

ENGR 2300 Course Syllabus –University of Texas at Dallas

Course: ENGR 2300 –Linear Algebra for Engineers, Fall 2015

Class Schedule and Meeting Rooms:

Section 502 – Tuesday and Thursday, 5:30-6:45 PM, ECSN 2.120

Problem solving/lab session: Friday, 10:00-11:00am, ECSN 2.112

Instructor: Dr. Amir Khoobroo

email: axk144831@utdallas.edu

Office: ECSN 4.208

Office Hours: Tuesday- Thursday 6:45– 7:30

Website: www.elearning.utdallas.edu

Teaching Assistant: Fei Tao Email: fxt120230@utdallas.edu

Office: ECSN 4.410

Course Pre-requisite/ Co- requisite: Math 2414 or Math 2419

Course Description:

The course would cover matrices, vectors, linear systems of equations, Gauss-Jordan elimination, LU factorization and rank, Vector spaces, linear dependence/independence, basis, and change of basis, Linear transformations and matrix representation, similarity, scalar products, orthogonality, Gram-Schmidt procedures, and QR factorization, Determinants, eigenvalues, eigenvectors, and diagonalization. Introduction to problem solving using MATLAB. Introduction to complex numbers. This course includes a required laboratory. Credit cannot be received for both courses, [ENGR 2300](#) and [MATH 2418](#).

Student Learning Objectives/Outcomes:

- Solve $Ax = b$ for square systems by elimination
- Deduce Basis and Dimension for the four fundamental subspaces
- Analyze properties of and compute determinants
- Compute eigenvalues and eigenvectors

Required Textbook:

R. Larson Elementary Linear Algebra 7th Edition.

References (Optional):

- 1- D. Hill, D. Zitarelli, *Linear Algebra Labs with MATLAB*, 3rd Edition.
 - 2- S. Leon, *Linear Algebra with Applications*, prentice hall, 9th Edition.
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Software Requirements:

According to Mathworks website: “MATLAB[®] is the high-level language and interactive environment used by millions of engineers and scientists worldwide. It lets you explore and visualize ideas and collaborate across disciplines including signal and image processing, communications, control systems, and computational finance”. MATLAB is available on most of the ECS lab computers on campus where you can practice and solve the exercises. Alternatively you can create SSH connection by following the link below (** connection will be without graphical display).

<http://www.utdallas.edu/ir/howto/create-an-ssh-connection/>

Finally you can buy the student version for \$49 by following the link below (not recommended):

http://www.mathworks.com/academia/student_version/

ENGR 2300 Class Schedule, Sections 502, Fall 2015:

<u>Week</u>	<u>Class #</u>	<u>Class Dates</u>	<u>Topic</u>
1	1	August 25	Introductory session: Syllabus discussion
	2	August 27	Lecture 1: Chapter 1 – HW1 Assigned
	3	August 28	Review 1: MATLAB Tutorial
2	4	September 1	Lecture 2: Chapter 1
	5	September 3	Lecture 3: Chapter 2 – HW2 Assigned
	6	September 4	Review 2
3	7	September 8	Lecture 4: Chapter 2
	8	September 10	Lecture 5: Chapter 2 – HW3 Assigned
	9	September 11	Review 3
4	10	September 15	Lecture 6: Chapter 2 and 3
	11	September 17	Lecture 7: Chapter 3 – HW4 Assigned
	12	September 18	Review 4
5	13	September 22	Lecture 8: Chapter 3
	14	September 24	Lecture 9: Chapter 3 and 4 – HW5 Assigned (3.1 – 3.4 chapters)
	15	September 25	Review 5
6	16	September 29	Lecture 10: Chapter 4
	17	October 1	Test 1 review Session– HW6 Assigned (4.1 & 4.2 chapters)
	18	October 2	Review 6
7	19	October 6	Test 1!
	20	October 8	Lecture 11: Chapter 4
	21	October 9	Review 7 (Test 1 solutions)
8	22	October 13	Lecture 12: Chapter 4
	23	October 15	Lecture 13: Chapter 4
	24	October 16	Review 8
9	25	October 20	Lecture 14: Chapter 5
	26	October 22	Lecture 15: Chapter 5
	27	October 23	Review 9
10	28	October 27	Lecture 16: Chapter 5
	29	October 29	Lecture 17: Chapter 5
	30	October 30	Review 10
11	31	November 3	Lecture 18: Chapter 5
	32	November 5	Test 2 review Session
	33	November 6	Review 11
12	34	November 10	Test 2!
	35	November 12	Lecture 19: Chapter 6
	36	November 13	Review 12
13	37	November 17	Lecture 20: Chapter 6
	38	November 19	Lecture 21: Chapter 6 and 7
	39	November 20	Review 13
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14	40	December 1	Lecture 22: Chapter 7
	41	December 3	Test 3 review Session
	42	December 4	Review 14
15	43	December 8	Final Test!!

NOTE: Some class lecture dates may be subject to change.

Grading Policy:

Exam #1:	(~25%)
Exam #2:	(~25%)
Exam #3:	(~25%)
Homework:	(~15%)
Attendance:	(~10%)

Grade ranges are as follows:

A+: 97-100; **A:** 93-96; **A-:** 90-92; **B+:** 87-89; **B:** 83-86; **B-:** 80-82;
C+: 77-79; **C:** 73-76; **C-:** 70-72; **D+:** 67-69; **D:** 63-66; **D-:** 60-62;
F: below 60

Important Dates:

- Last day to drop a class without a "W": 09/09/2015
 - Last day to withdraw from an undergraduate course with WP/WF, 10/29/2015
 - Last day of class: 12/08/2015
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Course & Instructor Policies:

- The best and fastest way to reach me is via Emails. Please add **ENGR2300** in the subject of emails, so I can give priority to your emails.
- There will be a 10% penalty for late homework (Maximum 1 class session late). Homework will not be accepted after the related review session.
- The course is taught using eLearning. The student should develop the habit of checking both eLearning and their UTD email often for assignments and announcements.
- Only emails sent from your official UTD email address or eLearning email will be considered and answered.
- No laptops, cell phones, pagers, or other electronic messaging services may be used in the classrooms, unless, it is necessary for a class activity.
- Class attendance is **Mandatory** and is taken occasionally.

Lab citizenship, etc.:

Proper lab deportment for engineering students is taken for granted. When you enter class, speak quietly if you are carrying on a conversation. **MAKE SURE YOU TURN OFF YOUR CELL PHONE.** Do not listen to mp3 players, IPODs, etc., in class. Do NOT use your computer in class, or you will be criticized, ridiculed, and possibly have points taken off your next reportor homework grade!

Field Trip Policies and Off-campus Instruction and Course Activities:

No off-campus activities in 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 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 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)

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.

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