Math 100 – 01 (Course # 34269) Orientation Spring 2023

Instructor: Martin Hauser
Time: MWF 8:00 am - 8:50 am, Brighton 104
Final Schedule: Monday, May 15, 8:00 am - 10:00 am
Office Hours: MWF 11-11:50 am in Brighton Hall 141
email: martinlh@saclink.csus.edu
Text: *Linear Algebra and its Applications*, 6th edition, by David Lay

Note: In the event a faculty member is not available during the semester for whatever reason, students will be contacted and advised how the course will proceed. This may include a change in instructor and/or modality.

Title: Applied Linear Algebra

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. Note: May not be taken for credit toward a mathematics major. Prerequisite: Math 26B or Math 31.

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Learning Objectives:

- Understand Gaussian elimination method and use this method to solve *m* x *n* systems of equations, and to interpret the solution.
- Understand the representation of linear transformation as matrices, interpret the elementary matrices as linear transformations, find the matrix representation of expansions, contractions, translations, rotations, reflections, understand the relationship between Gaussian elimination and the elementary matrices, and use elementary matrices to find the inverse of an $n \times n$ matrix.
- Understand and apply the definitions of a subspace, a spanning set, a linearly independent set, a basis, and dimension to $\mathbb{R}^2$ and $\mathbb{R}^3$, understand the connections between these concepts, and generalize these ideas to general vector spaces.
- Find the kernel and range of a linear transformation, understand the relationship between the dimension of the kernel and range, find the eigenvalues and eigenvectors of a linear transformation and use the eigenvectors to diagonalize an *n* x *n* matrix.

Homework: Homework, Solutions, and Supplementary Course Materials

MyLab: We will use the online homework system MyLab for homework assignments. No special software is needed, just an internet connection and browser. You can enroll yourself and access the eBook and homework through the course Canvas site.

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Those who want a print copy may purchase a loose-leaf copy from within MyLab. Click on the "Purchase Options" link menu and follow the prompts from there.

You will have free trial access for the first week or so. After that you will be required to purchase an access code (which ***may*** come bundled with the text that you bought, so check before buying the access code). Homework will be collected during dead week.

***Late homework will not be accepted without prior approval*!**

Writing Component

Every student is expected to complete story problems and case studies that develop the key concepts of the course. In addition, several assignments, possibly involving the use of technology, will require interpreting the results of analyses using technical and non-technical language.

Examinations

There will be three midterm examinations, occasional quizzes, and a *comprehensive* final examination. It may be necessary to schedule a quiz or midterm during dead week. The final will be given at the officially designated time. Check your schedule now; if you have multiple finals on the same day as the final for this class, you should talk to me.

Grading

The grade you earn will be a weighted average of your scores on the components below:

Component	Weight
Homework/Quizzes	20%
Midterms (3)	50%
Final Exam	30%

If you feel that you are too ill to complete an assignment or take an exam, email me as soon as possible describing your condition, what medical appointments you've made, etc., and we will make alternative arrangements for you to complete the work. Contact Student Health & Counseling Services (SHCS) at 916-278-6461 or your doctor to receive guidance and/or medical care. It is your responsibility to communicate with me in a timely manner, document your situation if requested, and follow through with alternative appointments, etc.

Final Grades: The course grade cutoffs as follows: Grades of +/- will be awarded at the discretion of the instructor.

- A: 90-100%
- B: 80-89%
- C: 65-79%
- D: 50-64%
- F: Below 50%

Drops

Drop schedules will be determined by the university. It is *your* responsibility to be aware of and understand policies for adding and dropping classes! Check https://www.csus.edu/college/natural-sciences-mathematics/mathematics-statistics/_internal/docs/drop-policy.pdf for the current drop policies.

Attendance

You are expected to attend class regularly. If, for some reason, you are unable to attend, you are responsible for material presented in class (whether or not it is covered in the text), and all announcements made in class.

Calculators

You should own a calculator that is capable of doing basic calculations. Graphing calculators, such as the TI-84 and TI-89, are recommended, but cannot be used on exams. Cell phones should be turned off in class and on exams. All work on exams must be accompanied by appropriate derivations to receive credit.

Course Policies

Work should reflect your own effort, and a copy of another's work will not be accepted for credit. Academic integrity is of utmost importance to me. I will not hesitate to assign an "F" to students who are cheating. Cheating incidents will also be reported to the Dean of Student Affairs. If you wish to talk to me, I am available during my office hours in room Brighton Hall 231, and at other times by appointment.

Commit to Study: The Commit to Study (C2S) program provides students with a safe, non-judgmental environment where they can work on their study skills with their own personal peer mentor. Peer mentors are undergraduate students, just like you, who know what it's like to be a stressed student and who are trained to help all students reach their full potential. Here is a link to C2S: https://www.csus.edu/college/natural-sciences-mathematics/center-science-math-success/commit-study.html

Math Lab: The Math Lab in Brighton 118 is open for both in-person and online assistance this semester. (Go to csus.zoom.us/my/csusmathlab for help online.)

- Services to Students 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."

- Student Health and Counseling Services

"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 healthcare, 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."

- 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.

Covid-19: An FAQ of university policies concerning the return to face-to-face instruction can be accessed at https://www.csus.edu/academic-affairs/academic-continuity/specific-faq.html

Peer Academic Resource Center: https://www.csus.edu/student-affairs/centers-programs/peer-academic-resource/

Campus Resources PDF (Open to View)

Student Resources Handout.pdf

https://csus.instructure.com/courses/74723/modules links to an interactive list of additional resources.

An updated list of resources: This includes newer information on resources listed above.

- A Short List of Campus Resources https://webpages.csus.edu/wiscons/more/SacStateCampusResources.html
- A Short List of NSM Resources https://webpages.csus.edu/wiscons/more/SacStateNSMResources.html