



<b>COURSE: FLUID INSTALLATIONS AND HYDRAULIC MACHINERY</b>		
<b>DEGREE: MECHANICAL ENGINEERING</b>	<b>YEAR: 3</b>	<b>TERM: 1</b>

*La asignatura tiene 29 sesiones que se distribuyen a lo largo de 14 semanas. Los laboratorios pueden situarse en cualquiera de ellas. Semanalmente el alumno 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	Presentation and basic facts about the subject. Introduction and review of the fundamental concepts: primary pressure losses, correlations for the friction factor in ducts, Moody chart, secondary pressure losses	x			NO		1,6	3
1	2	Pipe networks (1/2). Ducts in series and in parallel. Branched networks. Solution of the three-reservoir problem (1: trial and error)		x		NO		1,6	
2	3	Solution of the three-reservoir problem (2: linearization and matrix method)	x			NO		1,6	6
2	4	Solution to problems on branched networks		x		NO		1,6	
3	5	Pipe networks (2/2). The matrix method for solving	x			NO		1,6	6

		complex pipe networks							
3	6	<b>Lab 1:</b> Introduction to MATLAB programming. Numerical solution of the three-reservoir problem with the matrix method.		x	Computer class room	YES		1,6	
4	7	Theory of incompressible transient flow in ducts. Example.	x			NO		1,6	
4	8	<b>Lab 2:</b> Programming of the network proposed for evaluation		x	Computer class room	YES		1,6	6
5	9	Application of the incompressible transient theory: surge tanks	x			NO		1,6	
5	10	<b>Lab 3:</b> Programming of the network proposed for evaluation		x	Computer class room	YES		1,6	4
6	11	Theory of the water hammer (1/2). Basic equations.	x			NO		1,6	
6	12	Solution to problems of incompressible transient flow		x		NO		1,6	4
6	13	<b>Lab 4:</b> Programming of the network proposed for evaluation		x	Computer class room	YES			
7	14	Theory of the water hammer (2/2). Sudden closure of a valve at the end of a pipe. Sudden opening of a valve at the end of a pipe: the phenomenon of cavitation	x			NO		1,6	
7	15	Solution of transient flow problems		x		NO		1,6	6
8	16	Solution of transient flow problems	x			NO		1,6	
8	17	Solution of transient flow problems		x		NO		1,6	6
9	18	<b>FIRST PARTIAL EXAM</b>	x			NO		1,6	
9	19	Solution of the first partial exam		x		NO		1,6	6
10	20	Introduction to turbomachinery (1/2). Classification of fluid machinery. Hydraulic pumps and turbines. Types and basic characteristics. Hydraulic turbomachines.	x			NO		1,6	
10	21	Introduction to turbomachinery (2/2). Cavitation and NPSH. Similarity in pumps and turbines (1/2)		x		NO		1,6	3
11	22	Similarity in pumps and turbines (2/2). Specific speed and specific diameter. Cordier's chart.	x			NO		1,6	
11	23	Coupling of turbomachines to pipe networks. Optimal selection. Example.		x		NO		1,6	5
12	24	Solution to problems on turbomachines.	x			NO		1,6	
12	25	Solution to problems on turbomachines.		x		NO		1,6	5

13	26	Solution to problems on turbomachines.	x			NO		1,6	
13	27	Solution to problems on turbomachines.		x		NO		1,6	6
14	28	Solution to problems on turbomachines.	x			NO		1,6	6
14	29	<b>SECOND PARTIAL EXAM</b>	x			NO		1,6	6
								1,6	
<b>Subtotal 1</b>								<b>48,33</b>	<b>78</b>
<b>Total 1 (Hours of class plus student homework hours between weeks 1-14)</b>								<b>126,33</b>	

15		Tutorials, handing in, etc							
16		Assessment							
17									
18									
<b>Subtotal 2</b>									
<b>Total 2 (Hours of class plus student homework hours between weeks 15-18)</b>									

<b>TOTAL (Total 1 + Total 2. <u>Maximum 180 hours</u>)</b>								<b>126,33</b>	
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