

Course Syllabus

Math 2333.5U1
10310

Matrices, Vectors, & Applications
6 - 10 pm R

Summer 2008
GR 3.420

Instructor Contact Information

Instructor: Dr. David L. Lewis
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Course Pre-requisites, Co-requisites, and/or Other Restrictions

Prerequisite: MATH 1314 or equivalent.

Course Description

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. Topics include: matrices, vectors, determinants, matrix inverses, and systems of linear equations.

Student Learning Objectives/Outcomes

1. Students will apply Gauss-Jordan method to solve a system of linear equations or to determine that a solution does not exist.
 2. Students will compute determinants and inverses of matrices when they exist.
 3. Students will demonstrate their understanding of the properties of operations on vectors. In particular, given a set of vectors in a space, they will be able to determine if the set forms a basis for that space.
 4. Given a narrative description of a real-life problem, students will analyze the problem and relate it to relevant concepts from linear algebra and then use appropriate techniques to solve the original application problem.
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Required Textbooks and Materials

“*Linear Algebra with Applications*”, 5th Edition, Gareth Williams.

Suggested Course Materials

Solutions manual: The Student Solutions Manual is recommended and available in the bookstore.
Calculators: A scientific calculator is recommended. Graphing calculators, programmable calculators, or calculators with non-numeric displays are NOT ALLOWED on quizzes or exams.

Additional Resources

WebCT: <http://webct.utdallas.edu> requires your NETID and password to logon. Once logged in, select this course. If successful, you will see a link to the syllabus and a blue backpack which contains additional course material. You can view your grades, use the email tool, or utilize the discussion tool to communicate with your classmates. You will receive a notice from me via WebCT (either an

announcement, or an email) if there is additional information, exam date/location change, etc, or an urgent message, class canceled, etc, that directly impacts this course. If a personal situation arises that you feel I need to be aware of, send that information to; dlewis@utdallas.edu. DO NOT send email to me via WebCT.

The UTD Math Learning Center is located in McDermott Library in Room 2.412 (phone: 972-883-6707) The hours are posted on the door. The Center provides free walk-in tutoring for students. In addition to the help available during normal operating hours, each registered student is entitled to a free, one-hour, individual tutorial per week. Individual tutorials require an appointment which are arranged via learning center personnel.

Academic Calendar

- 5/23 - 6/4 Students may withdraw from a class without record.
- 6/5 - 6/18 Students may withdraw from a class and receive a W.
- 6/19 - 7/21 Students may withdraw from a class with signatures of instructor and advisor receiving a WP(if passing) or WF(if failing).
- 7/22 - Students may withdraw from a class for non-academic reasons only.

Schedule (Subject to change)

Week	Thur		Scores
1	5/29	Introduction, pretest Section 1.1, 1.2, 1.3 Supplement #1	
2	6/5	Quiz 1 Sections 2.1, 2.2, 2.3, 2.4 Supplement #2	
3	6/12	Quiz 2 Sections 2.4, 2.6, 2.7, 3.1	
4	6/19	Exam 1 (Ch 1 & 2) Section 3.1, 3.2,	
5	6/26	Quiz 3 Sections: 3.3, 3.4, 7.4, Supplement #3	
6	7/3	Quiz 4 Sections: 4.1, 4.2, 4.3, 4.4	
7	7/10	Quiz 5 Sections: 4.5, 4.6, 4.7, 4.8,	
8	7/17	Exam 2 (Ch 3, sec7.4, & Ch 4) Sections: 6.1, 8.1, 8.2	
9	7/24	Quiz 6 Sections: 9.1, 9.2	
10	7/31	Quiz 7 Sec 9.2, Additional topics, closing comments	
11	8/7	Final Exam	

Assignments

Homework Assignments (subject to change): Problems in the text marked with an asterisk have solutions in the appendix. The assignments are intended to supply adequate practice for mastery of the concepts presented in each section. 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, select problems from those assigned occasionally occur on a quiz or exam.

SEC	Problems
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
	Supplement #1

1.2	1,2,3,4,5a,e,6a,7d,e,8e,g,10a,11a,12,13
1.3	1,4,5,6 (no electric circuits or traffic flow)
2.1	1,2,4,5a,6,7b,9,10a,c,12,a,b,16,25 (no partitioning)
	Supplement # 2
2.2	1,2,4,5a,b,d,6,8,11a,b,c,14,18a,c,19a,b,20a,b,23,24,27,28
2.3	1a,d,e,f,g,i,2,a,b,c,6,9,10,11a,15b,c (no complex or seriation)
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
2.6	1,4,5,6,7,11,13
2.7	1a,b,2b,3a,b,d,4,5,8a,b,e,13a,d,14a,17,23
3.1	1,2,3a,c,d,5a,c,7,a,c,8b,c,9c,d,11a,b,c,12,13,14,17
3.2	2a,b,4a,b,5,6a,b,7a,b,8,9,10a,b,d,12,16,19
3.3	1,2a,b,4a,b,5a,b,6a,7a,b,8,9,10,11,12a
3.4	2,3a,c,5a,b,6a,b,9b,c,10a,b,12a,c,13a,b,14a,c,15,16
4.1	1,3a,b,5a,d,g,6,7a,b,d,9b,d,10a,b,c
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
4.3	1a,c,2a,b,3a,d,5b,c,7a,c,9,10,12
4.4	1a,b,2a,d,3a,c,5,6a,c,7a,b,c,8,12a,b,c matrices?
4.5	1a,c,2a,b,3a,d,6b,c,8a,c,9a,c,10,13,17,22a
4.6	1a,b,2a,c,3a,4a,b,e,5a,b,6a,b,c,7a,b,c,(note 9)
4.7	1a,2a,3a,d,5a,b,c,6,10,12,13,15a,b,c,d,21,31,32a,b,c
4.8	1c,d,2a,c,d,3a,b,4c,5a,b,6a,c,7a,c,9,12,14a
6.1	1,2,3,4,5,6,7,10,12,15a,b,16,18
7.4	1,3,6,8,9,11,15,21,26,28
	Supplement #3
8.1	1,2,3,5,6
9.1	1,2,6,12,13,16 (for 1,2&16, draw graphs)
9.2	1, 2, 12, 13

Grade Policy

Course grade:	Quiz total: The best 5 quiz scores will be used and scaled to 100%.	20%
	Two major exams:	50%
	Final Exam	30%

The final exam score, if higher, will replace the lower score of the two major exams.

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 range from 50 to 55 minutes. On exam days, the remaining class period will be devoted to lecture. Exams and quizzes are closed book, without notes, and without graphing calculators (unless otherwise instructed).

Letter grades are assigned according to the following 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

Example: Kramer has quiz scores of 22, 21, 16, 8, 24, 20, 18 , 94 on exam 1, 73 on exam 2, and a final exam score of 89. Assuming 25 possible points are possible on each quiz, then the quiz percent is $(22+21+24+20+18)/1.25=84$. The final exam score would replace the exam 2 score thus the course percent is

$$(0.2)84 + (0.25)(94 + 89) + (0.3)89 = 89.55 \text{ and the course grade is a B+}.$$

Course & Instructor Policies

Attendance

Attendance is not mandatory, however, studies show that attendance can improve course grade.

Citizenship

Any action that disturbs your classmates or interrupts the lecture is unacceptable.

Examples of such actions are:

- (a) Entering the classroom late...be punctual.
- (b) Leaving the classroom before break or before the end of lecture.
- (c) Cell phones, ringers, buzzers, beepers, alarms, blackberries, raspberries
...turn them off unless you are a member of an emergency response team.

An apology is expected from anyone creating such a disturbance.

Student participation in class is desired, however, please raise your hand to speak and avoid side conversations with your classmates.

Extra credit

No extra credit

Late work

Occasionally there may be an assignment that is to be completed outside the classroom. Any such assignment will have a specified deadline-- failure to meet the deadline will result in a 25% reduction of the point value for the assignment per each 12 hours late.

Exams/Quizzes

- (a) There will be no make-up quizzes.
- (b) There will be no make-up exams unless the circumstances are extraordinary.
- (c) Exams and quizzes are closed book, without notes, and without graphing calculators (unless otherwise instructed).
- (d) **SHOW ALL WORK** on quizzes and exams. Unsupported answers are considered miracles and, while inspirational, will receive little or no credit. Graded quizzes and major exams will be returned to you as soon as possible. Any document not picked up by the end of finals week will be destroyed.
- (e) Final exams are not returned to the student but are held for review for one year.

Calculators: A scientific calculator may be useful. Graphing calculators, programmable calculators, or calculators with non-numeric displays are **NOT ALLOWED** on quizzes or exams.

UTD sanctioned intercollegiate competitions and other activities

Students missing class due to involvement in a UTD sanctioned activity must supply the instructor with a letter certifying his/her eligibility to participate in such an activity. It is the students' responsibility to discern scheduling conflicts and to inform the instructor well in advance of a class, quiz, or exam that will be missed due to such an activity. The instructor will make reasonable accommodation to resolve the conflict.

General University policies on Academic Integrity, Incomplete Grades, and other important topics, form part of this Syllabus, and are to be found in the version of the Syllabus posted on the UTD Website.

Technical Support

If you experience any problems with your UTD account you may send an email to: assist@utdallas.edu or call the UTD Computer Helpdesk at 972-883-2911.

Field Trip Policies

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 the website address http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean. Below is a description of any travel and/or risk-related activity associated with this course.

Student Conduct & 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 printed 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, Series 50000, Board of Regents, The University of Texas System*, 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) and online at <http://www.utdallas.edu/judicialaffairs/UTDJudicialAffairs-HOPV.html>

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, any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

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.

Copyright Notice

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials, including music and software. Copying, displaying, reproducing, or distributing copyrighted works may infringe the copyright owner's rights and such infringement is subject to appropriate disciplinary action as well as criminal penalties provided by federal law. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act. As a UT Dallas student, you are required to follow the institution's copyright policy (Policy Memorandum 84-I.3-46). For more information about the fair use exemption, see <http://www.utsystem.edu/ogc/intellectualproperty/copypol2.htm>

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 Grade Policy

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)

disabilityservice@utdallas.edu

If you anticipate issues related to the format or requirements of this course, please meet with the Coordinator of Disability Services. The Coordinator is available to discuss ways to ensure your full participation in the course. If you determine that formal, disability-related accommodations are necessary, it is very important that you be registered with Disability Services to notify them of your eligibility for reasonable accommodations. Disability Services can then plan how best to coordinate your accommodations.

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.

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