SYLLABUS

MATH 4378 / MATH 6309
ADVANCED LINEAR ALGEBRA II
SPRING 2021

Instructor: Alexander Mamonov
Class format: Synchronous Online
Class hours: MWF 12:00PM – 1:00PM
Office hours: MWF 1:30PM – 2:30PM
Phone: (713) 743-0297
E-mail: mamonov@math.uh.edu
Web page: https://www.math.uh.edu/~mamonov/MATH4378-S2021/index.html

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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, lecture videos and notes, reviews, homework assignments, solutions, exams and grades are posted on **Blackboard**:
http://elearning.uh.edu/webapps/portal/frameset.jsp

Synchronous Online Class: This course is being offered in the **Synchronous Online** format. There is **no face-to-face component** to this course. Synchronous online class meetings (lectures and office hours) take place at the times listed above. The links to meetings are posted on **Blackboard**.

Prerequisite: MATH 4377 or MATH 6308.

Textbook: S.H. Friedberg, A.J. Insel, L.E. Spence, *Linear Algebra*, 4th Edition, Prentice Hall.

Objectives: Upon completion of this course, the students are expected to gain the understanding of the fundamental concepts of linear algebra including eigenvalues, eigenvectors and diagonalizability, inner products and orthogonalization, linear operator adjoints, unitary operators and orthogonal projections, Singular Value Decomposition and pseudoinverse, bilinear and quadratic forms, and the Jordan Canonical Form.

Assignments and Grading: Weekly homework, three midterm exams and a final exam are given. Detailed exam schedule and policies are posted on Blackboard. The course grade is determined by the homework, midterm and final exams with each having the following weights:

Homework	1/6
Midterm 1	1/6
Midterm 2	1/6
Midterm 3	1/6
Final Exam	2/6

Topics:

5.1 Eigenvalues and Eigenvectors
5.2 Diagonalizability
5.4 Invariant Subspaces and the Cayley-Hamilton Theorem
6.1 Inner Products and Norms
6.2 The Gram-Schmidt Orthogonalization Process and Orthogonal Complements
6.3 The Adjoint of a Linear Operator
6.4 Normal and Self-Adjoint Operators
6.5 Unitary and Orthogonal Operators and Their Matrices
6.6 Orthogonal Projections and the Spectral Theorem
6.7 The Singular Value Decomposition and the Pseudoinverse

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. 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 Center for Students with DisABILITIES. 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 Blackboard.

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 Access UH. They can also be configured on [IOS](#) and [Android](#) mobile devices. Additional assistance can be found at the [Get Help](#) page.

Counseling and Psychological Services (CAPS) Statement

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad and 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 "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus.
http://www.uh.edu/caps/outreach/lets_talk.html