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UC San Diego – Math 18 Linear Algebra
Summer Session 1 2023 Syllabus (Lectures A00 and B00)

Instructor: Dr. Brian Tran (b3tran@ucsd.edu)

Lecture Times:

A00, MWF, 8 am – 9:50 am, CENTR 216

B00, MWF, 10 am – 11:50 am, CENTR 216

Instructor Office Hour: M 1 pm – 2 pm, Zoom https://ucsd.zoom.us/j/3525565871

Discussion Sections:

Section	TA	Email	Location	Time
A01	Mingyu (Silvia) Liu	mil094@ucsd.edu	APM 2301	TuTh 8 – 8:50 am
A02	Mingyu (Silvia) Liu	mil094@ucsd.edu	APM 2301	TuTh 9 – 9:50 am
B01	Lillian McPherson	lmcpherson@ucsd.edu	HSS 4025	TuTh 10 – 10:50 am
B02	Lillian McPherson	lmcpherson@ucsd.edu	HSS 4025	TuTh 11 – 11:50 am
B03	Toren D'Nelly-Warady	tdnellywarady@ucsd.edu	CENTR 205	TuTh 10 – 10:50 am
B04	Toren D'Nelly-Warady	tdnellywarady@ucsd.edu	CENTR 205	TuTh 11 – 11:50 am

TA Office Hours:

Silvia: Th 12 pm – 1 pm, APM 6414B.

Lillian: Tu 1 pm – 2 pm, APM 5412.

Toren: W 9 am – 10 am, APM 2313.

SI Leader: Christian Brueggeman (cbruegge@ucsd.edu)

SI Session Times: W 1:30 pm – 2:50 pm, TLC 1504. Th 10 am – 11:20 am, via Zoom.

Credit Hours: 4

Website: We will have two course websites: Canvas, as well as http://www.math.ucsd.edu/~b3tran/courses/math18.html. You are responsible for checking both regularly for announcements, assignments, etc.

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. Students who have not completed listed prerequisites may enroll with consent of instructor.

Topics: 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. *Time permitting, additional topics may be added.*

Textbook: David C. Lay, Steven R. Lay, and Judi J. McDonald. *Linear Algebra and Its Applications*. Published by Pearson 2021. 6th Edition.

Material: We will cover the relevant parts of the text corresponding to the topics above. Note that I will add material that is not necessarily in the text and will not follow the text verbatim, so it is essential to attend/watch lectures, as well as reading the corresponding sections in the textbook (it is beneficial to read the textbook section before the corresponding lecture, as well as review it afterward). This is considered part of your responsibility in taking this course.

Lecture: Lectures will be given in-person at CENTR 216. Lectures will also be podcasted with video and audio recording so that synchronous attendance is not required for lectures, although encouraged. Please feel free to ask questions at any time during lecture. You may feel intimidated to ask a question, but you and your peers will benefit from you asking, so please ask.

Discussion Section: TuTh (time depending on section number). Discussion sections are useful for discussing material and asking questions (e.g., about the lecture material or about the homework) directly with your TA. Attendance is not required for discussion, although encouraged.

Office Hours: My and your TAs' office hours allow us to engage with you directly. These are here for your benefit, and you are highly recommended to make use of these resources. Attendance for office hours is not strictly required, although encouraged. If you cannot attend our listed office hours, feel free to email me or your TAs and we can schedule an appointment at a different time.

Homework: There will be 4 homework sets, due each week on Wednesday at 11:59 pm. No late submissions will be accepted. The homework sets will be posted to both course websites and to Gradescope. The homework sets will consist of both textbook problems as well as problems that I will write; you are encouraged to discuss homework problems with me and your TAs during office hours and discussion sections. You may refer to your textbook (but do not plagiarize). However, you may not discuss or share answers with your peers, since working through the homework yourself is a fundamental part in learning the course material. Submitted homework must be your own original work. Make sure to include your full name, PID, and show all of your work. You will submit your homework on Gradescope; after it is graded, you will be able to view the grade as well as any comments on Gradescope. There are two methods in which you can write and submit your homework:

- You can write out your solutions using a pen and paper. Subsequently, scan your work and submit it as a PDF file. If you choose this method, make sure that your work is neat and legible, as it is your responsibility to make sure that your work is readable by the grader. Alternatively, if you have a tablet and stylus, you can write out your solutions digitally, save your work as a PDF and submit it this way.
- You can type out your solutions electronically, with whichever software that you prefer (as long as the software has the capability of creating mathematical text and you must submit the file as a PDF). Two common choices are: Microsoft Word (using the Insert > Equations option for mathematical text; make sure to save your document as a PDF before submitting) and LaTeX. LaTeX is a typesetting software which allows you to create professional mathematical documents; it may seem difficult at first (its structure is similar to coding) but in my opinion, it is a worthwhile skill to learn, especially if you plan on continuing your career in the mathematical sciences. I have created a LaTeX homework template that you can use for your homework, if you'd like (see the course websites).

MATLAB: Please refer to UCSD's Math 18 MATLAB webpage for more information regarding the MATLAB portion of the course. https://mathweb.ucsd.edu/~math18m/

Exams: There will be one midterm which will be a 90-minute timed online exam. The midterm will be available to be viewed at the below date on Gradescope. The exam will be available to be viewed on Gradescope for 12 hours from 12 pm in the afternoon to 11:59 pm midnight. Once you view the exam, the 90-minute timer begins; thus, for the full 90-minute time on the exam, begin the exam before 10:30 pm. You will have 90 minutes to complete, scan, and upload your exam to Gradescope. You should use about 80 minutes to work on the exam and 10 minutes to scan and upload the exam. You can write out your solutions using pen and paper and scan it to submit as a PDF, or if you have a tablet and stylus, you can write out your solutions digitally, save it as a PDF, and submit it this way. You are allowed to have a single sheet of handwritten notes (two-sided) for the midterm, but you may not use any other resources such as the textbook, calculators, or outside communication. Any form of academic dishonesty will be reported to the Academic Integrity Office.

The final exam will be a 180-minute proctored exam (tentatively in-person, but this may be changed to be proctored remotely through Zoom). You may bring two sheets of handwritten notes for the final, but no other resources will be allowed.

All exams are cumulative, in that they will require material covered up to that point in the course. Exam dates:

- Midterm: Week 3, Friday July 21st 2023, Available on Gradescope 12 pm – 11:59 pm.
- Final:
  A00: Week 5, Saturday, August 5th 2023, 8 am – 10:59 am. CENTR 216.
  B00: Week 5, Saturday, August 5th 2023, 11:30 am – 2:29 pm. CENTR 216.

Exam Regrade Policy: After receiving the grade for your exam on Gradescope, you can request a regrade on Gradescope for a given period of time. For a regrade request, we reserve the right to deduct or add points, so make sure that you are confident in any errors in grading.

Grading Policy: The course grade consists of the homework (30%) with the lowest homework dropped, Midterm (20%), MATALB (10% = 6% MATLAB homework + 4% quiz), and the Final (40%). The grade scale is:

A+	A	A-	B+	B	B-	C+	C	C-
97	93	90	87	83	80	77	73	70

I reserve the right to adjust this scale to be more lenient if warranted by the overall class performance.

Administrative Deadline: It is your responsibility to ensure that your exam and homework grades are correctly recorded on Gradescope. Contact your TA before the last week of instruction to resolve any errors.

Academic Integrity: Academic integrity is expected at UCSD and any academic dishonesty is a serious offense. Any students involved in academic dishonesty (including, but not limited to, utilizing outside resources, communicating, receiving, or sharing solutions) will face an administrative sanction, which may include a failing grade, suspension, or even expulsion. Please uphold your academic integrity; any academic dishonesty only undermines your and your peers' education. For more regarding academic integrity, please see UCSD's Academic Integrity Website.