

**HAGERSTOWN COMMUNITY COLLEGE
MASTER SYLLABUS**

COURSE: MAT 208 Linear Algebra (4 Credits)
INSTRUCTOR: CJ Lewis
SEMESTER: 17 Fall

COURSE DESCRIPTION:

This course is the study of the relationships between matrix algebra, vector spaces and linear transformations. Topics include: systems of linear equations, linear independence, The Invertible Matrix Theorem, determinants, vector spaces, null spaces, column spaces, bases, rank, eigenvalues and eigenvectors, diagonalization, inner product, orthogonality, symmetric matrices and quadratic forms. Applications to business, science and engineering are studied, including Leontief input-output models and Markov chains.

Prerequisite: MAT-204

TEXTS

- A. *Linear Algebra and Its Applications*, 4rd Edition, David C. Lay, Addison Wesley,
- B. *Study Guide Linear Algebra and Its Applications*, 4rd Edition, David C. Lay, Addison Wesley,

STUDENT LEARNING OUTCOMES:

Course Outcomes:

Upon successful completion of this course students will be able to:

- 1) Use computational techniques and algebraic skills essential for the study of systems of linear equations, matrix algebra, vector spaces, eigenvalues and eigenvectors, orthogonality and diagonalization. (Computational and Algebraic Skills).
- 2) Use visualization, spatial reasoning, as well as geometric properties and strategies to model, solve problems, and view solutions, especially in R^2 and R^3 , as well as conceptually extend these results to higher dimensions. (Geometric Skills).
- 3) Collect, organize, and display data as well as use appropriate statistical methods to analyze data and make inferences and predictions.
- 4) Critically analyze and construct mathematical arguments that relate to the study of introductory linear algebra. (Proof and Reasoning).
- 5) Use technology, where appropriate, to enhance and facilitate mathematical understanding, as well as an aid in solving problems and presenting solutions (Technological Skills).
- 6) Communicate and understand mathematical statements, ideas and results, both verbally and in writing, with the correct use of mathematical definitions, terminology and symbolism (Communication Skills).
- 7) Work collaboratively with peers and instructors to acquire mathematical understanding and to formulate and solve problems and present solutions (Collaborative Skills).

General Studies Outcomes:

Upon successful completion of this course students will be able to:

1. Apply mathematical methods involving arithmetic, algebra, geometry, and graphs to solve problems.
2. Represent mathematical information and communicate mathematical reasoning symbolically and verbally.
3. Interpret and analyze numerical data, mathematical concepts, and identify patterns to formulate and validate reasoning.

ASSESSMENT PROCEDURES:

There will be chapter exams, assigned problems to be turned in, quizzes, and a final.

The final grade will be determined by dividing the total points accumulated by the total points possible.

- A = 90% - 100%
- B = 80% - 89%
- C = 70% - 79%
- D = 60% - 69%
- F = 0% - 59%

The above percentages are used as a guideline in determining grades. For example, a cumulative average of 78%, with improved work, may result in a final grade of B. On the other hand, if test scores have

deteriorated since the beginning of the semester, a cumulative average of 78% will be interpreted as a final grade of C.

All students are expected to complete assignments on time and to come to each class prepared to ask questions and cover new material. **Academic integrity violations may result in 0 points for the quiz, exam or assignment involved and will, quite possibly, result in a grade of F for the course, or permanent expulsion from HCC.** Academic integrity violations are explained under the Code of Student Conduct published in the Student Handbook, which may be obtained in the Student Activities Office. Become familiar with the Code of Student Conduct. Excessive absences (more than 3 classes missed) may result in a lowered grade. Any student absent more than 50% of the time will fail the course,

COURSE POLICES:

Hagerstown Community College's Attendance Policy:

Students are expected to attend all classes. In the case of absence due to emergency, or participation in Official College functions, it is the student's responsibility to confer with the instructor about the absence and missed course work. Further, it is the student's responsibility to withdraw officially from any class, which he or she ceases to attend, and failure to do so will result in the recording of an "F" grade.

Do not miss any exams. Students absent from an announced test or examination, unless authorized, be given an equivalent exam at a later date **or a zero** at the discretion of the instructor. Make-ups will be more difficult than in-class exams and will only be given immediately following the final exam.

Academic Integrity:

Upon admission to HCC all students are required to uphold an honor system which holds the qualities of honesty and integrity in highest regard for the duration of their educational experience. Academic integrity violations are explained under the Code of Student Conduct published in the Student Handbook, which may be obtained in the Student Activities Office. Become familiar with the Code of Student Conduct. **Academic integrity violations may result in an F for the work involved, an F for the course, or permanent expulsion from HCC.**

Total Hours Of Coursework:

To earn one academic credit at HCC, students are required to complete a minimum of 37.5 clock hours (45 fifty-minute academic hours) of coursework per semester. Those hours of coursework may be completed through a combination of hours within the classroom and hours outside the classroom. Certain courses may require more than the 37.5 minimum hours of coursework per credit.

Credit Hour to Clock Hour Calculation:

Direct Faculty Instruction: 1 hour/week/credit for 15 weeks; 50 min = 1 classroom hour
 (50 min x 4 credits x 15 weeks) = 3000 minutes = 50 hours

Student Work Outside the Classroom:
 (2 hrs x 50 hours in class) = 100 hours

Total Time Needed: 150 hours

Activity	Hybrid	Lecture
Outside of the Classroom		
Online Instruction (videos)	30 hours	
Written Assignments	80 hours	80 hours
Test Preparation	20 hours	20 hours
Subtotal	130 hours	100 hours
Inside of the Classroom		
	25 hours	50 hours
Total	155 hours	150 hours

Services for Students with Disabilities: Students may receive reasonable accommodations if they have a diagnosed disability and present appropriate documentation. Students seeking accommodations are required to contact the Disability Support Services (DSS) office as early as possible. Students may contact a DSS staff member for an appointment at dss@hagerstowncc.edu or at 240-500-2530.

NOTE: THE INSTRUCTOR RESERVES THE RIGHT TO MODIFY THE COURSE CONTENT AND/OR THE EVALUATION (TESTING) PROCEDURES AS S/HE DEEMS NECESSARY.