



Course	MATH 2418-521 Linear Algebra
Professor	Dr. Paul Stanford
Term	Summer 2007
Meetings	6:00 p.m.-7:50 p.m. MW in GR3.302

Professor's Contact Information

Office Phone	(972) 883-4143
Other Phone	(972) 883-2161 (math dept)
Office Location	ECSN 2.518
Email Address	paul.stanford@utdallas.edu
Office Hours	4:00 - 5:00 MTWR
Other Information	Prefer contact through WebCT6 mail
Teaching Assistant	Ke Chen in FO 1.601

General Course Information

Pre-requisites, Co-requisites, & other restrictions

Prerequisite: MATH 2419 (Calculus), or consent of instructor

Co-requisite: MATH 2018 (Monday evening problem session MATH 2018-821)

Graphing calculators will NOT be allowed: only non-alpha display scientific calculators are permitted.

Course Description

The main goal of the course is the presentation of some fundamental techniques of linear algebra. The concepts of vector spaces, matrices, determinants, inverses, eigenvalues and eigenvectors will be developed.

Learning Outcomes

Students will learn concepts and techniques of linear algebra, including vector spaces, matrices, determinant, linear transformations, eigenvalues and eigenvectors.

Learning Outcomes

- 1). Given a system of linear equations, students will be able to apply the Gauss-Jordan algorithm to determine all solutions, and determine whether the system is consistent and whether the solution is unique.
- 2). Given definitions of a set of objects with a well-defined addition and scalar multiplication, students will be able to evaluate whether this constitutes a Real vector Space. If valid, students will be able to demonstrate each axiom; if invalid, students will be able to present and verify an explicit counterexample to a vector space property.
- 3). Given a square matrix, students will be able to accurately calculate its determinant, and deduce whether the matrix is invertible or singular.
- 4). Given an explicit matrix, students will be able to determine its eigenvalues, and for each such eigenvalue students will be able to create a basis for the corresponding eigenspace.
- 5). Given a matrix, students will be able to accurately determine basis vectors for its row space, column space and nullspace.

Required Texts & Materials Elementary Linear Algebra, ninth edition, by Howard Anton

Suggested Texts, Readings, & Materials Solutions Manual

Assignments & Academic Calendar

[Topics, Reading Assignments, Due Dates, Exam Dates]

May 14 First day

May 28 Memorial Day

June 6 Exam I

June 27 Exam II

July 4 Independence Day

July 25 Last Day (review)

Monday, July 30 at 6:00pm Final Exam

Course Policies

Grading (credit) Criteria

Each quiz is worth 25 points. The lowest two quiz scores will be dropped. The remaining quizzes are counted and converted to a percentage, giving a possible total of 100 points. Each regular examination is also worth 100 points. The comprehensive final examination is worth 200 points. This score cannot be dropped.

These scores are weighted so that the final contributes 40% toward the overall grade. The remaining 60% is made up from the two exams and the quiz average (after dropping the two lowest quizzes). For these, the highest score has a weight of 30%, the next highest has a weight of 20%, and the lowest score has a weight of 10%. This means that your best scores will have the biggest impact on your course grade. Note that none of these can be completely dropped.

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 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%.

Make-up Exams NO MAKE-UPS except in extraordinary circumstances. Missed exams are a zero.

Extra Credit n/a

Late Work All students are expected to take the examinations at the announced time.

Special Assignments

Problems will be assigned on a regular basis. Answers to most of these problems are given at the back of the textbook. 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).

Homework Assignments

Chapter 1

Section 1.1: 1-9 odd, 11, 12, 13

Section 1.2: 1-17 odd, 23

Section 1.3: 1-21 odd, 25, 29

Section 1.4: 1-11 odd, 21

Section 1.5: 1-11 odd

Section 1.6: 1-25 odd

Section 1.7: 1-9 odd, 17

Chapter 2

Section 2.1: 1-13 odd, 17, 20

Section 2.2: 1-11 odd, 12, 13

Section 2.3: 1-11 odd, 14, 15

Section 2.4: 1-9 odd 17-23 odd

Chapter 3

Section 3.1: 1-13 odd

Section 3.2: 1-9 odd

Section 3.3: 1-19 odd

Section 3.5: 1-29 odd

Chapter 4

Section 4.1: 1-19 odd

Section 4.2: 1-21 odd

Section 4.3: 1-21 odd

Section 4.4: 1-15 odd

Chapter 5

Section 5.1: 1-17 odd

Section 5.2: 1-21 odd, 22

Section 5.3: 1-19 odd

Section 5.4: 1-19 odd

Section 5.5: 1-13 odd

Section 5.6: 1-13 odd

Chapter 6

Section 6.1: 1-21 odd

Section 6.2: 1-17 odd

Section 6.3: 1-17 odd, 24, 29

Section 6.4: 1-9 odd

Section 6.5: 1-13 odd, 17

Section 6.6: 1-15 odd

Chapter 7

Section 7.1: 1-21 odd

Section 7.2: 1-21 odd, 22

Section 7.3: 1-9 odd

Chapter 8

Section 8.1: 1-27 odd

Section 8.2: 1-19 odd

Section 8.3: 1-15 odd

Section 8.4: 1-17 odd

Section 8.5: 1-17 odd

Section 8.6: 1-15 odd

Class Attendance Classroom attendance and problem session attendance is required.

Classroom Citizenship Professional behavior is expected.

Field Trip Policies n/a

Student Conduct and Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, A to Z Guide, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3, and in Title V, Rules on Student Services and Activities of the university's Handbook of Operating Procedures. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's Handbook of Operating Procedures.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grades

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of F.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:

The University of Texas at Dallas, SU 22
PO Box 830688
Richardson, Texas 75083-0688
(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

Off-Campus Instruction and Course Activities

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean.

These descriptions and timelines are subject to change at the discretion of the Professor.