



UNIVERSITY OF
CENTRAL FLORIDA

MAS 3105 - Matrix and Linear Algebra

Section: 0013

College of Sciences

Department of Mathematics

Course Information

Term: Spring 2025

Class Meeting Days: MW

Class Meeting Time: 11:30AM - 01:20PM

Class Meeting Location: BIO O209

Modality: P

Credit Hours: 4.00

Instructor Information

Jason Swanson

Office Location: MSB 202E

Office Hours:

MW 2:50-4:20, T 1-2:10 (Zoom)

Email: Jason.Swanson@ucf.edu

Course Description

MAS 3105 COS-MATH 4(4,0)Matrix and Linear Algebra: PR: MAC 2312 or C.I. Matrices, determinants, vector spaces over the reals, linear independence, basis, solutions of systems, range of linear transformations, eigenvectors, singular value decomposition
Fall, Spring.

Course Objectives

The course will familiarize students with main concepts and techniques of linear algebra. It includes systems of linear equations, matrices and basic operations, determinants, vector spaces, linear transformations in vector spaces, independence and bases, eigenvalues of matrices, diagonalization, inner products and orthogonalization, and singular value decomposition. These instruments are crucial tools in modern mathematics, physics, engineering, and technology. The course is primarily but not exclusively a computationally based approach to linear algebra.

Student Learning Outcomes

After successful completion of this course, students will be able to:

- Understand the elementary theory of matrix algebra
 - solve systems of linear equations, write solution sets in appropriate forms, and translate advanced problems and applications into such systems
 - compute matrix inverses and determinants, and apply these concepts to the advanced theory
 - perform computations with matrices and vectors, including eigenvalues and eigenvectors, diagonalization, and matrix decomposition, especially the singular value decomposition
- Understand the elementary theory of vector spaces
 - show sets of vectors are linearly independent, or spanning, or are bases; use dimension of a vector space to interpret properties of matrices
 - use linear products and orthogonality in vector spaces to develop meaningful computational techniques, and apply these to advanced applications of matrices

Course Materials and Resources

Linear Algebra and Its Applications - MyLab with eText

ISBN: 8220113219508

Authors: David Lay

Publisher: Pearson Co

Edition: 6th 20

Notes: This textbook and its associated materials is available in the UCF First Day Program. See the "Course Materials" tab in the WebCourses menu.

MyLab Math

Notes: This course will utilize the MyLab Math platform provided by the publisher of the textbook. All students must have access to MyLab Math for the entirety of the term. Students must also have access to a computer and reliable broadband internet access. Online homework will be administered in MyLab Math. Using a cell phone as your primary source of internet access is almost certainly not sufficient. Students can access MyLab Math via the links in the MyLab Math Student Links module, and through the various homework assignment links.

Third-Party Accessibility and Privacy Statements

This course uses MyLabs Math, an online learning platform published by [Pearson Education, Inc.](#)

- [Digital Services Privacy Notice](#)
- [Accessibility](#)

Course Assessment and Grading Procedure

Assessment and Grading Procedures

Assignment	Percentage of Grade
attendance	5%
online homework (MyLabs Math)	10%
test 1	25%
test 2	25%
final	35%

Financial Aid Accountability

All instructors/faculty are required to document students' academic activity at the beginning of each course. In order to document that you began this course, please complete this activity by the end of the first week of classes or as soon as possible after adding the course. Failure to do so may result in a delay in the disbursement of your financial aid.

Grading Scale

Letter Grade	Percentage
A	90 - 100%
B	80 - 89%
C	70 - 79%
D	60 - 69%
F	0 - 59%

Policies for Course Grade

Make-Up Policy

Except as required by the University, exam/quiz make-ups will not be given. Personal travel plans, medical reasons, and personal or family emergencies are not valid reasons for taking quizzes or tests at a time different than scheduled. See also "RELIGIOUS OBSERVANCES" below. University related absences that require special scheduling must be arranged prior to the missed exam. Such absences must be documented by a university official (see [UCF Policy 4-401.1](#)). Absences due to court-imposed legal obligations will also be accommodated, if documentation is provided, on a case-by-case basis but typically requiring the work be completed at the very earliest opportunity (see the [University of Central Florida Undergraduate Catalog](#)).

Religious Observances

[UCF Regulation 5.020 \(1\)](#): The University of Central Florida will reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. A student who desires to observe a religious holy day of his or her religious faith must notify all of the instructors teaching the class(es) from which the student desires to be excused no later than the tenth business day of the term.

Syllabus Updates

This syllabus may be updated by making reasonable corrections or to accommodate external factors (for example, scheduling issues caused by hurricane closures). Updates will be communicated as soon as practicable.

Class Schedule

Week	Topic
1	Sections 1.1–1.3
2	Sections 1.4, 1.5, 1.7, 1.8
3	Section 1.9
4	Sections 2.1–2.3
5	Review, Test 1
6	Sections 3.1, 3.2, 4.1
7	Sections 4.2–4.5
8	Sections 4.6, 5.1
9	Sections 5.2, 5.3
10	Review, Test 2
11	Sections 6.1, 6.2
12	Sections 6.3–6.5
13	Section 7.1
14	Section 7.4
15	Review

Final exam: Wed, Apr 23, 10:00 am–12:50 pm, BIO O209

Reporting an Incident or Issue

If you believe you have experienced abusive or discriminatory behavior by any faculty or staff member, contact the Office of Institutional Equity [online](#) or at 407-823-1336. You can also choose to report using the UCF Integrity Line and can report anonymously or as yourself at 1-855-877-6049 or using the [online form](#). UCF cares about you and takes every report seriously. For more information see the [Reporting an Incident or Issue Webpage](#).

University Services and Resources

Academic Services and Resources

A list of available academic support and learning services is available at [UCF Student Services](#). Click on "Academic Support and Learning Services" on the right-hand side to filter.

Non-Academic Services and Resources

A list of non-academic support and services is also available at [UCF Student Services](#). Click on "Support" on the right-hand side to filter.

If you are a UCF Online Student, please consult the [UCF Online Student Guidelines](#) for more information about your access to non-academic services.

Academic Integrity

Students should familiarize themselves with UCF's Code of Conduct at [Student Conduct and Integrity Office](#). According to Section 1, "Academic Misconduct," students are prohibited from engaging in:

- a. Academic misconduct is defined as any submitted work or behavior that obstructs the instructor of record's ability to accurately assess the student's understanding or completion of the course materials or degree requirements (e.g., assignment, quiz, and/or exam). Examples of academic misconduct include but are not limited to: plagiarism, unauthorized assistance to complete an academic exercise; unauthorized communication with others during an examination, course

assignment, or project; falsifying or misrepresenting academic work; providing misleading information to create a personal advantage to complete course/degree requirements; or multiple submission(s) of academic work without permission of the instructor of record.

- b. Any student who knowingly helps another violate academic behavior standards is also in violation of the standards.
- c. Commercial Use of Academic Material. Selling of course material to another person and/or uploading course material to a third-party vendor without authorization or without the express written permission of the University and the instructor of record. Course materials include but are not limited to class notes, the instructor of record's slide deck, tests, quizzes, labs, instruction sheets, homework, study guides, and handouts.
- d. Soliciting assistance with academic coursework and/or degree requirements. The solicitation of assistance with an assignment, lab, quiz, test, paper, etc., without authorization of the instructor of record or designee is prohibited. This includes but is not limited to asking for answers to a quiz, trading answers, or offering to pay another to complete an assignment. It is considered Academic Misconduct to solicit assistance with academic coursework and/or degree requirements, even if the solicitation did not yield actual assistance (for example, if there was no response to the solicitation).

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, [The Golden Rule](#). UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an "F" letter grade in the course. In addition, an Academic Misconduct report could be filed with the Office of Student Conduct and Academic Integrity, which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a "Z" designation on one's transcript.

Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a

leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc.

Let's avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

Course Accessibility

The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need access to course content due to course design limitations should contact the professor as soon as possible. Students should also connect with [Student Accessibility Services \(SAS\)](#) (Ferrell Commons 185, sas@ucf.edu, phone 407-823-2371). For students connected with SAS, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential course access and accommodations that might be necessary and reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student. Further conversation with SAS, faculty and the student may be warranted to ensure an accessible course experience.

Campus Safety

At UCF Public Safety and Police, safety is the top priority. Emergencies on campus are rare, but if one should arise, it's important to be familiar with some basic safety and security concepts.

- In an emergency, always dial 911.
- Every UCF classroom has an **Emergency Procedure Guide** posted on a wall near the door, which will show you how to respond to a variety of situations. This guide can also be found online [here](#).
- In the event of an active threat, remember **AVOID, DENY, DEFEND**. Choose the best course of action and act immediately. Watch the video [here](#) to learn more.
 - **AVOID**. Pay attention to your surroundings and have an exit plan. Get as much distance and as many barriers between you and the threat as quickly as possible.

- **DENY.** When avoiding is difficult or impossible, deny the threat access to you and your space. Lockdown by creating barriers, turning the lights off and remaining quiet and out of sight. Make sure your cell phone is silenced, but do not turn it off.
- **DEFEND.** When you are unable to put distance between yourself and the threat, be prepared to protect yourself. Commit to your actions, be aggressive and do not fight fairly. Do whatever it takes to survive.
- For emergencies on campus, UCF will utilize the [UCF Alert](#) system. All UCF students, faculty and staff are automatically enrolled to receive these email and text alerts, however, it's a good idea to frequently ensure your [contact information is up to date](#).

Deployed Active-Duty Military Students

Students who are deployed active duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make related arrangements.

Copyright

This course may contain copyright protected materials such as audio or video clips, images, text materials, etc. These items are being used with regard to the Fair Use doctrine in order to enhance the learning environment. Please do not copy, duplicate, download or distribute these items. The use of these materials is strictly reserved for this online classroom environment and your use only. All copyright materials are credited to the copyright holder.

Third-Party Software and FERPA

During this course you might have the opportunity to use public online services and/or software applications sometimes called third-party software such as a blog or wiki. While some of these could be required assignments, you need not make any personally identifying information on a public site. Do not post or provide any private information about yourself or your classmates. Where appropriate you may use a pseudonym or

nickname. Some written assignments posted publicly may require personal reflection/comments, but the assignments will not require you to disclose any personally identity-sensitive information. If you have any concerns about this, please contact your instructor.

Title IX

Title IX prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. If you or someone you know has been harassed or assaulted, you can find resources available to support the victim, including confidential resources and information concerning reporting options at [Let's Be Clear](#) and [UCF Cares](#).

For more information on diversity and inclusion, Title IX, accessibility, or UCF's complaint processes contact:

- Title IX – OIE – [Office of Institutional Equity](#) & askanadvocate@ucf.edu
- Disability Accommodation – Student Accessibility Services – [Student Accessibility Services](#) & sas@ucf.edu
- [Access and Community Engagement](#) (including the Ginsberg Center for Inclusion and Community Engagement, Military and Veteran Student Success, and HSI Initiatives)
- UCF Compliance and Ethics Office – [Compliance, Ethics, and Risk Office](#) & complianceandethics@ucf.edu
- The [Ombuds Office](#) is a safe place to discuss concerns.