



**PRAIRIE VIEW
A&M UNIVERSITY**

SYLLABUS

MATH 3073/32493. Linear Algebra, Summer 2019			
Department of	Mathematics	College of	Arts and Sciences
Instructor Name:	Manouchehr Misaghian, Ph. D.		
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Office Hours:	By appointment in advance		
Virtual Office Hours:	e-mail		
Course Location:	Banks Bldg. 208		
Class Meeting Days & Times:	MTWR 11:00 am-1:20 PM		
Course Abbreviation and Number:	Math 3073/32493		
Catalog Description:	Credit (3-0) semester hours. Linear systems of equations, vectors, matrices, Matrix Algebra, Determinants, vector spaces and linear transformations, and vector spaces with an inner product.		
Prerequisites	Consent of instructor and MATH 1124 or equivalent or Approval of the Mathematics Department		
Co-requisites			
Required Text:	<ul style="list-style-type: none"> Linear Algebra with Applications, by JEFFREY HOLT, 2nd edition, Copyright © 2017, 2013 by W. H. Freeman and Company. ISBN-13: 978-1-4641-9334-7. Web Assign subscription needed for HW, quizzes, and other activities. You will be able to access to the book through web assign. https://www.webassign.net Course key: pvamu 8547 4869		
Recommended Texts:	<ol style="list-style-type: none"> Linear Algebra: A Modern Introduction By David Poole Published by Brooks/Cole, 2003 ISBN 0534341748, 9780534341749 Linear Algebra: A Geometric Approach By Ted Shifrin, Theodore Shifrin, Malcolm Adams Published by W.H. Freeman, 2001 ISBN 071674337X, 9780716743378 <i>Linear Algebra</i> by Ben Woodruff. This book can be downloaded from following site for free: http://cloud.github.com/downloads/jasongrout/linear-algebra/linear-algebra_chapters1-2_git9e17b.pdf 		
Access to Learning Resources:	PVAMU Library:		

phone: (936) 261-1500;
 web: <http://www.tamu.edu/pvamu/library/>
 University Bookstore:
 phone: (936) 261-1990;
 web: <https://www.bkstr.com/Home/10001-10734-1?demoKey=d>

Course Goals or Overview:

Math 3073 is designed to provide basic knowledge of elementary linear algebra with abstraction

Course Objectives: At the end of this course the student should be able (with at least 70% accuracy) to:

1. Solve linear systems of m equation in n unknown.
2. Perform basic matrix operations
3. Perform algebraic matrix operations
4. Work with special types of matrices including partitioned matrices
5. Reduce a matrix to Echelon form
6. Reduce a matrix to Reduce Row Echelon form
7. Compute inverse of a square matrix A (whenever the inverse exists)
8. Determine equivalent matrices
9. Identify vector spaces and subspaces
10. Determine whether a set of vectors are linearly independent or linearly dependent.
11. Determine a basis for a vector space
12. Determine the rank of a matrix
13. Determine the dimension of a vector space
14. Determine isomorphic vector spaces
15. Define the standard inner product spaces
16. Apply the Gram-Schmidt process
17. Define a linear transformation of a vector space V into a vector space W
18. Determine the Kernel of a linear transformation
19. Determine the range of a linear transformation
20. Determine the matrix of a linear transformation
21. Define the determinant of a square matrix
22. Apply Cramer's rule whenever possible
23. Diagonalize a matrix (whenever possible)
24. Determine eigen values and eigen vectors

At the end of this course, the student will be able to:

		Alignment with Academic Program	Alignment with Core Curriculum
1	Solve linear systems of m equation in n unknown, Perform basic matrix operations Perform algebraic matrix operations	#2	#2, #3
2	Work with special types of matrices including partitioned matrices Reduce a matrix to Echelon form Reduce a matrix to Reduce Row Echelon form Compute inverse of a square matrix A (whenever the inverse exists)	#3	#2, #3
3	Determine equivalent matrices Identify vector spaces and subspaces Determine whether a set of vectors are linearly independent or linearly dependent	#1	#2
4	Determine a basis for a vector space	#3	#2

	Determine the rank of a matrix Determine the dimension of a vector space		
5	Determine isomorphic vector spaces Define the standard inner product spaces Apply the Gram-Schmidt process	#2	#1, #2, #3
6	Define a linear transformation of a vector space V into a vector space W Determine the Kernel of a linear transformation Determine the range of a linear transformation Determine the matrix of a linear transformation	#3	#2
7	Define the determinant of a square matrix Apply Cramer's rule whenever possible Diagonalize a matrix (whenever possible) Determine eigen values and eigen vectors	#4	#2, #3

Course Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

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Exams – written tests designed to measure knowledge of presented course material

Exercises – written assignments designed to supplement and reinforce course material

Class Participation – daily attendance and participation in class discussions.

Grading Matrix

Instrument	Value (points or percentages)	Total
Assignments	10 assignments at 20 points each	200
Tests, including Mid-Term	3 tests at 150 points each	450
Class Participation/ Discussion	50 points	50
Final Exam	300 points	300
Total:		1000

Grade Determination:

A = 1000 – 900pts;

B = 899 – 800pts;

C = 799 – 700pts;

D = 699 – 550pts;

F = 549pts or below

Course Procedures

Submission of Assignments:

Formatting Documents:

Microsoft Word is the standard word processing tool used at PVAMU. If you're using other word processors, be sure to use the "save as" tool and save the document in either the Microsoft Word, Rich-Text, or plain text format.

Exam Policy

Exams should be taken as scheduled. No makeup examinations will be allowed except under documented emergencies (See Student Handbook).

University Rules and Procedures

Disability statement (See Student Handbook):

Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook):

You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty:

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

Nonacademic misconduct (See Student Handbook)

The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook):

Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy:

Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

Technical Considerations for Online and Web-Assist Courses

Minimum Hardware and Software Requirements:

- Pentium with Windows XP or PowerMac with OS 9
- 56K modem or network access
- Internet provider with SLIP or PPP
- 8X or greater CD-ROM
- 64MB RAM
- Hard drive with 40MB available space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Netscape Communicator ver. 4.61 or Microsoft Internet Explorer ver. 5.0 /plug-ins
- Participants should have a basic proficiency of the following computer skills:
 - Sending and receiving email
 - A working knowledge of the Internet
 - Proficiency in Microsoft Word
 - Proficiency in the Acrobat PDF Reader
 - Basic knowledge of Windows or Mac O.S.

Netiquette (online etiquette): students are expected to participate in all discussions and virtual classroom chats when directed to do so. Students are to be respectful and courteous to others in the discussions. Foul or abusive language will not be tolerated. When referring to information from books, websites or articles, please use APA standards to reference sources.

Technical Support: Students should call the Prairie View A&M University Helpdesk at 936-261-2525 for technical issues with accessing your online course. The helpdesk is available 24 hours a day/7 days a week. For other technical questions regarding your online course, call the Office of Distance Learning at 936-261-3290 or 936-261-3282

Communication Expectations and Standards:

All emails or discussion postings will receive a response from the instructor within 48 hours.

You can send email anytime that is convenient to you, but I check my email messages continuously during the day throughout the work-week (Monday through Friday). I will respond to email messages during the work-week by the close of business (5:00 pm) on the day following my receipt of them. Emails that I receive on Friday will be responded to by the close of business on the following Monday.

Submission of Assignments:

Assignments, Papers, Exercises, and Projects will distributed and submitted through your online course. Directions for accessing your online course will be provided. Additional assistance can be obtained from the Office of Distance Learning.

Discussion Requirement:

Because this is an online course, there will be no required face to face meetings on campus. However, we will participate in conversations about the readings, lectures, materials, and other aspects of the course in a true seminar fashion. We will accomplish this by use of the discussion board.

Students are required to log-on to the course website often to participate in discussion. It is strongly advised that you check the discussion area daily to keep abreast of discussions. When a topic is posted, everyone is required to participate. The exact use of discussion will be determined by the instructor.

It is strongly suggested that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it should be copied and pasted to the discussion board.

TENTATIVE COURSE OUTLINE

Week	Topic	Section
I & II Ch. 1 §§ 1.1,1.2	Systems of Linear Equations Solving Systems of Linear Equations Systems of Linear Equations Possibilities for Solution Equivalent Systems and Equation Operations Matrix and Vector Notation for Systems of Equations	
III, Ch. 2, § § 2.1-2.3	Euclidean space Vectors, Span, Linear Independence	
IV, Ch. 3, § § 3.1-3.4	Matrices Linear Transformations, Matrix Algebra, Inverses LU Factorization	
V & VI Ch.4 § § 4.1-4.3	Subspaces Introduction to subspaces, Basis and Dimension, Row and column Spaces	
VII & VIII Ch.5, § § 5.1-5.3	Determinants The Determinant Function Properties of Determinants Applications of the Determinants	
IX & X Ch.6 § § 6.1, 6.3-6.5	Eigenvalues and Eigenvectors Eigenvalues and Eigenvectors, Change of Basis, Diagonalization, Complex Eigenvalues Review for Mid-Term Examination	
XI Ch. 7 § § 7.1-7.3	Vector Spaces, Vector Spaces and subspaces, Span and Linear Independence Basis and dimension	
XII & XIII Ch.8 § §8.1-8.3	Orthogonality Dot products and Orthogonal Sets Projection and the Gram-Schmidt Procedure. Diagonalizing Symmetric Matrices and QR Factorization	
XIV & XV Ch. 9 § § 9.1-9.4	Linear Transformations Definition and properties, Isomorphism, The Matrix of a Linear Transformations, Similarity Catch up and review for final	