

Syllabus for MATH 244 - 01, Linear Algebra

College of the Holy Cross, Spring 2025

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Office Hours: 1:30pm - 3pm on Wednesdays and Thursdays, or by appointment

Meeting Times and Location: 9:00am - 9:50am on MWF, Swords 302

Course Description: This is an introductory course in Linear Algebra. In this course, we will study vector spaces and their properties, mappings between vector spaces which are known as linear transformations, Matrices, determinants, eigenvalue theory, and the finite dimensional spectral theorem. Linear Algebra is used in almost every area of mathematics. We will also discuss applications of Linear Algebra as we go along the semester.

Recommended Reading:

- (1) A Course in Linear Algebra by David B. Damiano and John B. Little. We will cover Chapters 1 - 4.
- (2) Linear Algebra Done Right by Sheldon Axler. Fourth Edition. Undergraduate Texts in Mathematics.

Course Materials: All announcements, materials and grades will be posted on Canvas.

Quizzes: There will be seven in-class quizzes during the semester. The lowest quiz grade will be dropped.

Here are the dates you will be taking a quiz:

Quiz 1 (Feb 7), Quiz 2 (Feb 14), Quiz 3 (Feb 21), Quiz 4 (Mar 14), Quiz 5 (Mar 28), Quiz 6 (Apr 11), Quiz 7 (April 25)

It is strongly advised that you do all of assigned homework since the quizzes will closely resemble the homework problems.

Homework: Each homework assignment will be posted on Canvas a week prior to its due date. You must submit your solutions as a hard copy. Ten points will be deducted from late homework. No homework assignment will be accepted after 5 days from the due date. No homework grade will be dropped.

No help from any Internet sources is allowed. Plagiarism will not be tolerated and will be treated as a violation of the Departmental Policy on Academic Integrity.

By doing mathematics you learn mathematics. You learn math best when you approach the subject as something you enjoy. Learn to explain mathematics to your classmates. Mathematics can be fun and rewarding when there are people around you who enjoy figuring out problems as much as you do. Take advantage of this opportunity and organize study groups. I will not consider working on homework problems with your classmates as a violation of the academic honesty policy in the department. However, you must prepare and submit your own solutions.

Please follow these guidelines when you submit homework assignments:

- Put your name, the date, and the homework assignment number at the top of the first page.
- Staple multi-page assignments.
- Write neatly and show all your work.
- On the last page of your assignment, please write the name(s) of your classmate(s) with whom you work on homework problems (with an asterisk).
- Make sure you attach the honor code.

All homework assignments are due by 4pm on the following days:

Homework 1 (Jan 31), Homework 2 (Feb 7), Homework 3 (Feb 14), Homework 4 (Feb 21), Homework 5 (Mar 14), Homework 6 (Mar 21), Homework 7 (Mar 28), Homework 8 (Apr 4), Homework 9 (Apr 11), Homework 10 (Apr 25)

Exams: There will be two exams during the semester. The exams are 90-minute exams; they will be held from 6pm to 7.30pm on February 26 (Wednesday) and April 14 (Monday) in Smith Labs 155. No exam grade will be dropped.

Final Exam: There will be a mandatory cumulative final exam in this course. Location and time of the final exam are to be determined. **Check for final exam schedule conflicts as soon as possible.**

Snow Days: If classes are cancelled due to snow, or for other official reasons, any scheduled quiz or test will occur during next class meeting.

Grading: The course grade will be determined as follows:

Homework: 20% (2% each)

Quizzes: 15% (2.5% each)

Exams: 40% (20% each)

Final Exam: 25%

Final grades will be given according to the following percentage cutoffs. These cutoffs, although fairly strict, can be lowered (according to class performance), but not raised, no matter how well the class performs.

$$A \geq 93, \quad 90 \leq A- \leq 92, \quad 87 \leq B+ \leq 89, \quad 83 \leq B \leq 86, \quad 80 \leq B- \leq 82, \quad 77 \leq C+ \leq 79, \quad 73 \leq C \leq 76, \quad 70 \leq C- \leq 72,$$

$$67 \leq D+ \leq 69, \quad 63 \leq D \leq 66, \quad 60 \leq D- \leq 62, \quad F \leq 59$$

An incomplete grade is given if you have a good attendance record, have completed all the assignments with an overall grade of at least 70%, and have missed the final exam for a valid reason. An incomplete grade is given at the discretion of the instructor.

Calculators: Calculators are not allowed on exams and quizzes.

Additional Resources: Zack Wu is the teaching assistant (TA) for this course. Zack holds office hours in Swords 209 from 5pm - 7pm on Thursdays. You may contact Zack at zwu25@holycross.edu.

Issues with the Course/Instructor: If you have issues with this course and/or instructor which you are not comfortable discussing with your instructor, you should contact the Chair of the Department of Mathematics and Computer Science, Professor Eric Ruggieri, at eruggier@holycross.edu.

Academic Honesty: A necessary prerequisite to the attainment of the goals of the College is maintaining complete honesty in all academic work. Students are expected to present their own work in exams and in any material submitted for credit. Students may not assist others in presenting work that is not their own. Offenders are subject to disciplinary action. A violation of the Department Policy on Academic Integrity will result in a 0 for that quiz or exam, and a letter describing the occurrence of academic dishonesty will be sent to the Chair of the Department of Mathematics and Computer Science and your Class Dean.

For more on Academic Integrity see:

<https://www.holycross.edu/academics/programs/mathematics-and-computer-science/node/211581/academic-integrity>

Diversity and Inclusion: It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength, and benefit. Any suggestions you have pertaining to diversity and inclusion are encouraged and appreciated.

Important:

- (1) Any student with special needs is encouraged to meet with me during the first week of classes to discuss accommodations. The student must bring a current Memorandum of Accommodations from the Office of Accessibility Services. The following is the link to the Office of Accessibility Services:

<https://www.holycross.edu/health-wellness-and-access/office-accessibility-services>

- (2) Please note that, consistent with applicable federal and state law, this course may be video/audio recorded as an accommodation only with permission from the Office of Accessibility Services. Students are not permitted to record the contents of this class under any other circumstances.
- (3) If you are an athlete and have conflicts with an important class activity (homework, quiz, exam, or final), please let me know in advance.
- (4) For College's Excused Absence Policy see:

<https://catalog.holycross.edu/requirements-policies/academic-policies/#coursepolicies>

- (5) All electronic devices (mobile phones, laptops etc.) must be turned off during class time, quizzes, exams and final exam.

Syllabus: Syllabus is subject to change. It is your responsibility to be aware of any changes I may make to the syllabus as they are announced in class. Students are responsible for all information given when they are absent.

Some Additional Notes:

- (1) I will hold an additional 2-hour final exam review session the day before (or two days before) the final exam. We will discuss and find a time that works for all of us. I will let you know the location before you go home for Easter Break.
- (2) I will hand out worksheets in class. Since we do not have time to work on all the problems on problem sheets in class, I will post their solutions on Canvas. However, I encourage you all to work on the problems and bring questions to my office hours.

Important Dates:

March 3 – 7	Spring Break: no classes
April 17, 18 & 21	Easter Break: no classes
April 23	Academic Conference Day: no classes

May 5, Monday, Last day of classes
May 10, Saturday – May 15, Thursday, Final Exams
Final Exam is based on all sections covered in class.

The mind is not a vessel to be filled but a fire to be kindled.

— Plutarch