

Course Information

Course Number:	Math 3320
Course Name:	Linear Algebra
CRN:	20547
Location:	MCS 219
Class Hours:	1:00pm-1:50pm MWF
Textbook:	Matrices and Linear Transformations by Cullen
Prerequisites:	Math 1497 or Math 2330*

*CSCI 2330 may also be an adequate prerequisite; this is currently under view by a committee

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.

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 be available either via Zoom or in person. For in person office hours you 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/>

**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.

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 Lessons**
The online lessons will have some items that need to be completed for credit. Each week 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 in-person tests. Each one is cumulative.
- **Video Problem Presentations**
There will be two video presentations. You will illustrate the solution to a couple problems and provide peer review on other students' presentations.
- **Research Project**
The research 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 final exam.
- **Calculation of Grades**

Test 1	15%
Test 2	15%
Test 3	15%
Research Project	15%
Final Exam	15%
All other coursework	15%
Max(Final Exam, Project)	10%

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	January 25 th
Video Problem Presentation 1 Due	February 14 th
Test 1	February 15/17/19 th
Video Problem Presentation 2 Due	March 14 th
Test 2	March 15/17/19 th
Last day to Withdraw Withdraw means the course is on your record with a "W" but does not factor into your GPA	April 12 th
Project First Version Due	April 16 th
Test 3	April 19/21/23
Project Video Presentation Due	Friday April 30 th
Final Exam	Monday May 3 rd , 11am-1pm
Project Final Version Due	Monday May 3 rd , 11am
Project Peer Review Due	Monday May 3 rd , 11am
Late course work for reduced credit Due	Monday May 3 rd , 11am

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/studentssuccess/academic-success-workshops/>
- Online Success Workshops (reading strategies, note-taking skills, test prep, etc!)
 - <http://uca.edu/studentssuccess/academic-success-workshops/>
- Peer Coaching (time management skills, study skills, motivation!)
 - <http://uca.edu/studentssuccess/successcoaching/>
- Communication Skills (oral and written)
 - <http://uca.edu/cwc/>

Late Work

Last coursework will be accepted up until the final exam date for a 20% penalty. Late work is often not marked in a timely manner and may not be graded until final exam week.

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 face-to-face class sessions as well.
- The course will be taught with the “modular approach” with two lecture options. This means that part of the class will be taught synchronously during our class time. Another part will be taught through online coursework 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.
- As the semester begins, you will submit preferences on which day your synchronous you will attend.
- 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 you do not have a class in MCS after ours, you should leave the building after class.
- No food or drinks during class because such would require removing your mask.
- Please do not use the first row of seats during class unless you are visually impaired or the other rows are filled.