	COURSE: Propulsion Systems Performance and Design		
Universidad Carlos III de Madrid	MASTER: Aeronautical Engineering	YEAR: 1st	TERM: 2nd

						WEEKLY PLANNING			

SESSION	WEEK	DESCRIPTION	TYPE		COMMENTS	STUDENT WEEKLY PROGRAMME			
			LECTURE	SEMINAR		DESCRIPTION		CLASS HOURS	HOMEWORK HOURS
1	1	Review of engine requirements	X			Read the corresponding notes chapters Study and personal work		1,67	2
2	1	Preliminary design process: the constraint analysis - Theta break and throttle ratio - Models for thrust lapse and constraint estimation - Non-standard atmosphere models	X			Read the corresponding notes chapters Study and personal work		1,67	3
3	2	LAB 1 - Selection of the powerplant		X	Computer room	Study and personal work Solve the proposed exercises		1,67	3
4	2	Preliminary design process: the mission analysis Parametric cycle analysis (1/4) - Nomenclature of characteristic ratios and efficiencies - Engine performance analysis: ideal and real turbojet	X			Read the corresponding notes chapters Study and personal work		1,67	2
5	3	Parametric cycle analysis (2/4) - Polytropic efficiencies of turbomachines - Calorically perfect gases and real gases - Engine performance analysis: mixed flow turbofan with bleeds and afterburning		X		Read the corresponding notes chapters Study and personal work		1,67	3
6	3	Parametric cycle analysis (3/4) - Mixer, afterburner and performances of a mixed flow turbofan with afterburner - Mixed vs separate exhaust turbofan - Examples of parametric cycle analysis	X			Read the corresponding notes chapters Study and personal work		1,67	3

7	4	Parametric cycle analysis (4/4) • Perform parametric cycle analysis		X	Computer room	Study and personal work Solve the proposed exercises	1,67	2
8	4	LAB 2 – parametric cycle analysis		X	Computer room	Study and personal work Solve the proposed exercises	1,67	4
9	5	Introduction to performance analysis	X			Read the corresponding notes chapters Study and personal work	1,67	3
10	5	Engine testing	X			Read the corresponding notes chapters Study and personal work	1,67	3
11	6	Off-design performances	X			Study and personal work Solve the proposed exercises	1,67	4
12	6	Certification Problems on engine testing.		X		Read the corresponding notes chapters Study and personal work Solve the proposed exercises	1,67	3
13	7	Cycle analysis of turbofan engines in PROOSIS		X	Computer room	Study and personal work Solve the proposed exercises	1,67	3
14	7	Off-design analysis in PROOSIS		X	Computer room	Read the corresponding notes chapters Study and personal work	1,67	3
15	8	LAB 3 – performance analysis		X	Computer room	Study and personal work Solve the proposed exercises	1,67	4
16	8	Secondary systems: lubrication and cooling	X			Read the corresponding notes chapters Study and personal work	1,67	2
17	9	Installed performances	X			Read the corresponding notes chapters Study and personal work	1,67	3
18	9	Bearing and seals	X			Read the corresponding notes chapters Study and personal work	1,67	2
19	10	Turbine cooling design (1/2)	X			Read the corresponding notes chapters Study and personal work	1,67	3

							Read the corresponding notes chapters Study and personal work		

#	Week	Topic				Activities	Hours	Homework
20	10	Engine structural design	X			Read the corresponding notes chapters Study and personal work	1,67	3
21	11	Turbine cooling design (2/2)		X		Read the corresponding notes chapters Study and personal work Solve the proposed exercises	1,67	3
22	11	Problems on structural design		X		Study and personal work Solve the proposed exercises	1,67	2
23	12	Sensors, instrumentation and control	X			Read the corresponding notes chapters Study and personal work	1,67	3
24	12	Turbomachinery flutter	X			Read the corresponding notes chapters Study and personal work	1,67	3
25	13	Ramjets and scramjets	X			Read the corresponding notes chapters Study and personal work	1,67	2
26	13	Problems on turbomachinery flutter		X		Study and personal work Solve the proposed exercises	1,67	2
27	14	LAB 4 - Engine testing		X		Study and personal work Solve the proposed exercises	1,67	2
28	14	Labs discussion Exam problems		X		Solve the proposed exercises	1,67	3
						Subtotal 1	**46.8**	**78**
		Sum *(Hours of class plus student homework hours between weeks 1-14)*				124.8		
	15	Tutorials, handing in, etc						5
	16							
	17	Assessment					3	15
	18							
						Subtotal 2	**3**	**20**
		Total *(Total 1 plus student homework hours between weeks 15-18)*				147.8		