Title: Linear Algebra

Credit Hours: 4 (Students may not receive credit for both Math 18 and 31AH.)

Calendar: https://mathweb.ucsd.edu/~asuk/math18sp24.html

Prerequisite: Math Placement Exam qualifying score, or AP Calculus AB score of 3 (or equivalent AB subscore on BC exam), or SAT II Math Level 2 score of 650 or higher, or Math 4C, or Math 10A, or Math 20A, or consent of instructor.

Catalog Description: Matrix algebra, Gaussian elimination, determinants, linear and affine subspaces, bases of Euclidean spaces. Eigenvalues and eigenvectors, quadratic forms, orthogonal matrices, diagonalization of symmetric matrices. Applications. Computing symbolic and graphical solutions using MATLAB. See the UC San Diego Course Catalog.

Textbook: *Linear Algebra and its Applications* (6th Edition), by David C. Lay, Steven R. Lay, and Judi J. McDonald; published by Pearson (Addison Wesley).

Subject Material: We will cover parts of Chapters 1-7 of the text.

Lecture: Attending the lecture in-person or viewing the lecture podcast, is a **fundamental** part of the course; you are responsible for material presented in the lecture *whether or not it is discussed in the textbook.* You should expect questions on the exams that will test your understanding of concepts discussed in the lecture.

Discussion Sections: Discussion sections will be highly interactive. You will work in small groups on concept check and challenging exercises, to cement your understanding of core ideas from the course, and build a community of learning in this large class.

Homework: Homework is a very important part of the course and in order to fully master the topics it is essential that you work carefully on every assignment and try your best to complete every problem. Weekly homework is assigned through MyLab, accessible in Canvas. Unless otherwise stated, you have unlimited attempts on each homework problem: after three incorrect attempts, you will be offered a "Similar question" which is the same problem but with different numbers. All problems completed before the due date will receive full credit. You may continue to work on problems you did not complete before the deadline, for 50% credit until the last day of instruction. Your

total homework score will be based on all the total possible homework points available; no homework assignment scores will be dropped at the end of the quarter.

MATLAB: In applications of linear algebra, the theoretical concepts that you will learn in lecture are used together with computers to solve large scale problems. Thus, in addition to your written homework, you will be required to do homework using the computer language MATLAB. The Math 18 MATLAB Assignments page contains all information relevant to the MATLAB component of Math 18. **No late MATLAB assignments will be accepted.** However, the lowest MATLAB assignment score will be dropped. **There will be no make-up MATLAB quiz.**

Exams: The midterm exams and final exam are scheduled for the Friday of Week 4, the Friday of Week 7, and the first Saturday of exam week; see above for details. The midterms and the final exam are planned to take place **in-person**; this may change depending on UC San Diego policy and the public health situation at the time. More information will follow closer to these exams about precise logistics and policies.

Collaboration Guidelines: You are allowed and even encouraged to collaborate with other students in the MyLab homework and MATLAB assignments. It is up to your own best judgment to make sure you are learning the material through those collaborations. **No collaboration is allowed on the MATLAB quiz or exams**. Moreover, **"homework assistance" online sites such as Chegg are NEVER allowed for use in this class** on homework, the MATLAB quiz, or exams. Any use of Chegg or similar services will be considered serious Academic Integrity violations.

Academic Integrity: In this course, and in your life as a UC San Diego student, we expect you to Excel with Integrity, and to adhere to the UC San Diego Integrity of Scholarship Policy.

Why? Math 18 is a core, foundational course for a wide variety of other mathematics, engineering, and physical science courses. This class is designed to aid your mastery of this important material, for its own sake and for the sake of your learning in all the further courses that rely heavily upon it. Every course component in Math 18 is formulated to cement your understanding, verify what you've mastered, and let us and you know where you need to prioritize your time and energy reviewing. **All of our course policies around academic integrity are meant to make sure you are getting the best, most accurate information about your learning in this course.** Any students who choose to violate our integrity policies are not just being unfair to their peers; they are ultimately cheating themselves out of a solid foundation in linear algebra.

That means we're all in this together and we actually want the same thing. You, your peers, and the instructional team all want a class that has academic integrity. We want to be able to trust one another, and we want grades to be fair and honest reflections of learning. How can you ensure this type of environment is created in Math 18? Here are some specific examples:

- Do not use, or post to "homework help" services such as Chegg. Do not post solutions to homework, the MATLAB quiz, or exam problems in any public forum (such as Piazza).
- Do not collaborate on or copy the MATLAB quiz or exams. (There will be specific instructions about what that means in an Academic Integrity Pledge at the beginning of the MATLAB quiz or exam.)
- Do not use any apps or sites that do the math for you, or connect you with people who will do the math for you. This will not aid in your learning.
- Do not attempt to search for solutions to homework, the MATLAB quiz, or exam problems online or in sources outside of the course content. If you accidentally stumble upon a publicly available solution, you should notify your TA and instructor.

We are aware that the temptation to inappropriately collaborate, or use disallowed resources, is especially high right now during this period of remote/hybrid instruction. We urge you to remember that your integrity is worth more than any advantage you might hope to gain. We will (unfortunately) have to use all tools at our disposal to detect any academic integrity violations, for which there is a zero-tolerance policy. Penalties for these offenses always include assignment of a failing grade in the course, along with administrative sanctions, including up to suspension and dismissal from UC San Diego. Both failing grades and the administrative penalties could impact your ability to get into a capped major or be admitted into graduate or professional schools. Maintain your integrity, and don't risk major consequences to your career at UC San Diego and beyond.

Grading Policies: Final grades will be calculated as the **maximum** of the following two grading schemes:

- **5% MATLAB Assignments**
- **5% MATLAB Quiz**
- **20% MyLab Homework**
- **20% Midterm Exam 1**
- **20% Midterm Exam 2**
- **30% Final Exam**

or

- **5% MATLAB Assignments**
- **5% MATLAB Quiz**
- **20% MyLab Homework**
- **30% Best Midterm Exam**
- **40% Final Exam**

Missed exam policy: There will be no make-up midterm exams; however, by design, the lowest midterm exam grade will be dropped. Nevertheless: you should make every effort to take the exams; this policy is meant only to accommodate true emergencies.

If you have a conflict with the scheduled final exam time, you should not enroll in Math 18 this quarter. If an unexpected emergency or crisis prevents you from attending the final exam at the end of the quarter, and **if you are in passing standing** in the class at that time, you may be eligible for an Incomplete grade that will allow you to take the final exam at a later date. The circumstances under which Incompletes can be granted are tightly controlled by the university.

Here are two links regarding UC San Diego policies on exams:

- Exam Responsibilities An outline of the responsibilities of faculty and students with regard to final exams
- Policies on Examinations The Academic Senate policy regarding final examinations (These are the rules!)

Regrade Policy: Your MyLab homework and the MATLAB quiz will be autograded; your exams and MATLAB homework will be graded using Gradescope

Links to an external site.

. If you find errors in the grading of your written work, you will have an opportunity to request a regrade through Gradescope. A regrade window will open the day after the scores are posted, and it will stay open for one week for each midterm and a few days for the final (depending on how quickly the exam is graded). During this time window you will be able to leave careful, thoughtful comments about where you feel a grading error was made. No regrade requests will be considered after the specified window

closes. Please note: **any regrade request may result in regrading of the entire assignment, and your overall score could go up or down**.

Administrative Deadline: Your scores for all graded work will be posted in Gradescope and in Canvas. It is your responsibility to check your scores and contact your TA ***before the end of Week 10*** to resolve recording errors. Questions regarding missing or incorrectly recorded scores ***will not be considered after the last day of instruction***.

Equity, Diversity, and Inclusion: We are committed to fostering a learning environment for this course that supports a diversity of thoughts, perspectives, and experiences, and respects your identities, including race, ethnicity, heritage, gender, sex, class, sexuality, religion, ability, age, educational background, etc. Our goal is to create a diverse, inclusive, and empowering learning environment where all students feel comfortable and can thrive.

Our instructional staff will make a concerted effort to be welcoming and inclusive to the wide diversity of students in this course. If there is a way we can make you feel more included please let one of the course staff know, either in person, via email/discussion board, or even in a note under the door. Our learning about diverse perspectives and identities is an ongoing process, and we welcome your perspectives and input.

We also expect that you, as a student in this course, will honor and respect your classmates, abiding by the UC San Diego Principles of Community. Please understand that others' backgrounds, perspectives and experiences may be different than your own, and help us to build an environment where everyone is respected and feels comfortable.

If you experience any sort of harassment or discrimination, please contact the instructor as soon as possible. If you prefer to speak with someone outside of the course, please contact the Office of Prevention of Harassment and Discrimination.

Students with Disabilities: We aim to create an environment in which all students can succeed in this course. If you have a disability, please contact the Office for Students with Disability (OSD), which is located in University Center 202 behind Center Hall, to discuss appropriate accommodations right away. We will work to provide you with the accommodations you need, but you must first provide a current Authorization for Accommodation (AFA) letter issued by the OSD. You are required to present your AFA letters to faculty (please make arrangements to contact your instructor privately) and to the OSD Liaison in the Math Department (Holly Proudfoot, hproudfood@ucsd.edu) in advance so that accommodations may be arranged. You will find more information here.

Basic Needs and Food Insecurities: If you are experiencing any basic needs insecurities (food, housing, financial resources), there are resources available on campus to help, including The Hub and the Triton Food Pantry. Please visit here to for more information.