COURSE SYLLABUS

YEAR COURSE OFFERED: 2022
SEMESTER COURSE OFFERED: Spring
DEPARTMENT: Mathematics
COURSE NUMBER: 2318
NAME OF COURSE: Linear Algebra
FORMAT AND TIME: Face-to-face, MoWeFr 9:00-10:00 am
INSTRUCTOR: Giselle Sosa Jones
OFFICE HOURS: Wednesdays 2 pm – 3 pm
TUTORING HOURS: TBD

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.

Prerequisites
Credit for or concurrent enrollment in MATH 1432.
Contact NSM Academic Advising with all enrollment requests.

Communication With Instructor
If you wish to contact the instructor, you must do so only with your UH email address and using the email provided above (ggsosajo@central.uh.edu), not the MS Teams chat. If you use a different email address, you risk your email not being delivered thanks to UH email filters.
Major Assignments/Exams

- Final exam: 40% (Monday, May 9, 8 am – 11 am)
  
  The final exam is comprehensive and replaces the lowest exam grade (if it is lower).

- Tests 1 and 2: 20% each
  
  Exams will be in-person. There are no make-up exams.

- Homeworks: 20%
  
  There will be weekly homework assignments. The homework problems and due dates will be posted on Blackboard. Homeworks should be submitted through Blackboard as one single PDF. No email submissions will be accepted. There are no extensions. The lowest homework grade will be dropped.

Required Textbook

Linear Algebra and Its Applications (5th Edition), David C. Lay

Grade Distribution

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<th>Grade</th>
<th>Minimum Score</th>
<th>Maximum Score</th>
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List of discussion/lecture topics

1. Linear Equations in Linear Algebra
   1.1 Systems of Linear Equations
   1.2 Row Reduction and Solution Sets of Linear Systems
   1.3 Vector Equations
   1.4 The Matrix Equation Ax = b
   1.5 Solutions Sets of Linear Systems
   1.6 Linear Independence
   1.7 Introduction to Linear Transformations
   1.8 The Matrix of a Linear Transformation
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2. Matrix Algebra
   2.1 Matrix Operations
   2.2 -2.3 The Inverse of a Matrix and Characterizations of Invertibility

3. Determinants
   3.1 Introduction to Determinants
   3.2 Properties of Determinants, the Determinant and Invertibility
   3.3 Cramer’s Rule, Volume and Linear Transformations

4. Vector Spaces
   4.1 Vector Spaces and Subspaces
   4.2 Null Spaces, Column Spaces and Linear Transformations
   4.3 Linearly Independent Sets; Bases
   4.4* Coordinate Systems
   4.5 The Dimension of Vector Space
   4.6 Rank
   4.7* Change of Basis
   4.9* Application to Markov Chains

5. Eigenvalues and Eigenvectors
   5.1 Eigenvectors and Eigenvalues
   5.2 The Characteristic Equation
   5.3 Diagonalization
   5.4* Eigenvectors and Linear Transformations
   5.5* Complex Eigenvalues
   5.6-5.8* Applications

6. Orthogonality and Symmetric Matrices
   6.1 Inner Product, Length, and Orthogonality
   6.3 Orthogonality and Projections
   6.5 Least-Squares Problems

* Sections are optional, as time permits

Online Portion of the Course

Following the University’s soft-opening plan, during the first two weeks of classes, the course will have certain online components as described next. In order to reduce classroom density, the class will be divided into two groups as follows:

   1. Group A: Students whose last name begins with A-L
   2. Group B: Students whose last name begins with M-Z

The schedule for the first two weeks is as follows:
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- Wednesday, January 19: Group A in-person, group B online
- Friday, January 21: Group B in-person, group A online
- Monday, January 24: Group A in-person, group B online
- Wednesday, January 26: Group B in-person, group A online
- Friday, January 28: online synchronous lecture on MS Teams

The in-person lectures will be recorded and posted on Blackboard immediately after the class. You are responsible for watching the lecture before attending your corresponding in-person class.

After the soft-opening plan is over, the lectures will not be recorded anymore.

Office Hours

Wednesdays 2 pm – 3 pm online on MS Teams

Tutoring Hours

TBD

Required Equipment

Computer, web camera, and internet access is required for this course. For the current list of minimum technology requirements and resources, copy/paste/navigate to the URL [http://www.uh.edu/online/tech/requirements](http://www.uh.edu/online/tech/requirements). For additional information, contact the office of Online & Special Programs at UHOnline@uh.edu or 713-743-3327. In summary, students will need:

- PC/Laptop or any other device with web browsing capability
- A PDF viewer and ability to watch mp4 files
- Ability to access Microsoft Teams. Note that all UH students have access to MS Team with their cougarnet ID.
- A scanning app on a phone or other device for scanning homeworks into a PDF with multiple pages. Alternatively, students can use a writing pad to write directly on a PDF.

General Information

Face Covering Policy

To reduce the spread of COVID-19, the University strongly encourages everyone
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(vaccinated or not) to wear face coverings indoors on campus including classrooms for both faculty and students.

Presence in Class

Your presence in class each session means that you:

- Are NOT exhibiting any Coronavirus Symptoms that makes you think that you may have COVID-19
- Have NOT tested positive or been diagnosed for COVID-19
- Have NOT knowingly been exposed to someone with COVID-19 or suspected/presumed COVID-19

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.

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 and Graduate 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. Additional policies address absences related to military service, religious holy days, pregnancy and related conditions, and disability.

COVID-19 Information

Students are encouraged to visit the University’s COVID-19 website for important information including on-campus testing, vaccines, diagnosis and symptom protocols, campus cleaning and safety practices, report forms, and positive cases on campus. Please check the website throughout the semester for updates.

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, consult with their health care provider. The University strongly encourages all students, faculty and staff to be vaccinated.

Reasonable Academic Adjustments/Auxiliary Aids
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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).

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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 Blackboard.

Resources for Online Learning

The University of Houston is committed to student success, and provides information to optimize the online learning experience through our Power-On website. Please visit this website for a comprehensive set of resources, tools, and tips including: obtaining access
to the internet, AccessUH, and Blackboard; requesting a laptop through the Laptop Loaner Program; using your smartphone as a webcam; and downloading Microsoft Office 365 at no cost. For questions or assistance contact UHOnline@uh.edu.

UH Email

Email communications related to this course will be sent to your Exchange email account which each University of Houston student receives. The Exchange mail server can be accessed via Outlook, which provides a single location for organizing and managing day-to-day information, from email and calendars to contacts and task lists. Exchange email accounts can be accessed by logging into Office 365 with your Cougarnet credentials or through AccessUH. They can also be configured on iOS and Android mobile devices. Additional assistance can be found at the Get Help page.

Honor Code Statement

Students may be asked to sign an honor code statement as part of their submission of any graded work including but not limited to projects, quizzes, and exams: “I understand and agree to abide by the provisions in the University of Houston Undergraduate Academic Honesty Policy. I understand that academic honesty is taken very seriously and, in the cases of violations, penalties may include suspension or expulsion from the University of Houston.”

Helpful Information

COVID-19 Updates: https://uh.edu/covid-19/

Coogs Care: https://www.uh.edu/dsaes/coogscare/

Laptop Checkout Requests: https://www.uh.edu/infotech/about/planning/off-campus/index.php#do-you-need-a-laptop

Health FAQs: https://uh.edu/covid-19/faq/health-wellness-prevention-faqs/

Student Health Center: https://www.uh.edu/healthcenter/

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad or hopeless. You can reach CAPS (www.uh.edu/caps) by calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the “Lets talk” program, a drop in consultation service at convenient locations and hours around campus https://www.uh.edu/caps/outreach/lets-talk/.