COURSE DESCRIPTION
INTRODUCTION TO LINEAR ALGEBRA
MA 260-2F(55460), FALL 2014

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Dr. Henghui Zou
Office: 480B, Campbell Hall
Phone#: 934-2154
E-mail: zou@uab.edu
Office Hours: 2:00PM-3:15PM, TTh; or by appointment/dropping in

Meeting times: 3:30pm-4:45pm, TTh
Meeting location: EB 133
Prerequisite: Grade of C or better in MA 126.
Credits: 3 semester hours
by Howard Anton and Chris Rorres, Willy, 2013, 2014, Sections 1.1-1.6, 2.1-2.3, 3.1-3.3, 4.1-4.5, 5.1-5.2, 7.1-7.2, 8.1, 8.4

Important dates:
First day of classes: Monday, August 25, 2014
Labor Day Holiday: Monday, September 1, 2014
Last day to drop/add (without paying full tuition): September 2, 2014
Last day to withdraw with a “W”: Friday, October 24, 2014
Fall/Thanksgiving Break: Monday - Friday, November 24 - 28, 2014
Last day of classes: Friday, December 5, 2014
Major exams: Test 1: near Thursday September 25, 2014;
Test 2: near Thursday October 30, 2014.
These dates are tentative.
Final exam: December 10, 2014, Wednesday, 1:30PM-4:00PM; room 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.

Date: August 25, 2014.
Aims of the course:
Upon successful completion of the course a student

• understands the geometric interpretation of solutions of systems of linear equations (e.g., multiple, no, or unique), and uses Gaussian Elimination to find the solutions;
• knows basic algebraic operations and properties of matrices, invertible matrices and inverses, and 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 their properties (e.g., row reduction), and to solve systems of linear equations using Cramer’s Rule;
• visualizes intuitively vectors in Euclidean spaces, i.e., length and angle, etc., and uses coordinates in computing those quantities;
• develops a solid understanding of general real vector spaces, including concepts of subspaces, linear independence, basis and dimension;
• knows eigenvalues and eigenvectors of square matrices and how to compute them;
• knows to diagonalize square matrices with a complete eigenvector set, including orthogonal diagonalization of symmetric matrices;
• knows the concept of linear transformations, and how to find the matrix representation of a linear transformation.

Course content:

• Linear Equations: Gaussian Elimination
• Matrices: Matrix Operations and Properties; Invertible Matrices and Inverses
• Determinants: Cofactor Expansion; Row Reduction; Cramer’s Rule
• Euclidean Vector Spaces: Vectors; Norm, Dot Product and Distance; Orthogonality
• General Vector Spaces: Real Vector Spaces; Subspaces; Linear Independence; Basis; Dimension
• Eigenvalues and Eigenvectors: Characteristic Polynomials, Eigenspaces
• Diagonalization: Complete Eigenvector Sets, Symmetric Matrices; Orthogonal Diagonalization
• 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.
Assessment procedures:

- Student achievement will be assessed by the following measures:
  - Regular homework. Homework will be due each Tuesday. Homework/quizzesa contribute 25% total to the course average.
  - Sporadic unannounced quizzes. Homework/quizzesa contribute 25% to the course average (see above).
  - Two 75-minute in class tests. Each test contributes 20% to the course average.
  - A 150-minute comprehensive final examination. The final contributes 35% 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>Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>88-100</td>
<td>A</td>
</tr>
<tr>
<td>75-87</td>
<td>B</td>
</tr>
<tr>
<td>62-74</td>
<td>C</td>
</tr>
<tr>
<td>50-61</td>
<td>D</td>
</tr>
<tr>
<td>below 50</td>
<td>F</td>
</tr>
</tbody>
</table>

Tips:

- Help is available in the Math Learning Laboratory HH 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 worried about your attendance and/or performance, consider taking advantage of the services suggested by your instructor, your advisor, or the Early Alert program.