

Math 211: Linear Algebra - Online Course Syllabus
Spring 2020
Last Updated: March 18, 2020

Instructor: Stefanie Wang Office Hours: Set times listed under resources
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Textbook: *Linear Algebra*, Third Edition, Jim Hefferon. This is an open-source textbook available on Moodle. If you prefer a hardcopy text, new and used copies are available for \$22 or less.

The syllabus is subject to change and updates as the situation with COVID-19 unfolds. I will alert students of changes via Moodle as soon as I can after changes are made.

Prerequisites: MTH 112 or the equivalent, or MTH 111 and MTH 153; MTH 153 is suggested.

Remaining topics: Bolded items are ones covered before spring break, but will still get some emphasis in the second half.

- Chapter 3: **Properties of linear transformations, kernels, range space**, matrix representations, change of basis
- Chapter 4: how to compute determinants using Laplace's formula and Gauss-Jordan elimination, properties of determinants
- Chapter 5: Computing eigenvalues, eigenvectors, diagonalizability

Topics cut: different kinds of matrix equivalence, lots of examples with matrix representations. A separate document will be posted with a list of problems and brief notes on these topics.

Resources: With the shift to remote learning, the following resources are available to you at this time. Should more resources become available, I will include that in the syllabus and send email notifications via Moodle reflecting the updates.

- **Office hours** via Zoom. Office hour times are in the Eastern time zone as follows:

Mondays 4 p.m. - 5 p.m.	Tuesdays 10 a.m. - 11 a.m.
Wednesdays 1 p.m. - 2 p.m.	Thursdays 11 a.m. - 12 p.m.

Book appointments here:

<https://my.setmore.com/bookingpage/a63bc54d-b097-4673-9846-377a0e14b612>

for 15-minute appointment slots. Unfortunately, I did not find a free platform that shows the appointments publicly. So if you want to book a 15-minute appointment with a study buddy, you are welcome to include that information at time of booking. [I need 24 hours notice for appointments outside of normal office hours. I need to work from home as often as possible as per Smith's policies. My home WiFi is not reliable enough for video conferencing calls. I need to go to campus for office hours and cannot go between my home and my office at the drop of a hat. Thanks for your understanding!](#)

- For overseas students with a 6+ hour time difference from Northampton, email me separately for office hour appointments.

- **Video lectures** on examples and possibly theorems/lemmas. I will keep the videos short (~10 minutes) and aim to have one per homework assignment. They will not be perfect, I won't edit out each time I say "like" or "um," nor will I edit out Rook's snoring. My dog snores like he needs a CPAP machine, so you're probably going to hear some of that.

I will go over some definitions, lemmas/theorems (maybe do bullet point proofs of lemmas/theorems as all the details are in the book anyway), and examples. I'll alert you when you can pause in the video so that you can work on an example on your own and then resume the video when you want to go over the solution.

I want the videos to be easily accessible by students with limited or spotty internet access. As more people will be working from home, residential WiFi may be heavily taxed. This means you won't get one video per worksheet. It'll be as many 10-minute max videos as needed per worksheet. I will create some pauses in the videos so that you can take a screen shot if necessary. The app I plan to use has a good built-in canvas feature.

- **Class worksheets** - I will still post relevant worksheets for the examples so you can work alongside the videos. In the videos, I will have a lot more space in between each lemma/definition/examples I go over so that I can write all on one "slide." The worksheets I post to Moodle will look like the ones I provide for in-class work.
- **Homework forums** on Moodle. I can respond more quickly here and am not inhibited by spotty WiFi access. Also, see the graded category of forum participation!
- Online resources that students have found helpful in the past.

1. Geogebra applet: <https://www.geogebra.org/m/pDU4peV5>

2. 3blue1brown: <https://www.3blue1brown.com/>

3. MIT Linear Algebra by Gilbert Strang:

<https://ocw.mit.edu/courses/mathematics/18-06-linear-algebra-spring-2010/video-lectures/>

How to reach me: Email is the most reliable way to reach me outside of class. Please include "Math 211" in the subject line of the email. Outside of holiday breaks, you can expect a response within 24 hours during the weekday and 36 hours during the weekend.

Grading:	Written Homework:	30%
	WeBWorK:	30%
	Forum participation:	30%
	Take-home twiz/quizzam:	10%

The above grading scheme is for the second half of the semester. Some components may change pending updates from the College, the math department, if the public health crisis increases in severity, or possibly under another circumstance. For the first half of the semester, I will determine a grade based on written assignments and the first exam with their relative weights scaled up proportionately so that the total percentage is 100%. I am still deliberating with colleagues (and waiting to hear any input from the College) on how to weight first half and second half letter grades. My initial thoughts are as follows: if you did well on homeworks in the first half and successfully complete your work in the second half, you'll get an S for the course. Once this information is finalized, I will post an update in this syllabus or in a separate document on Moodle and alert everyone of the changes.

Academic Accommodations: If you have a disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) and need accommodations in this course, please contact the Office of Disability Services in College Hall 104 or at ods@smith.edu as soon as possible to ensure that we can implement accommodations in a timely manner.

If you have accommodations in place, they still are in place for the rest of the semester. If you are facing extenuating circumstances, email me and we can make necessary arrangements.

Collaboration: Study groups are encouraged for the second half of the semester. However, I urge you to be cautious and careful with in-person interactions. I recommend coordinating study groups via Zoom or some other video call platform if possible.

WeBWorK There are four online homework assignments via WeBWorK. Log-in instructions and the link are available on Moodle as of March 17. Each problem has 6 attempts and all WeBWorK assignments are available March 23 until May 1. You can work on these at your own pace, but I do strongly recommend keeping up with them as the written assignments are due. The May 1 deadline is in place so that you can practice WeBWorK whenever you can and focus on written assignments.

If you need to work on WeBWorK offline, you can download a PDF of your questions. The numbers change from student to student, so I cannot publish a universal assignment for general access.

The “ask my instructor” feature is disabled. If you have any WeBWorK questions, post them to the appropriate homework forum.

Each assignment will be weighted the same when determining final grades for the second half the semester. All scores will be converted to a 10-point scale. No online assignments will be dropped.

Written Assignments: All written assignments are available as of March 17 on Moodle. The same written standards still apply as before. Each assignment has an initial deadline and a firm deadline. Please do your best to submit your homework by the initial deadline. In the event that this course does not get graders or if I get sick, I need the work turned in by firm deadlines (barring extenuating circumstances) so that I will be able to submit grades for seniors shortly after the semester is over.

How to submit: You will need to submit your written homework through Moodle. You can submit a document up to 800 MB per assignment. If I am the one grading your work, it will be very helpful for you to submit a PDF and not a photo of your work. This is an accommodation that I need for my eyesight. If this is not possible, that is okay. I sincerely hope that we can minimize the number of non-PDF or non-Word document submissions.

For students facing a firewall or connectivity issues, please wait for updates on the College’s protocol. I along with other faculty have submitted these questions. ITS is working on a solution and I will share information with you as soon as I can.

Each assignment will be graded on a 10-point scale. No written assignments will be dropped.

Homework forums: Each homework assignment (both online and written) will have a dedicated forum. I will also post recommended exercises for the remainder of the semester and create forums for recommended exercises associated with each assignment set (online + written). My responses to forum posts will be targeted toward problems that are due for credit. If there is time, I may be able to respond to questions on the extra problems listed in most written assignments.

FYI: I have enabled the anonymous posting feature. To earn full credit for the “forum participation”

category, I will look at the following criteria

1. Post at least twice to one of the forums (homework or recommended exercises forum) with your name attached so that I can track your minimum number of posts. Beyond that, I leave it up to you whether or not you want your name attached.
2. Posting excessively won't result in extra credit.
3. Don't post "I have no idea what to do." I will either post a sassy remark to this type of post or ignore it until a question is formed.
4. A brief guideline on some points to consider when creating a post that someone can meaningfully respond to:
 - (a) What definitions, lemmas, or theorems do you suspect could be relevant to the question?
 - (b) What book examples or worksheet exercises use similar concepts?
 - (c) What techniques do you suspect are relevant here?
5. A sample question could be: "I'm looking at question X and it looks really similar to example Y. But example Y has Feature A. Is it okay to use the same method for question X as we did for example Y even though question X does not have Feature A? Definition/Lemma/Theorem Z seems to suggest this, but can someone point me to a place in the text that confirms this?"
6. Another sample: "I'm trying to use Lemma A for question X. Do I start by doing Procedure B? Is there a similar example that someone can point me to that uses Lemma A?"
7. Or another sample question could be: "A lot of previous posts used Method A for question X on the homework. I'd like to use Method B and my reasoning for that is given by Example L/Definition/lemma/theorem Y and Z. Has anyone else used Method B and would like to share ideas?"
8. Reasonable responses to questions also earn forum participation. "Yes/no" responses or rude remarks don't count toward forum participation.
9. If you can do the above at least twice, you'll earn full credit for the forum category.

Take-home twiz/quizzam: I will post a take-home exam in the week of April 26. If you don't like exams, Jedi mindtrick yourself into thinking that this is a cumulative written assignment. There will be two multi-part problems that encapsulate many major ideas from the semester. It is significantly shorter than the first exam and will be comparable in length to written assignments prior to the shift online.

The take-home twiz/quizzam will be open book and open notes. You may not use the Internet, the solution manual for the textbook, consult each other, or any computational tools. The Smith College Academic Honor Code applies to this take-home twiz/quizzam. You are welcome to ask me clarifying questions. The questions will be genetically modified so that computations are very doable by hand (i.e., lots of integers).

Potential ways the course can be made more robust: If we get TA and graders for this class, that will allow me to talk with students on some of the cut content for the semester. It is possible, though not likely, that I can make a couple of supplemental videos on these topics. If you choose to do extra exercises, it's for your own learning and benefit and I will help you as best I am able. I will not grant extra credit for doing this out of fairness to those students who want to do more but cannot due to the circumstances.