

Math 220: Linear Algebra (Item #6393)

Winter 2021 on Zoom M – F: 10-10:50am

Syllabus

Instructor Information

- i. Instructor: Dusty Wilson
- ii. Office: 29-341
- iii. Phone: 206-592-3338
- iv. Student Office Hours: 9:45-10am T-F, 11-11:15 T-F, and Mondays for presentations from 8-10 and 11-1. I am also available by appointment.
- v. home page: <http://people.highline.edu/dwilson>
- vi. e-mail: dwilson@highline.edu

Course Description

Introduction to Linear Algebra: Row operation, matrix algebra; vector spaces, orthogonality, Gram-Schmidt orthogonalization, projections, linear transformations and their matrix representations, rank, similarity; determinants; eigenvalues, eigenvectors, and least squares.

Student Learning Outcomes

- i. Solve systems using Gauss-Jordan elimination.
- ii. Identify and orthogonalize the basis of a vector space.
- iii. Apply matrix methods to model a data set using least squares regression.
- iv. Calculate and interpret the eigenvalues and eigenvectors of a matrix.
- v. Identify, create, and apply linear transformations using matrix methods.
- vi. Construct a mathematical proof.

Text

Linear Algebra and its Applications, by Lay, Lay, and McDonald.

Prerequisite

Math 152 with a minimum grade of 2.0.

Tech and its place in this course

We are using a variety of technologies in this class. It may feel a bit overwhelming in the first week, but will all make sense pretty quickly.

- i. Canvas: Grades, homework, and deadlines are listed here.
- ii. MyLab: Homework and quizzes will be through MyLab. This costs.
- iii. Gradescope: Written Assignments and Assessments will be submitted in Gradescope (not Canvas). This is free.
- iv. Website: Content is on my website (not Canvas). You may access it through links on Canvas, or use the direct link <https://people.highline.edu/dwilson/> if you prefer.
- v. Zoom: Class sessions will be in Zoom at: <https://highline.zoom.us/my/dwilson> (or in room 712 965 5684). There is no passcode required as I make use of the waiting room feature.
- vi. YouTube: Class session will be recorded for those who want to review (or are unable to attend) class. They will generally be available by early evening on the night of class. You can subscribe to my channel [dustywwilson](https://www.youtube.com/channel/UCdustywwilson) if you want notifications when new videos are posted.

- vii. Slack: We will use Slack for most communication in this course. You may direct message me or your classmates. But the power of Slack is in four channels (You may post to all four channels):
- linear-algebra-winter-21: This is where class reminders and notifications will be posted and where you can ask general questions.
 - homework-assessments: Please post ALL questions about homework and assessments here. You (as a community) can often provide faster and more comprehensive guidance than I can.
 - general: This is where general announcements will happen (scholarships, news items, etc)
 - random: This is for fun stuff.
- viii. Graphing calculator: The TI-84 calculator is recommended and we will use it heavily in this course. Other calculators are permitted as well as software packages.

Homework and Quizzes

Homework and Quizzes will be assigned on MyLabs online. It is important that you use the online resources to learn the material, and not just “get problems right”. Keep an organized notebook of your work, clearly labeling the section and problem number, etc. so you can review your work as it will be helpful on quizzes. This is especially important because Assessment (Test) questions will generally be based upon the online homework and quizzes.

- You will have five attempts on each/most homework questions.
- Quizzes are timed and short. The questions parallel the homework assignments. You may attempt each quiz three times, but are allowed only one attempt at each question.

Participation

3% of the grade is designated to various forms of participation

- 1% is for attendance. To receive credit, put something into the Zoom chat each day when you arrive (preferably something funny). You do not need to submit your notes if you attend class.
 - IF YOU MISS CLASS: Alternatively, watch the class videos on your own time and submit the completed workalongs via Gradescope by Sunday night. Submit notes in Gradescope to the appropriate “Optional” assignment. The notes cover all days for a given week and do not rollover or accrue attendance points. Please also include a lesson learned and/or question from each lesson.
- 1% is for participation in class. Choose one of the following to do each day:
 - Turn your video on to show you are physically present.
 - Respond to a question either by speaking up in class or responding via chat to show you are engaged with the lesson.
 - After class, put either a lesson learned or a question about the lesson in the chat to show that you are thinking about the class holistically.
- 1% is for submitting weekly written assignments tied to math, studenting, and philosophy. These should be submitted in Gradescope.

Assessments

There will be (mostly) weekly assessments:

- Please see below for the details about assessments.
- If you miss an assessment, your grade will be replaced with the percent of points scored on the following assessment. Should you miss a second assessment a score of 0 will be assigned. All assessments must be taken during the scheduled class time. No make-ups.

Final Exam

A comprehensive final exam assessment will be administered in a similar manner to the weekly assessments. The final exam is mandatory and a grade of 0.0 may be assigned at the instructor's discretion to those who fail to take the final exam.

Grading

Homework: 9%, Quizzes: 9%, Participation: 3%, Assessments: 49%, and Final Exam: 30%. GPA's will be given according to:

96-100%	4.0	%%	GPA	%%%	GPA	%%	GPA	%%	GPA
95%	3.9	87%	3.1	76-7%	2.3	65%	1.5	57%	0.7
94%	3.8	86%	3.0	74-3%	2.2	64%	1.4	0-56%	0.0
93%	3.7	85%	2.9	72-3%	2.1	63%	1.3		
92%	3.6	84%	2.8	70-1%	2.0	62%	1.2		
91%	3.5	83%	2.7	69%	1.9	61%	1.1		
90%	3.4	82%	2.6	68%	1.8	60%	1.0		
89%	3.3	80-1%	2.5	67%	1.7	59%	0.9		
88%	3.2	78-9%	2.4	66%	1.6	58%	0.8		

All about Assessments

These are strange times requiring creativity and flexibility on the part of students and teachers. I want to assess whether you are learning/understanding linear algebra. I want you to be able to collaborate online with each other (for the sake of community and greater understanding). At the same time, I want to ensure that you are being assessed on the basis of your understanding of calculus (and not that of your friend, Chegg, or WolframAlpha). To accomplish this, Assessments (think open book and untimed tests with a presentation component) will be administered as follows.

- i. There will be weekly assessments administered as follows:
 - Friday by 5 pm:
 - I will post a blank assessment for you to download/print. This will be around 10 questions in length.
 - These are to be worked by hand. Show ALL work.
 - Printing (or working on a touch screen) is preferable, but you may work on scratch paper if need be. If you do this, please clearly label your work and work no more than one question per page. Include your name on each page.
 - You will sign up for a five minute Zoom presentation slot on the Google Sheet.
 - The weekend:
 - You will have the weekend to work through the assessment questions, collaborate with peers, and utilize online resources.
 - Monday:
 - 8 am: You will upload your handwritten solutions to the questions into Gradescope.
 - During the five minute time slot you signed up for, you will meet with your instructor online in Zoom.
 - Using a random number generator, your instructor will assign and then ask you to explain one of your solutions.
 - You are welcome and encouraged to attend the presentations of your classmates.
 - Presentations can be recorded upon request.
 - Time permitting, you may ask about other solutions.
- ii. Grading the assessments:

- To receive credit, you must submit your handwritten solutions *and* present online.
 - Handwritten solutions and showing up for your time slot: 50%
 - Quality of presentation, clarity, and mathematical accuracy: 50%
- iii. Expected questions:
- I've never done this, do you have any tips?
 - DO YOUR HOMEWORK
 - Relative to a few timed traditional exams, previous students generally liked the presentation format.
 - The questions will similar to the homework and quizzes. So if you take good notes, the Assessments should be straight-forward.
 - Learning to annotate in Zoom is generally helpful.
 - Show lots of work that way you can more easily remember what you did the previous night.
 - What if I am not available to present during the time slots?
 - Alternate times are available upon request.
 - What if I am not ready (or comfortable) presenting upon the assigned question?
 - You can pick which question you want to present on for (max) half presentation credit.
 - You can ask that I randomly pick another question for (max) three quarters presentation credit.
 - Can I lose points for the same thing in my presentation and written work?
 - No. If this happens, let me know (in a timely manner) and I will correct this.
 - Will there be any drops?
 - Not as a rule. Please keep me abreast of emergencies and extenuating circumstances. If you do miss an Assessment, your next score will take the place of the missing grade.
 - What if I don't like to present my work?
 - Being able to explain technical work aloud such as mathematics is a vital part of being a successful mathematician, engineer, computer scientist, etc.
 - What if there are technical difficulties presenting or uploading my materials?
 - You have all been submitting work electronically for a long time, so I do not expect problems in that area. That said, we can deal with issues as they arise.
 - Presenting requires the same technology as attending class through Zoom.
 - Emergencies will be addressed on a case by case basis
 - What if I (or one of my family members) gets really sick and I am unable to keep up?
 - Should it be needed, we will address this on a case by case basis. At the end of the quarter, my desire is that everyone who demonstrates that they have met the course outcomes will pass with flying colors. How we get there remains to be seen.

Policies and Notes

- i. **Attendance:** You need to attend during the scheduled Assessment times. Lecture attendance is a small part of the grade and you have the option to “attend” on your own time by watching the videos and submitting completed class notes.
- ii. **Math Resource Center:** Cost-free mathematics tutoring is available through Zoom and the MRC.
- iii. **Faculty Advising:** Highline College instructors are a wonderful resource for students at any stage of the academic process. Many Highline instructors have career experience, are

knowledgeable about campus resources, and can assist students in reaching their educational goals through degree planning. If you have an advising question, feel free to approach your instructor. If your instructor cannot answer your question, s/he will help you find someone who can.

- iv. **Honors:** Highline College offers opportunities for students to participate in an Honors Program tailored to their pathways. Students who fulfill all Honors Program requirements may become eligible for a scholarship during their final quarter and receive recognition at Highline's commencement ceremony.

I have a really cool honors project developed for this class that, if enough people participate, can help you and help your classmates! The more the merrier. If you are interested, I invite you to pursue an honors project in this class. After completing the project and earning a 3.5 GPA in this course, an "honors" notation will appear on your official Highline transcript.

- v. **Academic Dishonesty:** Cheating, plagiarism, and other forms of academic dishonesty are unacceptable at Highline College and may result in lower grades and/or disciplinary action. It is both your right and responsibility to be familiar with the document entitled: Student Rights and Responsibilities code WAC 132I-1210 adopted by the Board of Trustees of Community College District 9 on December 13, 2007. This is available in the counseling center.

- vi. **Special Concerns:** If you have any special concerns about this class, please talk to me personally. The more I know about you individually, the more I can help you be successful in this course. If you need course adaptations or accommodations because of Disability; if you have emergency medical information to share with me; or if you need special arrangements in case the building must be evacuated, please provide me with the Letter of Accommodation you have received from the Office of Access Services.

- vii. **School Policies:**

- The Student Rights and Responsibilities Code: A legal document that describes college expectations, students' rights, and outlines the process for resolving disciplinary matters and Code violations. <http://studentservices.highline.edu/srr.php>
- The College Catalog: Lots of fine print about grades, deadlines, and resources can be found in the catalog at: <http://catalog.highline.edu/>

- viii. **Spring Registration Note:**

- Highline College will be integrating a new collegewide system for student self-service, called ctcLink, which will vastly improve the way you do all your college business (review class schedules, register for classes, pay tuition, review financial aid, check academic progress, view unofficial transcripts, receive messages, and more). As part of this process, accessing the new system will require a different Login and password. (Access to Canvas and student email will not change, nor will those passwords.) Highline College will go live on the new system on Feb. 8, 2021, and will be providing support for students during the week of Feb. 16, 2021. More information to follow. In the meantime, visit highline.edu/ctclink/students to learn more.

- ix. **Important Dates (dates should be verified online):**

- January 15th: Last Day for 100% Tuition Refund
- January 25th: The last day to drop without incurring a "W"
- February 8th: Priority deadline for Spring Financial Aid
- March 5th: The last day to officially withdraw with a "W"