Universidad Carlos III de Madrid
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COURSE: Advanced Aircraft Design and Certification I		
DEGREE: Master in Aeronautical Engineering	**YEAR: 1st**	**TERM: 2nd**

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	Case Study Exercices Group work			DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. 7h week)
1	1	Introduction to the Course/Introduction to FEA and review of elasticity	X			YES	Reading corresponding notes chapters	1,6	5
1	2	Introduction to finite element modeling. Review of the principle of virtual work.	X			NO	Study and personal work about the lecture	1,6	
2	3	Displacement method and application to discrete systems. Bar (or rod) element.	X	X		NO	Study and personal work about the lecture	1,6	5
2	4	Bar element. Up to potential energy approach. Exercise of matrix assembly	X	X		NO	Study and personal work about the lecture	1,6	
3	5	Computer room 1. For springs and Bars		X	X	NO	Solve the proposed exercises/group work	1,6	7

3	6	Weighted residual approach for bars and determination of K. Application of Galerkin method to diff. equation.	X	X		NO	Study and personal work about the lecture	1,6	
4	7	Beam element	X			NO	Study and personal work about the lecture	1,6	5
4	8	Beam element 2 (load distribution) And some examples	x	X		NO	Study and personal work about the lecture	1,6	
5	9	Computer room 2: beams + HW1			X	NO	Solve the proposed exercises/group work	1,6	5
5	10	Frames and grids	X	X		NO	Study and personal work about the lecture	1,6	
6	11	Computer room 3: frame and grids			x	NO	Solve the proposed exercises/group work	1,6	7
6	12	Plane stiffness. Triangular elements (CST)	X	X		NO	Study and personal work about the lecture	1,6	
7	13	Rectangular elements and isoparametric formulation	X			NO	Study and personal work about the lecture	1,6	7
7	14	Computer room 4: plane elements + HW2			X	NO	Solve the proposed exercises/group work	1,6	
8	15	Practical considerations in FEM	X			NO	Reading corresponding notes chapters Study and personal work about the lecture	1,6	5
8	16	Aircraft certification processes and Airworthiness. General Overview	X			NO	Study and personal work about the lecture	1,6	
9	17	Airworthiness Authorities: I CAO, Europe, USA, Spain, Militay AA	X			NO	Study and personal work about the lecture	1,6	7
9	18	Airworthiness Regulations Regulations: I CAO, Europe, USA, Spain, EASA Part 21, Certification Specifications, Militay AA Regulations	X			NO	Study and personal work about the lecture	1,6	
10	19	Type Certification Process	X			NO	Study and personal work about the lecture	1,6	7
10	20	Changes to Type Design. Parts and Appliances Certification	X	X		NO	Study and personal work about the lecture	1,6	
11	21	Design Organization Approvals	X			NO	Study and personal work about the lecture	1,6	5

11	22	Continued Airworthiness	X			NO	Study and personal work about the lecture	1,6	
12	23	Certificates of Airworthiness and Permits to Fly	X			NO	Study and personal work about the lecture	1,6	7
							S Study and personal work about the lecture		
12	24	Airframe certification Test program / Visit to Airbus		X		NO	Study and personal work about the lecture	1,6	
13	25	Manuals and Instructions for Continued Airworthiness		X		NO	Study and personal work about the lecture	1,6	7
13	26	Operational Certification, MMEL, ETOPS, FCOM	X	X		NO	Study and personal work about the lecture	1,6	
14	27	Certification Documentation.	X			NO	Study and personal work about the lecture	1,6	5
14	28	Group Project Presentations	X	X		NO	Reporting and presentation	1,6	
15	29	Group Project Presentations		X		NO	Solve the proposed exercises/group Work	1,6	-
							Subtotal 1	**48,3**	**84**
							Total 1 *(Hours of class plus student homework hours between weeks 1-14)*	132.33	

15		Tutorials, handing in, etc							5
16		Assessment						6	35
17									
18									
							Subtotal 2	**6**	**40**
							Total 2 *(Hours of class plus student homework hours between weeks 15-18)*	46	

TOTAL *(Total 1 + Total 2. Maximum 180 hours)*	**178.33**