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

COURSE: Aerodynamics II		
DEGREE: Aerospace Engineering	YEAR: 4th	TERM: 1st

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	Introduction/Scope of the course Experimental aerodynamics (1/2) - Physical similarity principle - Wind tunnel design	X				1,66	6,5
	2	Experimental Aerodynamics (2/2) - Measurement and visualization techniques - Procedure to follow on the laboratory sessions in the wind tunnel		X			1,66	
2	3	Wings of finite span in incompressible flow 1/7 - Problem Statement - Basic solutions for 3D potential flow	X				1,66	6,5
	4	Exercises: point singularities		X			1,66	
3	5	Wings of finite span in incompressible flow 2/7 - Surface distribution of the basic 3D solutions - Exercises: distributed singularities, quadsource.m and vring.m	X				1,66	6,5
	6	Wings of finite span in incompressible flow 3/7 - Green's formula		X			1,66	
4	7	Wings of finite span in incompressible flow 4/7 - Numerical panel methods	X				1,66	6,5
	8	Exercises: panel methods in XFLR5		X	computer		1,66	
5	9	Wings of finite span in incompressible flow 5/7 - Lifting surface theory - The lift problem	X				1,66	6,5
	10	LAB#1: the numerical lifting surface method		X	computer		1,66	
6	11	Wings of finite span in incompressible flow 6/7 - Slender wings - Non-potential effects on Delta wings	X				1,66	6,5
	12	Exercises: slender wings		X			1,66	
7	13	Wings of finite span in incompressible flow 7/7 - The thickness problem - Trefftz plane	X				1,66	6,5
	14	Exercises: Trefftz plane		X			1,66	
8	15	Wings of finite span in subsonic flow - Linearization of the problem for compressible flows - Prandtl-Glauert Analogy - Review: Critical Mach number	X				1,66	6,5
	16	LAB#2: numerical thickness problem		X	computer		1,66	
9	17	Wings of finite span in supersonic flows 1/3 -Mach cone, Mach lines - Supersonic LE/TE - Fundamental Solutions: supersonic sources	X				1,66	6,5
	18	Exercises: Prandtl-Glauert analogy		X			1,66	
10	19	Wings of finite span in supersonic flows 2/3 - Evvard formula	X				1,66	6,5
	20	LAB#3: numerical methods for supersonic wings		X	computer		1,66	
11	21	Wings of finite span in supersonic flows 3/3 - Evvard-Krasilshchikova formula	X				1,66	6,5
	22	Exercises: finite wings in supersonic regime		X			1,66	
12	23	Slender body theory 1/2 -Problem formulation - Incompressible flow past a body of revolution	X				1,66	6,5
	24	Exercises: longitudinal forces in slender bodies		X			1,66	
13	25	Slender body theory 2/2 - Incompressible flow transversal to a body of revolution - Application of Prandtl-Glauert analogy to slender bodies	X				1,66	6,5

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	26	Exercises: transversal forces in slender bodies		X			1,66	
14	27	Presentation of the projects (1/2)	X				1,66	6,5
	28	Presentation of the projects (2/2)		X			1,66	
	29	Laboratory session in the wind tunnel			7.0.H05		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**	