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

COURSE: Solid Mechanics (14120)		
DEGREE: Mechanical Engineering	YEAR: 2019-2020	TERM: 1

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	TEACHING (mark X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS (1,66=50+50 min)	HOMEWORK HOURS (Max. Estim. 6,5h)
1	1	Presentation of the course. Topic 1: Introduction to the mechanical behaviour of materials.	X			Personal work of acquisition of the basic knowledge and understanding of fundamental aspects related to the mechanical behavior of materials.	1.66	6.5
	2	Solving problems of revision of basic concepts of elasticity and strength of materials.		X		Resolution of exercises and questions related to the content of session 1.	1.66	
2	3	Topic 2: Equations of Solids Mechanics.	X			Personal work of acquiring the basic knowledge and understanding of fundamental aspects related to the Equations of Solids Mechanics.	1.66	6.5
	4	Solving problems related to the Equations of Solids Mechanics and Kinematics.		X		Resolution of exercises and questions related to the content of session 3.	1.66	
3	5	Topic 3.1: Yield Criteria.	X			Personal work of acquiring the basic knowledge and understanding of fundamental aspects related to Yield Criteria.	1.66	6.5
	6	Solving problems related to Yield Criteria.		X		Resolution of exercises and questions related to the content of session 5.	1.66	

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4	7	Topic 3.2: Strain Hardening.	X			Personal work of acquiring the basic knowledge and understanding of fundamental aspects related to Strain Hardening.	1.66	6.5
	8	Solving problems related to Strain Hardening.		X		Resolution of exercises and questions related to the content of session 7.	1.66	
5	9	Topic 3.3: 1D Plasticity.	X			Personal work of acquiring the basic knowledge and understanding of fundamental aspects related to 1D Plasticity.	1.66	6.5
	10	Solving problems related to 1D Plasticity.		X		Resolution of exercises and questions related to the content of session 9.	1.66	
6	11	Topic 3.4: Incremental Plasticity Theory (I)	X			Personal work of acquiring the basic knowledge and understanding of fundamental aspects related to Incremental Plasticity Theory.	1.66	6.5
	12	Solving problems related to Incremental Plasticity Theory.		X		Resolution of exercises and questions related to the content of session 11.	1.66	
7	13	Topic 3.4: Incremental Plasticity Theory (II)	X			Personal work of acquiring the basic knowledge and understanding of fundamental aspects related to Incremental Plasticity Theory.	1.66	6.5
	14	Solving problems related to Incremental Plasticity Theory.		X		Resolution of exercises and questions related to the content of session 13.	1.66	
8	15	First Partial Test of Knowledge. Topic 3.5: Finite Element Method in Plasticity. Newton-Raphson Method.	X			First evaluation exam. Personal work to acquire basic knowledge and understanding of fundamental aspects related to the Finite Element Method in Plasticity.	1.66	6.5
	16	Solving problems related to the Finite Element Method in Plasticity.		X		Resolution of exercises and questions related to the content of session 15.	1.66	

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9	17	Lab Session 1 - Application of FEM to the analysis of a plasticized solid. Part A.			Lab.	Study the corresponding laboratory session guide, carry out the tasks assigned in the laboratory.	1.66	6.5
	18	Lab Session 2 - Application of FEM to the analysis of a plasticized solid. Part B.			Lab.	Develop the laboratory session results report.	1.66	
10	19	Topic 4.1: Introduction to Viscoelasticity. Viscoelastic Constitutive Models. Creep Function and Relaxation Module.	X			Personal work of acquiring the basic knowledge and understanding of fundamental aspects related to Incremental Viscoelastic Behaviour.	1.66	6.5
	20	Solving problems related to Incremental Viscoelastic Behaviour.		X		Resolution of exercises and questions related to the content of session 19.	1.66	
11	21	Topic 4.2: Principle of Correspondence and Hereditary Integrals.	X			Personal work of acquiring the basic knowledge and understanding of fundamental aspects related to Principle of Correspondence and Hereditary Integrals.	1.66	6.5
	22	Solving problems related to Principle of Correspondence and Hereditary Integrals.		X		Resolution of exercises and questions related to the content of session 21.	1.66	
12	23	Lab Session 3 - Viscoelasticity. Part A.			Lab.	Study the corresponding laboratory session guide, carry out the tasks assigned in the laboratory.	1.66	6.5
	24	Lab Session 4 - Viscoelasticity. Part B.			Lab.	Develop the laboratory session results report.	1.66	
13	25	Second Partial Test of Knowledge. Topic 5.1: Viscoplasticity. Laws of Stationary Creep. Norton's Law.	X			Second evaluation exam. Personal work to acquire basic knowledge and understanding of fundamental aspects related to the Viscoplasticity.	1.66	6.5
	26	Solving problems related to Viscoplasticity. Laws of Stationary Creep. Norton's Law.		X		Resolution of exercises and questions related to the content of session 25.	1.66	

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14	27	Topic 5.2: Viscoplastic Constitutive Models based on non-linear analogies.	X			Personal work of acquiring the basic knowledge and understanding of fundamental aspects related to Viscoplastic Constitutive Models.	1.66	6.5
	28	Solving problems related to Viscoplastic Constitutive Models.		X		Resolution of exercises and questions related to the content of session 27.	1.66	
	29	Topic 6: Introduction to Fracture Mechanics.	X			Personal work of acquiring the basic knowledge and understanding of fundamental aspects related to Fracture Mechanics.	1.66	3.25
						Subtotal 1	**48**	**94**
						Total 1 *(Hours of class plus student homework)*	**142**	
15		Tutorials, handing in, etc					3.6	-
16		Assessment					4	10
17								
18								
						Subtotal 2	**8**	**10**
						Total 2 *(Hours of class plus student homework)*	**18**	
TOTAL (*Maximun 160 horas*)							**160**	