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SYLLABUS

MATH 226 - Linear Algebra and Applications
Framingham State University
Summer 2018

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Disclaimer: This syllabus is intended to give the student guidance in what may be covered in the course and will be followed as closely as possible. However, the professor reserves the right to modify, supplement and make changes as needs arise.

Session: Summer 2018(May 28th, 2018-June 29th, 2018)
Credit: 4
Teaching Hours: 50 Hours
Time: 2 hours/day, Mon.-Fri.
Professor Name: Professor Sandberg
Title: Professor Emerita of Mathematics
Home Institution: Framingham State University
Email: ssandberg@framingham.edu

Text: Howard Anton, Elementary Linear Algebra (11th ed), John Wiley & Sons, Inc.

Course Description : A study of vector spaces, subspaces, linear dependence, bases, dimension, linear mappings, linear equations, matrices, inner products and norms, determinants, quadratic forms, and the spectral theorem. Applications to various fields outside of mathematics are examined.

Prerequisites: MATH 219 Calculus I.

Topics to be covered include: systems of linear equations, matrices, determinants, vectors and vector spaces, inner product spaces, linear transformations, eigenvalues and eigenvectors. Applications and the history of linear algebra will also be discussed.

Homework: Homework will be regularly assigned, but will not be collected. It is, however, very important to do all the homework.

Attendance: Regular attendance in class is important. However, there is no direct penalty for absences.

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Course Outline

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Topics	Textbook Sections
Week 1	
5/28 Systems of linear Equations	section 1.1
5/29 Gaussian Elimination	section 1.2
5/30 Matrix Operations	section 1.3

5/31-6/1   Matrix Inverses   section 1.4-1.6

Exam 1

Week 2
6/4   Special Matrices   section 1.7
6/5   Matrix Transformations   section 1.8
6/6   Cofactor Expansion   section 2.1
6/7   Determinants   section 2.2
6/8   Cramer's Rule   section 2.3
           Vectors   section 3.1

Exam 2

Week 3
6/11   Norm and Dot Product   section 3.2
           Orthogonality   section 3.3
6/12   Geometry of Linear Systems   section 3.4
6/13   Cross Product   section 3.5
6/14   Real Vector Spaces   section 4.1
6/15   Subspaces   section 4.2

Exam 3

Week 4
6/18   Linear Independence   section 4.3
6/19   Bases   section 4.4
6/20   Dimension   section 4.5
           Change of Basis   section 4.6
6/21   Spaces – Row, Column, Null   section 4.7
6/22   Rank and Nullity   section 4.8

Exam 4

Week 5
6/25   Eigern values Eigenvectors   section 5.1
           Diagonalization   section 5.2
6/26   Complex Vector Spaces   section 5.3
6/27   Inner Products   section 6.1
6/28   Angle and Orthogonality   section 6.2
6/29   Gram-Schmidt Process   section 6.3

Final Exam

Exams: There will be an hour-long, closed-book exam each week. THERE WILL BE NO MAKE-UP EXAMS. In the event that a student misses an exam and presents an acceptable reason to the instructor, the final exam grade will be counted for the missed exam. If you are able to do the homework problems, then you should do well on the exams because the questions on the exams will look very similar to the homework. If they don't, please come and see me right away.

I have frequent exams so that you and I both know how you are doing throughout the semester. If you start doing poorly on the exams, please come and see me so that we can together figure out how you can improve. Don't get behind in this class because it is very difficult to catch up when you do.

Final Exam: A comprehensive final exam will be given during the last week.

Grading: The exam average will count 70% of the final grade and the final exam will count 30%. The letter grade will be calculated as follows:

Overall Average Grade	Letter Grade
95 – 100	A
90 - 94	A-
87 - 89	B+
83 - 86	B
80 - 82	B-
77 - 79	C+
74 - 76	C
70 - 72	C-
67 - 69	D+
63 - 66	D
60 - 62	D-
00 - 59	E

Academic Honesty: I expect that all of your work will be your own. Please see the undergraduate catalog for the college's policy on academic honesty (http://www.framingham.edu/undergraduate-catalogs/documents/1011/academic-regulations.pdf) .

Blackboard: There is a blackboard site for this class. Homework assignments, the quiz schedule and your quiz and exam grades will be listed there.