



<b>DENOMINACIÓN ASIGNATURA:</b> Diseño de Sistemas Espaciales (Space Systems Design)		
<b>POSTGRADO:</b> MÁSTER UNIVERSITARIO EN INGENIERÍA AERONÁUTICA <b>Profesor/a:</b> Mario Merino	<b>ECTS:</b> 6	<b>CUATRIMESTRE:</b> 2

<b>CRONOGRAMA DE LA ASIGNATURA (versión detallada)</b>								
<b>SEMANA</b>	<b>SESIÓN</b>	<b>DESCRIPCIÓN DEL CONTENIDO DE LA SESIÓN</b> (En su caso, incluir las recuperaciones, tutorías, entrega de trabajos, etc)	<b>GRUPO (marcar X)</b>		<b>Indicar espacio necesario distinto aula (aula informática, audiovisual, etc..)</b>	<b>TRABAJO DEL ALUMNO DURANTE LA SEMANA</b>		
			<b>1</b>	<b>2</b>		<b>DESCRIPCIÓN</b>	<b>HORAS PRESENCIALES</b>	<b>HORAS TRABAJO Semana Máximo 7 H</b>
1	1	Introduction to space systems design; Assignment of Space Systems Design project	X			Personal study and project work.	1.6	7
1	2	Mission geometry. Space segment: subsystems overview		X		Personal study and project work.	1.6	7
2	3	System Engineering for space missions; QA	X			Personal study and project work.	1.6	7



2	4	LEO, GEO, GNSS, Lagrange point, Science, and interplanetary missions		X		Personal study and project work.	1.6	7
3	5	Computer session: STK/GMAT		X	Computers	Do lab report	1.6	7
3	6	Space Environment I	X			Personal study and project work. Voluntary homework.	1.6	7
4	7	Space Environment II. ECLSS	X			Personal study and project work.	1.6	7
4	8	Space propulsion subsystem (SPS) I	X			Personal study and project work. Voluntary homework.	1.6	7
5	9	Space propulsion subsystem (SPS) II		X		Personal study and project work.	1.6	7
5	10	Communications subsystem (COMM); Telemetry, tracking, command (TT&C); On-board data handling I	X			Personal study and project work. Voluntary homework.	1.6	7



6	11	Communications subsystem (COMM); Telemetry, tracking, command (TT&C); On-board data handling II		X		Personal study and project work.	1.6	7
6	12	Laboratory session: satellite telemetry and telecommunications		X	Lab	Do lab report	1.6	7
7	13	Thermal control subsystem I	X			Personal study and project work. Voluntary homework.	1.6	7
7	14	Thermal control subsystem II		X		Personal study and project work.	1.6	7
8	15	Electric power subsystem (EPS) I	X			Personal study and project work. Voluntary homework.	1.6	7
8	16	Electric power subsystem (EPS) II		X		Personal study and project work.	1.6	7
9	17	Eyassat Lab session 1		X	Lab	Do lab report	1.6	7



9	18	Spacecraft configuration, structural subsystem. Mechanisms. I	X			Personal study and project work. Voluntary homework.	1.6	7
10	19	Spacecraft configuration, structural subsystem. Mechanisms. II	X			Personal study and project work.	1.6	7
10	20	Attitude Determination and Control subsystem (ADCS) I	X			Personal study and project work. Voluntary homework. Study for quiz	1.6	7
11	21	Attitude Determination and Control subsystem (ADCS) II		X		Personal study and project work. Study for quiz	1.6	7
11	22	Quiz	X			Personal study and project work.	1.6	7
12	23	Eyassat Lab session 2		X	Lab	Do lab report	1.6	7



12	24	Guidance, Navigation and Control (GNC). Spacecraft ranging.	X			Personal study and project work.	1.6	7
13	25	Space launchers. Launcher selection. Reentry. I	X			Personal study and project work. Voluntary homework.	1.6	7
13	26	Space launchers. Launcher selection. Reentry. II		X		Personal study and project work. Prepare final presentation	1.6	7
14	27	End-of-life considerations. Space Law. Course review.	X			Personal study and project work. Prepare final presentation	1.6	7
14	28	Final Presentation (student design projects)		X		Process presentation feedback and complete report	1.6	7
*	29	ESAC visit + Invited talk: Ground Segment and Operations (Sara de la Fuente, ESA) (TBC)	X		Visit to ESAC	Personal study	3	0



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Carlos III de Madrid

<b>TOTAL HORAS</b>	49.66	98
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