



**College of Arts and Sciences**  
**Department of Natural and Computational Sciences**  
**Course Syllabus – Math 2203 Section 01**  
**SPRING 2025 (Sample)**

## **I. GENERAL INFORMATION**

**Course:** Introduction to Linear Algebra (MATH 2203) - Section 01 (3 Credit Hours)

**Schedule:**

**Instructor:** Professor. xxxx xxxxx

Emil:

Telephone:

Office Location:

**Office Hours:**

## **II. COURSE DESCRIPTION (sample from FVSU)**

In this course, students will acquire knowledge of matrices and determinants, vector spaces, and linear operators. They will apply the principles of linear algebra to solve real-world problems.

## **III. PREREQUISITES:** MATH 1111 (College Algebra) or MATH 1113 (Precalculus)

## **IV. TEXTBOOK AND OTHER RESOURCES**

**Textbook:** This course uses the following textbook. The digital version of the textbook is available for free.

**A First Course in Linear Algebra - an Open Text, LibreTexts**

**Contributing Authors:**

Ilijas Farah, York University

Ken Kuttler, Brigham Young University

**Textbook:** [Table of Content](#)

**Textbook Web Link:** [By Specific Chapter](#)

**MyOpenMath and D2L:** This course will utilize the MyOpenMath and D2L platforms to facilitate access to course materials, as well as to manage homework assignments, exam reviews, and potentially some exams.

### Accessing MyOpenMath for this course:

#### If you do not already have a MyOpenMath account:

- 1) Visit [www.myopenmath.com](http://www.myopenmath.com) and click “Register as new student”
- 2) Enter the requested information. **Make sure to use your Wildcat email address.**
- 3) Where it says “Select the course you'd like to enroll in”, leave "My teacher gave me a course ID (enter below)" selected, and enter this class's course id and key:  
Course ID (ALG Course Specific): **273037**  
Enrollment key: **leave it blank if requested**
- 4) Click “Sign-up”
- 5) You will be taken back to the login page. Enter the username and password you selected.
- 6) You may see a “Browser Check” page. If so, click the “Continue with Image-based display” button.
- 7) The course name will now appear in the “Courses You’re Taking” box on your home page. Click on the course name to enter the course.

The next time you want to access the course, you will just need to enter your username and password on the login page, then click on the course name to re-enter the course.

#### If you already have a MyOpenMath account:

- 1) Log in to myopenmath.com and click the "Enroll in a New Course" button.
- 2) Enter the course ID and enrollment key from #5 above, and click Sign Up.
- 3) The course name will now appear in the “Courses You’re Taking” box on your home page. Click on the course name to enter the course.

**Calculator:** A graphing calculator such as the TI-83 or higher can prove beneficial for your understanding of certain concepts in this course. However, it is not mandatory, as we will utilize alternative online resources. Please note such calculators may not be permitted during exams.

## V. DEPARTMENTAL MAJOR AREA LEARNING OUTCOMES

This course addresses the following major area learning outcomes: Students will solve mathematical problems with the aid of technology using linear algebra concepts and techniques. This learning outcome is demonstrated through specific project(s).

## VI. COURSE LEARNING OUTCOMES

1. Students will demonstrate the ability to perform scalar multiplication, addition, subtraction, vector, and matrix multiplication, find matrix inverses, and comprehend the properties of inverse matrices. (Objectives 1-5, 7, 8, 12-19)
2. Students will be able to determine the equations of lines and planes. (Objectives 6 and 9)
3. Students will learn about determinants, including their properties, and apply these properties to compute determinants. (Objectives 20 – 24)
4. Students will acquire knowledge of linear dependence and basis in Euclidean Spaces, as well as in vector spaces in a broader context. (Objectives 25 – 37)

5. Students will develop an understanding of linear transformations, eigenvalues, and eigenvectors. (Objectives 38 – 40)

**Methods for assessing these outcomes:** examinations, quizzes, and technology projects.

**Specific Objectives: In this course, students will be able to:**

1. Compute vector length and distance between vectors.
2. Perform vector operations: addition, subtraction, and scalar multiplication.
3. Determine the vector equivalent of a given directed line segment.
4. Calculate dot products of vectors in  $\mathbb{R}^3$ .
5. Identify orthogonal vectors and find vectors orthogonal to given vectors.
6. Use vectors to derive equations of lines in  $\mathbb{R}^2$  and lines/planes in  $\mathbb{R}^3$ .
7. Calculate the length of vectors in  $\mathbb{R}^n$ .
8. Perform vector operations in  $\mathbb{R}^n$ : scalar multiplication, sum, difference, and dot product.
9. Determine equations for lines and hyperplanes in  $\mathbb{R}^n$ .
10. Transform matrices into row-reduced echelon form.
11. Solve linear systems using Gauss-Jordan and Gaussian elimination.
12. Perform matrix operations: addition, subtraction, and multiplication.
13. Find scalar multiples, transpose, and inverse of matrices.
14. Solve systems of linear equations using matrix inverses.
15. Calculate the rank of matrices.
16. Extract information about solutions of linear systems.
17. Determine LU decomposition of matrices.
18. Utilize LU decomposition to solve linear systems.
19. Identify elementary matrices in row reduction or LU decomposition.
20. Calculate determinants of square matrices of any order.
21. Streamline determinant calculations using elementary row (and column) operations.
22. Determine matrix invertibility using determinant value.
23. Apply Cramer's rule to solve linear equations.
24. Use determinants to find matrix inverses.
25. Assess the linear dependence of vectors in  $\mathbb{R}^n$  and express linear combinations.
26. Determine if subsets of  $\mathbb{R}^n$  are subspaces.
27. Verify if vector sets span specific subspaces in  $\mathbb{R}^n$ .
28. Identify basis sets for given subspaces in  $\mathbb{R}^n$ .
29. Find bases and dimensions of subspaces in  $\mathbb{R}^n$ .
30. Calculate matrix rank and relate it to row and column spaces.
31. Determine whether given sets form vector spaces under addition and scalar multiplication.
32. Analyze linear dependence in sets of vectors and express linear combinations.
33. Determine if sets of vectors span vector spaces.
34. Identify basis sets for vector spaces.
35. Determine the dimensions of vector spaces.
36. Compute coordinate vectors relative to given bases.
37. Assess orthogonality or orthonormality of subsets in inner product spaces.
38. Determine the linearity of given functions.
39. Find the sum, difference, and product of linear transformations.
40. Calculate eigenvalues and corresponding eigenvectors for simple linear operators on  $\mathbb{R}^n$ .

## VII. COURSE CONTENT AND ASSIGNMENTS

This course covers the following chapters and sections from the textbook.

<b>Units</b>	<b>Chapter and Section (C.S)</b>	<b>Corresponding Test</b>
<b>1</b>	<b>Required:</b> 1.1 – 1.5	<b>Test 1</b>
<b>2</b>	<b>Required:</b> 2.1 – 2.7; 3.1 – 3.4; <b>Optional:</b> 2.8 – 2.10	<b>Test 2</b>
<b>3</b>	<b>Required:</b> 4.1 – 4.5; 4.10; <b>Optional:</b> 4.6 – 4.9; 4.11- 4.12	<b>Test 3</b>
<b>4</b>	<b>Required:</b> 5.1 – 5.3; 7.1 – 7.3, <b>Optional:</b> 5.4 – 5.9; 7.4.	<b>Test 4.</b>
<b>Final</b>	<b>Units 1 - 4</b>	<b>Final Exam</b>

**Preparation and Participation:** Assignments designed to help students in preparing for classes or exams (such as pre-requisite quizzes, pre-instruction lessons, and test reviews) will be administered on MyOpenMath and/or D2L, while participation quizzes will be given during lectures.

**Homework:** Homework assignments under each section are assigned and will be graded

**Tests and Final Exam:** Students will take 4 tests and a comprehensive final exam. The final exam will take place on the date and time determined by the Office of the Registrar. Tentative test dates are as follows:

Test 1:           Tuesday, February 4  
Test 2:           Tuesday, March 4

Test 3:	Tuesday, April 1
Test 4:	Thursday, April 24
Final Exam:	May 7 (TBA)

## VII. GRADING STANDARDS AND CRITERIA

Final averages will be computed using the following criteria:

Preparation and Participation	5%
Homework	35%
Test Average	45%
Final Exam	15%

Course grades will be assigned using the following scale:

A: 90 and above      B: [80, 90)      C: [70, 80)      D: [60, 70)      F: Below 60

**Midterm grades will be based on all the assignments administered before the midterm grade due date.**

**Incomplete Grade (I):** An “I” grade indicates that a student was doing satisfactory work but, for nonacademic reasons beyond his/her control, was unable to meet the full requirements of the course. Note that the instructor cannot award an “I” grade; they can only request it. The instructor will request an “I” grade only if:

- the student requests the “I” grade and provides acceptable documentation no later than the last day of class.
- the student has a good attendance record.
- the instructor determines that the student has satisfactorily completed the majority of the course requirements and further class attendance is not necessary.

An “I” grade will not be requested as a substitute for a failing grade or to provide an opportunity for doing additional work after the due date for submission of final grades. If an “I” is not satisfactorily removed by the midterm of the student’s next enrolled term (not including summer), the symbol “I” will be changed to the grade “F” by the Registrar.

## VIII. INSTITUTIONAL AND COURSE POLICIES

**Attendance:** Students are expected to come prepared and actively participate in every lecture. The student who misses a class meeting is responsible for all missed materials, assignments, and any announcements made. For each absence over four that is not officially excused, **one point will be deducted from the final course average** before the corresponding letter grade is assigned. If a student arrives late or leaves early, it will be recorded as “partial attendance”, and three occurrences of partial attendance will be converted to one absence.

**No Shows:** Students who fail to attend the class for the first time during the mandatory enrollment period required by the Financial Aid Office will be reported as “No Shows.” Such a report removes the student from the roster and jeopardizes the student’s financial aid status.

**Involuntary withdrawal policy:** If after the mid-semester period, the instructor verifies that a student has accumulated 10 or more days of unexcused absences from the class, the student is subject to involuntary withdrawal from the class and will receive a final course grade of “WF.”

**Dress Code:** Students are expected to wear attire that is suitable for an educational environment, avoiding clothing that is offensive, provocative, or disruptive. Students not adhering to this standard will be requested to leave the classroom and return once appropriately dressed.

**Classroom Conduct:** Disruptions in class will not be tolerated and may lead to a student's removal. Show respect to your peers and instructor by following these class rules:

- Turn off and put away phones, music players, laptops, tablets, and other electronics, unless authorized for class use. Using headsets or air pods in class is not allowed.
- Arrive on time and remain for the entire period; entering or leaving after class starts is prohibited.
- Avoid unrelated side discussions.
- Put away any materials unrelated to the course.

### **Late/Make-Up Work:**

**Participation Quizzes:** Participation quizzes are an integral part of the learning process and cannot be made up under any circumstances. Regular attendance is crucial for your engagement and success in the course.

**Homework and Review Assignments:** Each student will receive 5 LatePasses in MyOpenMath, which can be utilized for excused or unexcused situations. These LatePasses provide a 72-hour (3-day) extension to the original due date. To request a LatePass extension, you must click on "Use LatePass" when opening the assignment within the specified 72-hour period after the original deadline. Remember, only one LatePass can be used per assignment.

**Tests:** Make-up tests are considered in exceptional circumstances only, and are subject to the instructor's discretion. To be eligible for a make-up test, the student must notify the instructor before the scheduled test time and provide official documentation justifying his/her absence. Make-up tests are not guaranteed and will be scheduled at a time convenient for both the student and the instructor.

It is important to plan ahead, manage your time effectively, and utilize your LatePasses wisely. Regular attendance, timely submission of assignments, and participation are essential for your academic progress. Please communicate promptly with the instructor if you encounter any challenges that may affect your attendance or performance in the course.

**Regrade Policy:** If you believe there has been an error in the grading of an assignment or exam, you may submit a request for regrade. Such a request must be submitted to the instructor via email within one week of receiving the graded assignment or exam with a written explanation outlining the specific concern and including any supporting documentation.

**Academic Honesty Policy:** All students in the University System of Georgia are expected to maintain high standards of academic honesty. It is dishonest to take the work of others and pass it off as your own. For FVSU students, there are serious penalties for academic dishonesty. For more information, please refer to the FVSU Student Handbook.

*“Plagiarism is the practice of taking and using, without acknowledgment, as one’s own, the thoughts, data, or writings of another.”*

**FVSU’s current policies and practices regarding plagiarism and academic dishonesty:**

**Student Academic Dishonesty:** Expulsion or suspension from the University or any lesser sanction may be imposed for the commission of offenses involving cheating or defrauding on examinations. Examples of such offenses include giving assistance not authorized by the instructor in the preparation of an essay, laboratory report, examination or other assignment included in an academic course; taking or attempting to take, steal, or otherwise procure in an unauthorized manner, any material pertaining to the conduct of a class, including but not limited to examinations, laboratory experiments, and roll books; and plagiarizing.

**Plagiarism:** The appropriation of someone else’s ideas, passages, arguments, interpretation of events or factual information, in either hard copy or electronically, demonstrates a lack of integrity and is unacceptable at Fort Valley State University. Other examples of plagiarism include submitting someone else’s work/assignment as one’s own, submitting purchased papers as one’s own, and submitting papers from the Internet as one’s own. Students who are guilty of plagiarism are subject to disciplinary action. Acts of plagiarism must be reported to the Department Head, Dean, Vice President for Academic Affairs, and Vice President for Student Affairs for appropriate action. (2015 – 2017 Fort Valley State University Undergraduate Catalog.)

**Disability:** FVSU is committed to the full inclusion of individuals with disabilities. To that end, the policies, and procedures of FVSU ensure that a person with a documented disability is not, on the basis of that disability, denied full and equal access to academic programs, nor excluded from participation in co-curricular activities, or otherwise subject to discrimination in such programs and activities. The policies for individuals with disabilities at FVSU are designed to ensure full compliance with all pertinent federal and state legislation, specifically to include Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. If a student requires reasonable accommodation, he/she must register with the Office of Accessibility and Accommodations (OAA). To register, please email Trelaine Jackson, OAA Coordinator at Trelaine.Jackson@fvsu.edu. You may also call (478)-822-1072 or visit the Royal C. Peabody Bldg., Room 125.

*The instructor is committed to ensuring that students registered with the OAA appropriately receive reasonable accommodation. If a student with approved accommodation believes that their specific needs were not adequately addressed at any point during the semester, it is essential for the student to promptly inform the instructor. This notification should take place without delay, preferably within 24 hours of the occurrence, allowing for swift resolution and ensuring a supportive learning environment.*

**IX: SUGGESTED REFERENCES:**

- "Linear Algebra and Its Applications" by David C. Lay (5th edition, Pearson)
- "Introduction to Linear Algebra" by Gilbert Strang (5th edition, Wellesley-Cambridge Press)
- "Linear Algebra Done Right" by Sheldon Axler (3rd edition, Springer)
- "Elementary Linear Algebra" by Howard Anton and Chris Rorres (11th edition, Wiley)
- "Linear Algebra: A Modern Introduction" by David Poole (4th edition, Cengage Learning)
- "Linear Algebra" by Friedberg, Insel, and Spence (4th edition, Pearson)

**X: DISCLAIMER:** The course content, schedule, and policies outlined in this syllabus are subject to change at the instructor's discretion to enhance the learning experience and accommodate unforeseen circumstances.

#### **XI: IMPORTANT DATES FOR SPRING 2025 - SESSION A – FULL TERM**