uc3m | Universidad Carlos III de Madrid
Vicerrectorado de Estudios
Apoyo a la docencia y gestión del grado

COURSE: Los materiales y su impacto ambiental		
DEGREE: Ingenieria Mecanica	YEAR: 4	TERM: 2

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	TEACHING (mark X)		SPECIAL ROOM FOR SESION (computer classroom, audio-visual classroom…)	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. Estim. 3,25h)
1	1	Topic 1: Environmental impact of materials. Life cycle of materials. Population and materials. Circular economy. Sustainable Development Goals				Study of circular economy and ODS of a proposed type of material.	1,5	3,25
2	2	Topic 1: Environmental impact of materials. Solid industrial and urban waste. Separation and selection of the USW. Complex waste: transport vehicles				Study of the recovery process of a material of a complex structure of various materials	1,5	3,25
3	3	Topic 2: Recycling of metals and alloys. Recycling of metals and alloys. Integral cycle of metals. Secondary metallurgy Regeneration and welding of railway rail. Pyrometallurgy: Treatment of steel scrap				Metal recovery study of the proposed complex structure	1,5	3,25
4	4	Topic 2: Recycling of metals and alloys. Recycled aluminum. Recycled tin. Hydrometallurgy: Recycling of heavy metals. Recycled lead batteries. Recycling of batteries and batteries. Mercury management				Metal recovery study of the proposed complex structure	1,5	3,25
5	5	Topic 2: Recycling of metals and alloys. Problems of faulty management. Accident in Riotinto / Doñana. Portman Bay Accidents in Minas Gerais				Study of metal recovery management of the proposed complex structure	1,5	3,25
6	6	Topic 3: Recycling of ceramics and glasses. Building Materials				Ceramic recovery study of the proposed complex structure	1,5	3,25

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7	7	Topic 3: Ceramic and Glass Recycling. Difference between glass and crystal. Color separation Recycled glass Manufacture of containers, fibers and microspheres.				Ceramic recovery study of the proposed complex structure	1,5	3,25
8	8	Topic 3: Recycling of ceramics and glasses. Recycling of solar cells. Recycling of lamps, fluorescent tubes, mercury systems. Recycling of batteries: primary, alkalines, Li-ion,.				Ceramic recovery study of the proposed complex structure	1,5	3,25
9	9	Topic 4: Recycling of polymers. Kind of polymers. Plastic separation treatments. Reuse of thermoplastics. Recycled thermosetting. Plastics "bio".				Polymer recovery study of the proposed complex structure	1,5	3,25
10	10	Topic 5: Recycling of composites. Separation of the elements of the composite materials. Recycled GFRP and CFRP.				Composites recovery study of the proposed complex structure	1,5	3,25
11	11	Topic 5: Reciclado de Composites: Reuse or recycling: the cases of tires and tetrabrik.				Composites recovery study of the proposed complex structure	1,5	3,25
12	12	Topic 6: Nuclear waste management. Obtaining enriched uranium. Low activity wastes High activity wastes: ATC and Deep Burial.				Study of materials related to nuclear energy	1,5	3,25
13	13	Topic 6: Nuclear waste management. Decommissioning of a nuclear plant. Recycling of nuclear fuel. Map of the future of nuclear energy.				Study of the management of materials related to nuclear energy	1,5	3,25
14	14	Topic 6: Nuclear waste management: defective management problems. Three Mile Island incident. Chernobyl Incident, Fukushima Incident.				Study of other nuclear incidents	1,5	3,25
						Subtotal 1	**21**	**46**
						Total 1 *(Hours of class plus student homework)*	**67**	
15		Tutorials, handing in, etc				Presentation of the works	1,8	-
16								
17		Assessment					3	4

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			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. Estim. 3,25h)
18								
						Subtotal 2	**4,8**	**4**
						Total 2 *(Hours of class plus student homework)*		**9**
TOTAL *(Maximun 75 horas)*								**75**