

Syllabus & Course Policies

Time & Location:

Lectures: MWF 1:00-1:50 PM, CB 335

Instructor:

Lecturer: [David Murrugarra](#), POT 771, (859) 257-4734, murrugarra@uky.edu
Office hours: MWF 3-4 PM and by appointment.

Course Overview:

MA 322 is an introduction to linear algebra and the theory of matrices. Prerequisites are the mathematical maturity represented by successful completion of two semesters of calculus or the completion of the first and concurrent enrollment in the second. The course covers topics in: linear equations, matrix algebra, determinants, vector spaces, eigenvalues and eigenvectors, and orthogonality corresponding to chapters 1-6 of the textbook posted in the course website. The class calendar which contains the tentative class schedule, topics, examination and quiz dates is available at the class home page. The calendar is subject to change, depending on the progress of the course.

Course Outline:

1. Chapter 1: Linear Equations

- Systems of Linear Equations.
- Row Reduction and Echelon Forms.
- Vector equations.
- Matrix equations.
- Solution sets of linear systems.
- Linear independence, rank of a matrix.
- Linear transformations.
- Matrix of a linear transformation.

2. Chapter 2: Matrix Algebra

Algebra of matrices.

Invertible matrices.

3. Chapter 3: Determinants

Working with determinants.

Cramer's rule, Theory of determinants (Artin).

4. Chapter 4: Vector Spaces

Vector spaces and subspaces.

Spaces associated with linear transformations.

Basis of a vector space.

Coordinates relative to a basis.

Dimension of a vector space.

Rank and dimension.

Change of basis.

Some applications.

5. Chapter 5: Eigenvalues and eigenvectors

Eigenvalues and eigenvectors.

Characteristic equation.

Diagonalization.

Eigenvectors of linear transformations.

Complex eigenvalues.

6. Chapter 6: Orthogonality and Least Squares

Inner products and orthogonality.

Orthogonal sets.

Orthogonal projection.

Gram-Schmidt process.

Least squares problem and other applications.

Inner Product Spaces.

Student Learning Outcomes:

After completing this course, students will be able to:

1. Understand the main concepts presented in the class.

2. Write correct justifications for their solutions to problems.
3. Apply the methods of linear algebra in new contexts to solve unfamiliar problems.

Grading:

You will be able to obtain a maximum of 500 points in this class, divided as follows:

	Points	Percentage of final grade
First Exam	100 points	20%
Second Exam	100 points	20%
Final Exam	100 points	20%
Online Homework	100 points	20%
In-Class Quizzes	80 points	16%
Attendance	20 points	4%

Your final grade for the course will be based on the total points you have earned as follows:

	Points	Percentage
A	450 - 500 points	90 - 100 %
B	400 - 449 points	80 - 89.9 %
C	350 - 399 points	70 - 79.9 %
D	300 - 349 points	60 - 69.9 %
E	0 - 299 points	0 - 59.9 %

The grading scale might be adjusted at the end of the semester. You will be guaranteed the above letter grade if your score falls within the given range, but the minimum score for each letter grade might be lowered.

Mid-term grades will be posted in myUK by the deadline established in the [Academic Calendar](#).

Policies:

Attendance in MA 322-006 is mandatory. Be on time and remain until dismissed. Do not leave in the middle of class. Whenever possible, please notify your instructor of absences prior to class.

S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor.

You may be asked to verify absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request *appropriate verification* when students claim an excused absence because of illness or death in the family. Appropriate notification of absences due to university-related trips is required prior to the absence. If you anticipate an absence for a major religious holiday please notify your instructor (in writing) of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud (859) 257-3737, http://www.uky.edu/Ombud/ForStudents_ExcusedAbsences.php.

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or unexcused) per university policy.

Classroom behavior:

Electronic devices such as mobile phones, laptops and tablets should be put away or used only as part of class activities during lectures and recitations. Mobile phones, laptops, and computers may not be used during exams.

Recording in the Classroom:

Video and audio recordings are not permitted during the class unless the student has received prior permission from the Professors. If permission is granted, recording of other students is prohibited. Any distribution of recordings is also prohibited. Students with specific recording accommodations approved by the Disability Resource Center should present their official documentation to the professor. All content for this course, including handouts, assignments, and powerpoint lectures are the intellectual property of the instructors and cannot be reproduced, sold, or used for any purpose other than educational work in this class without prior permission from the professor.

Make-up policies:

Per Senate Rule 5.2.4.2, if you are missing any graded work due to an excused absence you are responsible for informing the Instructor about your excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The instructor will give you an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred. In particular, if you have university excused absences or have university-scheduled class conflicts with uniform examinations you may arrange with their instructor to take the exam at an alternate time. Generally these make-up exams will be scheduled on the day

of or on the day after the regularly scheduled exam. Work-related conflicts are neither university excused absences nor university-scheduled absences.

Students needing accommodations.

If you have a documented disability that requires academic accommodations, please see your instructor as soon as possible. In order to receive accommodations in this course, you must provide your instructor with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them via phone at (859) 257-2754 and via email at drc@uky.edu. Their web address is <http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/>.

Accommodations for victims of violence:

By federal law, any student who is a victim of dating violence, domestic/intimate partner violence, sexual assault, or stalking (whether on or off campus) is entitled to appropriate accommodations for his or her coursework. To get help getting accommodations and other support, students who are assaulted can do any of the following:

1. Tell your instructor who can assist you in accessing resources appropriate to your situation;
2. Call the UK VIP Center (Violence Intervention and Prevention Center) at 257-3574 or vipcenter@uky.edu or http://www.uky.edu/StudentAffairs/VIPCenter/about_contact.php; or walk in to the Center in Frazee Hall, lower level, between 8:30 and 5:00;
3. Call the University Counseling Center at 257-8701; 2nd floor, Frazee Hall;
4. Call Ms. Patty Bender from the UK Institutional Equity and Equal Opportunity at 257-8927 or patty.bender@uky.edu;
5. **In the case of an emergency, contact the UK Police Department at 911.**
6. Students may also contact community resources 24-hours a day, including:
 - a. Bluegrass Rape Crisis Center at 800.656.4673 or <http://bluegrassrapecrisis.org/>.
 - b. Greenhouse17 (formerly Bluegrass Domestic Violence Program) at 800.544.2022 or <http://greenhouse17.org/>.

Academic Honesty:

Cheating or plagiarism is a serious offense and will not be tolerated. It will be thoroughly investigated, and might lead to failure in the course or even to expulsion from the university. See

<http://www.uky.edu/StudentAffairs/Code/part2.html>

(Sections 6.3.1 and 6.3.2) for information on cheating, plagiarism, and penalties.

A summary of recent changes to rules on cheating can be found at the Academic Ombud website:

<http://www.uky.edu/Ombud>