Universidad Carlos III de Madrid
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COURSE: Linear Algebra		
DEGREE: Bachelor's Degree in Mobile and Space Communications Engineering	**YEAR: 1st**	**TERM: 1st**

(*4, see Notes at the end) ***sessions along 14 weeks.***

WEEKLY PLANNING

			GROUPS				WEEKLY PROGRAMMING FOR STUDENTS		
			LECTURES	SEMINARS			DESCRIPTION	CLASS HOURS (*5, see Notes at the end)	HOMEWORK HOURS (Max. 7h week)
1	1	Presentation Complex numbers	X				Book study (*1, see Notes at the end)	1,66	7
1	2	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
2	3	Complex numbers	X				Book study (*1, see Notes at the end)	1,66	7
2	4	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
3	5	1.1 Systems of linear equations (Lay 1.1, see Notes at the end) 1.2 Row Reduction and Echelon Form 1.3 Vector Equations	X				Book study (*1, see Notes at the end)	1,66	
3	6	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
4	7	1.4 The Matrix Equation Ax=b 1.5 Solution Sets of Linear Systems	X				Book study (*1, see Notes at the end)	1,66	
4	8	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
5	9	2.1 Matrix Operations	X				Book study (*1, see Notes at the end)	1,66	

		2.2 Inverse of a Matrix 2.3 Characterizations of Invertible Matrices							
5	10	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
6	11	2.4 Partitioned matrices	X				Book study (*1, see Notes at the end)	1,66	7
6	12	3.1 Introduction to Determinants 3.2 Properties of determinants	X				Book study (*1, see Notes at the end)	1,66	
6	13	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
7	14	4.1 Vector Spaces and Subspaces (also Lay 2.8)	X				Book study (*1, see Notes at the end)	1,66	
7	15	**Test on Chapters 1 and 2** Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
8	16	4.2 Null Space, Column Space and Linear Transformations (also Lay 1.8, 1.9, 2.8)	X				Book study (*1, see Notes at the end)	1,66	
8	17	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
9	18	4.3 Linearly Independent Sets; Bases (also Lay 1.7, 2.9) 4.4 Coordinate Systems (also Lay 2.9)	X				Book study (*1, see Notes at the end)	1,66	
9	19	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
10	20	4.5 The Dimension of a Vector Space (also Lay 2.9) 4.6 Rank 4.7 Change of basis	X				Book study (*1, see Notes at the end)	1,66	
10	21	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
11	22	5.1 Eigenvalues and Eigenvectors 5.2 The Characteristic Equation 5.3 Diagonalization	X				Book study (*1, see Notes at the end)	1,66	
11	23	**Test on Chapters 3 and 4** Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
12	24	6.1 Inner product, Length and Orthogonality 6.2 Orthogonal Sets 6.3 Orthogonal Projections	X				Book study (*1, see Notes at the end)	1,66	
12	25	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
13	26	6.4 The Gram-Schmidt Process 6.5 Least-squares Problems	X				Book study (*1, see Notes at the end)	1,66	
13	27	Selected exercises (*2, see Notes at the end)		X			Odd numbered exercises. Compare with solutions (*3)	1,66	
14	28	7.1 Diagonalization of Symmetric Matrices 7.2 Quadratic Forms 7.4 The Singular Value Decomposition	X				Book study (*1, see Notes at the end)	1,66	7
14	29	**Test on Chapters 5, 6 and 7 (optional)**		X			Odd numbered exercises. Compare with solutions (*3)	1,66	

		Selected exercises (*2, see Notes at the end)							
							Subtotal 1	**48,33**	**98**
							Total 1 *(Hours of class plus student homework hours between weeks 1-14)*	**146,33**	

15		Extra sessions Tutorials, handing in, etc							4
16									
17									
18									
							Subtotal 2	**3,66**	**10**
							Total 2 *(Hours of class plus student homework hours between weeks 15-18)*		

TOTAL *(Total 1 + Total 2)*	**160**

Notes:
(Lay 1.3) Section of D. C. Lay's book containing the material covered in the corresponding session.
(*1) Study the corresponding sessions in D. C. Lay's book
(*2) Selected exercises from D. C. Lay's book corresponding to the previous lecture in large group
(*3) Do some of the odd numbered exercises in D. C. Lay's book corresponding to the previous lecture in large group and compare with the solutions in the book
(*4) There are 29 sessions. 15 of theory, 14 of exercises. The extra theory session occurs (due to the university schedules) on week 6.
(*5) 1,66 hours (in fact 10/6) corresponds to 100 minutes each session.

#1 SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)
#2 Indicate YES/NO If the session needs 2 teachers