

Math 217: Linear Algebra

Instructor: John Lorch

Spring 2026 Syllabus

General Information:

Instructor: John Lorch, jlorch@bsu.edu. My office is Robert Bell 473. Office hours will be held regularly. See Canvas for the times.

Textbook: Linear Algebra with Applications, 5th edition, by Otto Bretscher. You just need access to a copy of this book somehow, in hard copy or digital format.

About the course:

Linear algebra is a beautiful subject that melds parts of algebra and geometry. Algebraically, it is the study of (systems of) linear equations, answering questions like: “how do we find solutions?” and “how many solutions should we expect?” Geometrically, it is the study of points, lines, planes, and the transformations between them. These two perspectives combine to make a powerful theory that is central to pure and applied mathematics, statistics, data science, and other disciplines from biology to economics.

Official BSU course information:

Course Description: Theory and application of systems of linear equations, vector equations, linear transformations, vector spaces, and inner product spaces. Includes the use of computer software.

Course Objectives: Students will learn to solve basic computational problems involving systems of equations, matrices, vector spaces and linear transformations. Students will master fundamental concepts and will learn to use precise language related to the theory of vector spaces and linear transformations. Students will become acquainted with technology (e.g. calculators and/or computer software) that is helpful in solving computational problems in linear algebra.

Course Rationale: Linear algebra is a fundamental topic in mathematics that finds wide application in computer science, engineering, physics, and other fields. It is fundamental in solving certain types of systems of equations (namely, linear equations). Further, since many systems can be approximated by linear systems, the techniques of linear algebra provide powerful tools in solving applied problems. Finally, many geometric transformations (e.g., rotations and reflections of the plane) are linear transformations, and because of this, linear algebra has important connections to geometry.

Coursework:

Homework: There will be regular homework sets in the course. These will be posted on Canvas and will consist mainly of problems mostly from the textbook. You should always show your work and explain how you got your answers. Homework should be scanned and uploaded to Canvas. Late homework will generally not be accepted, but the lowest two homework scores will be dropped from your final grade. You are welcome to work with your classmates on the homework problems. However, you must write up your solutions on your own. On each homework, some selected problems will be graded for correctness, while the remainder will be graded for completion.

Exams: There will be three 50-minute midterm exams in class during the semester. In addition, there will be a cumulative two-hour final exam on Wednesday, December 10 from 9:45—11:45 am. Makeup exams will be given only in exceptional circumstances (documented illness, family emergency).

Communication

All information about the course, including this syllabus, will be posted on the Canvas website for the course. I’m happy to discuss mathematics, or other matters related to the course, by email or in person during my office hours. If you

would like to talk during a time outside of my usual office hours, just send me an email and we will set up a time to meet.

Grading

Your final course grade will be based on: 20% Homework, 20% Exam 1, 20% Exam 2, 20% Exam 3, 20% Final Exam. At the end of the course, I will use the above scheme to assign you a numerical grade, which will be converted into a letter grade using the standard college scale. I may adjust these cutoffs slightly at the end of the semester, but if I do it will only be downwards (i.e., to be more lenient). There is no form of “extra credit” in the course beyond the above assignments and exams. The best way to get a good grade in the course is to attend lecture, do all assigned readings and problems, and ASK QUESTIONS during class and office hours.

Attendance

Despite popular myth, math is not usually done alone by geniuses in poorly lit rooms; far more often, it is done by people discussing ideas together. Although there are no formal grade penalties for missing class, regularly doing so will make it difficult for you to pass the course. If you do miss class, it is your responsibility to learn the material we discussed on your own (of course with help from my office hours if you like). Whether I am lecturing or we are working on problems together, class time should be for active learning, not passive watching. Please arrive on time and participate in class discussions: ask questions and propose ideas. Please do not use your cell phone, laptop, etc. during class time, unless instructed otherwise.

Other policies and resources

BSU Statement on Discourse: We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse.

BSU Statement on Adaptations: If you need course adaptations or accommodations because of a disability, please contact the instructor of record as soon as possible. Ball State's [*Disability Services*](#) office coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability Services can be contacted at 765-285-5293 or [*dsd@bsu.edu*](mailto:dsd@bsu.edu).

Other Information: Do not hesitate to contact me with any questions or concerns. For additional help, you can also contact the Learning Center at 285-1006, NQ 350.

Withdrawals: The course withdrawal period ends in March. Before this time, students can elect to receive a “W” for the course by completing and submitting the proper form. The instructor’s permission is not required. For details, see Degree Requirements and Time Limits in the current Undergraduate Catalog.

Student Academic Ethics Policy:

<https://www.bsu.edu/about/administrativeoffices/studentrights/policiesandprocedures/studentcode/student-academic-ethics-policy>;

Code of Student Rights and Responsibilities:

<https://www.bsu.edu/about/administrativeoffices/studentrights/policiesandprocedures/studentcode>.