Universidad Carlos III de Madrid

SUBJECT NAME: MATERIALS PERFORMANCE IN EXTREME CONDITIONS		
POSTGRADE: UNIVERSITY MASTER IN MATERIALS SCIENCE AND ENGINEERING Professors: María Asunción Bautista, Sophia Tsipas y Juan Cornide	ECTS: 3	FOUR -MONTH PERIOD: 2

TIMETABLE OF THE COURSE (detailed version)

WEEK	SESION	DESCRIPTION OF THE CONTENT OF THE SESSION	GRUOP (tick X)		Indicate different classroom space required (computer classroom, audiovisual, etc...)	TRABAJO DEL ALUMNO DURANTE LA SEMANA		
			1	2		DESCRIPCION	ATTENDANCE HOURS	HOURS OF INDIVIDUAL WORK (maximum 7 h)
1	1	Presentation of the subject. 1. Challenges of material in the industry. 2. Aqueous corrosion and the factors that determine the anode location. Corrosion under thermal isolation.	X			Study of the contents taught during the lesson.	1.5	1.5
1	2	3. High temperature oxidation of materials.	X			Study of the contents taught during the lesson.	1.5	2
2	3	4.Extreme wear conditions 5. Tribocorrosion.	X			Study of the contents taught during the lesson. Doing the first individual exercise of the continuous assessment (analysis of laboratory data)	1.5	4
2	4	**Laboratory 1**	X		Chemistry lab.	Reading the guide notes for the experimental work and solving the raised questions in small groups.	1.5	3
3	5	**Laboratory 2**	X		Chemistry lab.	Reading the guide notes for the experimental work and solving the raised questions in small groups.	1.5	3.5

3	6	4. Stress corrosion cracking 5. Deterioration of the mechanical properties in extreme conditions.	X			Study of the contents taught during the lesson. Doing the second individual exercise of the continuous assessment	1.5	3
4	7	8. H embrittlement. 9. Challenges of joining of components in the industry. .	X			Study of the contents taught during the lesson. Doing the second individual exercise of the continuous assessment	1.5	2
4	8	10. Corrosion control strategies	X			Study of the contents taught during the lesson. Doing the 3rd individual exercise of the continuous assessment	1.5	3
5	9	11. Materials performance in the chemical industry.	X			Study of the contents taught during the lesson.	1.5	2
5	10	12. Materials performance in the petrol and petrochemical industry.	X			Study of the contents taught during the lesson. Doing the 4th individual exercise of the continuous assessment	1.5	3
6	11	13. Materials performance in thermal fuel plants. 14. Materials performance in the paper industry.	X			Study of the contents taught during the lesson.	1.5	2
6	12	15. Materials performance in nuclear power generation plants. Effect of irradiation on materials	X			Study of the contents taught during the lesson. Doing the 5th individual exercise of the continuous assessment.	1.5	3
7	13	16. Materials performance in solar power stations Materials performance in aerospace and aeronautical industries.	X			Study of the contents taught during the lesson.	1.5	2
8	14	Doubts about concepts and exercises	X			Study of the contents taught during the lesson.	1.5	5