

COURSE DESCRIPTION
NUMERICAL LINEAR ALGEBRA
MA 660-1F
SPRING 2022

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF ALABAMA AT BIRMINGHAM

Course Instructor: Dr. Carmeliza Navasca

E-mail: cnavasca@uab.edu

Office: UH 4010

Phone: (205) 934-2154

Preferred Methods of Contact: Email is the preferred method of contact if you have questions. Please expect a response within 24 hours on weekdays and a slower response on weekends (OR Emails received after 5 pm on Friday will be returned Monday morning). Include course number in the subject line of your email for a faster response. I am available to meet with you virtually via Zoom by appointment during my virtual office hours (see below for my scheduled virtual office hours).

Office Hours: TBA

Course Info

Meeting times: MonWedFri 1:25–2:15 PM

Meeting location: UH 4002

Required Textbook: (1) *Numerical Linear Algebra* by Nikolai Chernov, 2014, (<http://people.cas.uab.edu/~mosya/teaching/660new3.pdf>)

Recommended Textbook: (1) *Numerical Linear Algebra* by Lloyd N. Trefethen and David Bau III, SIAM, 1997

(2) *Matrix Computations* by Gene H. Golub and Charles F. Van Loan, Johns Hopkins University Press, 2012

(3) *Matrix Analysis* by Roger A. Horn and Charles R. Johnson, Cambridge University Press, 2012

Important Dates

First day of our class: January 10, 2022

Martin Luther King Holiday: January 17, 2022

Last day to drop without paying full tuition: January 18, 2022

Spring Break: March 14–20, 2022

Last day to withdraw: March 22, 2022

Last day of our class: April 22, 2022

Midterm Dates: February 16, 2022. March 25, 2022

Final Exam Date: Friday, April 29, 2022

Course Policies

Date: January 7, 2019.

- Please make sure that you are able to receive e-mail through your Blazer-ID account.
- If your are contacted by the Early Alert Program, you should consider taking advantage of the services it offers.
- If you wish to request a disability accommodation please contact DSS at 934-4205 or at *dss@uab.edu*.

Course Description

Vector and matrix norms; SVD; stability, condition numbers, and error analysis; QR factorization; least squares problems; computation of eigenvalues and eigenvectors; iterative methods; implementation of algorithms

Class Management via Canvas

- Homework problems will be posted in canvas (<http://www.uab.edu/online/canvas>). Other class materials (class announcements, codes, grades and etc.) will be in canvas. Students should log in to canvas at least three times a week! (I prefer to receive emails via canvas.)
- I will NOT collect your homework in class. Homework will be uploaded in canvas before the due date.
- If you miss an exam, you will receive "0" as your exam grade. A medical excuse with proper documents may be acceptable for an exam exemption; then, the grade weight distribution will be adjusted, i.e. the midterm exam weight will be added to the final exam weight.

Assessment Procedures

- Student achievement will be assessed by the following measures:
 - **Weekly homework.** Homework will be due weekly. There will be no extension of deadlines for any reason. Homework contributes 30% to the course average.
 - **Project** The project contributes 10% to the course average.
 - **Midterm exams.** Each midterm exam contributes 15% to the course average.
 - **Final exam.** The final exam contributes 30% to the course average.
- Your final grade is determined according to the following table:

Course performance:	88-100	75-87	50-74	below 50
Final Grade:	A	B	C	F

Past JPE Problems

These problems are posted in

<https://www.uab.edu/cas/mathematics/graduate/phd/qualifying-exams-testbank>. We will have several review sessions based on these JPE problems. Moreover, you are encouraged to do the additional problems given in the homework assignments.

Masking Requirements

Mask-wearing has proven to be one of the most successful mitigation strategies used to combat spread of the various variants of the COVID-19 virus. UAB requires face coverings indoors on campus regardless of vaccine status. Students who do not follow this requirement can be reported to Student Conduct.

Students will be asked to wear a face covering and if the student is noncompliant, the student will be asked to leave the classroom/lab. As a last resort, class will be dismissed if a student refuses to wear a face covering.

We strongly urge you to be fully vaccinated. Here is information on the safety of vaccines and on how to get vaccinated at UAB (<https://www.uab.edu/uabunited/covid-19-vaccine>). There you will find incentives for getting vaccinated.

Title IX Statement

The University of Alabama at Birmingham is committed to providing an environment that is free from sexual misconduct, which includes gender-based assault, harassment, exploitation, dating and domestic violence, stalking, as well as discrimination based on sex, sexual orientation, gender identity, and gender expression. If you have experienced any of the aforementioned conduct we encourage you to report the incident. UAB provides several avenues for reporting. For more information about Title IX, policy, reporting, protections, resources and supports, please visit (<https://www.uab.edu/titleix/>) for UABs Title IX, UABs Equal Opportunity, Anti-Harassment, Duty to Report, and Non-Retaliation policies.

Academic Honor Code

The University of Alabama at Birmingham expects all members of its academic community to function according to the highest ethical and professional standards.

Academic misconduct undermines the purpose of education. Such behavior is a serious violation of the trust that must exist among faculty and students for a university to nurture intellectual growth and development. Academic dishonesty and misconduct includes, but is not limited to, acts of abetting, cheating, plagiarism, fabrication, and misrepresentation.

It will be important that you review and become familiar with the Universitys Academic Integrity Code (<https://www.uab.edu/faculty/resources/academic-integrity-code>)

Non-harassment, Hostile Work/Class Environment

The UAB College of Arts and Sciences expects students to treat fellow students, their Course Instructors, other UAB faculty, and staff as adults and with respect. No form of hostile environment or harassment will be tolerated by any student or employee.
