SYLLABUS

MATH 2318
LINEAR ALGEBRA
FALL 2022

Instructor:	Alexander Mamonov
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Classroom:	CBB 108
Class hours:	MW 4:00PM - 5:30PM
Class number:	16277

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The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.
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All class policies, announcements, reviews, homework assignments, solutions, and grades are posted on **Blackboard**: http://elearning.uh.edu/webapps/portal/frameset.jsp

Prerequisite: credit for or concurrent enrollment in MATH 2414.

Textbook: David C. Lay, Steven R. Lay and Judi J. McDonald,
Linear Algebra and Its Applications, 5th Edition, Pearson.

Objectives: Upon completion of this course, the students are expected to gain the understanding of the fundamental concepts of linear algebra including systems of linear equations and their solution, linear dependence and independence, linear transformations, matrices and matrix operations, matrix inverses, subspaces, dimension and rank, determinants, vector spaces, subspaces, bases, eigenvectors and eigenvalues, matrix diagonalization, inner products and orthogonality, projections, Gram-Schmidt process, least squares, etc.

Assignments, Exams and Grading: Weekly homework, two in-class midterm exams and a final exam will be given. There are no make-ups for the exams. The course grade is determined by the homework, midterm exams and the final exam with each having the following weights:

Homework	1/5
Midterm 1	1/5
Midterm 2	1/5
Final Exam	2/5

Specifically, at the end of the semester, the following (percentage) Weighted Class Total (WCT) quantity is computed

$$WCT = 0.2*HW + 0.2*ME1 + 0.2*ME2 + 0.4*FE,$$

where HW is the average of all homework grades excluding the two lowest grades, ME1 and ME2 are the first and second midterm exam grades, respectively, and FE is the final exam grade. Any missing assignment or exam grades are set to zero.

WCT is converted to a Letter Grade on a sliding scale that is determined at the very end of the semester after the Final Exam. The sliding scale is set so that the average value of WCT taken over the whole class corresponds to a Letter Grade between B- and C+.

Topics: The following topics are covered (section numbering as in the textbook, the list is subject to change)

Chapter 1: Linear Equations in Linear Algebra
1.1 Systems of Linear Equations
1.2 Row Reduction and Echelon Forms
1.3 Vector Equations
1.4 The Matrix Equation Ax=b
1.5 Solutions Sets of Linear Systems
1.7 Linear Independence
1.8 Introduction to Linear Transformations
1.9 The Matrix of a Linear Transformation

Chapter 2: Matrix Algebra
2.1 Matrix Operations
2.2 The Inverse of a Matrix
2.3 Characterizations of Invertible Matrices
2.4 Partitioned Matrices
2.8 Subspaces of R^n
2.9 Dimension and Rank

Chapter 3: Determinants
3.2 Properties of Determinants
3.3 Cramer's Rule, Volume, and Linear Transformations

Chapter 4: Vector Spaces
4.1 Vector Spaces and Subspaces
4.2 Null Spaces, Column Spaces, and Linear Transformations
4.3 Linearly Independent Sets; Bases
4.5 The Dimension of a Vector Space
4.6 Rank

Chapter 5: Eigenvalues and Eigenvectors
5.1 Eigenvectors and Eigenvalues
5.2 The Characteristic Equation
5.3 Diagonalization
5.4 Eigenvectors and Linear Transformations

COVID-19 Information

Students are encouraged to visit the University's COVID-19 website for important information including diagnosis and symptom protocols, on-campus testing, and vaccine information. Please check the website throughout the semester for updates.

If you are experiencing any COVID-19 symptoms that are not clearly related to a pre-existing medical condition, do not come to class. Please see Student Protocols for what to do if you experience symptoms and Potential Exposure to Coronavirus for what to do if you have potentially been exposed to COVID-19. Consult the Undergraduate Excused Absence Policy for information regarding excused absences due to medical reasons.

Vaccinations

Data suggests that vaccination remains the best intervention for reliable protection against COVID-19. Students are asked to familiarize themselves with pertinent vaccine information and to consult with their health care provider. The University strongly encourages all students, faculty and staff to be vaccinated.

Reasonable Academic Adjustments/Auxiliary Aids

The University of Houston complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for disabled students. In accordance with Section 504 and ADA guidelines, UH strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please contact the Justin Dart Jr. Student Accessibility Center (formerly the Justin Dart, Jr. Center for Students with DisABILITIES).

Excused Absence Policy

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston Undergraduate Excused Absence Policy for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended absences. Additional policies address absences related to military service, religious holy days, pregnancy and related conditions, and disability.

Recording of Class

Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the [Justin Dart, Jr. Student Accessibility Center](). If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with *anyone* without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

Syllabus Changes

Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible through email and/or Blackboard.

UH Email

Email communications related to this course will be sent to your Cougarnet accout. To access this email, [login]() to your Microsoft 365 account with your Cougarnet credentials.