Math 3013 - Linear Algebra

Syllabus - Summer 2016

Instructor:	Dr. Birne Binegar 430 Mathematical Sciences Tel. 744-5793 Email: binegar@okstate.edu WWW: http://lie.math.okstate.edu/~binegar
Lectures:	MTWTh 10:30–11:45 in 514 MSCS
Office Hours:	Mondays and Wednesdays 12:00 – 1:00 in 430 MSCS
Required Text:	*Linear Algebra: A Modern Introduction*, 4th Edition, by David Poole, ISBN-13 978-1-285-46324-7
Prerequisites:	Calculus II
Course Objectives:	Students entering the course are expected to have completed Calculus II and to be very competent at algebra. Upon completing the course students will understand the basic notions of linear systems, vectors, matrix algebra, and vector spaces. Computational skills should be sharp.
Homework:	Homework problems will be assigned daily in class. All the homework assigned during a given week will be due at the beginning of the first class of the following week. Several of the homework assignments may involve the use of the computing facilities at the MLRC (Mathematical Learning Resource Center), located on the fourth floor of the Classroom Building
Examinations:	There will be two midterm examinations worth 100 pts each and one final examination worth 150 pts.
Grades:	Grades will be determined exclusively from homework, midterm, and final exam scores.

2 Midterm Examinations	200 possible pts.
Homework and Quizes	25 possible pts.
Final Examination*	150 possible pts.
	375 possible pts.

Letter grades will be assigned as follows:

A:	337	-	375 pts.
B:	300	-	336 pts.
C:	262	-	299 pts.
D:	225	-	261 pts.
F:	0	-	224 pts.

This course will be conducted in accordance with the standard OSU Policies and Procedures.
(See https://academicaffairs.okstate.edu/sites/default/files/Summer%202016%20Syllabus%20Attachment%20Changes.pdf for details on these policies)

Math 3013
Course Outline

I: Vectors and Matrices

- Vectors
- Vector operations
- Matrices
- Systems of Linear Equations
- Solving Linear Systems
- Matrix Inverses
- Subspaces and Bases

FIRST EXAM

II: The Vector Space $\mathbb{R}^n$

- Linear Independence and Dimension
- The Rank of a Matrix
- Linear Transformations

III: General Vector Spaces

- Definition of a Vector Space
- Subspaces, Linear Independence, and Bases
- Coordinatization of Vectors
- Linear Transformations

SECOND EXAM

IV: Determinants

- Areas, Volumes and Cross Products
- Determinants
- Methods of Computing Determinants
- Cramer's Rule

V: Eigenvalues, Eigenvectors, and Eigenspaces

- Eigenvalues, Eigenvectors, and Eigenspaces
- Diagonalization
- Applications

VI: Orthogonality

- Projections
- The Gram-Schmidt Process
- Orthogonal Matrices
- Projection Matrices

FINAL EXAM