



COURSE: BIOMEDICAL APPLICATIONS OF NANOTECHNOLOGY

DEGREE: BIOMEDICAL ENGINEERING

YEAR: 2014/2015

TERM: 2nd

*La asignatura tiene 29 sesiones que se distribuyen a lo largo de 14 semanas. Los laboratorios pueden situarse en cualquiera de ellas.
Semanalmente el alumnos 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 we
1	1	Introduction to nanotechnology. Basic concepts	X				Reading of proposed topics.	1,6	6
1	2	Organic chemistry I	X				Reading of proposed topics.	1,6	
2	3	Organic chemistry II	X				Reading of proposed topics.	1,6	6
2	4	Synthetic Organic Chemistry I	X				Reading of proposed topics.	1,6	
3	5	Synthetic Organic Chemistry II		X			Reading of proposed topics.	1,6	6
3	6	Bioconjugation techniques with proteins		X			Examples and exercises	1,6	
4	7	Bioconjugation techniques with antibodies		X			Examples and exercises	1,6	6
4	8	TEM, SEM, AFM	X				Reading of proposed topics.	1,6	
5	9	DLS, NMR, MS	X				Reading of proposed topics.	1,6	6

5	10	Dendrimers and polymeric particles	X				Reading of proposed topics.	1,6	
6	11	Liposomes	X				Reading of proposed topics.	1,6	
6	12	Practice 1; Synthesis of liposomes					Practice	1,6	6
7	13	Practice 2; Synthesis of citrate-coated gold NPs					Practice	1,6	
7	14	Carbon nanotubes	X				Reading of proposed topics.	1,6	6
8	15	Superparamagnetic nanoparticles I	X				Examples and exercises	1,6	
8	16	Superparamagnetic nanoparticles II		X			Reading of proposed topics.	1,6	6
9	17	Gold Nanoparticles, Quantum dots and UCNPs	X				Reading of proposed topics.	1,6	
9	18	Practice 3; Characterization of nanoparticles					Practice	1,6	6
10	19	PET Nanoparticles	X				Reading of proposed topics.	1,6	
10	20	PET / MRI probes	X				Reading of proposed topics.	1,6	6
11	21	Practice 4; In vivo kinetics of SPIO NPS by MRI					Practice	1,6	
11	22	Theranostics		X			Examples and exercises	1,6	6
12	23	Nanoparticle-Proteins Interactions		X			Examples and exercises	1,6	
12	24	Nanotech. for cancer		X			Examples and exercises	1,6	6
13	25	Nanotech. for Cardiovascular diseases					Examples and exercises	1,6	
13	26	Nanotech. and gene therapy		X			Examples and exercises	1,6	6
14	27	Nanotoxicology		X			Examples and exercises	1,6	2
14	28	Scientific paper presentations by students		X				1,6	
	29	Scientific paper presentations by students		X				1,6	

Subtotal 1 **48,33** **80**

Total 1 (<i>Hours of class plus student homework hours between weeks 1-14</i>)	128,33
---	--------

15		Tutorials, handing in, etc						1,5	
16		Assessment						3	
17									
18									

Subtotal 2 **3**

Total 2 (<i>Hours of class plus student homework hours between weeks 15-18</i>)	4,5
--	-----

TOTAL (<i>Total 1 + Total 2. <u>Maximum 180 hours</u></i>)

132,8
