uc3m | Universidad Carlos III de Madrid

SUBJECT: Complements of Aerospace Engineering					
MASTER DEGREE: Master in Space Engineering				ECTS: 6	TERM: 1st

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	TEACHING (MARK X) LECTURES	TEACHING (MARK X) SEMINARS	SPECIAL ROOM FOR SESSION (Computer room, audiovisual room)	WEEKLY PROGRAMMING FOR STUDENT DESCRIPTION	CLASS HOURS (1,66 h = 50 min + 50 min)	HOMEWORK HOURS (max. est. 3,25 h)
1	1	Course introduction. vectors, vector bases, reference frames, coordinates, tensors	X			Home study. Problems. Prepare next lecture	1.66	3.25
1	2	Vector differentiation in a moving reference frame	X			Home study. Problems. Prepare next lecture	1.66	3.25
1	3	Continuum postulate, system, control mass and volume. Thermodynamic state, properties, processes	X			Home study. Problems. Prepare next lecture	1.66	3.25
1	4	Conservation of Mass and Momentum	X			Home study. Problems. Prepare next lecture	1.66	3.25
2	1	Point particle kinematics	X			Home study. Problems. Prepare next lecture	1.66	3.25
2	2	Point particle dynamics	X			Home study. Problems. Prepare next lecture	1.66	3.25
2	3	First Law: heat and work, internal energy, energy equation, enthalpy, specific heats	X			Home study. Problems. Prepare next lecture	1.66	3.25
2	4	Second law: entropy and irreversibility. Thermodynamic cycles	X			Home study. Problems. Prepare next lecture	1.66	3.25
3	1	Point particle dynamics II	X			Home study. Problems. Prepare quiz	1.66	3.25
3	2	Quiz 1		X		Review quiz questions. Prepare next lecture	1.66	3.25
3	3	1D flow model	X			Home study. Problems. Prepare next lecture	1.66	3.25
3	4	1D flow model	X			Home study. Problems. Prepare next lecture	1.66	3.25
4	1	Central force problems	X			Home study. Problems. Prepare next lecture	1.66	3.25
4	2	Oscillations	X			Home study. Problems. Prepare next lecture	1.66	3.25
4	3	Nozzles	X			Home study. Problems. Prepare next lecture	1.66	3.25
4	4	Heat transfer mechanisms. Conduction and convection	X			Home study. Problems. Prepare next lecture	1.66	3.25
4	*	Radiation	X		Session 29th	Home study. Problems. Prepare next lecture	1.66	3.25
5	1	Rigid body kinematics	X			Home study. Problems. Prepare next lecture	1.66	3.25
5	2	Geometry of masses	X			Home study. Problems. Prepare quiz	1.66	3.25
5	3	Quiz 2		X		Review quiz questions. Prepare next lecture	1.66	3.25
5	4	Solid mechanics and linear structures. Types of structures	X			Home study. Problems. Prepare next lecture	1.66	3.25
6	1	Rigid body dynamics	X			Home study. Problems. Prepare next lecture	1.66	3.25
6	2	Rigid body dynamics II	X			Home study. Problems. Prepare next lecture	1.66	3.25
6	3	Deformation and stress in a material. Elasticity. Constitutive relations	X			Home study. Problems. Prepare next lecture	1.66	3.25
6	4	Loads and stress types: compression/tension, shear, torsion, bending...	X			Home study. Problems. Prepare next lecture	1.66	3.25
7	1	Torque-free motion of a rigid body	X			Home study. Problems. Prepare next lecture	1.66	3.25
7	2	Kinematics and dynamics of material systems. Constraints and reactions	X			Home study. Problems. Prepare next lecture	1.66	3.25
7	3	Resistance: ultimate stresses. Safety factors in a structure	X			Home study. Problems. Prepare next lecture	1.66	3.25
7	4	Introduction to structural dynamics. Vibration modes, fundamental frequency, harmonics.	X			Home study. Problems	1.66	3.25
						Subtotal 1	48	94
						Total 1 (Hours of class plus student homework)	142	
8		Tutorials, handing in, etc.,					1.8	--
8		Assessment					4	4
						Subtotal 2	6	4
						Total 2 (Hours of class plus student homework)	10	
						Total	152	