College of the Holy Cross, Spring Semester, 2016
Math 244, Section 02 (Professor Hwang)
Course Information Sheet

Contact Information

Office: 339 Swords Hall
Office Hours: M 11:00–11:50 PM, W 1–1:50, R 11–11:50 AM, or by appt.
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Introduction

In *Linear Algebra*, we investigate matrices, matrix multiplication, and far-reaching generalizations called *vector spaces* and *linear transformations*. As in *Algebraic Structures*, logical precision and clarity of written expression are paramount.

The most important action you can take is to **keep up with the course**: Read ahead, come to class with questions, have a serious look at each problem set the day it is handed out, and visit me in office hours. Do not wait a week to see me if you start to fall behind; much more so than in earlier courses, the material of *Linear Algebra* builds on itself. The abstract nature and rapid pace of the course put stringent demands on you.

Academic Honesty

The problem sets are your chance to work through ideas and course concepts in a low-risk setting. **It's far more important to learn from your mistakes on the problem sets than it is to get a high score on each assignment.** Please treat written work accordingly. Don't mindlessly mimic your classmates' work just for the sake of getting a few more homework points. This bad habit will come back to bite you on the midterms.

You are welcome to engage in *honest collaboration* with your classmates on the problem sets. Specifically, write up the first draft of each problem set **entirely on your own**. Let the ideas sit for a day or two. Then meet with one or two classmates and compare your **ideas**.

Do not exchange written work with classmates; doing so constitutes *dishonest collaboration*. As noted above, this bad habit will also harm your course grade in the long run.

A more complete statement may be found on the problem set page:

`http://mathcs.holycross.edu/~ahwang/teach/244/prob.html`

Grading

Problem sets (20%), midterm tests ($20 + 2 \times 15 = 50\%$), final exam (30%).

Problem Sets Problem sets will be posted each Friday, and are due the following Friday at the beginning of the lecture. Late problem sets will not be marked for grading, but should be turned in for commenting. There may be occasional group assignments.

Midterm Tests There are three non-cumulative midterm tests, scheduled for Friday, February 19; Wednesday, March 23; and Friday, April 22. In total, the midterms count for 50% of your grade: The best score counts for 20%, the other two scores are worth 15% each. Midterms will be held in class. If you have a midterm conflict due to an athletic event, illness, or a family emergency, notify me and your Class Dean immediately.

Final Exam The cumulative final exam is worth 30% of the course grade. The date and time of the final exam will be announced in the first few weeks of the semester. **Do not make travel plans that conflict with the midterms or final exam!**

Meeting Schedule

Deviations from this schedule will be announced by email or in class.

W	Jan 27	Section 1.1	Matrices
F	Jan 29	Section 1.1	Matrix Multiplication
M	Feb 1	Section 1.1	Invertibility
W	Feb 3	Section 1.2	Systems of Linear Equations
F	Feb 5	Section 1.2	Row-Echelon Form
M	Feb 8	Section 1.2	Elementary Matrices
W	Feb 10	Section 1.2	Matrix Inversion
F	Feb 12	Section 2.1	Vector Spaces
M	Feb 15	Section 2.1	Linear Combinations
W	Feb 17	Section 2.2	Subspaces
F	Feb 19		**Midterm 1**
M	Feb 22	Section 2.2	Subspaces
W	Feb 24	Section 2.3	Spans
F	Feb 26	Section 2.3	Sums and Direct Sums
M	Feb 29	Section 2.4	Linear Independence
W	Mar 2	Section 2.4	Bases
F	Mar 4	Section 2.4	Dimension
Spring Break			
M	Mar 14	Section 2.4	The Dimension Theorem
W	Mar 16	Section 3.1	Inner Products
F	Mar 18	Section 3.2	Orthonormal Sets
M	Mar 21	Section 3.2	Orthogonal Matrices
W	Mar 23		**Midterm 2**
Easter Break			
W	Mar 30	Section 3.2	Orthogonal Projection
F	Apr 1	Section 3.2	Best Approximation
M	Apr 4	Section 3.3	Determinants
W	Apr 6	Section 3.3	Determinants
F	Apr 8	Section 4.1	Linear Transformations
M	Apr 11	Section 4.1	Linear Transformations
W	Apr 13	Section 4.2	The Space of Transformations
F	Apr 15	Section 4.2	Change of Basis
M	Apr 18	Section 4.3	The Rank-Nullity Theorem
W	Apr 20	Section 4.3	The Rank-Nullity Theorem
F	Apr 22		**Midterm 3**
M	Apr 25	Section 5.1	Linear Operators
W	Apr 27	Section 5.2	Eigenvalues and Eigenvectors
F	Apr 29	Section 5.2	Diagonalizability
M	May 2	Section 5.3	The Chapacteristic Polynomial
W	May 4	Section 5.4	Symmetric Operators
F	May 6	Section 5.4	Symmetric Operators
M	May 9	Section 5.5	Topics