UAB Department of Mathematics
MA 434/534-OV  Algebra 1:  Linear  Summer 2014  Call #s 40140/40141

Course Instructor:  Dr. Jeanne S. Hutchison
Office Location:  CH 482B  Office Phone #:  (205) 934-2154
E-mail:  hutchiso@uab.edu
Office Hours:  Mon 9:30 – 11:00 AM, Wed & Thurs 3:30 – 4:30 PM
Meeting Times:  TuTh 10:20 AM – 12:20 PM
Prerequisite:  Grade of C or better in MA 126 (Calculus II)
Credit:  4 semester hours
Textbook:  *Elementary Linear Algebra* by Howard Anton, 10th Ediction, Wiley, 2013
Sections
Topics to be covered:  Sections 1.1–1.7; 2.1-2.3; Chapter 3 (mostly just a review of MA 126 topics); 4.1-4.10; 6.1-6.2; 7.1-7.3; 8.1-8.3; & Appendix A; as time permits.

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Important Dates:
First Day of classes:  Monday, June 2, 2014
Last day to drop/add:  Monday, June 9, 2014
Last day to withdraw with a W:  Thursday, July 3, 2014
Independence Day Holiday:  Friday, July 4, 2014
Last day of classes:  Friday, August 1, 2014
Major Exams:  
  Test 1:  Near Thursday, June 19, 2014
  Test 2:  Around Thursday, July 10 or Monday, July 14, 2014
Final Exam:  Thursday, August 7, 2014, 8-10:30 AM

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Methods of teaching and learning:

- 18 class meetings of 120 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 doing homework per week.

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Aims of the course:
Upon successful completion of the course, a student

- has been introduced to Mathematical Induction and Methods of Proof;
- understands the geometric interpretation of solutions of systems of linear equations and can use Gaussian Elimination to find the solutions;
- knows algebraic operations and properties of matrices, invertible matrices and inverses, and how to compute the inverses by row operations and to solve systems of linear equations via inverses;
- knows how determinants are defined and how to evaluate them, and to solve systems of linear systems using Cramer’s Rule;
- visualizes intuitively vectors in Euclidean spaces, i.e. length and angle, etc., and uses coordinates in computing these quantities;
- develops a understanding of general real vector spaces, including subspaces, linear independence, basis and dimension;
- knows about eigenvalues and eigenvectors of square matrices and how to compute them;
knows the concept of linear transformations, and how to find the matrix representation of a linear transformation

Course content:
- Mathematical Induction, basic logic, methods of proof
- Linear Equations: Gaussian Elimination
- Matrices: Operations and properties, invertible matrices, inverses
- Determinants: Cofactor expansions, row reduction, Cramer’s Rule
- Euclidean Vector Spaces: Norm, dot product and distance, orthogonality
- General Vector Spaces: Real vector spaces, subspaces, linear independence, basis, dimension
- Eigenvalues and Eigenvectors: Eigenspaces, characteristic polynomials
- Linear Transformations: Matrix representation
- Selected Additional Topics for Graduate Students

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 Disability Support Services 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 rescaled final exam score. You have to advise the instructor before the exam takes place.
- You must turn in a good faith effort on 85% of the homework. Late homework is only given half credit.
- 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. Homework will be due each Tuesday. Sporadic quizzes may be announced or unannounced. Homework/quizzes contribute 15% to the course average.
- Two in class tests. Each test contributes 25% to the course average.
- A 150 minute final examination. The final exam contributes 35% to the course average.

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>
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Tips:
- Help may be available in the Math Learning Lab 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 worried about your attendance and/or performance, consider taking advantage of the services suggested by your instructor, your advisor, or the Early Alert Program.