Universidad Carlos III de Madrid
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COURSE: Electrical Drives		
DEGREE: ELECTRICAL POWER ENGINEERING	**YEAR: 4º**	**TERM: 1º**

La asignatura tiene 29 sesiones que se distribuyen a lo largo de 14 semanas. Los laboratorios pueden situarse en cualquiera de ellas. Semanalmente el alumnos tendrá dos sesiones, excepto en un caso que serán tres

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 (Max. 7h w
1	1	**Introduction to electric drives and mechanical system**	X			Introduction to the subject and mechanical system	1,66	
1	2	**Introduction to MATLAB for electric drives**		X	Computer room	Use of the software Matlab in electric drives	1,66	3
2	3	**Introduction to DC machines and DC-DC converters**	X			Introduction to DC machines and DC-DC converters	1,66	
2	4	**Introduction to Simulink for electric drives**		X	Computer room	Use of the software Simulink in electric drives - Law of Motion	1,66	5
3	5	**Principle of the electric machines control**	X			Introduction to torque control, speed control, and current control.	1,66	
3	6	**Simulation of a chopper in Simulink**		X	Computer room	Simulation of a chopper in Simulink	1,66	5

4	7	**DC motor control**	X			Principle of operation of the separately excited DC motors	1,66	
4	8	**Dynamic model of a separately excited DC motor**		X	Computer room	Dynamic model of a separately excited DC motor	1,66	5
5	9	**Practical 1-** DC motor control			Laboratory	DC motor control (ELWE)	1,66	
5	10	**Dynamic model of a separately excited DC motor in Matlab/Simulink**		X	Computer room	Dynamic model of a separately excited DC motor-continued	1,66	6
6	11	**AC Motor Drives: frond-end Inverter (I)**	X			Introduction to frond-end Inverter Definition of Space vectors, Clarke transformation, and Park transformation. Inverter model in Stator Reference Frame	1,66	
6	12	**Speed control in the separately excited DC motor in Matlab/Simulink (I)**		X	Computer room	Torque control, speed control, and flux control-MATLAB/Simulink	1,66	4
7	13	**AC Motor Drives: frond-end Inverter (II)**	X			Sizes ,operation modes and limits of the Inverter	1,66	
7	14	**Speed control in the separately excited DC motor in Matlab/Simulink (II)**		X	Computer room	Torque control, speed control, and flux control-MATLAB/Simulink (continued)	1,66	6
8	15	**Dynamic model of the induction motor (cage rotor)**	X			Dynamic model of the induction motor (cage rotor)	1,66	
8	16	**Dynamic model of the induction motor in Matlab/Simulink (I)**		X	Computer room	Dynamic model of the induction motor in Matlab/Simulink	1,66	6
9	17	**Scalar speed control of induction motors**	X			Scalar speed control of induction motors	1,66	
9	18	**Dynamic model of the induction motor in Matlab/Simulink (II)**		X	Computer room	Modelo del motor de inducción jaula de ardilla en Simulink	1,66	7
10	19	**Vector control systems for induction motors (I)**	X			Introduction to vector control for induction motor	1,66	
10	20	**Simulation of a Scalar speed control of induction motors in Matlab/Simulink (I)**		X	Computer room	Simulation of a scalar speed control of induction motors in Simulink	1,66	5
11	21	**Practical 2- AC synchronous Motor Drives**	X		Laboratory	Control of a synchronous motor (UNIDRIVE)	1,66	
11	22	**Simulation of a Scalar speed control of induction motors in Matlab/Simulink (II)**		X	Computer room	Simulation of a scalar speed control of induction motors in Simulink	1,66	5
12	23	**Vector control systems for induction motors (II)**	X			Direct vector control induction motor fed by converter which operates as a current source	1,66	6
12	24	**Simulation of a Vector control systems for induction**		X	Computer room	Simulation of a Vector control systems in Simulink/MATLAB	1,66	

		motors (I)						
13	25	**Practical 3- AC induction Motor Drives**	X			Control of a induction motor (elevator)	1,66	
13	26	**Simulation of a Vector control systems for induction motors (II)**		X	Computer room	Simulation of a Vector control systems in Simulink/MATLAB (continued)	1,66	4
14	27	**Vector control systems for induction motors (III)**	X			torque, speed and flux control	1,66	
14	28	**Simulation of a Vector control systems for induction motors (III)**		X	Computer room	Simulation of a Vector control systems in Simulink/MATLAB (continued)	1,66	5
15	29	**Test simulation**			Computer room	Evaluation of the simulation part		
						Subtotal 1	**48,33**	**72**
						Total 1 *(Hours of class plus student homework hours between weeks 1-14)*		**120,33**

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

TOTAL *(Total 1 + Total 2. Maximum 180 hours)*	**140,33**