Universidad Carlos III de Madrid
www.uc3m.es

COURSE: Control Engineering III		
DEGREE: Industrial Electronics and Automation Engineering	**YEAR: 3**	**TERM: 2**

The subject is divided into 28 sessions within 14 weeks. The labs could be changed to another week (the final dates will be announced in Aula Global). There are two sessions per week except in some cases with three sessions.

WEEKLY PLANNING

WEEK	SESSION	DESCRIPCIÓN DEL CONTENIDO DE LA SESIÓN	GROUPS (mark X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	Indicate YES/NO If the session needs 2 teachers	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS			DESCRIPTION	CLASS HOURS	CLASS HOURS
1	1	Unit 1. Identification of systems: Introduction	X			NO		1,66	
1	2	1.1. Parametric and nonparametric models. 1.2. Identification methods	X			NO		1,66	
2	3	1.1: Problems		X		NO		1,66	
2	4	1.3. Least squares method.	X			NO		1,66	
3	5	1.3: Problems Least squares method.		X		NO		1,66	
3	6	Unit 2. Modeling of non-linear systems: 2.1. Types and effects.	X			NO		1,66	
4	7	2.2. Describing Function analysis.	X			NO		1,66	
4	8	2.2: Problems Describing Function analysis.		X		NO		1,66	
5	9	2.3. Phase plane analysis.	X			NO		1,66	
5	10	2.3: Problems Phase plane analysis.		X		NO		1,66	
6	11	Lab 1: Non Linear Systems		X	Lab.	NO		1,66	
6	12	Phase Plane problems	X			NO		1,66	

7	13	Unit 3. Stability.: 3.1. Lyapunov Criterion.	X			NO		1,66	
7	14	3.1: Problems Lyapunov.		X		NO		1,66	
8	15	Unit 4. Non-linear Systems Control: 4.1. Systems with delay. Smith Predictor.	X			NO		1,66	
8	16	4.1: Problems Smith Predictor.		X		NO		1,66	
9	17	Lab 2: Smith Predictor		X	Lab.	NO		1,66	
9	18	4.2. Linearization by state feedback.	X			NO		1,66	
10	19	4.2. Problems Linearization by state feedback.		X		NO		1,66	
10	20	4.2. Problems Linearization by state feedback.		X		NO		1,66	
11	21	4.3. Application of Lie Algebra.	X			NO		1,66	
11	22	4.3. Problems Lie Algebra.		X		NO		1,66	
12	23	Lab 3: Control of Non Linear Systems		X	Lab.	NO		1,66	
12	24	Unit 5. Optimal Control: 5.1. General problem (discrete-time) 5.2. Linear Quadratic Regulator (LQR) in discrete-time.	X			NO		1,66	
13	25	5.1, 5.2: Problems Optimal Control Discrete.		X		NO		1,66	
13	26	5.3. General problem (continuous-time) 5.4. Linear Quadratic Regulator (LQR) in continuous-time.	X			NO		1,66	
14	27	5.3, 5.4: Problems Optimal Control Continuous.		X		NO		1,66	
14	28	Lab 4: Optimal Control		X	Lab.	NO		1,66	
	29	Optimal Control exercises	X			NO		1,66	
							Subtotal 1	**48,33**	
		Total 1 *(Hours of class plus student homework hours between weeks 1-14)*							
15		Tutorials, handing in, etc							
16		Assessment						3	
17									
18									
							Subtotal 2	**3**	
		Total 2 *(Hours of class plus student homework hours between weeks 15-18)*							
TOTAL *(Total 1 + Total 2. Máximo 180 horas)*									