

## Instructor

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Office hours: Monday 4-5pm, Friday 1.502.50pm MS 7380

## Teaching Assistants

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Office hours: Tuesday 4-5pm and Thursday 4-5pm MS 3957

## Course webpage

<https://ccle.ucla.edu/course/view/19F-MATH33A-4>

## Email policy

Please note that we will use Questionsly as an online discussion platform for this course (see sign-up information below). Whenever possible, post your questions there, instead of sending an email to me or the TAs. In case you do need to send an email, please follow these guidelines: use your UCLA email address, start the subject of all your emails with “MATH 33A”, and sign your emails with your full name and UCLA ID number.

## Textbook

O. Bretscher, *Linear Algebra*, 5th Ed., Prentice Hall.

Additional reading will be posted on the course webpage if necessary.

## Schedule

**Class:** 3–4pm MWF MS 4000A

### Discussions:

#### Tuesday 3–4pm

**4A:** MS 5137 (Soukup)      **4C:** MS 5117 (Hiatt)      **4E:** MS 5203 (Szczesny)

#### Thursday 3–4pm

**4B:** MS 5147 (Soukup)      **4D:** MS 5137 (Hiatt)      **4F:** MS 5138 (Szczesny)

## Questionsly

We will be using Questionsly for class discussion. Questionsly is a social platform where you can ask and answer questions, and it is integrated with CCLE. To join, simply follow the corresponding link under “Course apps” on the CCLE homepage for the course.

## Gradescope

We will be using Gradescope for submission and grading of homework, as well as for grading the exams. Gradescope has recently been integrated with CCLE, and all students enrolled to the course should have been automatically added to Gradescope. If this is not the case, please contact me.

Follow these instructions to submit your solutions: [https://gradescope-static-assets.s3-us-west-2.amazonaws.com/help/submitting\\_hw\\_guide.pdf](https://gradescope-static-assets.s3-us-west-2.amazonaws.com/help/submitting_hw_guide.pdf)

## Grading

Homework: 20%                      Midterms: 20% + 20%                      Final: 40%

OR

Homework: 20%                      One midterm: 20%                      Final: 60%

whichever yields the highest grade.

No make-up exams. If you miss one of the midterms, the final will count 60% towards the final grade. The homework with the lowest grade will be dropped from the final score.

Final grades will be absolute, and will be based on UCLA's standard letter-grading scheme:

Highest	Lowest	Letter
100.00 %	97.00 %	A+
96.99 %	93.00 %	A
92.99 %	90.00 %	A-
89.99 %	87.00 %	B+
86.99 %	83.00 %	B
82.99 %	80.00 %	B-
79.99 %	77.00 %	C+
76.99 %	73.00 %	C
72.99 %	70.00 %	C-
69.99 %	67.00 %	D+
66.99 %	63.00 %	D
62.99 %	60.00 %	D-
59.99 %	0.00 %	F

I might consider modifying this scheme, but only if the modification results in a grade increase.

## Homework

There will be a total of maximum 10 exercise sheets. Exercise sheets will be posted on CCLE approximately on Thursdays and you should upload your solutions to Gradescope by Friday of the following week at 3pm. No late submissions will be accepted. All exercises will be graded for completion, while a selection of exercises will also be graded for correctness, and will be marked by a (★) in the exercise sheets. You will be able to access your graded solutions on Gradescope a week after the due date on Fridays.

The sheets will be graded and count towards 20% of the final grade, with the option of dropping the sheet with the lowest score.

The first exercise sheet will be due on Friday 4 October 2019.

## Exams

Midterm 1: Monday 21 October during the lecture.

Midterm 2: Monday 18 November during the lecture.

Final: Monday 9 December 8-11am.

All exams are closed book (no books, no notes, no calculators, etc; only pen/pencil). The grades will be curved, and

## Content of classes

The following is a tentative outline; it will be regularly updated over the course of the quarter.

- **Lecture 1–3:** Systems of linear equations, associated matrix equations, row reduction of a matrix, Gauss-Jordan elimination; (Chp. 1.1–3)
- **Lecture 4–8:** Linear transformations, invertible matrices, matrix algebra; (Chp. 2.1–4)
- **Lecture 9–10:** Subspaces of  $\mathbb{R}^n$ , linear independence, row space, column space; (Chp. 3.1–2)
- **Monday 21 October, 2019:** Midterm 1
- **Lecture 11–15:** Bases, dimension, kernel and image of linear transformations, rank-nullity theorem, coordinates; (Chp. 3.3–4)  
(Classes were cancelled on 28.10.19 due to the fire)
- **Lecture 16–18:**  
Orthogonality, orthonormal bases, orthogonal projections, Gram-Schmidt process; (Chp. 5.1–2)
- 11 November, 2019: holiday
- **Lecture 18–19:**  
QR-factorization, orthogonal transformations,  $2 \times 2$  determinants (Chp. 5.3)
- **Monday 18 November, 2019:** Midterm 2
- **Lecture 20–21:** Determinants; (Chp. 6.1–3)
- **Lecture 22–24:** Eigenvalues, eigenvectors, diagonalization of matrices (Chp. 7.1–3)
- 29 November, 2019: holiday
- **Lecture 25–26:** Diagonalization of symmetric matrices, SVD (singular-value decomposition); (Chp. 8.1, 8.3)