MATH 360
LINEAR ALGEBRA
Nicholls State University, Fall 2010

Instructor: Dr. Brian Heck
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My office hours are 8:30-11:30 T/Th and 8:30-1:30 F. Please contact me (phone, email, or in person) during these times if you have any questions. If you need assistance at a different time, let me know and we'll work something out.

Prerequisite: Math 358
Text: Linear Algebra With Applications (7^{th} 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 it a good thing or a bad thing that I love this topic?) To prepare you for this abstract notion, we will spend the first couple of weeks on matrices. You have surely run across matrices before - perhaps in College Algebra, Calculus III, or 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, orthogonality, and finally eigenvalues.

Student Learning Outcomes: A student who completes this course will be able to:

- Explore and describe properties of Euclidean space.
- 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.
- Compute 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.
- Decide whether a transformation is linear or not.

- Find the matrix representation of a linear transformation.
- Determine whether vectors are orthogonal or not.
- Create orthonormal sets.
- Find the eigenvalues and their corresponding eigenspaces of a matrix.
- Solve applied problems such a least squares problems.
- Prove and/or verify theorems regarding any covered topic.

Grading Policy: We will have four equally-weighted components to your course grade: problem sets, board work, a midterm exam, and a final exam. Both exams will be comprehensive and neither is optional. One or both of the exams *might* be take-home. The problem sets will be assigned periodically throughout the semester (maybe 5-7 times). Additionally, almost every class students will present homework problems at the board. Each component (board work, problem sets, and both exams) will count for 25% of your course grade. At the conclusion of the semester, I will assign letter grades based on the usual 10% grading scale (A: 90-100%, B: 80-89%, C: 70-79%, etc). I will not accept late problem sets unless there are VERY unusual circumstances, and make-up exams will only be administered if the student provides a valid excuse. The instructor will decide which circumstances are unusual and which excuses are valid. Academic dishonesty (i.e. cheating, plagiarism, etc.) will not be tolerated. Sanctions for such behavior are outlined in the *Code of Student Conduct* (Section 5).

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.

Important Dates: Mid-Term Exam – Tuesday, October 12, 2010
'**W**' Day – Monday, November 1, 2010
Final Exam – Monday, December 6, 2010 **10:30-12:30**

Academic Grievances: The proper procedure for filing grade appeals or grievances related to academic matters is listed in Section 5 of the *Code of Student Conduct* and at the following link: http://www.nicholls.edu/documents/student_life/code_of_conduct.pdf.

Continued Learning following an Extreme Emergency: In order to make continued learning possible following an extreme emergency,

students are responsible for:

- reading regular emergency notifications on the NSU website;
- knowing how to use and access Blackboard (or university designated electronic delivery system);
- being familiar with emergency guidelines;
- evacuating textbooks and other course materials;
- knowing their Blackboard (or designated system) student login and password;
- contacting faculty regarding their intentions for completing the course.

faculty are responsible for:

- their development in the use of the Blackboard (or designated) software;
- having a plan for continuing their courses using only Blackboard and email;
- continuing their course in whatever way suits the completion of the course best, and being creative in the continuation of these courses;
- making adjustments or compensations to a student's progress in special programs with labs, clinical sequences or the like only in the immediate semester following the emergency.

Disability: If you have a documented disability that requires assistance, you will need to register with the Office of Disability Services for coordination of your academic accommodations. The Office of Disability Services is located in Peltier Hall, Room 100-A. The phone number is (985) 448-4430 (TDD 449-7002).