



COURSE: INFORMATICS AND BIOTECHNOLOGY TO SUPPORT TISSUE ENGINEERING		
DEGREE: Grado en Ingeniería biomédica	YEAR: 2015	TERM: 1st semester

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	0. Overview of the subject I. Systems Biology and molecular networks. Introduction. Protein interaction networks (I).	x		Class room	NO		1,5	4
1	2	Protein interaction networks (II). Computational methods for inferring protein interactions.		X	Computer Room	NO		1,5	
2	3	Protein interaction networks (III). Topological features of the interactome. interaction networks. Graph Theory (I). Introduction to Graph Theory	x		Class room	NO		1,5	4
2	4	Graph Theory (II). Pathways/routes in graphs.	x		Class	NO		1,5	

		Classification of graphs			room				
3	5	Visualizing and handling molecular networks with Cytoscape Functional analysis		X	Computer room	NO		1,5	4
3	6	Handling, visualization and topological calculations on molecular networks with R.		X	Computer room	NO		1,5	
4	7	Topological and functional characteristics of metabolic networks.	X		Class room	NO		1,5	4
4	8	Topological and functional characteristics of gene regulatory networks. Other molecular networks	X		Class room	NO		1,5	
5	9	Systemic and network approaches to drug design and disease diagnose/treatment. Mid term exam	x		Class room	NO		1,5	4
5	10	II Omic technologies and applications in biomedicine Introduction to omics	x		Class room	NO		1,5	
6	11	Genomics The Human genome project Genomics instrumentation. Genome sequencing.	X		Class room	NO		1,5	4
6	12	Genomics applications in biomedicine Personalized medicine. Paper discussion in class	X		Class room	NO		1,5	
7	13	Gene expression. Transcriptomics instrumentation. DNA microarrays	X		Class room	NO		1,5	4
7	14	Transcriptomic applications in biomedicine. Babelomics practical exercise Paper discussion in class		X	Computer Room	NO		1,5	
8	15	Proteomics and metabolomics instrumentation. Mass spectrometry.	x		Class room	NO		1,5	4
8	16	Proteomic and metabolomic applications in biomedicine		X	Computer room	NO		1,5	
9	17	Omics and cáncer	X		Class Room	NO		1,5	4
9	18	Mid term exam	X		Class room	NO		1,5	
10	19	III. Synthetic Biology: Introduction. The logic	x		Class	NO		1,5	4

		and the need of standards.			Room			
10	20	The prokaryotic gene expression flow. Orthogonal gene expression systems.	X		Class Room	NO		1,5
11	21	Genome engineering. The repository of biological parts	X		Class room	NO		1,5
11	22	Deployment of Synthetic constructs: Environmental mining of synthetic parts		x	Computer room	NO		1,5
12	23	Metabolic engineering	x		Class Room	NO		1,5
12	24	Design and testing of genetic circuits	x		Class room	NO		1,5
13	25	Synthetic operative systems in live organisms	x		Class room	NO		1,5
13	26	Biotechnological applications of Synthetic Biology	x		Class room	NO		1,5
14	27	Minimal Cells and Synthetic Life. The business of Syn Bio	x		Class room	NO		1,5
14	28	Mid term exam	X		Class room	NO		1,5

Subtotal 1 **42** **56**

Total 1 (Hours of class plus student homework hours between weeks 1-14)	98
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15		Tutorials, handing in, etc						1.5
16		Assessment						3
17								
18								

Subtotal 2 **4.5** **6**

Total 2 (Hours of class plus student homework hours between weeks 15-18)	10.5
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TOTAL (Total 1 + Total 2)	108.5
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