COURSE DESCRIPTION
ALGEBRA I: LINEAR
MA 434/534-2C
FALL 2018

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Dr. Carmeliza Navasca
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Office: CH 475B
Phone: (205) 934-8621
Office Hours: Mon and Wed 12:30-2:00 PM (or by appointment)

Course Info

Meeting times: TueThu, 11:00 AM-1:15 PM
Meeting location: HHB 221
Required Textbook: Elementary Linear Algebra by Howard Anton, 2014, Chapters 1-8, including proofs

Important Dates

First day of our class: August 28, 2018
Labor Day Holiday: September 3, 2018
Last day to drop without paying full tuition: September 4, 2018
Fall and Thanksgiving Break: November 19–25, 2018
Last day of our class: December 6, 2018
Approximate Midterm Dates: October 4, 2018 and November 15, 2018
Final Exam Date: Tuesday, December 11, 2018

Course Policies

• Please make sure that you are able to receive e-mail through your Blazer-ID account.
• If you are contacted by the Early Alert Program, you should consider taking advantage of the services it offers.
• If you wish to request a disability accommodation please contact DSS at 934-4205 or at dss@uab.edu.

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

Date: August 28, 2018.
Course Goals

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 Cramers 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.

Class Management via Canvas

• Homework problems will be posted in canvas (http://www.uab.edu/online/canvas). All other materials (class announcements, codes, grades and etc.) will be posted in canvas. Students should log in to canvas at least once a day! (I prefer to receive emails via canvas. Your email is guaranteed to be answered within 24 hours of the next business day.)
• Homework assignments, projects and activities will only be collected on canvas.

Assessment Procedures

• Student achievement will be assessed by the following measures:
  – Weekly class activity. Class activity will be due weekly. It entails class participation and presentation. There will be no extension of deadlines for any reason. Class activity contributes 15% to the course average.
  – Weekly homework. Homework will be due weekly. There will be no extension of deadlines for any reason. Homework contributes 15% to the course average.
  – Project. The project contributes 10% to the course average.
  – Midterm exam. Each midterm exam contributes 15% to the course average.
  – Final exam. The final exam contributes 30% to the course average.

Grading Scheme: 30% class activity + homework, 30% midterm exams, 10% project, 30% final exam

• 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>

• 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
Academic Honor Code

The University of Alabama at Birmingham expects all members of its academic community to function according to the highest ethical and professional standards. Academic misconduct undermines the purpose of education. Such behavior is a serious violation of the trust that must exist among faculty and students for a university to nurture intellectual growth and development. Academic dishonesty and misconduct includes, but is not limited to, acts of abetting, cheating, plagiarism, fabrication, and misrepresentation. Candidates are expected to honor the UAB Academic Honor Code as detailed in the most current UAB Student Catalog. Please consult this resource (https://www.uab.edu/students/academics/honor-code) for additional information regarding the specific procedures to be undertaken when a student violates the UAB Academic Honor Code.

Non-harassment, Hostile Work/Class Environment

The UAB College of Arts and Sciences expects students to treat fellow students, their Course Instructors, other UAB faculty members and staff as adults and with respect. No form of hostile environment or harassment will be tolerated by any student or employee.