University of Wisconsin-Madison

Math 340 - Elementary Matrix and Linear Algebra

Credits: 3

Course Designations and Attributes:
Breadth - Natural Science
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S

Meeting Time and Location: MWF 1:20PM-2:10PM at 6104 Sewell Social Sciences

Instructional Mode: Classroom Instruction

Specify how Credit Hours are met by the Course: This class meets for three in-person 50-minute class periods/two in-person 75-minute class periods and one 50-minute in-person discussion period each week over the semester and carries the expectation that students will work on course learning activities (reading, writing, problem sets, studying, etc.) for about 6 hours out of classroom every week. The syllabus includes additional information about meeting times and expectations for student work.

INSTRUCTORS AND TEACHING ASSISTANTS

Instructor Title and Name: Yang Yang

Instructor Availability: Office Hours: MW 2:30PM-3:30PM, OH's location TBD

Instructor Email/Preferred Contact: yang923@wisc.edu

Teaching Assistants: Chenghuang Chen

TA Email/Preferred Contact: cchen594@wisc.edu

TA Office / Office hours: See Canvas for Office Hours

OFFICIAL COURSE DESCRIPTION

Course Description

An introduction to linear algebra. Topics include matrix algebra, linear systems of equations, vector spaces, sub-spaces, linear dependence, span, basis, rank of matrices, determinants, linear transformations, coordinate representations, kernel, range, eigenvalues and eigenvectors, diagonalization, inner products and orthogonal vectors, symmetric matrices. Covers linear algebra topics in greater depth and detail than MATH 320. Formal techniques in mathematical argument [MATH 341] not covered. Enroll Info: None

Prerequisites

MATH 222

LEARNING OUTCOMES

Course Learning Outcomes

- Express informal mathematical arguments in English using appropriate mathematical terminology and notation.
- Verify if a mathematical object has a given property used in elementary linear algebra (e.g., that a matrix is invertible, that a set is a vector subspace, that a vector is an eigenvector, etc.).
- Recall and state the formal definitions, properties, and theorems associated to elementary linear algebra (e.g., matrix, eigenvector, rank, linear independence, vector space, etc.).
- Resolve algebraic statements related to elementary linear algebra through appropriate computations.
- Check the premises of theorems used in elementary linear algebra in order to apply their conclusions (e.g., that a given matrix has zero determinant and therefore cannot be inverted).

GRADING

Your letter grade will be based on the following weighted components:

Homework: 20%

Discussion Activities: 4%

Midterms: 46%=2x23%

Final: 30%

The following scores correspond to the guaranteed letter grades in this course. The cut-offs may be adjusted slightly in favor of the students at the end of the semester by the instructor.

$$A \geq 92\% > AB \geq 89\% > B \geq 82\% > BC \geq 79\% > C \geq 70\% > D \geq 60\% > F$$

DROP AND MAKEUP ASSIGNMENT POLICY

To be accomodating, we will automatically drop the three lowest scores of your homeworks and two lowest scores of your discussion activities. There are **no** makeup homework and discussion activities. See **EXAMS** section for drop and makeup policy for exams (midterms and final).

HOMEWORK

Homework is assigned through Canvas using the online homework system MyOpenMath. Several homework sets will be assigned each week and are typically due on Wednesdays at 11:59pm.

- Late homework is accepted for 48 hours after it is due with a 20% penalty on problems completed after the deadline; request an automatic extension from MyOpenMath (via Canvas) by clicking “Redeem LatePass” **without viewing the solutions**. Late requests are not accepted. Your three lowest homework scores will be dropped.
- Canvas will update your homework score when you begin working on a homework set. It will say “Assignment Submitted” but you can still work on it before the deadline. Go back into the homework assignment through Canvas Assignments to resume the assignment.
- Each problem has 3 attempts, then generates a new version. You get 20 versions, and the best score is saved. Do NOT waste your attempts.
- If you’re struggling with a problem, please post it on Piazza. If you’d like to show us your work for feedback, please post it privately to the instructors.
- Study tip: Keep a complete written record of your homework, clearly organized by section, assignment, and problem to help you learn the material, minimize mistakes, and review for exams.

DISCUSSION ACTIVITIES

Attendance at your enrolled Discussion section is expected. There will be an in-person assignment at each Discussion session, either an Exit Ticket or Quiz.

- *Exit Tickets* are completed via Canvas in the last 5 minutes of discussion and require a registration code; sharing of registration code with others is considered academic

misconduct. Exit Tickets are completion credit and intended to help you reflect on the current material in the course.
- *Quizzes* are in-person, individual, graded quizzes during Discussion. Quiz problems are work-out and are graded on correctness and clarity of explanation. No resources are allowed for Quizzes. They will be returned electronically via Gradescope.

You can see the schedule for Exit Tickets and Quizzes in the Weekly Schedule on Canvas. The **Drop and Makeup Assignment Policy** explains how we accommodate for absences.

EXAMS

Exams in this course are in-person and proctored. There will be two midterms exams and one final exam for this course. Midterm exams will be evening exams. The location will be announced on Canvas before the exam. All exams are closed book, closed notes and no calculators or electronic devices of any kind are allowed. Collaboration is NOT allowed during exams.

Makeup Exam Policy: If you have a lab or class scheduled at the same time as the midterms you are eligible to take a makeup exam. Makeup times and dates are posted on our Canvas site. Documentation may be required to request a makeup exam. Makeup requests must be submitted **at least a week** before the scheduled exam date. **Makeup requests on the day of the midterm will be denied.**

Dropped Exam Policy: If a student cannot take a midterm or the makeup due to an academic conflict, health conflict, or other university sanctioned conflict, said midterm may be dropped and replaced by the grade on the final exam. All exam drops require prior instructor approval. You must reach out to your instructor BEFORE the exam to discuss if your situation qualifies for a drop. In emergency situations (e.g., a student was unconscious during the exam, so had no way of reaching out to their instructor before the exam), accommodations may be provided without prior authorization.

Only students with three final exams in a 24 hour period or two exams at the same time are eligible per university policies to take a final exam makeup. DO NOT plan any travel for the date of the final exam. Travel plans are not a valid reason to take the makeup exam.

Incompletes may be granted in cases of family emergencies, illnesses, or other unavoidable conflicts.

If a student misses both midterm exams and misses the final as well then that student will not qualify for an incomplete. Students in this situation should contact the Office of Student Assistance and Support (formerly the Dean of Students Office) for guidance.

Exam Dates

Midterm 1: Thursday, October 9th, 2025 from 7:30pm-9:00pm

Midterm 2: Thursday, November 13th, 2025 from 7:30pm-9:00pm

Final Exam: Monday, December 15, 2025 from 5:05pm-7:05pm

GRADE APPEALS

All grade disputes must be dealt with within 48 hours after receiving your grade on Canvas. Note that regrade requests will require regrading of the entire problem and may lead to raising, unchanging, or even possibly lowering the original score. Instructors will have all appeals addressed within two weeks after the exam is given. Gradescope grades will be resynced to Canvas AFTER all appeals have been addressed.

COURSE WEBSITE, LEARNING MANAGEMENT SYSTEM AND DIGITAL INSTRUCTIONAL TOOLS

Information about the course material, announcements, lecture notes, assignment submissions, videos, and exam reviews will be posted on the Canvas site.

Recording and privacy policy: Students are not permitted to make recordings (neither video nor audio) in the classroom. The classroom is a place for learning and your fellow classmates deserve privacy and respect during this time. See **PRIVACY OF STUDENT RECORDS & THE USE OF AUDIO RECORDED LECTURES STATEMENT** for more information.

REQUIRED TEXTBOOK, SOFTWARE, AND OTHER COURSE MATERIALS

Note: The book is available freely on Canvas.

Title: *Discover Linear Algebra*

Author: Jeremy Sylvestre

COURSE WEBSITE, LEARNING MANAGEMENT SYSTEM and INSTRUCTIONAL TOOLS

- Our Learning Management System is Canvas. The site for our course is: https://canvas.wisc.edu/courses/466820
- We will use Gradescope for grading exams and quizzes.
- We will use Piazza. This page is a forum for you to discuss the material of this class with other students and your TAs and/or instructor. Posts to this page should be confined to questions regarding the material and logistical questions about the class (e.g., exam dates and locations). Any posts containing comments (either positive or negative) about the instructors, the class, the students, or anything else, will be deleted. Unprofessional conduct may result in disciplinary action. Please do not use email for math questions.
- Some TA and/or instructor office hours may be held remotely. Zoom or MSTeams may be used for this purpose.

Academic Policies and Statements

- Academic Calendar and Religious Observances
- Academic Integrity
- Accommodations for Students with Disabilities
- Course Evaluations
- Diversity and Inclusion
- Mental Health and Well-Being
- Privacy of Student Records and the Use of Audio Recorded Lectures
- Students' Rules, Rights and Responsibilities
- Teaching & Learning Data Transparency