



COURSE: Aerodynamics		
DEGREE: Aerospace Engineering	YEAR: 2015-16	TERM: 1st

*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	SEMINARS			DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. 7h week)
1	1	Review of Fluid Mechanics: - Euler equations - Subsonic and supersonic flows - Irrotational flows	X					1,6	6.66
1	2	Aerodynamic Forces and Moments Problem Sheet #1		X				1,6	
2	3	Generation of lift in 2D (1/2) - Complex potential - Elementary solutions - Non-lifting flow around a cylinder	X					1,6	7
2	4	Problem Sheet #2		X				1,6	

3	5	Generation of lift in 2D (2/2) - Flow around a cylinder with circulation - Kutta-Joukowski theorem - D'Alamberts Paradox - Kutta's condition and the starting vortex	X					1,6	7
3	6	Problem Sheet #3		X				1,6	
4	7	Incompressible flow over airfoils (1/4) - Sheet of vortices and sheet of sources - Linearization of the boundary conditions QUIZ #1 (50 min)	X					1,6	7
4	8	LABORATORY #1: Panel method MATLAB			Computer room			1,6	
5	9	Incompressible flow over airfoils (2/4) - Asymmetric problem: angle of attack and camber	X					1,6	7
5	10	Problem Sheet #4		X				1,6	
6	11	Incompressible flow over airfoils (3/4) - Symmetric problem: thickness - Drag and Stall	X					1,6	7
6	12	Problem Sheet #5		X				1,6	
7	13	Incompressible flow over airfoils (4/4) - High lift devices Incompressible flow over finite wings (1/4) - Biot Savart law	X					1,6	7
7	14	LABORATORY #2: Panel method XFLR5			Computer room			1,6	
8	15	Incompressible flow over finite wings (2/4) - Prandtl's lifting line theory QUIZ #2 (50 min)	X					1,6	7
8	16	Problem Sheet #6		X				1,6	
9	17	Incompressible flow over finite wings (3/4) -Elliptic lift distribution -General lift distribution	X					1,6	7
9	18	Problem Sheet #7		X				1,6	
10	19	Incompressible flow over finite wings (4/4) - Initial and unitary lift distribution	X					1,6	7
10	20	Problem Sheet #8		X				1,6	

11	21	Compressibility effects in 2D airfoils - Linearization of the equations QUIZ #3 (50 min)	X					1,6	7	
11	22	LABORATORY #3: Re-design of the CN212-400 wing		X	Computer room			1,6		
12	23	Linearized theory for subsonic airfoils - Prandtl-Glauertc compressibility correction - Critical Mach number - Supercritical airfoil	X					1,6	7	
12	24	Problem Sheet #9		X				1,6		
13	25	Linearized theory for supersonic airfoils (1/2) - Drag Divergence - Linearized theory for supersonic airfoils	X					1,6	7	
13	26	Problem Sheet #10		X				1,6		
14	27	Linearized theory for supersonic Airfoils (2/2) - Aerodynamic interference in supersonic airfoils - Area Rule	X					1,6	3.5	
14	28	Problem Sheet #11		X				1,6	3.5	
-	29	LABORATORY SESSION #4: Wind tunnel			7.0.H03			1,6	0	
								Subtotal 1	48,33	97.66
								Total 1 (Hours of class plus student homework hours between weeks 1-14)		146

15		Tutorials, handing in, etc							14	
16		Assessment							3	
17										
18										14
								Subtotal 2	3	
								Total 2 (Hours of class plus student homework hours between weeks 15-18)		34

TOTAL (Total 1 + Total 2. Maximum 180 hours)								180
---	--	--	--	--	--	--	--	------------