Universidad Carlos III de Madrid
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FIELD OF STUDY : CALCULUS IV		
BACHELOR'S DEGREE IN ENERGY ENGINEERING	COURSE: 4º	SEMESTER: 2º

The subject has 14 sessions along 14 weeks.

WEEKLY PLANNING									
WEEK	SESSION	DESCRIPTION	GROUPS		#1	#2	WEEKLY PROGRAMMING FOR STUDENTS		
			LECTURES	SEMINARS			DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. 7h week)
1	1	Introduction. Matrix calculus	X			NO		1,66	6,5
2	2	Linear systems with constant coefficients	X			NO		1,66	
3	3	Non homogeneous systems. Variations of constants method	X			NO		1,66	6,5
4	4	Autonomous systems	X			NO		1,66	
5	5	Phase diagram	X			NO		1,66	6,5
6	6	Stability.	X			NO		1,66	
7	7	Nonlinear models. Population dynamics.	X			NO		1,66	
8	8	Trajectories and phase diagrams	X			NO		1,66	6,5

9	9	Local and global aspects of phase diagrams	X			NO		1,66	
10	10	Linearization. Stability. Conservative systems	X			NO		1,66	6,5
11	11	Initial value problema and general solution	X			NO		1,66	
12	12	Linear models. Non homogeneous equations	X			NO		1,66	6,5
13	13	Recurrent sequences. Spiderweb diagram	X			NO		1,66	
14	14	Parametric equations. Bifurcation and chaos	X			NO		1,66	6,5
							Subtotal 1	23.24	45.5
				Total 1 *Hours of class plus student homework hours between weeks 1-14*	**68.74**				
15-18		Tutorials, Evaluation preparation, Final exam						11.26	
							Subtotal 2	11.26	
				Total 2 *(Horas presenciales y de trabajo del alumno entre las semanas 15-18)*	**11.26**				

TOTAL *(Total 1 + Total 2. Máximo 180 horas*	**80**

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