



# MA 111 – 1

## Linear Algebra

Semester: Fall, 2015  
 Days: Wed, Fri, 9:45 PM-11:00 PM  
 Room: A2131  
 Lab – day: Wed, 4:00 PM-5:15 PM  
 Lab–Room: A2151

Number of credits: 3

Prerequisite:  
 Math 30

Instructor: John Wiest  
 Email: [jwiest@ambrose.edu](mailto:jwiest@ambrose.edu)  
 Phone: 403-410-6915  
 Office: L2115  
 Office hours: Wed @ 11:00 PM or by drop in

### Course Description:

This course teaches systems of linear equations, Gaussian elimination, matrices, and vectors with elements and applications to coordinate geometry. It includes diagonalization and applications to Markov Chains and linear recursions.

### Further Course Information:

The course consists of 2½ hours of lecture and 1¼ hours of lab/tutorial per week. The course will include 5 quizzes, a Midterm, and a Final Exam. The quizzes will be written during the lab times. The best 4 out of 5 marks on quizzes will be taken in for grades.

### Expected Learning Outcomes:

It is the aim of the course that students should

1. Understand and be able to utilize the Gaussian algorithm to solve many different problems relating to systems of linear equations.
2. Develop fluidity in matrix algebra and understand its relation to Markov Chains, linear recursions, and other mathematical models.
3. Be able to compute eigenvalues, eigenvectors, and diagonalized forms of matrices.
4. Be able to apply the concepts of linear algebra to the  $\mathbb{R}^3$  vector space.

### Important Dates:

First day of classes: September 9, 2015  
 Registration revision period: September 20, 2015  
 Last day to request revised examination: October 26, 2015  
 Last day to withdraw from course: November 12, 2015  
 Last day to apply for time extension for coursework: November 23, 2015  
 Last day of classes: December 14, 2015

**Final Exam: Tue., Dec. 22, 2015**  
**Time: 1:00 PM – 4:00 PM**  
**Room: Airhart**

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## Outline:

### Systems of Linear Equations

- a) Gaussian Elimination
- b) Homogeneous Systems of Equations

### Matrix Algebra

- a) Matrix operations
- b) Matrix Inverses
- c) Transformations
- d) Economic Models
- e) Markov Chains

### Determinants and Diagonalization

- a) Cofactors and Inverses
- b) Eigenvalues and Eigenvectors
- c) Linear Recursion

### Vector Geometry

- a) Lines in  $R^3$
- b) Projections and Planes
- c) Computer Graphics

## Attendance:

Students are expected to attend all lectures and labs to ensure success on exams, and quizzes. Students not attending lectures may find themselves missing information not covered in the textbook. Any student who is absent for an exam or misses an assignment due date should speak to the professor and, where possible, provide a doctor's note.

## Evaluation:

Quizzes	30%
Midterm Exam	30%
Final Exam (cumulative)	40%

During both the midterm and final exams, students will be allowed a page of handwritten, self-created notes. This formula sheet should contain any formulas the student feels they will need during the exams, as well as any comments they feel may assist them. Again, this sheet should be created by the students themselves to assist them both in studying and learning materials, and to assist them during the exams.

## Grade Summary:

The available letters for course grades are as follows:

<u>Letter Grade</u>	<u>Percentage</u>	<u>Description</u>
A+	96-100%	
A	91-95%	Excellent
A-	87-90%	
B+	83-86%	
B	79-82%	Good
B-	73-78%	
C+	69-72%	
C	64-68%	Satisfactory
C-	59-63%	
D+	55%-58%	

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D	50-54%	Minimal Pass
F	Below 50%	Failure

## Textbooks:

*Linear Algebra With Applications (7<sup>th</sup> Ed.)*

W. Keith Nicholson

McGraw Hill

The actual edition of the textbook is inconsequential. The textbook is for your own personal reference and study. Older editions will work just as well.

## Policies:

All students have received an Ambrose e-mail account upon registration. It is the student's responsibility to check this account regularly as the Ambrose email system will be the professor's instrument for notifying students of important matters (Cancelled class sessions, extensions, requested appointments, etc.) between class sessions. If students do not wish to use their Ambrose accounts, it is highly recommended that they forward all messages from the Ambrose account to the other account.

During the **Registration Revision Period** students may to enter a course without permission, change the designation of any class from credit to audit and /or voluntary withdraw from a course without financial or academic penalty. These courses will not appear on the student's transcript. Courses should be added or dropped on the student portal by the deadline date, please consult the List of Important Dates. After that date, the original status remains and the student is responsible for related fees.

Students intending to withdraw from a course after the Registration Revision Period must apply to the Office of the Registrar by submitting a Request to Withdraw from a Course by the **Withdrawal Deadline**, please consult the List of Important Dates. Withdrawal from courses after the Registration Revision period will not be eligible for tuition refund. A grade of "W" will appear on the student's transcript.

Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

Students, who find a conflict in their exam schedule must submit a **Revised Examination** Request form to the Registrar's Office by the deadline date, please consult the List of Important Dates. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

## Electronic Etiquette

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to engage in electronically-enabled activities unrelated to the class during a class session. Please turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Please do not use iPods, MP3 players, or headphones. Do not text, read, or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. The professor has the right to disallow the student to use a laptop in future lectures and/or to ask a student to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

## Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. Personal information, that is information about an individual that may be used to identify that individual, may be collected as a requirement as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at [privacy@ambrose.edu](mailto:privacy@ambrose.edu).

## Extensions

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Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a “**Course Extension**” from the Registrar’s Office. Requests for course extensions or alternative examination time must be submitted to the Registrar’s Office by the deadline date, please consult the List of Important Dates. Course extensions are only granted for serious issues that arise “due to circumstances beyond the student’s control”.

### **Appeal of Grade**

An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Office of the Registrar in writing within 30 days of receiving notification of the final grade, providing the basis for appeal. A review fee of \$50.00 must accompany the appeal to review final grades. If the appeal is sustained, the fee will be refunded.

### **Academic Integrity**

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University College as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else’s ideas, words, or work as one’s own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to give credit to another person’s ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university college. Students are expected to be familiar with the policies in the current Academic Calendar that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student’s permanent record.

Students are strongly advised to retain this syllabus for their records.

### **Other Important Dates**

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| <b>September 23:</b>     | <b>Quiz 1</b>                               |
| <b>Sep. 30 - Oct. 1:</b> | <b>Spiritual Emphasis Days (No Classes)</b> |
| <b>October 7:</b>        | <b>Quiz 2</b>                               |
| <b>October 12:</b>       | <b>Thanksgiving Day (No Classes)</b>        |
| <b>October 21:</b>       | <b>Midterm Exam</b>                         |
| <b>November 4:</b>       | <b>Quiz 3</b>                               |
| <b>November 11:</b>      | <b>Remembrance Day (No Classes)</b>         |
| <b>November 18:</b>      | <b>Quiz 4</b>                               |
| <b>December 2:</b>       | <b>Quiz 5</b>                               |