



**JOHN CABOT UNIVERSITY**

COURSE CODE: "MA 350"  
COURSE NAME: "Linear Algebra"  
SEMESTER & YEAR: Summer Session I 2024

**SYLLABUS**

**INSTRUCTOR:** Sara Munday  
**EMAIL:** smunday@johncabot.edu  
**HOURS:** MTWTH 3:40 PM 5:30 PM  
**TOTAL NO. OF CONTACT HOURS:** 45  
**CREDITS:** 3  
**PREREQUISITES:** Pre-requisite: MA 198  
**OFFICE HOURS:** By appointment

**COURSE DESCRIPTION:**

This course introduces students to the techniques of linear algebra and to the concepts upon which the techniques are based. Topics include: vectors, matrix algebra, systems of linear equations, and related geometry in Euclidean spaces. Fundamentals of vector spaces, linear transformations, eigenvalues and associated eigenvectors.

**SUMMARY OF COURSE CONTENT:**

The course will cover the basics of vectors and vector spaces, matrix operations, particularly the determinant and applications, linear transformations, eigenvalues and eigenvectors (and applications), symmetric matrices, positive definiteness and the Jordan form.

**LEARNING OUTCOMES:**

The students at the end of the course should be proficient at basic calculations and should have an understanding of the applications of the calculations that they are doing. They will also be expected to use the material from the course to solve problems that are related to ones they have seen before, but are not exactly the same. By the end of the course, the students ought to be demonstrating clarity of thought and expression in their work, and ought to be able to clearly present the proof of an algebraic statement (concerning projections, orthogonal vectors, linear independence, spanning sets, subspaces, bases, dimension and rank and so on).

**TEXTBOOK:**

Book Title	Author	Publisher	ISBN number	Library Call Number	Comments	Format	Local Bookstore	Online Purchase
Linear algebra and its applications	Gilbert Strang	CENGAGE Learning	ISBN-13: 978-0030105678					

**REQUIRED RESERVED READING:**

NONE

**RECOMMENDED RESERVED READING:**

NONE

**GRADING POLICY**

**-ASSESSMENT METHODS:**

Assignment	Guidelines	Weight
Exam 1	THURSDAY WEEK 2: In-class exam	30%
Exam 2	MONDAY WEEK 4: In-class exam	30%
Exam 3	FRIDAY 21st JUNE: The final exam will cover the material from WEEKS 4 and 5.	30%
Homework assignments		10%

**-ASSESSMENT CRITERIA:**

**A** Work of this quality directly addresses the question or problem raised and provides a coherent argument displaying an extensive knowledge of relevant information or content. The student demonstrates complete, accurate, and critical knowledge of all the topics, and is able to solve problems autonomously.

**B** This is highly competent level of performance and directly addresses the question or problem raised. There is a demonstration of some ability to critically evaluate theory and concepts and relate them to practice. The work does not suffer from any major errors or omissions and provides evidence that the student uses clear logic in their arguments.

**C** This is an acceptable level of performance and provides answers that are clear but limited, reflecting the information offered in the lectures. Mathematical statements are properly written most of the time.

**D** This level of performances demonstrates that the student lacks a coherent grasp of the material. Important information is omitted and irrelevant points included. Many mistakes are made in solving the problem raised. In effect, the student has barely done enough to persuade the instructor that they should not fail.

**F** This work fails to show any knowledge or understanding of the issues raised in the question. Most of the material in the answer is incorrect or irrelevant.

**-ATTENDANCE REQUIREMENTS:**

**ATTENDANCE REQUIREMENTS AND EXAMINATION POLICY:**

Attendance is mandatory for the course.

You cannot miss a major exam (midterm or final) without the permission of the Dean's Office. The Dean's Office will grant such permission only when the absence was caused by a serious impediment, such as a documented illness, hospitalization or death in the immediate family (in which you must attend the funeral) or other situations of similar gravity. **Absences due to other meaningful conflicts, such as job interviews, family celebrations, travel difficulties, student misunderstandings or personal convenience, will not be excused.** Students who will be absent from a major exam must notify the Dean's Office prior to that exam. Absences from class due to the observance of a religious holiday will normally be excused. Individual students who will have to miss class to observe a religious holiday should notify the instructor by the end of the Add/Drop period to make prior arrangements for making up any work that will be missed. The final exam will be the 21st of June.

**MAKE-UP EXAMS WILL NOT BE GIVEN UNDER ANY CIRCUMSTANCES.** If you are given permission to miss an assessment, the weight of that assessment will be shifted to the final. If you have to miss the final and are in good standing with the course, you can ask for an incomplete. Otherwise your grade will be assigned on the basis of the class tests you have already completed.

#### **ACADEMIC HONESTY**

As stated in the university catalog, any student who commits an act of academic dishonesty will receive a failing grade on the work in which the dishonesty occurred. In addition, acts of academic dishonesty, irrespective of the weight of the assignment, may result in the student receiving a failing grade in the course. Instances of academic dishonesty will be reported to the Dean of Academic Affairs. A student who is reported twice for academic dishonesty is subject to summary dismissal from the University. In such a case, the Academic Council will then make a recommendation to the President, who will make the final decision.

#### **STUDENTS WITH LEARNING OR OTHER DISABILITIES**

John Cabot University does not discriminate on the basis of disability or handicap. Students with approved accommodations must inform their professors at the beginning of the term. Please see the website for the complete policy.

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### SCHEDULE

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#### Week Topics Covered

- 1 Vectors and vector spaces
- 2 Matrices and matrix operations. The determinant and its applications. Linear transformations.
- 3 The null space and rank of a matrix, more subspace operations.
- 4 Eigenvalues, eigenvectors and their applications. (Time permitting: Markov matrices)
- 5 Symmetric matrices, positive definiteness, more applications.

More detailed information will be posted in due course on the class moodle page.