Universidad Carlos III de Madrid
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COURSE: SYSTEM AND CIRCUITS		
	YEAR: 2015/2016	**TERM: 1**

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	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	HOMEWORK HOURS (Max. 7h week)
1	1	**Part 1: Signals** Introduction Operations with signals. Sum, product, derivative, integration Transformations of the independent variable	X			NO	- Read sections 1.1 and 1.2 of Signals and Systems, by Oppenheim and Wilsky.	1,66	7

1	2	Exercises		X		NO	-Exercises about operations with signals.	1,66	
2	3	Properties of signals Odd/Even signals Periodic signals Energy and Power	X			NO	- Read sections 1.1 and 1.2 of Signals and Systems, by Oppenheim and Wilsky.	1,66	7
2	4	Exercises		X		NO		1,66	
3	5	Special signals: Discrete Unit step and impulse. Discrete Complex Exponential Signals.	X			NO	1. - Read section 1.3 of Signals and Systems, by Oppenheim and Wilsky. -Exercises section 1.3 of Signals and Systems, by Oppenheim and Wilsky.	1,66	7
3	6	Exercises on Signals and their properties.		X		NO	-Exercises chapter 1 of Signals and Systems, by Oppenheim and Wilsky.	1,66	

4	7	Special signals: Unit step and impulse. Complex Exponential Signals. Resolution of exercises.	X			1. 2. NO	- Read section 1.3 of Signals and Systems, by Oppenheim and Wilsky.	1,66	7
4	8	Laboratory session: signals in Matlab		X	Computer classroom.	NO		1,66	
5	9	**Part 2: Systems** Introduction Interconnection of Systems Properties of Systems	X			NO	Read sections 1.5 and 1.6 of Signals and Systems, by Oppenheim and Wilsky.	1,66	7
5	10	Exercises about properties of systems. Mid-term Exam: System (25 min).		X		NO	-Exercises sections 1.5 and 1.6 of Signals and Systems, by Oppenheim and Wilsky.	1,66	
6	11					NO		1,66	7

		Linear Time-Invariant Systems. Convolution.	X			and	Read sections 2.1 and 2.2 of Signals Systems, by Oppenheim and Wilsky.		
6	12	Exercises about convolution.		X		NO	1. - Excercises sections 2.1 and 2.2 of Signals and Systems, by Oppenheim and Wilsky. -Exercises section 2.3 of Signals and Systems, by Oppenheim and Wilsky.	1,66	
7	13	Properties of LTI systems based on the impulse response	X			NO	- Read section 2.3 of Signals and Systems, by Oppenheim and Wilsky. -Exercises section 2.3 of Signals and Systems, by Oppenheim and Wilsky.	1,66	7
7	14	Laboratory Session: Systems		X	Computer Classroom	NO		1,66	
8	15	Problems on LTI systems.	X			NO	-Exercises section 2.3 of Signals and Systems, by Oppenheim and Wilsky.	1,66	7
8	16	Systems described by differential equations.		X		NO		1,66	

9	17	**Part 3: Resistive Circuits** Introduction. Kirchhoff's Laws	X			NO	- Read chapters 2 and 3 of Electric Circuits by Nilsson.	1,66	
9	18	Circuit Analysis Methods. Voltage-node method Loop-current method Exercises about analysis of electric circuits		X		NO	Read sections 4.1 to 4.4 of Electric Circuits by Nilsson.	1,66	7
10	19	Theorems in Electric Circuits. Source transformations Thévenin Theorem Norton Theorem Maximum Power transfer	X			NO	Read sections 4.9 to 4.12 of Electric Circuits by Nilsson.	1,66	
10	20	Exercises about analysis of electric circuits Mid-term exam: systems (25 min).		X		NO	- Exercises chapter 4 of Electric Circuits by Nilsson. -Past Exams on electrical circuits	1,66	7
11	21	**PART 4: Filters in time-domain** Capacitors and Inductors Auxiliary Conditions Analysis of first order filters	X			NO	- Read sections 6.1 to 6.3 of Electric Circuits by Nilsson. - Read sections 7.1 to 7.4 of	1,66	7

							Electric Circuits by Nilsson.		
11	22	Exercises about first order filters (RC/RL circuits).		X		NO	- Exercises sections 7.1 to 7.4 of Electric Circuits by Nilsson.	1,66	
12	23	Analysis of Second Order filters (RLC circuits)	X			NO	- Chapter 8 of Electric Circuits by Nilsson.	1,66	
12	24	Exercises about RLC filters		X			- Exercises chapter 8 of Electric Circuits by Nilsson. -Past Exams.	1,66	7
13	25	**PART 5: Sinusoidal Steady-State Regime (SSTR)** Introduction Phasors Impedance	X			NO	- Read sections 9.1-9.6 and 9.8-9.9 of Electric Circuits by Nilsson.	1,66	7
13	26	• Mid-Term Exam: Electric Circuits (50 min).		X		NO	- Exercises sections 9.1 to 9.9 of Electric Circuits by Nilsson.	1,66	

		• Exercises about Phasors and Impedances.							
14	27	Analysis of circuits in SSTR Superposition Theorem	X				- Read sections 9.7 of Electric Circuits by Nilsson. - Past Exams	1,66	
14	28	Laboratory Session: Filters	X	X	Laboratory	NO		1,66	7
	29	Laboratory Session: Resistive Circuits. (Week 10 or 11)		X	Laboratory	NO		1,66	
							Subtotal 1	**48,33**	**98**
							Total 1 *(Hours of class plus student homework hours between weeks 1-14)*	146.33	

15		Tutorials, handing in, etc							
16		Preparing the exam. Final Exam.						3	21
17									
18									
							Subtotal 2	**3**	
							Total 2 *(Hours of class plus student homework hours between weeks 15-18)*	24	

TOTAL *(Total 1 + Total 2. Maximum 180 hours)*	**170.33**