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## Math 217: Linear Algebra

Fall 2016

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**Webpage:** Canvas <https://umich.instructure.com/courses/97920>

**Required text:**

*Linear Algebra with Applications*  
(5<sup>th</sup> edition)  
by Otto Bretscher

**Prerequisites:**

Math 215, 255, or 285.

**Instructors:**

Cochran, Amy (011/014)  
Daurat, Sandrine (002/005)  
DeBacker, Stephen (006)  
Fernandez-Breton, David (012)  
Goluskin, David (008/010)  
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### Course topics and goals:

This course is designed to give potential math majors, and those interested in the theory behind the mathematics, a rigorous introduction to linear algebra. The topics we will cover are, roughly, systems of linear equations; matrix algebra; vectors, vector spaces, and their subspaces; geometry of  $\mathbb{R}^n$ ; linear dependence, bases, and dimension; linear transformations; eigenvalues and eigenvectors; diagonalization; inner products.

We will not only study the above concepts and their applications, but also the methods by which one proves the foundational results in linear algebra. Consequently, this course has two major goals: to learn linear algebra and to learn how to write a rigorous mathematical proof. Students should leave this course prepared to use linear algebra as well as to succeed in further theoretical courses in mathematics. This is a challenging course, and those interested only in the computational side of linear algebra should consider Math 214 or 417.

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### Grading:

Your course work will be weighted out of 200 points, broken down as follows:

Written homework:	40 pts
Part A:	= 15 pts
Part B:	+ 25 pts
Web homework:	15 pts
Quizzes:	25 pts
Midterm 1:	35 pts
Midterm 2:	35 pts
Final exam:	50 pts

There will be 11 written homework assignments and up to 11 graded quizzes. We will drop one Part A score, one Part B score, and one quiz score, the lowest in each category. Web homework includes weekly assignments as well as daily reading questions, all of which will be posted at <https://instruct.math.lsa.umich.edu/webwork2/ma217-f16/>.

### Gateway exam:

There will be one gateway exam, covering elementary matrix operations. The gateway will open Monday, September 12, and close Wednesday, September 21. Students will lose a third of a letter grade (on their grade for the course) for failing to pass the proctored gateway during the open period. Proctored gateways are administered in the gateway lab (B069 EH) and may be taken no more than twice per day. Students may practice the gateway from any computer at any time (and many times) during the open dates for the exam.

### **Written Homework:**

Homework assignments will generally be assigned (on the Canvas course page) each Friday and due the following Friday in class. **Written assignments are due at the beginning of class.**

The written homework consists of two parts which must be written up and turned in separately. **Part A** will consist of short problems from the textbook. **Part B** will be several longer problems each requiring some insight and a carefully prepared solution.

You are encouraged to work together on homework assignments, but **you must write up your solutions independently**. Your solutions should be written clearly, legibly, showing all of your work, and fully explaining your reasoning. *You should really think of 217 as a writing course.*

### **Webwork:**

It is your responsibility to check the website regularly to determine when new webwork assignments and reading questions are available. The link to the web exercises for Math 217 can be found at <https://instruct.math.lsa.umich.edu/webwork2/ma217-f16/>. Note that the due dates for reading questions may vary by course section.

### **Quizzes:**

There will be regular quizzes. Quizzes will be short, in-class assignments to test comprehension of recent material. A quiz could involve definitions, True/False questions, computations or short proofs. Please consult your instructor for the specific details regarding the quizzes in your section.

### **Exams:**

You will have two midterm exams and one final exam. No calculators, note cards, books, or other outside materials are allowed on any exam.

First Midterm:	Wednesday, October 19, 6:00-8:00pm
Second Midterm:	Wednesday, November 16, 6:00-8:00pm
Final Exam:	Monday, December 19, 10:30am-12:30pm

Make-up exams will be available only to students who have a serious emergency, a strongly compelling personal reason, or grave academic conflict. Grave academic conflict is defined as having two examinations scheduled so that you cannot physically attend both, or having four or more examinations scheduled on the same day. All conflicts will be verified through the undergraduate office.

### **Accommodations for students with disabilities:**

If you think you need an accommodation for a disability, please let your instructor know as soon as possible. In particular, a Verified Individualized Services and Accommodations (VISA) form must be provided to your instructor at least two weeks prior to the need for a test/quizzes accommodation. The Services for Students with Disabilities (SSD) Office (G664 Haven Hall; <http://ssd.umich.edu/>) issues VISA forms.

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**Academic dishonesty policy:**

Do not cheat! Students who cheat will be penalized. Serious misconduct may have consequences beyond merely failing the course.

**Student Responsibilities:**

This course will present you with an opportunity to take control of and responsibility for your own learning. You will have numerous resources available to you, including your instructor, your classmates, the textbook, class worksheets, and homework sets, not to mention a vast array of external sources from the library or the web that you may find useful. Everybody learns differently, and in this class you will want to identify and cultivate learning strategies that work best for you.