

## **Math 341: Elementary Linear Algebra**

CRN: 40902    Summer 2025

**Instructor:** Zhe Xu

**Pronouns:** he/him/his

**Office:** Fenton 316

**Email:** zhxu@uoregon.edu

(Please include “Math 341” in the subject line when emailing me)

**Office Hours:**

TBD

or by appointment (email me)

**Class:** MTWRF 10:00 am - 11:50 am

**Anonymous Feedback:** All students are encouraged to give me anonymous feedback about my teaching through out the term. To access the anonymous feedback submission form, log onto the course’s Canvas page, and find the “course organization” module.

**Required Text:** *Linear Algebra and Its Applications* (5th ed) by David Lay, Steven Lay, and Judi McDonald. (There is a link to a free online textbook on Canvas.)

**Prerequisites:** C– or better in Math 252

**Canvas:** You can use our Canvas website to see syllabus, homework assignments, your grades and more. To access our class blackboard site go to:

<http://canvas.uoregon.edu/>

**Disabilities:** The University of Oregon is working to create inclusive learning environments. Please notify me as soon as possible if there are aspects of the instruction or design of this course that result in disability-related barriers to our participation. You may also wish to contact Disability Services in 164 Oregon Hall at 346-1155 or [disabsrv@uoregon.edu](mailto:disabsrv@uoregon.edu)

**Academic misconduct:** The University Student Conduct Code ([conduct.uoregon.edu](mailto:conduct.uoregon.edu))

defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students’ obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at <https://researchguides.uoregon.edu/citing-plagiarism>.

**Grading:** A: 90% or more, B: 80%–89%, C: 70%–79%, D: 60%–69%, F: below 60%. Plus grades will be awarded when the last digit is 8 or higher. Minus grades will be given if the last digit is either a 0 or 1. Your final percentage will be rounded to the nearest whole number. You must get at least 70% to receive a pass (P) grade if you are taking this course with the Pass/No Pass option.

**Attendance:** A significant portion of your grade will come from attending and participating in class. You should plan to attend *every single class*. You are responsible for finding out what you missed if you are unable to attend.

**Course learning outcomes:** Math 341 begins with the study of solving systems of linear equations by manipulating vectors and matrices. Then it introduces properties of matrices including operations, existence of an inverse, and determinants. The main goal is the introduction of vector spaces and linear transformations defined by matrices. A successful student in this course will be able to

1. Find the general solution of a system of linear equations using row reduction;
2. Express a system of linear equations as a matrix equation;
3. Determine whether a set of vectors is linearly independent or linearly dependent;
4. Use row operations to determine if a square matrix is invertible and then find its inverse when it exists;
5. Find the determinant of a matrix by using a cofactor expansion or by performing row operations;
6. Understand applications of the determinant including determining if a square matrix is nonsingular and the geometric implications for vectors in  $\mathbb{R}^2$  or  $\mathbb{R}^3$ ;
7. Understand the definition of vector space, subspace, basis, and dimension;
8. Determine if a given vector lies in the span of a set of given vectors;
9. Find the dimension of a span of vectors;
10. Find the coordinates of a vector with respect to a given basis;
11. Find the null space and range of a linear transformation.

Weekly assignments, as well as problems on the midterm and final exam, will provide students with opportunities to demonstrate the level of their abilities relative to the above learning outcomes.

**Daily homework:** There will be daily homework except on Fridays. Each daily homework will be relatively short; consists of 2-3 questions related the lecture of the same day. There are in total sixteen daily homeworks, the lowest *four* will be dropped to accommodate anyone missed a week of the class due to any reasons. **Tests:** There will be weekly test on

each Friday, each test covers all materials from the same week except for the last test; the last test will be cumulative over all materials.

**Tentative Reading Schedule:** Below is a **tentative** schedule of which sections of the textbook you are expected to read and when you are expected to read them. For example: in week 2, we will discuss section 1.3 on Monday, section 1.4 on Wednesday, and 1.5 on Friday.

Week	Sections
1	1.1 - 1.9
2	2.1, 2.2, 2.3, 3.1
3	3.2, 3.3, 4.1, 4.2, 4.3
4	4.3 - 4.6

**Grading Breakdown:**

Daily homework	15%
Participation	5%
Weekly Exam	80%

**Make-up and Extra Credit:** Late homework will be penalized 10% per day. You may

unlock **extra credit** by typesetting all (or almost all) assignments in latex (see Canvas for more resources). If you are unable to attend the midterm or quiz, the weight will be transferred onto the final exam. A missed final exam will likely result in an incomplete grade in the class, and will require a make-up exam.

**Important Dates:**

- June 25 – last day to drop without a ‘W’
- June 25 – last day to add a class
- July 10 – last day to drop the course

## **Expectations**

I expect you to:

- submit work on time
- arrive on time, and to minimize the disturbance if you arrive late
- ask questions
- provide feedback about the course (anonymously or otherwise)
- participate in class
- be respectful and courteous towards your classmates (eg., chatting during class distracts other students, and will not be tolerated)
- come to class prepared (eg., reviewed content from last class, attempted the homework, etc)
- spend approximately two hours outside of class on homework, review, etc for every one hour spent in class
- take responsibility for any course content covered when you miss a class
- attend office hours or make an appointment with me if you would like help

You can expect me to:

- arrive on time to class
- be enthusiastic about the material and about mathematics in general
- be available to provide help, support, and advice
- reply to email in less than 24 hours (typically *much less* than 24 hours)
- consider and respond to all feedback about the course
- return work no more than one week after it has been submitted
- make adjustments to the classroom environment throughout the term according to the needs of the class

What follows is a general description of various University of Oregon policies, not specific to this course.

**Academic Disruption due to Campus Emergency:** In the event of a campus emergency that disrupts academic activities, course requirements, deadlines, and grading percentages are subject to change. Information about changes in this course will be communicated as soon as possible by email, and on Canvas. If we are not able to meet face-to-face, students should immediately log onto Canvas and read any announcements and/or access alternative assignments. Students are also expected to continue coursework as outlined in this syllabus or other instructions on Canvas. In the event that the instructor of this course has to quarantine, this course may be taught online during that time.

**Academic Misconduct:** The University Student Conduct Code, available at

*<https://conduct.uoregon.edu>,*

defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students' obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at

*<https://researchguides.uoregon.edu/citing-plagiarism>.*

**Accessible Education:** The University of Oregon is working to create inclusive learning environments. Please notify me if there are aspects of the instruction or design of this course that result in disability-related barriers to your participation. You are also encouraged to contact the Accessible Education Center in 360 Oregon Hall at 541-346-1155 or [uoaec@uoregon.edu](mailto:uoaec@uoregon.edu).

**Accommodation for Religious Observances:** The university makes reasonable accommodations, upon request, for students who are unable to attend a class for religious obligations or observance reasons, in accordance with the university discrimination policy which says "Any student who, because of religious beliefs, is unable to attend classes on a particular day shall be excused from attendance requirements and from any examination or other assignment on that day. The student shall make up the examination or other assignment missed because of the absence." To request accommodations for this course for religious observance, visit the Office of the Registrar's website

*<https://registrar.uoregon.edu/calendars/religious-observances>*

and complete and submit to the instructor the "Student Religious Accommodation Request" form prior to the end of the second week of the term.

**Basic Needs:** Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live and believes this may

affect their performance in the course is urged to contact the Dean of Students Office (346-3216, 164 Oregon Hall) for support. This UO webpage includes resources for food, housing, healthcare, childcare, transportation, technology, finances, and legal support:

<https://blogs.uoregon.edu/basicneeds/food>.

**Inclement Weather:** It is generally expected that class will meet unless the University is officially closed for inclement weather. If it becomes necessary to cancel class while the University remains open, this will be announced on Canvas and by email. Updates on inclement weather and closure are also communicated in other ways described here:

<https://hr.uoregon.edu/about-hr/campus-notifications/inclement-weather>.

**Mental Health and Wellness:** Life at college can be very complicated. Students often feel overwhelmed or stressed, experience anxiety or depression, struggle with relationships, or just need help navigating challenges in their life. If you're facing such challenges, you don't need to handle them on your own—there's help and support on campus.

As your instructor if I believe you may need additional support, I will express my concerns, the reasons for them, and refer you to resources that might be helpful. It is not my intention to know the details of what might be bothering you, but simply to let you know I care and that help is available. Getting help is a courageous thing to do—for yourself and those you care about.

University Health Services help students cope with difficult emotions and life stressors. If you need general resources on coping with stress or want to talk with another student who has been in the same place as you, visit the Duck Nest (located in the EMU on the ground floor) and get help from one of the specially trained Peer Wellness Advocates. Find out more at [health.uoregon.edu/ducknest](http://health.uoregon.edu/ducknest).

University Counseling Services (UCS) has a team of dedicated staff members to support you with your concerns, many of whom can provide identity-based support. All clinical services are free and confidential. Find out more at [counseling.uoregon.edu](http://counseling.uoregon.edu) or by calling 541-346-3227 (anytime UCS is closed, the After-Hours Support and Crisis Line is available by calling this same number).

**Reporting Obligations:** I am an assisting employee. For information about my reporting obligations as an employee, please see Employee Reporting Obligations on the Office of Investigations and Civil Rights Compliance (OICRC) website. Students experiencing sex or gender-based discrimination, harassment or violence should call the 24-7 hotline 541-346-SAFE [7244] or visit [safe.uoregon.edu](http://safe.uoregon.edu) for help. Students experiencing all forms of prohibited discrimination or harassment may contact the Dean of Students Office at 5411-346-3216 or the non-confidential Title IX Coordinator/OICRC at 541-346-3123. Additional resources are available at

[https://investigations.uoregon.edu/how-get-support](http://investigations.uoregon.edu/how-get-support).

I am also a mandatory reporter of child abuse. Please find more information at Mandatory Reporting of Child Abuse and Neglect.