



COURSE: Turboprop design		
DEGREE: Aerospace Engineering	YEAR: 4th	TERM: 1st

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	Basics notions on propellers I Introduction to the course, recalls of propulsion. Basic concepts on propellers and their characteristics	X				Read the corresponding chapters and solve the proposed exercises.	1,6	3
2	2	Basics notions on propellers II Experimental testing of a propeller		X	Virtual Lab Session		Experimental test of a propeller	1,6	3
3	3	Basics notions on propellers III Geometry of propellers. Characteristic curves. Quantitative analysis. Propeller sets and variable pitch propellers.	X				Read the corresponding chapters and solve the proposed exercises.	1,6	3

4	4	Basics notions on propellers IV Problems on propellers		X			Read the corresponding chapters and solve the proposed exercises.	1,6	3
5	5	Blade Element Theory. Derivation of BET. Numerical implementation of BET	X		Virtual Computer class room		Solve the BET numerically.	1,6	3
6	6	Momentum Theory I Derivation of MT	X				Read the corresponding chapters and solve the proposed exercises.	1,6	3
7	7	Momentum Theory II Modified MT and optimization of MT	X				Read the corresponding chapters and solve the proposed exercises.	1,6	3
8	8	Momentum Theory III Problems on MT		X			Read the corresponding chapters and solve the proposed exercises.	1,6	3
9	9	Blade Element Momentum Theory I Derivation of BEMT. Numerical implementation of BEMT.	X		Virtual Computer class room		Solve the BEMT numerically.	1,6	3
10	10	Turboprop Engine I Introduction to turboprops. Different designs. Free-turbine cycle analysis. Efficiencies. Power optimization.	X				Read the corresponding chapters and solve the proposed exercises.	1,6	3
11	11	Turboprop Engine II Performances	X				Read the corresponding chapters and solve the proposed exercises.	1,6	3
12	12	Turboprop Engine III Problems on Turboprop		X			Read the corresponding chapters and solve the proposed exercises.	1,6	3
13	13	Blade Element Momentum Theory II Optimization of BEMT. Propeller design based on BEMT.		X	Virtual Computer class room		Design a propeller through BEMT optimization.	1,6	3
14	14	Propeller noise	X					1,6	3

Subtotal 1 **23,33** **42**

Total 1 (Hours of class plus student homework hours between weeks 1-14)	65,33
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8		Tutorials, handing in, etc						1.8	
9		Assessment						4	4

10									
11									
Subtotal 2								6	4
Total 2 (<i>Hours of class plus student homework hours between weeks 8-11</i>)								10	

TOTAL (<i>Total 1 + Total 2. Maximum 90 horas</i>)									
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() In EPS are given an additional 6 hours of completary teaching along two sessions.*