

Course Information

Course Number:	Math 3320
Course Name:	Linear Algebra
CRN:	12252
Location:	MCS 219
Class Hours:	11:00-11:50am MWF
Textbook:	Matrices and Linear Transformations by Cullen
Prerequisites:	Math 1497 or Math 2330

Instructor Information

Name:	Dr. Jeffrey Beyerl
Office Location:	MCS 231
E-mail:	jbeyerl@uca.edu
Phone:	501-450-5681

Course Description

This course is required for all majors in mathematics, physics, and computer science. This course introduces matrix algebra, vector spaces, linear transformations, and Eigenvalues. Optional topics include inner product spaces, solutions to systems of differential equations, and least squares.

Course Objectives and Requirements

The primary objective in this course is to understand linear systems, linear spaces, linear operators, and matrix algebra.

Software Requirements

Tests and quizzes will be designed to be completed without the aid of technology. However, many of the homework exercises can become tedious if completed by hand. You should become familiar with a computer algebra system to aid you on the homework. Wolfram Alpha will be used in class; other options include calculators such as TI-89, TI NSpire CAS or software packages such as Maple, Mathematica, R, MATLAB, Octave, Sage and others. Some of these software packages are installed on the computers in the Math Resource Lab.

Office Hours

My availability changes every day. Go to the website below for up to date availability. When you schedule an appointment, please specify what you're coming for.

To promote social distancing, office hours will use Google Meet by default. If you desire to come in person, you must request it when booking an appointment, properly wear a mask, maintain 6 feet of separation, and wash your hands or apply hand sanitizer shortly before arriving.

Office Hours Website: <https://ucamath.youcanbook.me/>



Grading Policy

- **Homework**
Suggested homework problems will be assigned on a weekly basis. Completing the homework will be on the honor system: you will need to self-report through Blackboard what you have completed.
- **Online Modules**
Each online module will have some items that need to be completed for credit. Each online module will open Saturday morning and be due Sunday night on the following week. This means that each module will have 9 days to complete, with two days overlapping with the previous module and 2 days overlapping with the following module.
- **Tests**
All tests are written full-class-length non-calculator tests. Each one is cumulative. Test scores will be reported as a percentage. The point-value assigned to tests will be determined at the end of the semester to make each test worth 20% of the course grade.
- **Final Project**
The final project will involve (1) a written paper, (2) a video presentation, and (3) peer review of other students' presentations.
- **Borderline Grades**
Borderline grades will be determined based on the quality of the final research project.
- **Calculation of Grades**
Grades will be calculated using the total-points method. All the points earned throughout the semester are totaled, and divided by the total points possible. Note above that the point-value of tests will be determined as described above. Everything else will be as listed on Blackboard.

A	$\geq 90\%$
B	$\geq 80\%$
C	$\geq 70\%$
D	$\geq 60\%$
F	$< 60\%$

Student Learning Objectives

Students who complete this course will have knowledge

- about various properties of matrices including but not limited to:
 - Solving linear systems in a systematic manner.
 - Determining linear dependence and independence of vectors.
 - Relating vectors to relevant vector spaces.
 - Finding and meaningfully interpreting the dimension of a vector space.
 - Demonstrating the duality between linear operators and matrices.
 - Performing algebraic operations on matrices.
 - Finding bases and performing a change-of-basis.
 - Finding and meaningfully interpreting determinants.
 - Finding eigenvalues, eigenvectors, and describing their nature.
 - Diagonalizing a matrix and find powers of matrices
- to solve system of linear equations using matrices.
- to use system of equations to model various applications

Important Dates

Last day to Drop Drop means the course is not on your record	August 26 th
Test 1	September 21/23/25 th
Test 2	October 19/21/23 rd
Last day to Withdraw Withdraw means the course is on your record with a "W" but does not factor into your GPA	November 6 th
Project First Version Due	November 8 th
Test 3	November 16/18/20 th
Project Video Presentation Due	Wednesday, December 2 nd
Project Final Version Due	Monday December 7 th , 4pm
Project Peer Review Due	Monday December 7 th , 4pm
Late work for reduced credit Due	Monday December 7 th , 4pm

Outside of class resources

- The Textbook
 - Description of material
 - Example problems
- Workbook of testable skills
 - Exercise problems
 - Homework problems
- Blackboard
 - Quiz/test solutions
 - Notes from class
 - Online modules
- Office Hours
 - Individual help
 - Availability changes every day. See <https://ucamath.youcanbook.me/> for up to date availability
- Previous course materials
 - <http://faculty.uca.edu/jbeyerl/courses.html>
- The Math Resource Lab
 - Study Area
 - Tutors available throughout the day
- Academic Success Workshops (every Tue at X-period)
 - <http://uca.edu/studentsuccess/academic-success-workshops/>
- Online Success Workshops (reading strategies, note-taking skills, test prep, etc!)
 - <http://uca.edu/studentsuccess/academic-success-workshops/>
- Peer Coaching (time management skills, study skills, motivation!)
 - <http://uca.edu/studentsuccess/successcoaching/>
- Communication Skills (oral and written)
 - <http://uca.edu/cwc/>

Late Work

Last assignments and online activities may be turned in late for a 20% penalty. They will be kept by the instructor until the end of the semester; at the end of the semester if there is a chance they can affect your course letter grade, they will be graded.

Expected Study Time

A good rule of thumb is that to be successful in a college course, you should work on your own two hours for every one hour of lecture. This course has 3 credit hours, so you should plan on studying 6 hours per week for this course. If you are well prepared you may need to study less; if you are not well prepared you may need to study more. If this is your first semester in college, please experiment with different study techniques throughout the course of the semester to figure out what works best for you. You can schedule a study technique consultation during office hours if you would like assistance developing a study plan.

Excused Absences

If you are part of an organization that includes official university trips, you will be excused from each day that you are on travel as long as you contact me each time to make arrangements for any missed work. It is your responsibility to make arrangements to make up any missed work before you leave for the trip. If you are going to miss a test or quiz, you must contact me approximately one week beforehand to make arrangements for the make-up, preferably by email.

For personal emergencies, you should contact me when it is safe and reasonable to do so, include documentation of the emergency. At his discretion, the instructor may choose to administer a make-up, issue a zero, or use the final exam to replace the missing test or quiz.

*****VERY IMPORTANT*** DO NOT COME TO CLASS IF YOU THINK YOU MIGHT BE SICK.** If you have a fever or persistent cough or other coronavirus symptoms, take the appropriate recommended action. E-mail me when you are able to, we will make accommodations for you to be able to complete anything you miss on your own or at a later date.

Attendance Policy

Your active participation in this course is expected and required for you to learn the material and earn a passing grade. If you miss more than two weeks of class meetings throughout the term, you may be administratively dropped from the course.

Academic Integrity Statement

The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the Student Handbook. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.

Academic integrity is taken seriously: cheating on a test or project will result in a failing grade in the course; allowing another student to copy off of your test will result in a one-letter-grade penalty.

Americans with Disabilities Act Statement

The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need an accommodation under this Act due to a disability, please contact the UCA Office of Disability Services, 450-3613.

Title IX disclosure:

If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to “student-on-student” or “employee-on-student”), the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs and the obligation to conduct an investigation will depend on those specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: <https://uca.edu/titleix>. *Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity.

Sexual Harassment and Academic Policies Statement

All students are required to familiarize themselves with the University of Central Arkansas policy on sexual harassment and on academic policies. These policies are printed in the Student Handbook.

Building Emergency Plan Statement

An Emergency Procedures Summary (EPS) for the building in which this class is held will be discussed during the first week of this course. EPS documents for most buildings on campus are available at <http://uca.edu/mysafety/bep/>. Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.

Pandemic Adaptation

- All students are expected to comply with the University policy regarding face coverings. In particular, as of the start of the semester, this means that all students should wear a mask or face covering during class that covers their mouth and nose. I plan to wear a mask during class sessions as well.
- The course will be taught with the “modular approach” in three sections. This means that 1/3rd of the course will be taught face to face during our class time. The other 2/3rds of the course will be taught through online modules on Blackboard. The material selected for face to face instruction will be the “hardest” concepts, while the material selected for the online modules will be the “easier” concepts.
 - Monday section – Last names A-G
 - Wednesday section – Last names H-O
 - Friday section – Last names P-Z
- DO NOT COME TO CLASS IF YOU THINK YOU MIGHT BE SICK. If you have a fever or persistent cough or other coronavirus symptoms, take the appropriate recommended action. E-mail me when you are able to, we will make accommodations for you to be able to complete anything you miss on your own or at a later date.
- MCS Building Specifics:

- Doors for the restrooms, and department suite should be propped during business hours times to minimize contact.
- Social distancing should be a priority at all times. Students should use first floor atrium and other designated places on the 2nd and 3rd floors to wait for classes while maintaining social distancing. Seating in the common spaces is intended for single occupancy. Only one person at a time should be seated at any table, chair, or bench. People who live together may sit together, but should remain socially distanced from all others. No congregations allowed in the hallways.
- The schedule for cleaning and sanitation in the building has been revised to increase their frequency. Everyone should use the provided wipes to clean any space before using it. Example: Wipe down a table and chair in the lobby before sitting there to do homework.
- Once seated, students should remain in their seats for the duration of the class session. Activities or moving into groups are not allowed.
- If a student does not have a class in the building immediately after yours, ask them to leave the building.
- On each floor, those who are walking down the hall toward the restroom/elevator, use the right side of the hallway. Others walk on the left side to have an orderly flow.
- No food or drinks in classrooms.
- Everyone will use the designated entry and exit doors for the building.
- To limit disruption and physical contact, seats near the entry door of the classroom will be reserved for students who arrive late.