

**Math 360 – 2T**  
**Linear Algebra**  
**Spring 2003**

**Instructor:** Dr. Brian Heck

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**Office Hours**

M, F 8:30-3:00

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**Prerequisite:** Math 358

**Text:** Linear Algebra with Applications (6<sup>th</sup> ed.) by Leon (Prentice Hall)

**Course Description (catalog):** The real number system, vectors, matrices, and linear equations, determinants, polynomials and complex numbers, vector spaces and linear transformations.

**Course Description (instructor):** Linear Algebra is really about vector spaces. Chapter 3 (Vector Spaces) therefore comprises the thrust of the course. (Is a good thing or a bad thing that I love this topic?) To prepare you for this abstract notion, we will spend the first few weeks on matrix algebra. You have surely run across matrices before. Perhaps in College Algebra, Calculus III, or even in Foundations. We will begin this course by further exploring their properties and utility. This material is fairly elementary, but without a solid grasp of it, the later chapters are unnecessarily difficult. After we cover the beloved vector spaces, we will study linear transformations, bases, spanning sets, and eigenvalues. Further topics will be covered if we have time.

**Course Objectives:** A student who successfully completes this course will be able to:

- Solve systems of equations
- Perform elementary row operations on matrices
- Perform algebraic operations on matrices
- Find the determinant of a matrix
- Find the inverse of a nonsingular matrix
- Define a vector space
- Determine whether a set is a vector space or not
- Find the dimension of a vector space
- Determine whether a set of vectors is linearly independent or not
- Determine the span of a set of vectors
- Determine whether a set of vectors spans a given vector space or not
- Form a basis of a vector space
- Find the matrix representation of a vector space
- Find the least squares approximation of set of data
- Find the eigenvalues and their corresponding eigenspaces of a matrix
- Prove and/or verify theorems regarding any covered topic

**Grading Policy:** Boardwork/Problem Sets: 60%  
Mid-Term/Final Exams: 40%

We will use the standard 10-point scale. A=90-100%, B=80-89%, etc... The majority of class time will be spent with the students at the board. Every day we cover new material, I will assign problems. The following day (or days) students will put their solutions on the board. You be graded in two ways: participation (how many problems you attempt to solve at the board) and proficiency (how successful you are). Additionally, I will periodically assign problem sets to be turned in (probably 8-12 times throughout the semester). These will usually consist of similar problems to the ones worked out in class, with occasional challenge problems thrown in. These will be graded in the typical fashion. ***These two components will account for 60% of your course grade.***

We will also have two exams: a mid-term, and a final. The purpose of both exams will be for you to take the knowledge that you acquired during the semester and apply it. ***These will account for 40% of your course grade.***

***Attendance:*** I will not include attendance as part of your course grade. I am not your mother or your parole officer, and this is not high school. I do, however, expect you to attend class everyday. You are responsible for all material covered in class.

***Approximate Class Schedule:*** Below is a list of the sections we will attempt to cover this semester. If time allows, more sections may be added. If time does not allow, some sections may be skipped.

Chapter 1: Sections 1-5

Chapter 2: Sections 1-3

Chapter 3: Section 1

**\*\*Mid Term Exam...Tuesday, March 11, 2003\*\***

Chapter 3: Sections 2-6

Chapter 4: Sections 1-3

Chapters 5, 6: Selected sections as time allows

**\*\*Final Exam...TBA\*\***

***Closing Remarks:*** It is assumed that you are attending this university because you have a desire for higher learning. It is therefore expected that you will pay attention, be respectful of your instructor and fellow students, and follow the Code of Student Conduct. Instances of academic dishonesty will be dealt with severely. If you are caught cheating, you will fail this course. Similarly, if you are a disruptive presence in the classroom, you will be dropped from the class.

***Important Date:*** Final Date To Drop Courses With a *W* – **Friday, April 4, 2003**