

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Mathematics</u>
COURSE RUBRIC AND NUMBER	<u>MATH 2318</u>
COURSE TITLE	<u>Linear Algebra</u>
COURSE CREDIT HOURS	<u>3 3 : 0</u> Credits Lec Lab

I. Catalog Description

Introduces and provides models for application of the concepts of vector algebra. Includes topics on finite dimensional vector spaces and their geometric significance; representing and solving systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion; matrices; determinants; linear transformations; quadratic forms; eigenvalues and eigenvector; and applications in science and engineering. Emphasizes applications in engineering and the physical sciences. **Prerequisite: MATH 2314 with a "C" or better. (3:0).**

II. Course Objectives

Upon satisfactory completion of this course the student will be able to

- A. Solve systems of linear equations utilizing vector and matrix equations.
- B. Show and perform linear transformations.
- C. Performs matrix operations to find the inverse of a matrix.
- D. Solve linear models in engineering and science.
- E. Evaluate and specify properties of determinants.
- F. Apply Cramer's Rule.
- G. Specify vector spaces and their properties.
- H. Verify linear independent sets and dimensions of a vector space.
- I. Find eigenvalues and eigenvectors in applications of dynamical systems and differential equations in engineering and science problems.
- J. Utilize orthogonality and quadratic forms in the support of matrices and vector equations solution techniques.

III. THECB Learning Outcomes (ACGM)

Upon successful completion of this course, students will:

1. Be able to solve systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion.
2. Be able to carry out matrix operations, including inverses and determinants.
3. Demonstrate understanding of the concepts of vector space and subspace.
4. Demonstrate understanding of linear independence, span, and basis.
5. Be able to determine eigenvalues and eigenvectors and solve problems involving eigenvalues.

6. Apply principles of matrix algebra to linear transformations.
7. Demonstrate application of inner products and associated norms.

IV. Evaluation

A. Examinations

There will be at least three in class exams (100 points each) and one required in class comprehensive final exam to evaluate student learning for the course. Each exam will be equally weighed.

B. Homework/Quizzes

Homework will be assigned daily, and will be discussed in class, as necessary. There will also be some unannounced quizzes. The quiz/homework average will be equivalent to an exam grade.

C. Grading Scale:

- A: 90-100
- B: 80-89
- C: 70-79
- D: 60-69
- F: Below 60 or cheating

Note: "I" and "W" grades will be assigned whenever the appropriate assignments and deadlines have been met. To receive an I, the students must have completed at least 80% of the course with at least a 75 average. The proper forms must also be signed by both the student, and the instructor before being submitted to the registrar.

V. Disability Statement (Americans with/Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.

VII. Title IX and Sex Discrimination

Title 9 (20 U.S.C. 1681 & 34 C.F.R. Part 106) states the following "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance." The Violence Against Women Act (VAWA) prohibits stalking, date violence, sexual violence, and domestic violence for all students, employees and visitors (male and female). If you have any concerns related to discrimination, harassment, or assault (of any type) you can contact the Assistant to the Vice President for

Student and Enrollment Services at 915-831-2655. Employees can call the Manager of Employee Relations at 915-831-6458. Reports of sexual assault/violence may also be reported to EPCC Police at 915-831-2200.