Universidad Carlos III de Madrid
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COURSE: Biomaterials Experimental Design		
DEGREE: Biomedical Engineering	**YEAR: 2018/2019**	**TERM: 2**

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	Introduction to the course (Overview + objectives). Analysis of stem cell niches: micro- and nano-scale surface engineering I	x				Reading of proposed topics. Bibliographic research	1.6	6
1	2	Analysis of stem cell niches: micro- and nano-scale surface engineering II	x	x			Reading of proposed topics. Bibliographic research Presentation and discussion of some practical examples, problems and articles	1.6	
2	3	Atomic force microscopy of living cells	x				Reading of proposed topics. Bibliographic research	1.6	6
2	4	Finding inspiration in nature: spider silk-based biomaterials	x				Reading of proposed topics. Bibliographic research	1.6	

3	5	Tissue-organ-on a chip	x				Reading of proposed topics. Bibliographic research	1.6	6
3	6	Experimental research I		x			UC3M Bioengineering Labs	1.6	
4	7	Microfabrication I	x				Reading of proposed topics. Bibliographic research	1.6	6
4	8	Microfabrication II	x				Reading of proposed topics. Bibliographic research	1.6	
5	9	Introduction to *in vivo* detection technologies	x				UC3M Bioengineering Labs	1.6	6
5	10	Introduction to bioprinting	x				Reading of proposed topics. Bibliographic research	1.6	
6	11	3D skin bioprinting	x	x			Reading of proposed topics. Bibliographic research	1.6	6
6	12	Polymer hydrogels for 3D bioprinting : structure and rheological characterization	x				Reading of proposed topics. Bibliographic research	1.6	
7	13	Experimental research II		x			UC3M Bioengineering Labs	1.6	6
7	14	Practical session I: design 3D objects		x	x		Practical training session	1.6	
8	15	CONTINUOUS EVALUATION: TEST						1.6	6
8	16	Experimental research III		x			UC3M Bioengineering Labs	1.6	
9	17	Practical session II: design 3D objects		x	x		Practical training session	1.6	6
9	18	Experimental research IV		x			UC3M Bioengineering Labs	1.6	
10	19	Nanotechnologies for drug, protein and gene delivery I	x				Reading of proposed topics. Bibliographic research	1.6	6
10	20	Experimental research V		x			UC3M Bioengineering Labs	1.6	
11	21	Nanotechnologies for drug, protein and gene delivery II	x				Reading of proposed topics. Bibliographic research	1.6	6
11	22	Nanotechnologies for drug, protein and gene delivery III	x				Reading of proposed topics. Bibliographic research	1.6	
12	23	Experimental research VI		x			UC3M Bioengineering Labs	1.6	6
12	24	Nanotechnologies for drug, protein and gene delivery IV	x	x			Reading of proposed topics. Bibliographic research	1.6	
13	25	Presentation by students I		x				1.6	6
13	26	Presentation by students II		x				1.6	
							Subtotal 1	**41.6**	**78**

Total 1 *(Hours of class plus student homework hours between weeks 1-14)*	119.6

14		Tutorials, handing in, etc						1.5	
15		Assessment						3	6
16									
17									
							Subtotal 2	**4.5**	**6**

Total 2 *(Hours of class plus student homework hours between weeks 15-18)*	10.5

TOTAL A *(Total 1 + Total 2)*	**130.1**

LABORATORIES CLASSES PROGRAMMING (*)

WEEK	SESSION	DESCRIPTION	LABORATORY	WEEKLY PROGRAMMING FOR STUDENT		
				DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. 7h week)
	1	Cationic polymers for gene transfection I	UC3M Bioengineering Labs	Teams of 10 students	1.6	1
	2	Cationic polymers for gene transfection II	UC3M Bioengineering Labs	Teams of 10 students	1.6	1
	3	Cationic polymers for gene transfection III	UC3M Bioengineering Labs	Teams of 10 students	1.6	1
	4	Microfabrication of microfluidic chips I	UC3M Bioengineering Labs	Teams of 10 students	1.6	1
	5	3D Bioprinting I	UC3M Bioengineering Labs	Teams of 10 students	1.6	1
	6	3D Bioprinting II	UC3M Bioengineering Labs	Teams of 10 students	1.6	1
	7	3D Bioprinting III	UC3M Bioengineering Labs	Teams of 10 students	1.6	1
	8	Smart-hydrogels for drug delivery I	UC3M Bioengineering Labs	Teams of 10 students	1.6	1
	9	Smart-hydrogels for drug delivery II	UC3M Bioengineering Labs	Teams of 10 students	1.6	1
	10	Smart-hydrogels for drug delivery III	UC3M Bioengineering Labs	Teams of 10 students	1.6	1
				Subtotal 3	**16**	**10**

Total 3 *(Hours of class plus student homework hours of ten sessions laboratories)*	**26**

TOTAL B *(Total 3)*	**26**

TOTAL *(Total A + Total B. Maximum 180 hours)*	**156.1**

(*) *In EPS are given an additional 16 hours of laboratory practices along ten sessions.*