Matrices, Vectors & Applications Syllabus
MATH 2333-502
TR 5:30-6:45 p.m.
GR 3.302
Spring 2006

Instructor: Dr. Paul Stanford
Text Book: *Linear Algebra with Applications*, fifth edition, by Gareth Williams.

(Student Solutions Manual is strongly recommended.)

Contact Information
Email: paul.stanford@utdallas.edu, Web Site: www.utdallas.edu/~paul.stanford/
Office hours: MTWR 4:00-5:00 p.m. in ECSN 3.910, or by appointment.

Prerequisite: MATH 1314 or equivalent.

Teaching Assistant: Ke Chen in FO 2.614.

Resource: Math Learning Center MC 2.412 (library) Phone: (972) 883-6707 Hours: MTWR 10am-8pm, F 10am-2pm, S 10am-2pm. The learning center offers one free 60 minute individual tutoring session per week. An appointment is required.

Course Description:
This is an introductory course in linear algebra with primary focus on theory and secondary focus on computational methods and applications in the physical and social sciences. Course Topics include matrices, vectors, determinants, matrix inverses, and systems of linear equations.

Chapter 1: Systems of Linear Equations (sections 1.1, 1.2, and 1.3).

Chapter 2: Matrices (sections 2.1, 2.2, 2.3, 2.4, 2.6, and 2.7).

Chapter 3: Determinants (sections 3.1, 3.2, 3.3, and 3.4).

Chapter 4: Vector Spaces (sections 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, and 4.8).

Chapter 6: Linear Transformations (section 6.1).

Chapter 7: Inner Product Spaces (section 7.4).

Chapter 8: Numerical Techniques (section 8.1).

Chapter 9: Linear Programming (sections 9.1, and 9.2).

Ground Rules:
Please be punctual and ensure that your electronic communication devices are turned off. Announcements are generally made at the beginning of class. If you miss class or arrive late, it is your responsibility to acquire any missed notes or announcements. Student participation in class is desired. However, please raise your hand to speak and avoid side conversations with your classmates. Attending university is a privilege, not a right. Behavior that infringes on the learning experience of your classmates will not be tolerated. Cheating, in any form constitutes an infraction of the academic integrity code and will be dealt with according to university disciplinary procedures.

Quizzes and Examinations
Quizzes and major exams are administered during the scheduled class period. The time allotted for most quizzes will be 15 minutes. The time allotted for the major exams will be the entire class period. There will be no make-up exams or quizzes. Exams and quizzes are closed book, without notes, and without graphing calculators (unless otherwise instructed).

There will be two regular examinations and a final examination. NO MAKE-UPS. Missed exams are a zero. See below for dates and the calculation of grades.

All students are expected to take the examinations at the announced time. Cheating will NOT be tolerated. Students are required to inform the lecturer of suspected honor code violations. On all problems, you must show your work. No work, no credit (even for correct answers). There will be no incompletes except in the direst of situations.

Homework Assignment
Problems will be assigned on a regular basis. See homework below. Problems in the text marked with an asterisk have solutions in the appendix. Complete solutions to many of these problems may be found in the Solutions Manual, which is on reserve at the library (and may be available in the bookstore). The assignments are intended to supply adequate practice for mastery of the concepts presented in each section. You should work several problems of each type, and working more than the class assignments is strongly encouraged. If you feel the assigned problems are inadequate, select additional problems of like kind and work them as well. Assignments will not be collected. However, the weekly quizzes may contain problems taken directly from the assigned homework problems. Do not use the solutions at the back of the textbook before you have exhausted all possibilities (including asking the TA and the instructor).

Calculation of Grade
Each quiz is worth 25 points. The lowest two quiz scores will be dropped, and the rest are counted. In addition, the final exam score, if higher, will replace the lower score of the two major exams. After such modifications, the overall course

grade is calculated as follows:

The modified quiz total is worth 20% of the course grade. Each of the two major exams are worth 25% of the course grade. The final is worth the remaining 30% of the course grade.

Grade Scale
[97,100] A+
[93,97) A
[90,93) A-
[87,90) B+
[83,87) B
[80,83) B-
[77,80) C+
[73,77) C
[70,73) C-
[67,70) D+
[63,67) D
[60,63) D-
[0, 60) F

Midterm grades
Midterm grades will be computed and submitted to the records office when requested. This grade will be computed in the following manner:
Average of all quizzes up to this time (no drops) 50%.
Average of all exams up to this time (no drops) 50%.

WebCT Quiz and Exam scores as well as the supplemental course material will be posted on Webct. To access your scores, go to the website webct.utdallas.edu, (no www). You will need the Unix logon id and password assigned to you at registration. If you do not know your id, go to www.utdallas.edu, select Current Students then SIS and follow the instructions or you can go to the computing help desk. WebCT mail is the preferred method of communication. (If you use regular email, be sure to identify the course.)

Important Dates (and see Academic Calendar)
Tuesday, January 10th: First Day of this Class.
Monday, January 16th: University Holiday: Martin Luther King Jr. Day.
Wednesday, January 25th: Last day to drop without a W.
Monday, February 13th: WF or WP withdraw period begins.
Thursday, February 16th: **Exam I** (subject to change).
Monday, March 6: Spring Break Begins.
Saturday, March 11: Spring Break Ends.
Thursday, March 16th: Last day to withdraw with WF/WP.
Thursday, March 30th: **Exam II** (subject to change).
Thursday, April 20th: Last Day of this Class.

Thursday April 27th: Comprehensive Final, 5:00 p.m. - 7:45 p.m.

Homework Assignments

In order to succeed in this course, one must work a large number of problems. Here is the list of selected exercises which everyone is expected to do. Many students might find it necessary to have more practice; they should choose similar problems from each section, or from the review exercises or practice tests, which can be found at the end of each chapter.

Sec 1.1 #1,2,3,4,5a,c,e,6b,d,f,h,7,8a,b,c,10a,c,e,12b,e,13a,b,c
Sec 1.2 #1,2,3,4,5a,e,6a,7d,e,8e,g,10a,11a,12,13
Sec 1.3 #1,4,5,6 (no electric circuits or traffic flow)

Sec 2.1 #1,2,4,5a,6,7b,9,10a,c,12,a,b,16,25 (no partitioning)
Sec 2.2 #1,2,4,5a,b,d,6,8,11a,b,c,14,18a,c,19a,b,20a,b,23,24,27,28
Sec 2.3 #1a,d,e,f,g,i,2,a,b,c,6,9,10,11a,15b,c (no complex or seriation)
Sec 2.4 #1,a,b,2,b,c,3a,c,e,4a,d,5c,d,6c,8a,c,11,13,15,17,18,21,24
Sec 2.6 #1,4,5,6,7,11,13
Sec 2.7 #1a,b,2b,3a,b,d,4,5,8a,b,e,13a,d,14a,17,23

Sec 3.1 #1,2,3a,c,d,5a,c,7,a,c,8b,c,9c,d,11a,b,c,12,13,14,17
Sec 3.2 #2a,b,4a,b,5,6a,b,7a,b,8,9,10a,b,d,12,16,19
Sec 3.3 #1,2a,b,4a,b,5a,b,6a,7a,b,8,9,10,11,12a
Sec 3.4 #1,2a,b,4a,b,5a,b,6a,7a,b,8,9,10,11,12a

Sec 4.1 #1,3a,b,5a,d,g,6,7a,b,d,9b,d,10a,b,c
Sec 4.2 #1a,3a,c,e,4c,d,5a,d,6e,7a,b,c,e,8c,e,10,13a,d,16,19a,e,24,28
Sec 4.3 #1,2a,5,16
Sec 4.4 #1a,b,2a,d,3a,c,5,6a,c,7a,b,c,8,12a,b,c matrices

Sec 4.5 #1a,c,2a,b,3a,d,6b,c,8a,c,9a,c,10,13,17,22a
Sec 4.6 #1a,b,2a,c,3a,4a,b,e,5a,b,6a,b,c,7a,b,c,(note 9)
Sec 4.7 #1a,2a,3a,d,5a,b,c,6,10,12,13,15a,b,c,d,21,31,32a,b,c
Sec 4.8 #1c,d,2a,c,d,3a,b,4c,5a,b,6a,c,7a,c,9,12,14a

Sec 6.1 #1,2,3,4,5,6,7,10,12,15a,b,16,18

Sec 7.4 #1,3,6,8,9,11,15,21,26,28

Sec 8.1 #1,2,3,5,6

Sec 9.1 #1,2,6,12,13,16 (for 1,2&16, draw graphs)
Sec 9.2 #1,2,12,13