MATH 289, Linear Algebra and its Applications, Autumn, 2010
Walla Walla University

BULLETIN DESCRIPTION: Study of matrices and determinants, vector spaces, linear transformations, eigenvalues and eigenvectors, with applications. Prerequisite: MATH 123 or 181.

INSTRUCTOR: Dr. Kenneth L. Wiggins, 338 KRH, 527-2088, ken.wiggins@wallawalla.edu

OFFICE HOURS: 2 TuWTh, 3 M, 11 F, Other Office hours by appointment

OBJECTIVES: After finishing this course, the student should be able to organize and effectively communicate ideas involving:

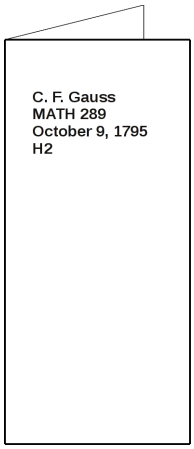
- systems of linear equations, row reduction, linear independence, matrix transformations
- matrix algebra, determinants, rank, dimension, subspaces of $\mathbb{R}^n$
- eigenvalues and eigenvectors
- applications of matrices

TEXT: *Linear Algebra and its Applications*, 3rd updated edition, David C. Lay, Addison-Wesley 2005, ISBN 0321287134

ASSESSMENT: All assessment will be based on both correctness and quality, including the quality of your presentation.

Category	**Weight**
Homework & quizzes	20%
Two tests	50%
Final exam	30%

Grade	**Percent**	**Grade**	**Precent**
A	91-100%	C	70-74%
A-	89-90%	C-	65-69%
B+	86-88%	D+	62-64%
B	83-85%	D	58-61%
B-	80-82%	D	55-57%
C+	75-70%	F	0-54%



HOMEWORK: The surest way to succeed in MATH 289 is to study each day. To aid you in your study, homework problems will be assigned daily. Most of this homework will be done on the computer, but you will hand in a weekly assignment that you will do on paper. Be sure to show all work neatly and indicate your answers clearly. The weekly assignments are given specifically for you to practice clear and precise presentations. Please fold your paper homework lengthwise and label it as illustrated in the diagram above.

QUIZZES: Occasionally quizzes may be given over the lectures and homework.

TESTS: Two 50-minute examinations will be given during the quarter. These will cover the lectures and the homework, and you will take these tests without calculators.

FINAL EXAMINATION: This test is scheduled for 12-1:50, Wednesday, December 15. Attendance is required, so make your travel plans early with this appointment in mind.

CLASS ATTENDANCE: Students are expected to attend all classes and to remain in their seats for the entire class period. In addition, students are expected to give their full attention to the class discussions, and to be courteous, respectful, and supportive of the learning environment. Cell phones, computers, personal organizers, and all other electronic devices are not to be used by students during class. Modifications to the homework assignments or test schedule may be announced in class.

DISABILITIES: If you have a physical and/or learning disability and require accommodations, please contact your instuctor or the Special Services office at 527-2366. This syllabus is available in alternative print formats upon request. Please ask your instructor.

ACADEMIC INTEGRITY: Some collaboration on homework is allowed, but the work you submit for grading must be your own. Any type of cheating on a test or examination, including but not limited to copying another student's work or using unauthorized notes or electronic equipment, will result in a zero grade for the test or a failing grade for the quarter and possibly futher disciplinary action taken by the Associate Vice President for Academic Administration.

TOPICS BY WEEK:

Week 1

- Systems of equations
- Row reduction
- Vectors

Week 2

- Vector-matrix equations
- Solution sets
- Linear independence

Week 3

- Linear transformations
- Transformation matrices

Week 4

- Matrix operations
- Matrix inverses
- Invertable matrices

Week 5

- Test I
- Subspaces of $\mathbb{R}^n$
- Rank and dimension

Week 6

- Determinants
- Properties of determinants
- Applications of determinants

Week 7

- Eigenvectors and eigenvalues
- The characteristic equation
- Diagonalization

Week 8

- Eigenvectors and transformations
- Test II

Week 9

- Inner products and orthogonality
- Orthogonal projections
- The Gram-Schmidt process

Week 10

- Applications of linear algebra

Week 11

- Final Examination