Course Description, Introduction to Linear Algebra  
MA260-2F (35852), Spring 2019  
Department of Mathematics, University of Alabama at Birmingham  

Course Instructor: Dr. Henghui Zou  
Office: 480B, Campbell Hall  
Phone#: 934-2154  
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Office Hours: 2:00-3:00PM, TTh; or by appointment/dropping in  

Meeting times: 3:30-4:45pm, TTh  
Meeting location: HHB 221  
Prerequisite: Grade of C or better in MA 126.  
Credits: 3 semester hours  
Textbook: *Elementary Linear Algebra: Applications Version, 11th Edition* by Howard Anton and Chris Rorres, Willy, 2014; Sections 1.1-1.6; 2.1-2.3; 3.1-3.3; 4.1-4.5, 4.7-4.8; 5.1-5.2; 8.1, 8.4  

Important dates:  
First day of classes: Monday, January 7, 2019  
Last day to drop/add: Monday, January 14, 2019  
Martin Luther King Holiday: Monday, January 21, 2019  
Last day to withdraw: Friday, March 1, 2019  
Spring Break: March 11 - 17, 2019  
Last day of classes: Friday, April 19, 2019  
Two tests: Test 1: near Thursday, February 28, 2019;  
          Test 2: near Thursday April 11, 2019;  
These dates are tentative.  
Final exam: TBA.  

Methods of teaching and learning:  
• 28 class meetings of 75 minutes consisting of lectures and discussions of examples and homework problems. Time for quizzes and two in-class tests is also included.  
• Students are expected to undertake at least 8 hours of private study and homework per week.  

Aims of the course:  
Upon successful completion of the course a student  
• understands the geometric interpretation of solutions (multiple, no, or unique) of systems of linear equations; knows how to use Gaussian Elimination to find the solutions;  
• knows basic algebraic operations and properties of matrices, invertible matrices and their inverses; knows how to compute the inverses by row operations and solve systems of linear equations via inverses;  
• knows to define determinants by cofactor expansion, to evaluate determinants by using row expansion, row reduction, etc., and to solve systems of linear equations using Cramer’s Rule;  
• understands the geometry of Euclidean vectors with intuitive visualization (i.e., length, angle and direction, etc.); knows basic vector operations/computations;  
• understands fundamental concepts of subspaces, linear Independence, basis and dimension of a general real vector space, matrix spaces;  
• knows eigenvalues and eigenvectors of a matrix and related computations;
knows to diagonalize square matrices with a complete eigenvector set;
knows the concept of linear transformations and their corresponding matrix representation.

Course content:
- Linear Equations: Systems of Linear Equations and their Solutions; Gaussian Elimination
- Matrices: Matrices; Matrix Operations and Properties; Invertible Matrices and Inverses
- Determinants: Cofactor/Row Expansion; Row Reduction; Cramer’s Rule
- Euclidean Spaces: Vectors; Component forms; Norm; Dot Product; Orthogonality
- General Vector Spaces: Real Vectors and Vector Spaces; Subspaces; Linear Independence; Basis and Component forms; Dimension; Matrix Spaces
- Eigenvalues and Eigenvectors: Characteristic Polynomials; Eigenvalues and Eigenvectors; Eigenspaces
- Diagonalization: Complete Eigenvector Sets and Diagonalization;
- Linear Transformations: Linear Transformations; Matrix Representations
- Selected Additional Topics/Computer Lab Components

Course policies:
- Please make sure that you are able to receive e-mail through your Blazer-ID account. Official course announcements may be sent to that address.
- If you wish to request a disability accommodation please contact DSS at 934-4205 or at dss@uab.edu.
- If a test is missed due to a serious verifiable circumstance or official university business, the test grade will be replaced with the properly re-scaled final exam score. You have to advise the instructor of such circumstances at the earliest possibility.
- No later Homework will be accepted.
- No make-up for missed quizzes.
- No books, or notes, will be allowed during any of the tests or quizzes.

Assessment procedures:
- Student achievement will be assessed by the following measures:
  - Regular homework and sporadic unannounced quizzes. Homework will be due each Tuesday. Homework/quizses contribute 25% total to the course average.
  - Three 50-minute in class tests. Each test contributes 15% to the course average.
  - A 150-minute comprehensive final examination. The final contributes 30% to the course average.
- Your course performance is the maximum of your course average and your final exam grade (each is a number between 0 and 100).
- Your final grade is determined according to the following table:

<table>
<thead>
<tr>
<th>Course performance</th>
<th>88-100</th>
<th>75-87</th>
<th>62-74</th>
<th>50-61</th>
<th>below 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Grade</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>F</td>
</tr>
</tbody>
</table>

Tips:
- Help is available in the Math Learning Laboratory HHB 202.
- By working steadily and regularly, you will increase your chances to succeed in this course.
- Remember, being a full-time student is a full-time job.
- The Mathematics Department participates in the Early Alert Program. If you receive an Early Alert because your instructor is concerned about your attendance and/or performance, consider taking advantage of the services suggested by your instructor, your advisor, or the Early Alert program.