DEPARTMENT OF MATHEMATICS

REQUIRED COURSE TEXTBOOK: LINEAR ALGEBRA AND ITS APPLICATION BY GILBERT STRANG

No Other Textbooks will be used or entertained

Course format:

Grading – external:

Grading – internal:

LESSON PLAN

DATE	#	TOPICS	CHAPTERS	Conceptual Problems (To be integrated into the lecture so as to aid the grasping of concepts)	In Class Problems	Assignment Problems
	1	The Geometry of Linear Equations	1.2		**1.2**(2,7)	**1.2** (15,17)
	2	The Geometry of Linear Equations	1.2		**1.2**(8,11)	**1.2**(18,22)
	3	Gaussian Elimination	1.3		**1.3**(1,3,4,7)	**1.3**(9,10,12)
	4	Gaussian Elimination	1.3		**1.3**(8,14,16)	**1.3**(26,32)
	5	Matrix Notation and Matrix Multiplication	1.4		**1.4**(4,5,21)	**1.4**(11,28,56)
	6	Triangular Factors and Row Exchanges	1.5		**1.5(**2,7,11**)**	**1.5**(9,27,30)
	7	Triangular Factors and Row Exchanges	1.5		**1.5(**21,28**)**	**1.5**(9,32,40,41)
	8	Inverses and Transposes	1.6		**1.6**(6,10,11)	**1.6**(2,4,5,12)

	9	Inverses and Transposes	1.6		**1.6**(15,17,41,42)	**1.6**(37,52,54,58)
	10	Vector Spaces and Subspaces	2.1		**2.1**(2,4)	**2.1(**1,6,8**)**
	11	Vector Spaces and Subspaces	2.1		**2.1**(5,24)	**2.1**(26,28)
	12	Solving $Ax = 0$ and $Ax = b$	2.2		**2.2**(1,4,5,13)	**2.2**(7,12,15)
	13	Solving $Ax = 0$ and $Ax = b$	2.2		**2,2**(34,44,54,59)	**2.2**(32,36,56)
	14	Linear Independence	2.3		**2.3**(1,3,5,8)	**2.3**(4,9,10)
	15	Basis, and Dimension	2.3		**2.3**(16,19,23)	**2.3**(13,31,32,40)
	16	The Four Fundamental Subspaces	2.4		**2.4(**2,13)	**2.4**(3,6,11)
	17	The Four Fundamental Subspaces	2.4		**2.4**(18,24,29)	**2.4**(17,28,31,32)
	18	Linear Transformations	2.6		Theory	Examples
	19	Linear Transformations	2.6		**2.6**(2,17,19,29)	**2.6**(20,25,26,28)
	20	Orthogonal Vectors and Subspaces	3.1		**3.1**(1,7,9,12)	**3.1**(2,10,11,18, 33)
	21	Cosines and Projections onto Lines	3.2		**3.2**(1,3,8,17)	**3.2**(5,9,11,19)
	22	Projections and Least Squares	3.3		**3.3**(1,4,6)	**3.3**(2,9,12)
	23	Orthogonal Bases and Gram-Schmidt	3.4		**3.4**(5,9)	**3.4**(6,10)
	24	Orthogonal Bases and Gram-Schmidt	3.4		**3.4**(16,23)	**3.4**(20,30)
	25	Properties and Formulas of the Determinant	4.2 & 4.3		**4.2** (4,5)	**4.2** (2,6,13) **&**

					& 4.3(1,4)	**4.3**(10,13,20,24,27)
	26	Applications of the Determinant	4.4		**4.4**(2,14,29)	**4.4**(5,7,27)
	27	Eigenvalues and Eigenvectors	5.1		**5.1**(1,2,6,7)	**5.1**(3,9,10,11)
	28	Eigenvalues and Eigenvectors	5.1		**5.1**(15,17)	**5.1**(19,22,27,39)
	29	Diagonalization of a Matrix	5.2		**5.2**(3,4,6)	**5.2**(8,12,16,32)
	30	Differential Equations and e^{At}	5.4		**5.4**(1,6)	**5.4**(4,10)
	31	Differential Equations and e^{At}	5.4		**5.4**(9,12,19)	**5.4**(20,24,42)
	32	Complex Matrices	5.5		**5.5**(1,2)	**5.5**(3,10)
	33	Complex Matrices	5.5		**5.5**(15,33)	**5.5**(22,43)
	34	Similarity Transformations	5.6		**5.6**(1,4,6)	**5.6**(7,17)
	35	Similarity Transformations	5.6		**5.6**(18,23,26)	**5.6**(31,41,44)
	36	Minima, Maxima, and Saddle Points	6.1		**6.1**(2,5,8)	**6.1**(9,17)
	36	Tests for Positive Definiteness	6.2		**6.2**(1,3,11)	**6.2**(25,34)
	37	Singular Value Decomposition	6.3		**6.3**(1,4)	**6.3**(2,3)
	39	Singular Value Decomposition	6.3		**6.3**(14)	**6.3**(14)

	40	Matrix Norm and Condition Number	7.2		**7.2**(15,17)	**7.2**(2,10)
	41	Iterative Methods for $Ax = b$	7.4		**7.4(2)**	**7.4(5)**