COURSE FORMAT	In-Person, CEB 254 MoWe 2:00pm–3:20pm
INSTRUCTOR INFORMATION	Sungju Moon, PhD **Primary Contact:** Use the Inbox tool within Canvas **Email:** sungju.moon@nevadastate.edu **Office Phone:** (702) 992-2725 **Office Location:** Dawson 223 Please note that all official University communication is conducted using Nevada State University-issued email addresses (e.g., @students.nevadastate.edu) in order to comply with the Family Educational Rights and Privacy Act (FERPA). If you need assistance finding or accessing your NSU email account, please see the Policies & Student Responsibilities page.
OFFICE HOURS	MoWe ~~1:00–2:00pm~~ 3:45–5:00pm (as of Mar 1) or whenever my office door is open Online meetings by appointment
E-MAIL & CLASSROOM RESPONSE TIME	You can generally expect a response to e-mails within 24–48 hours (or slightly longer over weekends or holidays). Feedback for completed discussions, quizzes, and assignments depends on the length and complexity of the activity and could take up to 10 days. For questions on the status of a completed assignment, discussion, or test please contact me.
COURSE DESCRIPTION	Introduction to linear algebra, including matrices and linear transformations, eigenvalues and eigenvectors. Some contents in this course will be continued in MATH 389 "Special Topics in Mathematics" in Spring 2026.
REQUIRED TEXT(S)	This course does not require a formal textbook. However, students are encouraged to supplement their learning with the following resources: • K. Kuttler, *A First Course in Linear Algebra*, Lyryx Available online at https://lyryx.com/first-course-linear-algebra/ • S. Axler, *Linear Algebra Done Right*, 4th Ed., Springer Available online at https://linear.axler.net/ The second text is for students who feel ambitious! While some material from the latter text by Axler may occasionally appear in the course, we will primarily follow the first reference (Kuttler).
SUPPLEMENTAL MATERIALS	Certain assignments (e.g., projects) will require having access to a scientific computing software tool such as Octave or MATLAB. Octave is a free and redistributable alternative to MATLAB. The following options are available: • You can download GNU Octave available at https://octave.org/. • Octave Online can be accessed through your web browser: https://octave-online.net/

Learning Outcomes

After finishing this course, you will be able to:

- perform computations involving matrices including Gauss–Jordan elimination, matrix multiplication, computation of determinants, and finding eigenvalues and eigenvectors of a matrix.
- explain the theoretical underpinnings of linear algebra that make possible the computations using the language of vector spaces.
- recognize real-life situations where the knowledge of linear algebra is applicable and sketch out or implement simple applications.
- build familiarity with the mathematical way of thinking and writing by engaging with definitions, theorems, proofs, and applications.
- gain an understanding of how pure mathematics fields are structured, with linear algebra as an example. Explore equivalence classes and mappings between them, as seen in concepts like change-of-coordinate matrices and transformations.

Course Schedule

See Page 6 of the course syllabus for the tentative course calendar.
All dates are subject to change.

Assignment Description & Due Dates

Problem Sets (20%): Problem sets will be assigned on a quasi-weekly basis. Your solutions must include every step leading to the final answers and should be written as if you are explaining the solution to a peer. Assignments are typically due within one week of being assigned. you may resubmit your work for live grading an unlimited number of times, provided that the following conditions are met:

- Your initial submission was made on or before the due date,
- You earned a grade of at least 50% on the assignment,
- You have attempted the problem that you are resubmitting.

While collaboration with other students in this course is encouraged, each student must submit their own work. Completed assignments may be submitted electronically (typed or scanned) or as physical copies in person.

Live-grading means that you present your revised solution to the instructor for instant feedback.

We will adopt standard-based grading for the problem sets. Each problem will be worth 3 points—1 point for completion, 1 point for accuracy, and 1 point for exposition. While this grading scheme may seem strict, note that you will have unlimited opportunities to resubmit your solutions, as outlined above.

Projects (15%; 5% each): Three project assignments will be completed during the semester, with tentative due dates outlined in the course schedule. These projects will involve the use of scientific computing software, such as Octave or MATLAB, to solve problems and analyze data. Instructions for using these tools will be provided in class. Submissions must include a brief report and any accompanying source code. You are encouraged to work in groups of 1–2 members, with only one report required per group. Each submission must also include a short statement detailing each member's role and contribution.

Participation (20%): Active participation is a vital component of this course. During in-person sessions, students are expected to engage meaningfully with peers and instructors in exploring fundamental ideas of linear algebra. Outside of class, students will extend their learning through independent study. Regular self-assessments will help you reflect on your participation in both settings.

Outiside-of-Class Study Plan—At the beginning of the semester, you will create a detailed study plan that outlines specific times, locations, and goals for your independent work. Your plan may include:

- Reviewing course material and reading ahead.
- Contributing to the class wiki.
- Working on problem sets
- Revisiting old assignments for resubmission.
- Setting aside time to catch up and prepare for exams.

Quizzes (5%): Weekly quizzes will be held at the start of class, typically on Wednesdays, and will last approximately 5 minutes. Each quiz will consist of two questions:

1. A definition or statement of a theorem
2. An example or explanation related to the above definition or theorem.

The first quiz (Quiz 0) will be a practice run and will not count toward your grade.

Class Wiki (20%): The class will collaboratively maintain a wiki page. The class will be divided into the following teams:

- Definitions Team—responsible for all the definitions and terminology entries,
- Examples & Applications Team—responsible for foundational examples and applications,
- Theorems Team—responsible for entries about theorems including lemmas, corollaries, as well as simple proof outlines and proof techniques whenever deemed appropriate,
- Remarks & Insights Team—responsible for the entries consisting of important remarks, insights, and comments.

What's New Updates: Approximately every fortnight, each group will upload a summary document highlighting what's new.

It is recommended that when teams are being formed, each group must recruit at least one member proficient in editing LaTeX documents. While roles such as typesetting or uploading the summary report can be assigned, all members are expected to contribute content on a rotating basis.

Exam Description

Exams (20%): There will be two midterm exams. See the course calendar for the tentative exam dates.

Schedule an individual meeting with the instructor to pick up your graded exam and discuss how the class is going. There may be opportunities for exam corrections.

Late Work Policy

When students miss work for medical and/or personal reasons, they should access the Student Absence Notification System.

Late problem sets will be accepted until the next assignment due date without the ability to resubmit them. Problem sets submitted after the next assignment due date will result in point deductions following a linear scale.

The following assignments may *not* be turned in late for credit without explicit permission from the instructor:

- Wiki Updates
- Quizzes
- Projects
- Exams

You cannot receive a passing grade for the course without completing all major assessments.

Attendance Expectations

There may be days you do not to attend classes or leave early due to past or ongoing crises or distressing circumstances. Disclosure of specific reasons or details is not expected, but it will be helpful if you could communicate with me about instances of missed sessions or work; this is because (1) frequent or prolonged inactivity with regard to course contents will negatively impact your learning, and (2) open communication will help us reformulate missed assignments to suit your situation. Missing five consecutive class sessions or assignments without prior or follow-up notice will prompt me to check in with you for a 'pulse check'. Please know that I am available to provide resources and connect you to support services.

Grading Criteria

Your grade will be determined by the following rubric:
(Course Point Totals)—100%

- Problem Sets (20%)
- Projects (15%; 5% each)
- Participation (20%)
- Quizzes (5%)
- Class Wiki (20%)
- Exams (20%)

Grading Scale (Letter Grade and Point Range):

A	93% or higher	B-	80%–82.99%	D+	67%–69.99%
A-	90%–92.99%	C+	77%–79.99%	D	63%–66.99%
B+	87%–89.99%	C	73%–76.99%	D-	60%–62.99%
B	83%–86.99%	C-	70%–72.99%	F	less than 60%

Accessing Grades and Instructor Feedback

To access your grades and find all of the instructor's feedback, click on Grades in the course navigation menu. Scroll through the list until you find the new graded assignment (indicated by the blue dot to the left of the assignment name). Then click on the assignment name. You will see your grade. Below it you can click on Show Rubric to see the marked up rubric. Click on the paper title if you want to download the original document. (The instructor's marks or comments will not appear on the downloaded document.) Click on the box to the right of the paper title to see the Turnitin report. Click on View Feedback to see the paper marked up with the instructor's comments/corrections in DocViewer. The instructor's feedback is on the right. Accessing Grades will take you step-by-step through how to find all instructor feedback and see the marked-up paper and rubric.

Policies & Student Responsibilities

Students are responsible for reading, understanding, and abiding by the policies listed on the Student Responsibilities page. This page contains information about conduct, plagiarism, cheating, and Turnitin, among other important policies related to this course, LASB, and NSU.

Artificial Intelligence (AI) Policy

Use Only With Permission. Students are allowed to use advanced automated tools (artificial intelligence or machine learning tools such as ChatGPT or Bard) on assignments in this course if instructor permission is obtained in advance. Unless given permission to use those tools, each student is expected to complete each assignment without substantive assistance from others, including automated tools. Students are responsible for ensuring the accuracy of any information provided by an AI tool.

Source: Adapted from the University of Delaware:
https://ctal.udel.edu/advanced-automated-tools/

Student Success Resources

At some point this semester, you may require help or support from various services on campus to help you be successful in your classes. On the Student Support & Resources page, you will find information about services like tutoring, library resources, advising, and help with writing assignments.

Course Schedule[†]

All Dates are Subject to Change

Date	Agenda	Assigned	Due
Wed, Jan 22	Introduction; System of Linear Equations		
Mon, Jan 27	Gaussian Elimination		Study Plan
Wed, Jan 29	Elementary Row Operations, Quiz 0	PS 1	
Mon, Feb 3	Vectors, Linear Combinations		Wiki 1
Wed, Feb 5	Network Applications, Quiz 1	Proj 1	PS 1
Mon, Feb 10	(no class)		
Wed, Feb 12	TFAE theorem, Quiz 2		
Mon, Feb 17	Presidents Day (no class)		Wiki 2
Wed, Feb 19	Linear Independence (1), Quiz 3	PS 2	
Mon, Feb 24	Linear Independence (2)		
Wed, Feb 26	Linear Transformations, Quiz 4		PS 2
Mon, Mar 3	Matrices (1), Unary Operations		Wiki 3
Wed, Mar 5	Inverses, Quiz 5	PS 3	
Mon, Mar 10	Matrices (2), Block matrices		
Wed, Mar 12	Applications to Graphics, Quiz 6	Proj 2	PS 3
Mar 17–19	Spring Break	Midterm Review	
Mon, Mar 24	Midterm Exam	Self-Eval 1	Wiki 4
Wed, Mar 26	Determinants (theory)		
Mon, Mar 31	Determinants (computation)	PS 4	
Wed, Apr 2	Vector Spaces, Quiz 7		
Mon, Apr 7	Bases and Coordinate Systems	PS 5	PS 4; Wiki 5
Wed, Apr 9	Change of Coordinates, Quiz 8		
Mon, Apr 14	Projections and Norms (Gram–Schmidt)		PS 5
Wed, Apr 16	Linear Regression, Quiz 9	Proj 3	
Mon, Apr 21	Eigenvalues, Eigenvectors	PS 6	
Wed, Apr 23	Characteristic Equations, Quiz 10		
Mon, Apr 28	Diagonalization	Final Review	PS 6; Wiki 6
Wed, Apr 30	Generalized Eigenvalues, Quiz 11	PS 7	
Mon, May 5	Operator Decomposition		
Wed, May 7	Final Exam	Self-Eval 2	PS 7

[†]Not including resubmission deadlines.