

Linear Algebra Syllabus

MAS 2103, Summer 2019, June 24 - July 26

Course & Faculty Information

Lecturer: TBA

E-mail: TBA

Time: Monday through Friday (1.8 contact hours each day)

Contact hour: 45 hours

Credit: 3

Office hours: By Appointment

Course Description

This is a survey course of introductory linear algebra. Fundamental concepts of linear algebra and matrix theory are introduced. Topics in the course include vectors, matrices, determinants, linear transformations, systems of linear equations, eigenvalues, eigenvectors, and their applications.

Textbook Information

Linear Algebra and Its Applications, 5th Edition, David C. Lay. ISBN: 9780321982384

Notes: I will prepare a set of guided notes for each section to be used during lecture.

Grading Scale:

Quizzes & In-Class Assignments	15%
Attendance	5%
Exams	50%
Final Exam	30%

Letter Grades will be assigned as follows:

<u>Percent Score in the Class</u>	<u>Letter Grade</u>
90% - 100%	A
80% - 89%	B
70 - 79%	C
60 - 60%	D
< 60%	F

Borderline grades will be determined by a student's score on the final exam.

Assessments:

- **Quizzes:** A short quiz will be given daily to record attendance and to ensure that students are keeping up with the assigned homework. These daily quizzes will be based on the homework assigned from the previous class. *Two quiz scores will be dropped at the end of the summer term.*
- **In-Class Assignments:** Graded review assignments will be given on Fridays where an exam is not given. These assignments are meant to prepare students for the next exam and will count as quiz grades.
- **Exams:** There will be three exams, Exam #1 (7/5), Exam #2 (7/19), and a cumulative final exam (7/26)
- **Homework:** Homework from the textbook will be assigned for each lecture. Students are expected to complete each homework assignment and are encouraged to work together on these assignments. The homework itself will not be graded, but problems from the homework assignment will be given on the daily quizzes.

Summer 2019 Class Schedule

WEEK ONE

Monday: 1.1-1.2 Systems of linear equations and Row Reduction and Echelon Forms and Vector Equations

Tuesday: 1.2-1.4 Row Reduction and Echelon Forms and Vector Equations; Vector Equations and the matrix equation $Ax = b$

Wednesday: 1.4&1.5 the matrix equation $Ax = b$ and Solutions sets of Linear Systems

Thursday: 1.7&1.8 Linear Independence and Introduction to Linear Transformations

Friday: Review & In-Class Assignment

WEEK TWO

Monday: 1.9 The matrix of a linear transformation

Tuesday: 2.1-2.2 Matrix Operations and the inverse of a matrix

Wednesday: 2.2-2.3, 2.5 The inverse of a matrix, characterizations of invertible matrices and matrix factorization

Thursday: 2.5, 2.8-2.9 Matrix factorization, the Leontief input-output model, Subspaces of R^n , and dimension and rank

Friday: EXAM #1 (Ch. 1 & Sections 2.1 – 2.3)

WEEK THREE

Monday: 3.1 & 3.2 Introduction to determinants and properties of determinants

Tuesday: 3.3 & 4.1 Cramer's rule, volume and linear transformations, and vector spaces and subspaces

Wednesday: 4.2 & 4.3 Null spaces, column spaces, linear transformations, and linearly independent sets and bases

Thursday: 4.5 & 4.6 the dimension of a vector space and Rank

Friday: Review & In-Class Assignment

WEEK FOUR:

Monday: 4.7 & 5.1 Change of basis, Eigenvalues, and eigenvectors

Tuesday: 5.2 the characteristic equation

Wednesday: 5.3 Diagonalization

Thursday: 5.4 & 5.5 Eigenvectors and linear transformations, and complex eigenvalues

Friday: EXAM #2 (2.8 – 2.9 , Ch. 3, 4.1 – 4.3, 4.5 - 4.7, 5.1 – 5.3)

WEEK FIVE:

Monday: 6.1 Inner product and orthogonality

Tuesday: 6.2 & 6.3 Orthogonality sets and orthogonality projects

Wednesday: 6.4 Gram Schmidt process

Thursday: Review

Friday: FINAL EXAM (Comprehensive)

Academic Integrity

As members of the Seminole State College of Florida community, students are expected to be honest in all of their academic coursework and activities.

Academic dishonesty, such as cheating of any kind on examinations, course assignments or projects, plagiarism, misrepresentation and the unauthorized possession of examinations or other course-related materials, is prohibited.

Plagiarism is unacceptable to the college community. Academic work that is submitted by students is assumed to be the result of their own thought, research or self-expression. When students borrow ideas, wording or organization from another source, they are expected to acknowledge that fact in an

appropriate manner. Plagiarism is the deliberate use and appropriation of another's work without identifying the source and trying to pass-off such work as the student's own. Any student who fails to give full credit for ideas or materials taken from another has plagiarized.

Students who share their work for the purpose of cheating on class assignments or tests are subject to the same penalties as the student who commits the act of cheating.

When cheating or plagiarism has occurred, instructors may take academic action that ranges from denial of credit for the assignment or a grade of "F" on a specific assignment, examination or project, to the assignment of a grade of "F" for the course. Students may also be subject to further sanctions imposed by the judicial officer, such as disciplinary probation, suspension or dismissal from the College.

Selected Studies in Mathematics Syllabus

MAC 1931, Summer 2019, June 24 to July 26

Course & Faculty Information

Course :MAC 1931 Selected Studies in Mathematics- Linear Algebra- MAS 2103

Lecturer: TBA

Email: TBA

Time: Monday through Friday

Contact Hours: 15 (50minutes each)

Office Hours: By Appointment

Credit: 1

Course Description

This is a survey course of introductory linear algebra. Fundamental concepts of linear algebra and matrix theory are introduced. Topics in the course include vectors, matrices, determinants, linear transformations, systems of linear equations, eigenvalues, eigenvectors, and their applications.

Textbook Information

Linear Algebra and Its Applications, 5th Edition, David C. Lay. ISBN: 9780321982384

Grading Scale:

Quizzes & In-Class Assignments	40%
Exams	60%

Letter Grades will be assigned as follows:

<u>Percent Score in the Class</u>	<u>Letter Grade</u>
90% - 100%	A
80% - 89%	B
70 - 79%	C

60 – 60%	D
< 60%	F

Assessments:

- **Quizzes:** A short quiz will be given daily to record attendance and to ensure that students are keeping up with the assigned homework. These daily quizzes will be based on the homework assigned from the previous class. Sometimes the quizzes will come directly from the homework. You may use notes and homework for the quizzes. *Two quiz scores will be dropped at the end of the summer term.*
- **Exams:** There will be five exams.
- **Homework:** Homework from the textbook will be assigned for each lecture. Students are expected to complete each homework assignment and are encouraged to work together on these assignments. The homework itself will not be graded, but problems from the homework assignment may be given on the daily quizzes.
- **Independent Study:** This will consist of extra projects and real-world problems students will complete on selected topics of linear algebra.

Summer 2019 Class Schedule

Date	Activity	Date	Activity
June 24	Syllabus 1.1 -Systems of Linear Equations 1.2 – Row Reduction and Echelon Form	June 25	Quiz over 1.1 Homework 1.2 1.3 – Vector Equations
June 26	Quiz over 1.2 Homework 1.3 1.4 – The Matrix Equation	June 27	Quiz over 1.3 and 1.4 Homework 1.5 – Solution Sets of Linear Systems 1.7 – Linear Independence
June 28	Review/Question and Answer Session with T.A.	July 1	Test Over Chapter 1
July 2	2.1 – Matrix Operations 2.2 – The Inverse of a Matrix 2.3 – Characterizations of Invertible Matrices	July 3	Quiz over 2.1 and 2.2 Homework 2.3 2.4 – Partitioned Matrices 2.5 – Matrix Factorizations
July 4	Quiz over 2.3 – 2.5 Homework 2.8 – Subspaces of \mathbb{R}_n 2.9 – Dimension and Rank	July 5	Review/Question and Answer Session with T.A.
July 8	Test over Chapter 2	July 9	3.1 – Introduction to Determinants 3.2 – Properties of Determinants

July 10	Quiz over Chapter 3 Homework 4.1 – Vector Spaces and Subspaces 4.2 – Null Spaces, Column Spaces and Linear Transformations	July 11	Quiz over 4.1 and 4.2 Homework 4.3 – Linearly Independent Sets; Bases 4.4 – Coordinate Systems 4.5 – The Dimension of a Vector Space
July 12	Review/Question and Answer Session with T.A.	July 15	Test over chapters 3 and 4
July 16	5.1 – Eigenvectors and Eigenvalues 5.2 – The Characteristic Equation 5.3 – Diagonalization	July 17	Quiz over 5.1 Homework 5.2 5.3
July 18	Quiz over 5.2 and 5.3 homework 5.6 – Discrete Dynamical Systems 6.1 – Inner Product, Length, and Orthogonality 6.2 – Orthogonal Sets	July 19	Review/Question and Answer Session with T.A.
July 22	Test over chapter 5	July 23	Quiz over 6.1 Homework 6.2 6.4 – The Gram-Schmidt Process
July 24	Quiz over 6.2 Homework 6.4 6.5 – Least-Squares Problems 6.7 – Inner Product Spaces	July 25	Review/Question and Answer Session with T.A.
July 26	Test over chapter 6		

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denial of credit for the assignment or a grade of "F" on a specific assignment, examination or project, to the assignment of a grade of "F" for the course. Students may also be subject to further sanctions imposed by the judicial officer, such as disciplinary probation, suspension or dismissal from the College.