

Math 100-05: Mathematical Reasoning

Fall 2021

Instructor: Benjamin Trowbridge

Email: benjamintrowbridge@csus.edu or Canvas

Class Meeting: MWF 12:00pm-12:50pm

Meeting Location: <https://csus.zoom.us/j/83750394707>

Student Hour: MTWTh 3:00pm-3:50pm

Student Hour Location: Shasta 150 or <https://csus.zoom.us/j/6331087429>

Catalog Description

Linear algebra and its elementary applications. Topics: Matrix algebra; simultaneous linear equations; linear dependence and vector spaces; rank and inverses; determinants; numerical solution of simultaneous linear equations; linear transformations; eigenvalues and eigenvectors; *unitary and similarity transformations*; *quadratic forms* (italicized items not to be covered in this course). **3 Units.**

Prerequisites: MATH 26B or MATH 31

Course Objectives

- Understand the connection between matrices and linear functions.
- Understand the representation of linear transformation as matrices.
- Understand and apply definitions of subspace, spanning set, linearly independent set, basis, and dimension, and be able to generalize to a general vector space.
- Define and find the determinant of a matrix, and the eigenvalue and eigenvector of matrices and linear transformations, and use them for various applications.

Textbook

The textbook we will be working out of is “Linear Algebra and Its Applications” (4th edition) by David C. Lay. This is an older edition of the textbook so it should be cheaper and easier to find if you want to have the textbook. You will notice that this textbook is only recommended as I will be providing the notes and assignments necessary for the course. However, the textbook has many examples that we won’t be able to get to during class, and will be helpful for those of who prefer to read through topics.

Assignments

You will be given assignments weekly. These will consist of online submissions. Homework will be due by the start of class on the day that it is due. Late homework will **ONLY** be accepted if you contact me by midnight the day before it is due. Life happens, but you need to let me know.

Quizzes

Quizzes will be given weekly throughout the term and will be administered and submitted online. The purpose of quizzes will be to let both you and the instructor know where you stand in the class in terms of understanding the material. Any quiz given will be based on the topics from the week before. Quizzes also give you an idea about the kinds of questions you will see on Exams. Quizzes can never be made up without prior notification.

Exams

There will be 3 exams (including the cumulative final exam) in this course. Exam dates will be announced in class. Expect to have exams in Week 5, Week 11, and during Finals week. Exams will be administered and submitted online. Exams will be made available as a timed quiz on Canvas on the day of the Exam. You will be able to start the exam any time on test day, but it will be due by midnight of the Exam day.

Note: Makeup exams may not be given. If you know that you must miss a class when an exam is to be given, please give me advance notice. Exam dates are subject to change.

Attendance

I do not require class attendance but you are responsible for material presented in class and all announcements made in class. Also, if you miss class, you will NOT be able to makeup any groupwork done that day. Your contributions are a valuable part of this course. To make the most of your learning experience, it is important that you participate in each class session and that you prepare for class discussions by doing the assigned work.

Grade Breakdown

Assignment	% of Grade
Homework	40%
Quizzes	15%
Exams	25%
Final	20%

Grade scale

93 – 100% A	77 – 79% C+
90 – 92% A –	73 – 76% C
87 – 89% B+	70 – 72% C –
83 – 86% B	60 – 69% D
80 – 82% B –	0 – 59% F

Respect

Keep in mind that we are in a diverse setting with students who come from all different backgrounds. You will be respectful and fair to each other, or you will be asked to leave the classroom. Please let me know in private if you feel that I have been disrespectful or unfair as well.

Math Lab

If you find yourself struggling in the course, or just want to get a firmer grasp of the material, then I recommend getting help early and often. One free resource available to you is the Math Lab in Brighton Hall, Room 118. They will be open for in-person tutoring from 9am - 5pm, and will also be available through Zoom at csus.zoom.us/my/csusmathlab.

Cheating and Academic Honesty

As a class, we form a community of scholars. We must be committed to a culture of honesty in which the members of the community accept responsibility to uphold academic integrity in all they say, write, and create. The value of our scholarly endeavors is undermined by anyone who chooses to ignore the foundational principle of academic honesty. If I suspect you have cheated by using technology, sharing answers, googling answers, or using anything other than your own brain on an assessment, you will receive a zero. Academic dishonesty is never tolerated.

Tips for Using Zoom and Netiquette

Even though we will be learning in a virtual environment, you are still expected to communicate with me and your classmates as effectively as possible inside and outside of the Zoom meeting. You are HIGHLY encouraged to have your cameras on during class and be ready to communicate both verbally and in the chat. This helps us connect as a class, a scholarly community, and also as human beings. Below are some tips to help you effectively communicate in class and some basic etiquette rules for being in a virtual environment.

- **IDENTITY:** Identify yourself by your real name. Be mindful of your personal safety, and avoid including personal information in chat or forums. When you log on, click the three dots on the upper corner of your video and select 'rename' to change your name (if needed) and add your pronouns. For example, Sean (she/her/hers). You can use a virtual background if you like.
- **MUTING:** When you log on you will be muted. However, I want to hear your voice! Verbal communication is still the most effective and quickest way to answer questions and clarify ideas. Remember to click the unmute button when you want to speak, and then mute yourself when you are done talking.

- **CHAT:** Use the chat feature to pose questions/comments to me or the group. You can answer these too! You can also use chat to send me private messages if you wish to make a comment or ask a question anonymously. However, don't be afraid to also respond to my comments verbally. A lot of time can be wasted waiting for you to respond in the comments.
- **NON-VERBAL REPLIES:** You can raise a hand, give thumbs up or thumbs down, clap, slow down, etc.
- **PERSONAL BEHAVIOR:** Remember that when your camera is on, you can be seen! Don't do anything that you wouldn't do in a regular classroom. Dress appropriately.
- **RECORDINGS:** Our class meetings are automatically recorded and uploaded to the cloud for your reference later. Only people who speak on Zoom will be shown in those recordings. Break-out sessions do not get recorded. Participants cannot record without my permission, which will never be granted.

OTHER NETIQUETTE:

- What you write is public — respect your audience and be mindful of proper netiquette. Netiquette, also known as 'net etiquette,' includes using language free of profanity, proper tone and mechanics (including full sentences), as well as courtesy and respect for others' opinions. Instructors may interpret breaches of netiquette as "disruptive behavior."
- Write in the first person (this is your opinion).
- Use humor, joking, or sarcasm with caution. We often rely on non-verbal cues such as facial expressions to communicate joking or sarcasm, but these cues are not always clear in an online environment.
- Challenge others with the intent of facilitating growth. Do not demean, harass or embarrass others.

Service to Student with Disability (SSWD)

Sacramento State is committed to ensuring an accessible learning environment where course or instructional content are usable by all students and faculty. If you believe that you require disability-related academic adjustments for this class, please immediately contact Services for Students with Disabilities (SSWD) to discuss eligibility. A current accommodation letter from SSWD is required before any modifications, above and beyond what is otherwise available for all other students in this class will be provided.

www.csus.edu/student-affairs/centers-programs/services-students-disabilities/

Student Health and Counseling Services (SHCS)

Your physical and mental health are important to your success as a college student. Student Health and Counseling Services (SHCS) in The WELL offers medical, counseling, and wellness services to help you get and stay healthy during your time at Sac State. SHCS offers: Primary Care medical services, including sexual and reproductive health-care, transgender care, and immunizations; urgent care for acute illness, injuries, and urgent counseling needs; pharmacy for prescriptions and over-the-counter products; mental health counseling, including individual sessions, group counseling, support groups, mindfulness training, and peer counseling; athletic training for sports injury rehabilitation; wellness services, including nutrition counseling, peerled health education and wellness workshops, and free safer sex supplies; violence and sexual assault support services. Most services are covered by the Health Services fee and available at no additional cost.

www.csus.edu/student-life/health-counseling/

Crisis Assistance & Resource Education Support (CARES)

If you are experiencing challenges with food, housing, financial or other unique circumstances that are impacting your education, help is just a phone call or email away. The CARES office provides case management support for any enrolled student.

www.csus.edu/student-affairs/crisis-assistance-resource-education-support/

If you need access to help, Sac State has a ton of services including, but not limited to:

- Martin Luther King Jr. Center
www.csus.edu/student-affairs/centers-programs/mlk-scholars/
- Dreamer Resource Center
www.csus.edu/student-affairs/centers-programs/dreamer-resource-center/
- Multicultural Center
www.csus.edu/student-affairs/centers-programs/diversity-inclusion/multicultural-center.html
- Pride Center
www.csus.edu/student-affairs/centers-programs/pride-center/
- For additional resources, you can find links on this website:
webpages.csus.edu/wiscons/more/SacStateCampusResources.html