MATH 495/540 – APPLIED MATRIX ANALYSIS
Nicholls State University, Fall 2005

Instructor: Dr. Brian Heck
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I will make available my office hours as soon as I know them (by Monday, August 22, at the latest). Please drop by my office if you have any questions. If I am not in my office during my scheduled office hours, then I am wandering the halls of Peltier. Please hang around or come and find me. If for some reason I am unable to hold office hours, I will put a note on my door.

Prerequisite: Math 360
Text: Finite-Dimensional Vector Spaces by Paul Halmos (Springer)

I am very excited about using this textbook in our class. This is one of the great textbooks of the 20th century. The exposition, clarity, examples, and structure are all first-rate. Professor Halmos is renowned for his teaching ability, both in the classroom and in print.

Course Description (catalog): Vector spaces and transformations, eigensystems, quadratic forms.

Course Description (instructor): This course could just as easily be called "Linear Algebra II" or "Advanced Linear Algebra". After learning the fundamentals in linear algebra, any follow-up course will necessarily involve many applications. Linear algebra is fast becoming one of the most widely used disciplines in mathematics. In fact, to some it has already supplanted calculus as the most important field.

Course Objectives: At the completion of this course, a student will be able to:

- demonstrate knowledge of the properties of vector spaces
- describe and solve real-world problems using matrices and eigensystems
- analyze linear transformations
- analyze bilinear and quadratic forms

Grading Policy: There will be four equally weighted components to your course

grade: board work, problem sets, midterm exam, and final exam. Each of these will be explained further below.

> **Board Work:** Every night, a portion of class time will be set aside for presentations of homework problems at the board by students. This instructional tool is very valuable in that it helps students identify what they don't understand long before it appears on an exam. The instructor also benefits in seeing the struggles of students. Once I know where you are having trouble, I can direct my efforts toward helping you resolve those problems, thereby increasing your learning and understanding. I will compile a grade on these board work problems by grading each presentation as well as how many you present.
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> **Problem Sets:** Several times throughout the semester (maybe 4-7 times) I will assign additional problems that will be due the next week. These will often be just like the other homework problems, but will usually include one or two "outside-the-box" problems. These will prepare you for the types of problems you can expect on our exams.
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> **Exams:** We will have an in-class midterm exam and a take-home final. Both exams will be quasi-comprehensive in that they will cover their respective half of the semester.

Attendance/Expectations: Students are expected to attend all classes. Excuses for missed classes will be handled on an individual basis. In any event, each student is responsible for all material covered in class. 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.

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).