MATH 320 LINEAR ALGEBRA

Welcome to Math 320! This course is an introduction to Linear Algebra. Linear Algebra is one of the great subjects of modern mathematics and an invaluable tool in many other disciplines ranging from economics to computer science and physics to engineering. In this course we will explore solutions to linear systems of equations, vector spaces and linear transformations.

Instructor: Izzet Coskun, icoskun@uic.edu

Venue: MWF 11-11:50, Taft Hall 309

Drop In Hours: MW 9-9:50 at SEO 423

Text: The required text for this course is Linear Algebra by Jim Heffron available online

Prerequisites: Calculus I, II, III. Some familiarity with writing proofs is helpful, but not required.

Requirements: There will be weekly homework, a mid-term and a final. The midterm and the homework will count for 30 % of your grade each. The final exam will account for 40 % of your grade. In order to pass the course, you must pass the final exam. The homework sets will be due Wednesdays in the beginning of class. No late homework will be accepted. You may collaborate on the homework problems, but you must write your own solutions and properly acknowledge any help you receive from others. I consider the homework to be a very important part of this course. To pass the course, you must receive a passing grade on the final. Attendance is strongly encouraged.

Topics: The following is a tentative list of topics that will be covered in the course. Please read the material in the text book before class.

August 22	Linear systems of equations	Chapter 1 Section 1
August 24	Gaussian Elimination	Chapter 1 Section 2
August 26	Gaussian Elimination	Chapter 1 Section 2
August 29	Reduced Echelon Form	Chapter 1 Section 3
August 31	Applications	Chapter 1 Topics
September 2	Vector spaces	Chapter 2 Section 1
September 5	Labor Day–No Class	
September 7	Vector spaces	Chapter 2 Section 1
September 9	Linear Independence	Chapter 2 Section 2
September 12	Bases	Chapter 2 Section 3
September 14	Dimension	Chapter 2 Section 3

September 16	Applications	Chapter 2 Topics
September 19	Homomorphisms	Chapter 3 Section 1
September 21	Isomorphisms	Chapter 3 Section 1
September 23	Rank and kernel	Chapter 3 Section 2
September 26	Null space and range	Chapter 3 Section 2
September 28	Matrices	Chapter 3 Section 3
September 30	Matrices	Chapter 3 Section 4
October 3	Change of bases	Chapter 3 Section 5
October 5	Gram Schmidt orthogonalization	Chapter 3 Section 6
October 7	Projections	Chapter 3 Section 6
October 10	Determinants	Chapter 4 Section 1
October 12	Determinants	Chapter 4 Section 1
October 14	Determinants	Chapter 4 Section 2
October 17	Determinants	Chapter 4 Section 3
October 19	Applications	Chapter 4 Topics
October 21	MIDTERM	
October 24	Eigenvalues	Chapter 5 Section 1
October 26	Eigenvectors	Chapter 5 Section 2
October 28	Eigenvectors	Chapter 5 Section 2
October 31	Eigenvectors	Chapter 5 Section 2
November 2	Diagonalization	Chapter 5 Section 3
November 4	Diagonalization	Chapter 5 Section 3
November 7	Jordan Canonical Forms	Chapter 5 Section 4
November 9	Jordan Canonical Forms	Chapter 5 Section 4
November 11	Jordan Canonical Forms	Chapter 5 Section 4
November 14	Jordan Canonical Forms	Chapter 5 Section 4
November 16	Symmetric Matrices	
November 19	Symmetric Matrices	
November 21	Symmetric Matrices	
November 23	Hermitian Matrices	
November 25	Thanksgiving–No class	
November 28	Skew-symmetric matrices	
November 30	Applications	
December 2	Review for the final	