LINEAR ALGEBRA FOR TEACHERS
MTH 482and MED 582
Fall 2005

COURSE DESCRIPTION: Graduate credit only applies in mathematics education. Matrices, vectors, mathematical systems, determinants, inverse of a matrix system of linear equations, matrix solutions, linear inequalities, linear programming.

PREREQUISITE: MTH 480 or MTH 140.

PREREQUISITES BY TOPIC: Complete familiarity and comfort with algebraic operations; familiarity with algebraic notation and the idea of functions.

REQUIRED TEXT: Anton, Howard and Rorres, Chris, *Elementary Linear Algebra with Applications, 9th Edition*, John Wiley & Sons, 2004. ISBN 0-471-66959-8.

INSTRUCTOR: Scott Anderson, Adjunct Professor of Mathematics and Computer Science, office E-276. Telephone: (313) 993-1410 or (313) 317-1356. E-mail: anderssc@udmercy.edu.

OFFICE HOURS: Thursday 6:00 to 6:30 and 9:15 to 9:45 p.m. or by appointment.

LECTURE: Thursday 6:40 p.m. to 9:10 p.m., room E-222.

COURSE OBJECTIVES: To develop the ability to analyze various types of application problems that can be solved with the tools and techniques of linear algebra and to become proficient in the use of those tools.

COURSE OUTCOMES: After taking this course, students will be able to:

1. Add vectors, form dot and cross products of vectors
2. Create matrices to represent mathematical systems
3. Add, subtract and multiply scalars with matrices and vectors
4. Add, subtract and multiply matrices by one another
5. Find the determinant of a matrix
6. Use matrices to solve linear systems of equations
7. Find the inverse of a matrix
8. Solve linear inequalities
9. Use the technique of linear programming to solve problems

COMPUTER USAGE: Students should be familiar with spreadsheet packages, particularly with entering cell formulas, graphing and mathematical functions.

TOPICS:

- ∞ Matrices
- ∞ Vectors
- ∞ Mathematical systems
- ∞ Determinants
- ∞ Inverse of a matrix
- ∞ Matrix solutions
- ∞ Linear inequalities
- ∞ Linear programming

GRADING: **MTH 482:** 3 tests, 75%; Final exam, 25%
MED 582: 3 tests, 60%; Final exam, 20%; Research paper, 20%
Research topic due 9/30, paper due 11/25

EXAM SCHEDULE (TENTATIVE):

Exam I	Thursday, September 29
Exam II	Thursday, October 20
Exam III	Thursday, November 17
Final	Thursday, December 15, time TBA

GRADING SCALE: A 92-100, A- 90-91, B+ 88-89, B 82-87, B- 80-81, C+ 78-79, C 72-77, C- 70-71, D+ 67-69, D 58-66

HOMEWORK POLICIES: Homework will be assigned each week and we will go over homework at the beginning of each class. I do not collect or grade homework; however, there is a direct relation between homework and examination scores. It is both acceptable and useful to work together on homework so long as everyone in the group is working on the problems and gaining understanding of the material.

IMPORTANT DATES:

September 26	Last day to drop without a "W"
November 21	Last day to withdraw from class
November 24 – 27	University closed

ACADEMIC INTEGRITY: Everything submitted for grading is expected to be a student's own work. Anything suspected otherwise will be dealt with according to the College policy - see the Engineering & Science Student Handbook.