOALS FOR COURSE:

Upon completion of MATH 265, students will be able to:

- solve systems of linear equations;
- perform basic matrix operations;
- determine and use vector space properties;
- translate information between the context of systems of equations, coefficient matrices, and the domain and range of a linear transformation;
- solve problems requiring the use of eigenvalues and eigenvectors.

COURSE PHILOSOPHY:

Linear algebra is of fundamental importance in all fields of higher mathematics and in nearly all applications of mathematics, particularly those involving technology. At its core, linear algebra is a study of structure. The primary concept in the course is that of a *vector space*, which is a set of objects that act like vectors in two or three (or higher) dimensional Euclidean space. Many of the calculations in linear algebra can be facilitated through the use of technology, such as TI-89 (or above) calculators or computer algebra systems such as MATLAB or Mathematica. However, we will NOT emphasize the use of technology in this course, but instead rely on pencil and paper calculation.

PROBABLE COURSE TOPICS:

- ▷ Matrices and systems of equations
- ▷ Determinants
- ▷ Linear transformations
- ▷ Eigenvectors and eigenvalues
- ▷ Vector spaces and subspaces

A NOTE ON VOCABULARY:

Perhaps more than any other course in the mathematics curriculum, linear algebra is swimming in new vocabulary terms. It is crucial that you keep up with the new vocabulary words, and understand what they mean. According to Vygotsky's theory of language acquisition, *thought is not merely expressed in words; it comes into existence through them*. Without mastery of the vocabulary, you cannot fully comprehend the depth of linear algebra. Pay special attention to new terms as they arise.

HOMEWORK:

Homework for this course will be carefully handwritten and uploaded electronically through Canvas. There is one assignment for each section of material in the course (15 sections). Either one or two sections of homework will be submitted each Monday by 5:00 pm. The lowest score of the 15 assignments will be dropped. The 14 remaining homework assignments count for 30% of the course grade.

Due to the hybrid nature of this course, we do not have a lot of class time to devote to answering homework questions. Be sure to send your questions to me via email so we can get them addressed.

IN-CLASS TESTS:

We will have in-class tests during the quarter, as specified on the course schedule; the third of these tests will take place during finals week. The tests will be administered in person during class time. If you need to miss a test for a school-sponsored event such as a field trip or participation in sports, a make up test will only be offered if arranged in advance. Otherwise, no make-up tests will be given unless you can provide documentation for an extenuating circumstance such as hospitalization or incarceration. The three in-class tests make up 45% of the course grade.

FINAL EXAM:

There is no cumulative 2-hour final exam in this course; we will use our time during finals week to take our third in-class test. By the nature of linear algebra, the third test contains content from the entire course.

PROJECT:

Each student in the course will work on an individual project related to linear algebra. Projects will be introduced during the last few weeks of the quarter, once we have built up enough content knowledge to dig into some interesting scenarios. More information about the projects will be distributed in class. The project, due during finals week, makes up 10% of the course grade.

VIDEO CHECKS:

Half of the instruction in this course takes place in the classroom, and half takes place independently and asynchronously online. For each section of material, you will watch 1-4 short videos before class to prepare for the day's lesson. Each video comes with a short 5-point "video check" quiz that must be completed by 7:30 am the day we will be engaging with that section's content in class. The video checks account for 10% of the course grade.

PARTICIPATION & ATTENDANCE:

We will be engaging in active learning in this class, meaning that our in-person time will primarily be spent working together on problems. You are expected to be awake, alert and attentive during class, and to participate in group or pair activities as they arise. You can't benefit from this experiential learning if you are not present. Participation & attendance make up 5% of the course grade.

GRADING:

Homework Assignments:	30%
In-Class Tests:	45% (3 of these)
Project:	10%
Video Checks:	10%
Participation & Attendance:	5%

HOW TO SUCCEED IN THIS COURSE:

Daily attendance is expected and considered necessary for success. If you need to miss class for some reason, it is your responsibility to find out what occurred in class while you were absent, from either another student or the professor. You are responsible for any announcements made in class regarding assignments and tests, whether or not you are present.

During class, you are expected to be alert and engaged. We will often do individual or group work during class, which clarifies or strengthens your understanding of the material. You are expected to work cooperatively with others, and to possibly explain your work to the class.

Keep in mind that half of the instruction for this course happens outside of class time. Be sure that you're watching the pre-work videos and working carefully through the video checks. A successful student will seek help immediately when things get murky – and things will get murky in this course.

All work handed in for the courses must be legibly written with correct mathematical notation and sufficient explanation that another student could follow your reasoning. A complete explanation is required to receive full credit on exams.

CONTINUING ADAPTATIONS FOR ACADEMIC YEAR 2021-22 (READ ME!!):

Due to the COVID-19 pandemic, the following policies are in effect:

- To the extent that it is possible, please stay in touch with me if COVID-19 affects your ability to do the work in this course.
- If you have been affected by COVID-19, homework will be accepted late. There is a due date on the schedule, but any work can be completed for full credit until the day of the final exam.
- Any test can be rescheduled as needed – just ask! When possible, ask before the day of the scheduled event, but due to the extraordinary circumstances we're living under right now, all requests will be honored. You are welcome to request to take a test either earlier or later than is listed on the course schedule – just let me know so I can make the necessary arrangements.

Remember to be kind to yourself and try to keep ahead of due dates, but that we can make arrangements as needed.

MENTAL AND EMOTIONAL HEALTH AND SUPPORT:

Stress and other life circumstances that may be out of your control can make learning and focusing difficult. If you find stress or other mental health concerns make academics difficult, Central has resources to support you. I encourage you to reach out as soon as you notice you're struggling.

- Student Counseling Services: Crisis appointments are available. Call 509-963-1391
www.cwu.edu/medical-counseling/counseling-clinic
- Mental health crisis support outside of normal business hours: Call 1-800-273-8255 or Text HOME to 741741
- Wellness Center: Confidential sexual assault and other victim advocacy. Call 509-963-3213 or visit www.cwu.edu/wecare, www.cwu.edu/path

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. See <https://apps.leg.wa.gov/WAC/default.aspx?cite=106-125> and <https://www.cwu.edu/resources-reports/cwur-2-90-040-academic-and-general-regulations#Grade%20Appeals>

DISABILITY SERVICES:

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations: Hogue Hall 126, 509.963.2214, DS@cwu.edu.

ACCOMMODATION FOR RELIGIOUS OBSERVANCES:

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.

STATEMENT ON DIVERSITY:

CWU expects every member of the university community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and at campus events. As a student in this course, you are expected to treat your professors, fellow students, and other people affiliated with your work at CWU with respect, regardless of their sex, race and color, religion and creed, national origin, sexual orientation, gender identity and gender expression, disability and use of assistive devices or a service animal, and veteran or military status.

EXPECTATIONS FOR STUDENT CONDUCT:

Students in this class are expected to interact with students and the professor professionally. Instances of disruptive conduct, obstructive conduct, or harassment (see definitions below from the Washington Administrative Code) will be referred to the Dean of Student Success.

Per WAC 106-125-020, the term “disruptive” or “obstructive” conduct means conduct, not protected by law, that interferes with, impedes, or otherwise unreasonably hinders the normal teaching, learning, research, administrative, or other functions, procedures, services, programs, or activities of the university. The term includes disorderly conduct, breach of the peace, violation of local or university noise policies, lewd or obscene conduct, obstruction of pedestrian or vehicular traffic, tampering with student election processes, or interfering with the orderly conduct of university investigations or disciplinary proceedings, including interfering with or retaliating against any witness, party, or other participant.

The term “harassment” means unwelcome and offensive conduct, including verbal, nonverbal, or physical conduct, that is directed at a person because of such person’s protected status and that is sufficiently serious as to deny or limit the ability of a student to participate in or benefit from the university’s educational program, or that creates an intimidating, hostile, or offensive environment for any campus community member(s). Protected status includes a person’s actual or perceived race, color, national origin, gender, disability, or other status protected by law.

I retain the right to change the policies contained in this syllabus as dictated by developments during the quarter.